



**BARRIERS, FACILITATORS, AND MOTIVES FOR YOGA  
PARTICIPATION AMONG MEN**

A thesis submitted by

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## **ABSTRACT**

Yoga is a holistic movement practice involving a physical activity rooted in a holistic philosophy of well-being, offering opportunities for physical activity, mind-body integration, personal transformation, and spiritual development. The potential of yoga for health and physical activity promotion is also widely acknowledged by health authorities worldwide. Participation, however, remains relatively low, particularly among men. The purpose of this PhD-by-publication, therefore, was to examine the barriers, facilitators, and motives for yoga participation among men. One review and three primary empirical studies were conducted. Using a scoping review methodology, the first paper established the need to further understand the psychological and social factors that influence or discourage yoga participation among adults in the general population. It highlighted the barriers and facilitators not typically mentioned in conventional physical activities and the under-representation of men in the existing literature, providing a strong justification for the current project. In the second and third papers, qualitative interviews and focus groups were used to collect data from male yoga participants and non-participants who shared their yoga perceptions and experiences. These two papers identified male-specific barriers and facilitators for yoga and described potential strategies to improve yoga uptake and support sustained participation. The final paper, including follow-up analyses, was a cross-sectional survey study. Respondents were 546 male and female yoga participants who completed an online questionnaire on yoga participation motives, engagement in yoga's philosophical and spiritual dimensions, selected conformity to masculine norm constructs, yoga practice characteristics, and socio-demographic information. Using a combination of multivariate analytical methods, this study established that modern yoga participants, including men, do not belong to

one homogenous participant group. They vary in the manner they perceive yoga and engage in its psycho-spiritual underpinnings. As such, participation motives vary across these participant groups. Collectively, these papers identified perceptions, barriers, and motives related to gender and psycho-spiritual aspects that motivate or hinder men from practicing yoga. While many of the facilitators and barriers were similar to conventional physical activities, several may be specific to yoga. The holistic aspects of yoga, for example, act as both barriers and facilitators for men and need to be studied further. The results of this PhD project point to the need for further studies on men's experiences in yoga and for additional quantitative work to test whether similar findings are observed in different populations. From the standpoint of promoting yoga, the findings could be useful in creating differentiated promotional messages to attract new participants seeking different outcomes from yoga or when developing context-specific yoga instructional content.

## **CERTIFICATION OF THESIS**

This Thesis is the work of Jonathan Y. Cagas except where otherwise acknowledged, with the majority of the authorship of the papers presented as a Thesis by Publication undertaken by the student. The work is original and has not previously been submitted for any other award, except where acknowledged.

Principal Supervisor: Stuart J. H. Biddle

Associate Supervisor: Ineke Vergeer

Student and supervisors' signatures of endorsement are held at the University.



## STATEMENT OF CONTRIBUTION TO THIS THESIS

This thesis comprises four research investigations, which have been completed almost entirely by the candidate, Jonathan Y. Cagas (Physically Active Lifestyles Research Group, Centre for Health Research). The candidate played a leading role in the design of the studies, participant recruitment, data collection, data analysis and interpretation, and is first author on all manuscripts (Chapters II, III, IV, V). The following people also contributed to each of the studies (unless otherwise specified) as detailed:

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The Candidate was the primary author, and contributed 70% of the planning, development, analysis, drafting and revising the final submission; Ineke Vergeer contributed the other 20% and Stuart J. H. Biddle 10% to the concept development, analysis, editing and providing important technical and conceptual inputs.

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The Candidate was the primary author of this paper and contributed 70% of the concept development, analysis, drafting and revising the final submission; Ineke Vergeer contributed the other 20% and Stuart J. H. Biddle 10% to the concept development, analysis, editing and providing important technical and conceptual inputs.

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The Candidate was the primary author of this paper and contributed 70% of the concept development, analysis, drafting and revising the final submission; Ineke Vergeer (20%) Stuart J. H. Biddle (5%), and Oscar Castro (5%) contributed the other 30% to the concept development, analysis, editing and providing important technical and conceptual inputs.

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The Candidate was the primary author of this paper and contributed 70% of the concept development, analysis, drafting and revising the final submission; Ineke Vergeer contributed the other 20% and Stuart J. H. Biddle 10% to the concept development, analysis, editing and providing important technical and conceptual inputs.

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The Candidate was the primary author of this paper and contributed 70% of the concept development, analysis, drafting and revising the final submission; Ineke Vergeer contributed the other 20% and Stuart J. H. Biddle 10% to the concept development, analysis, editing and providing important technical and conceptual inputs.

## OTHER PUBLICATIONS

During the period of the doctoral study, the candidate also co-authored the following papers:

- Castro, O., Vergeer, I., Bennie, J., **Cagas, J.**, & Biddle, S. J. H. (2020). Using the Behavior Change Wheel to understand university students' prolonged sitting time and identify potential intervention strategies. *International Journal of Behavioral Medicine*. doi:10.1007/s12529-020-09926-0
- Vergeer, I., Johansson, M., & **Cagas, J. Y.** (2021). Holistic movement practices - An emerging category of physical activity for Exercise Psychology. *Psychology of Sport and Exercise*, 53, 101870. doi:10.1016/j.psychsport.2020.101870
- Ruiz, M. C., Chen-Wilson, C.-H., Nicholls, W., Robazza, C., **Cagas, J. Y.**, Choi, Y., . . . Devonport, T. (2021). A cross-cultural exploratory study of health behaviours and well-being during COVID-19. *Frontiers in Psychology: Movement Science and Sport Psychology*, 608216. doi:10.3389/fpsyg.2020.608216

## CONFERENCE PRESENTATIONS

- **Cagas, J. Y.,** Biddle, S. J. H., & Vergeer, I. (2018). Barriers and facilitators for yoga participation: A scoping review. Poster presented at the Exercise & Sports Science Australia: Research to Practice 2018 held on 27-29 March 2018 in Brisbane, Australia.
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- **Cagas, J. Y.,** Biddle, S. J. H., & Vergeer, I. (2020). Why men don't practice yoga: Examining the barriers to yoga participation among men. Accepted for poster presentation at the 7<sup>th</sup> International Conference on Qualitative Research in Sport and Exercise (QRSE2020) to be held on 7-9 July 2020 in Durham, UK. This conference was cancelled due to the COVID-19 pandemic.

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## **LIST OF ABBREVIATION**

AFF – affiliation

ANOVA – analysis of variance

CAM – complementary and alternative medicine

CHA – challenge

COM – competition and social recognition

COP – coping and stress management

EFA – exploratory factor analysis

HFI – health and fitness

IHA – ill-health avoidance

MANOVA – multivariate analysis of variance

MBI – mind-body integration and transformation

NIM – nimbleness

PAF – positive affect

PRISMA – preferred reporting items for systematic reviews and meta-analysis

SPI – spirituality

SUP – supplementary activity

WHO – World Health Organization

WMA – weight management and appearance



**CHAPTER I**

**1.1 General Introduction**

Yoga, by origin, is a psycho-spiritual practice aimed to discipline the mind and achieve a state of mind-body integration and spiritual enlightenment (Feuerstein, 2008). In contemporary societies, however, yoga is increasingly recognised as a form of physical activity for health and fitness (Grabara, 2016; Thompson, 2021), lifestyle disease prevention (Grabara, 2016, 2017), and therapeutic intervention (McCall et al., 2013). For instance, the American College of Sports Medicine's annual worldwide fitness survey identified yoga as a fitness trend since 2008 (Thompson, 2021). In Australia, yoga ranks among the top 20 physical activities that adults engage in (Sport Australia, 2019).

Many systematic reviews on the physiological and psychological benefits of yoga support its potential for health and physical activity promotion. Despite yoga's increasing popularity and many possible benefits, participation in yoga remains low, particularly among men in western countries (Cartwright et al., 2020; Cramer, 2015; Vergeer et al., 2017; Vergeer et al., 2018; Wang et al., 2019). In India, for example, while prevalence of yoga participation was relatively low (11.8%), participation rates among men and women were similar (Mishra et al., 2020). In contrast, prevalence of yoga use in western countries like Australia and the United States ranged between 3% and 14.5%, and was more common among women (Vergeer et al., 2017; Vergeer et al., 2018; Wang et al., 2019). Understanding this gender discrepancy in yoga participation, particularly in western countries, is important if the wider use of yoga is to be promoted. Acknowledging that yoga participants are predominantly female (Clarke et al., 2018; Cramer, Ward, et al., 2016; Vergeer et al., 2018), and that yoga studies have recruited mostly female participants, many authors have identified the

1 need to focus future research on men (Alexander et al., 2013; Chen et al., 2007;  
2 LaChiusa, 2016).

3       Men have higher rates of chronic diseases and shorter life expectancy than  
4 women (Australian Institute of Health and Welfare, 2019; Martin et al., 2008) and,  
5 hence, there is a need for more health programs targeting men (Department of Health  
6 and Ageing, 2010; Richardson & Smith, 2011). Yoga can be an alternative health  
7 and physical activity program for men; therefore, identifying factors that may hinder  
8 or facilitate men's participation in this holistic practice is an important first step in  
9 understanding how to promote yoga to men. This PhD project aims to explore yoga  
10 for men, and it intends to answer the main question "What are the barriers,  
11 facilitators, and motives for yoga participation among men?"

### 12 **1.1.1 Yoga as Holistic Movement Practice**

13       The word "yoga" has multiple meanings and interpretations, and some  
14 scholars have argued the need to distinguish 'Yoga the philosophy' from 'Yoga the  
15 practice' (Mallinson & Singleton, 2017). Feuerstein (2008, p.5) described 'yoga' as  
16 an "enormous body of spiritual values, attitudes, precepts, and techniques" developed  
17 in India over millenia. However, yoga in contemporary society is generally  
18 understood as a physical practice involving postures (*asanas*), breathing techniques  
19 (*pranayama*), and meditation (*dhyana*) (Baggoley, 2015; Clarke et al., 2018; Elwy et  
20 al., 2014). De Michelis (2008) described this form of yoga as modern postural yoga,  
21 a style of yoga practice that puts greater emphasis on postures. The other types of  
22 modern yoga suggested by De Michelis (2008) include psychosomatic yoga, a form  
23 that incorporates elements of (neo-)Hindu or Western esoteric traditions; neo-Hindu  
24 yoga, a form of yoga influenced by the martial arts and gymnastics traditions of both  
25 Indian and Western origins; meditational yoga, a form that focuses primarily on

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1 meditational practices; and denominational yoga, a form that promotes its own  
2 meditational practices, worldviews and lifestyles. From a physical activity  
3 perspective, modern postural yoga offers a movement practice that can be beneficial  
4 for health and well-being.

5       Accordingly, modern postural yoga or simply ‘yoga’ can be categorized as a  
6 holistic movement practice, defined as “physical practices embedded in holistic  
7 philosophies of well-being” (Vergeer et al., 2021). The philosophical foundation of  
8 yoga is commonly referred to as “The Eight Limbs of Yoga” (Feuerstein, 2008;  
9 Singleton, 2010). These ‘limbs’ include moral values (*yamas*), ethical observances  
10 (*niyamas*), postures (*asanas*), breath regulation (*pranayama*), sense withdrawal  
11 (*pratyahara*), concentration (*dharana*), meditation (*dhyana*), and integration  
12 (*samadhi*). While yoga, as practiced in most western societies, places more emphasis  
13 on postures, breathing, and meditation, in a more traditional sense, the practice also  
14 includes ethical principles (*yamas* and *niyamas*) and other ancillary practices such as  
15 cleansing techniques (*kriyas*), gestures and ‘energetic’ seals (*mudras* and *bandhas*),  
16 and moderate eating (*mitahara*) (Gharote, 2017; Jois, 2015; Joshi et al., 2009; Patra,  
17 2017). The collective practice of these various techniques and principles constitutes  
18 the holistic approach of yoga for health and well-being.

19       Many styles of modern postural yoga have emerged over the course of  
20 history. Modern styles, especially those developed in India in the first half of the 20<sup>th</sup>  
21 century and later in the West, have mainly focused on movement, breathing, and  
22 meditation or relaxation (Goldberg, 2016; Singleton, 2010). Some of these  
23 approaches place greater emphasis on anatomical alignment and the use of various  
24 props to help practitioners perform the poses efficiently (e.g., Iyengar Yoga); other  
25 styles concentrate on deep rhythmic breathing and synchronizing the breath with

1 movement to create a dynamic, fluid, and meditative movement practice (e.g.,  
2 Ashtanga Yoga). Some contemporary methods incorporate environmental variables,  
3 such as heat to induce sweating during practice (e.g., Bikram Yoga). These variations  
4 in emphasis, and the manner in which the exercises are sequenced, contribute to  
5 differences in intensity across styles (Ainsworth et al., 2011; Larson-Meyer, 2016).

6 More than 50 different yoga styles have been identified in the literature  
7 (Cramer, Lauche, et al., 2016; McCrary, 2013)}. Given such diversity of styles, yoga  
8 may appeal to a broad range of people who may have several reasons for engaging in  
9 an activity (e.g., stress relief, fitness) (Penman et al., 2012). A systematic review  
10 found no significant association between the positive outcomes of yoga and the style  
11 of practice suggesting that participants could benefit from yoga regardless of the  
12 style they engage in (Cramer, Lauche, et al., 2016).

### 13 **1.1.2 Health Benefits of Yoga**

14 As a form of physical activity, yoga involves poses using body weight (e.g.,  
15 crow pose or *bakasana*) which may provide sufficient resistance to enhance muscular  
16 fitness. Some preliminary evidence provides support regarding the effects of yoga on  
17 muscular fitness. For instance, one review reported that Bikram yoga improves lower  
18 body strength, flexibility, and balance in healthy adults (Hewett et al., 2015). One  
19 randomised controlled trial demonstrated that 8 weeks of hatha yoga is as effective as  
20 conventional strength-training program in improving muscular strength, flexibility,  
21 and balance in inactive healthy adults (Gothe & McAuley, 2016). Another clinical  
22 trial reported that, compared to waitlist control group, a 12-week hatha yoga program  
23 improved cardiovascular endurance, muscular fitness and flexibility in non-yoga  
24 practising, apparently healthy adults (Lau et al., 2015). As a strength-promoting  
25 body-weight exercise, regular yoga participation may also reduce all-cause mortality

1 and cancer mortality similar to other own-body-weight exercise and gym-based  
2 activities (Stamatakis et al., 2018).

3         Yoga is widely recognised as a complementary intervention for a wide range  
4 of physical and mental health issues (e.g., hypertension, chronic pain, anxiety)  
5 (Büssing et al., 2012), and research on the potential health benefits of yoga has  
6 increased over the last 20 years (Jeter et al., 2015). Reviews have found that yoga is  
7 as effective as traditional exercise in reducing cardiovascular risk factors (e.g., body  
8 weight, blood pressure, total cholesterol) (Chu et al., 2016), enhancing psychological  
9 well-being (Hendriks et al., 2017), and addressing low back pain (Chang et al., 2016)  
10 in adults. Other reviews have reported that yoga increases exercise capacity and  
11 health-related quality of life in individuals with heart disease, stroke, and lung  
12 conditions and, hence, can be an effective program in managing chronic diseases  
13 (Desveaux et al., 2015).

14         A national prospective cohort study (Loprinzi, 2015), however, found no  
15 association between yoga participation and reduced all-cause mortality risk, although  
16 the authors noted several limitations including a relatively low engagement in yoga  
17 in the national sample and the single baseline assessment of yoga. In a review  
18 involving adult participants with coronary heart disease (Cramer, Lauche, et al.,  
19 2015), minimal effects of yoga on mortality, exercise capacity and health-related  
20 quality of life were found. The results are somewhat equivocal when it comes to  
21 heart disease due to considerable heterogeneity across included studies, outcomes  
22 measured, study quality, and small sample sizes. Nevertheless, all authors  
23 acknowledge the potential of yoga in improving common modifiable risk factors of  
24 cardiovascular diseases and physical function in general population (Chu et al., 2016;  
25 Jeter et al., 2015). Yoga has been found to be as safe and as effective as usual care

1 and conventional exercise in enhancing health in apparently healthy individuals and  
2 in people with chronic conditions (Cramer, Ward, et al., 2015; Ross & Thomas,  
3 2010).

4 While evidence is still preliminary and unclear on the benefits of yoga on  
5 cardiovascular health, findings on yoga's effects on psychological health and pain  
6 seems to be clearer. An umbrella review found that yoga appears most effective in  
7 reducing symptoms of anxiety, depression, and pain (McCall et al., 2013). Other  
8 reviews have found compelling evidence for yoga in treating chronic low back pain  
9 (Cramer et al., 2013), enhancing psychological well-being (Hendriks et al., 2017),  
10 and reducing stress, similar to other more common modalities (e.g., relaxation,  
11 cognitive behavioural therapy) (Chong et al., 2011). In a systematic review  
12 investigating the effects of modern postural yoga on positive mental health  
13 indicators, Domingues (2018) reported inconsistent and nonsignificant results due to  
14 heterogeneity of yoga styles used in interventions, short duration of interventions,  
15 lack of statistical power, and a wide range of outcomes assessed. Nonetheless, the  
16 author noted a general increasing trend in positive mental health indicators due to  
17 yoga practice in most studies.

18 Yoga involves not only physical exercise and therefore may offer additional  
19 benefits, especially when it is practiced in a holistic manner. For example, one study  
20 has shown that yoga provided further benefits when practiced with its philosophical  
21 component compared to when it is practiced only as exercise (Smith et al., 2011).  
22 Yoga involves a system of beliefs and values (Feuerstein, 2008) which may  
23 eventually cultivate compassion and mindfulness in the participants (Evans et al.,  
24 2011), as demonstrated in some cross-sectional studies (Gaiswinkler & Unterrainer,  
25 2016; Genovese & Fondran, 2017). Yoga, therefore, has potential to improve not

1 only physical and mental health, but also spiritual well-being, which could be  
2 appealing to people seeking more than just physical activity.

### 3 **1.1.3 Promoting Yoga for Physical Activity and Health**

4         Given the above benefits and the fact that yoga is also a form of physical  
5 exercise (Brinsley et al., 2021), enhancing yoga participation, as with other forms of  
6 physical activity, could help address the many lifestyle-related risk factors for  
7 chronic diseases affecting modern society (e.g., physical inactivity, stress,  
8 overweight and obesity) (Forouzanfar et al., 2016). The World Health Organization  
9 (2013), for example, acknowledges yoga as a traditional medicine from India and  
10 calls for its integration into healthcare systems. Because yoga has a ‘holistic’  
11 approach (e.g., physical, mental, spiritual) to health and well-being, it offers  
12 strategies to address many lifestyle- related health problems.

13         Regular practice of yoga can meet physical activity requirements for health.  
14 Although it is generally considered to be a light-intensity activity (Ainsworth et al.,  
15 2011), sequences such as the sun salutations and poses that use large muscle groups  
16 (e.g., backbends, warriors) can be performed continuously for 10 minutes and thus  
17 meet the criteria for moderate-intensity physical activity (Larson-Meyer, 2016). A  
18 systematic review found that even light-intensity physical activities have some  
19 benefits for cardio-metabolic health (Chastin et al., 2018). Additionally, yoga, as a  
20 strength-promoting exercise, can improve not only muscular fitness and balance  
21 (Jeter et al., 2014), but also potentially reduce all-cause mortality and cancer  
22 mortality (Stamatakis et al., 2018).

23         Yoga can potentially address the many dimensions of health (e.g., physical,  
24 mental, social, and spiritual) (Desikachar et al., 2005). Due to the commercialization  
25 of yoga, however, classes can be relatively costly which could act as barrier for

people with less disposable income (Antony, 2018; Atkinson & Permuth-Levine, 2009). Still, many researchers believe that yoga can be an inexpensive program to promote physical and mental health as it does not require any special equipment (Hartfiel et al., 2017; Khalsa, 2007; Patwardhan, 2017; Uebelacker et al., 2010).

While evidence relating to yoga and cardiovascular health remains unclear, the potential of yoga as a comprehensive physical activity program to prevent lifestyle-related diseases is widely acknowledged (Chu et al., 2016; Desveaux et al., 2015).

Hence, similar to other forms of physical activity, the optimal benefits of yoga can only be experienced if it is practiced regularly and consistently over time. Much of the previous research on yoga has focused on its clinical outcomes (McCall et al., 2013) but research on factors influencing participation is limited. Such research can improve understanding of yoga participation as a health behaviour, supplement current literature, and provide information on how best to promote yoga as a physical activity and health management program.

#### **1.1.4 Barriers, Facilitators, and Motives for Yoga Participation**

Despite its increasing popularity, the uptake of yoga remains relatively low and appears to be limited to specific groups of people. Population studies in the US, UK, and Australia have reported that prevalence ranges from 1% to 13%, and that the majority of yoga practitioners were young or middle-aged, healthy, and college-educated females (Clarke et al., 2018; Cramer, Ward, et al., 2016; Ding & Stamatakis, 2014; Vergeer et al., 2018). Given its many potential health benefits, promoting yoga to people outside these socio-demographics (e.g., men) would be a worthwhile endeavour.

Park, Braun, and Siegel (2015) summarised the psychological correlates of voluntary yoga participation, and found that yoga practice was associated with



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1 mindfulness, spirituality, religiousness, higher life satisfaction, and health-related  
2 quality of life. The authors, however, considered the results preliminary because of  
3 the quality of sampling and designs used in the included studies. They acknowledged  
4 the need for more research on psychosocial factors that may influence yoga uptake  
5 and adherence – a research gap that was also recognised by others (Patel et al.,  
6 2012). Park et al. (2015) highlighted that questions addressing factors that lead to or  
7 prevent participation remain unanswered. Identifying these factors would likely be  
8 helpful in informing yoga interventions or programs that would address the needs of  
9 different populations (Park et al., 2015; Patel et al., 2012).

10 Yoga is an integral part of Indian spirituality and, thus, may include  
11 references to Vedic texts and devotional practices, like chanting (Feuerstein, 2008).  
12 While these practices may act as barriers for people who hold strong religious beliefs  
13 or those who are not particularly religious or spiritual (Lian et al., 2017), they may  
14 also facilitate participation in those who are already interested in spirituality and  
15 other mystical practices (Hasselle-Newcombe, 2005). These spiritual elements are  
16 often removed from yoga intervention studies to make yoga more acceptable to  
17 participants from different backgrounds (Middleton et al., 2015). Some studies,  
18 however, have identified spirituality as the most common reason for continued yoga  
19 participation (Park et al., 2019; Park et al., 2016). Hence, more research is needed to  
20 understand further in which contexts spirituality becomes a barrier or a facilitator for  
21 yoga participation. Several authors (e.g., MacDonald, 2013; Park et al., 2015) have  
22 acknowledged this need and called for the inclusion of spirituality in studying yoga  
23 to gain a better understanding of its role in yoga participation.

24 Spirituality is a complex concept with multiple interpretations (MacDonald,  
25 2005), and thus, as a reason for continued participation, spirituality may have nothing

1 to do with chanting or devotion. According to MacDonald (2005), spirituality can be  
2 expressed as (1) a personal belief in the existence of parapsychological phenomena,  
3 (2) an intrinsic orientation towards religiosity, (3) a mystical experience, or (4) a  
4 search for meaning and purpose. Research on participation motives in yoga tended to  
5 use checklists to identify the most salient reason for participation and, thus, failed to  
6 account for the strength of endorsement. In the case of spirituality, studies which  
7 considered its multiple interpretations have been limited. Thus, it may be important  
8 to examine what yoga participants mean by spirituality when they state it as a reason  
9 for their continued participation. Spirituality as a motive for physical activity  
10 participation remains understudied in the field of sport and exercise psychology  
11 (Ronkainen & Nesti, 2019). Yoga has embedded psycho-spiritual dimensions which  
12 makes it an excellent context to study spirituality as a motive for engaging in  
13 physical activity.

14         Several studies have examined barriers, facilitators and motives for yoga  
15 participation (e.g., Atkinson & Permuth-Levine, 2009; Spadola et al., 2017), which  
16 could provide some explanations as to why people do or do not practice yoga. It  
17 seems, however, that aside from Park et. al.'s (2015) review, no other knowledge  
18 synthesis has been done to summarise the existing literature on factors associated  
19 with yoga participation among adults in general population. Synthesising relevant  
20 studies of a particular topic is a critical step to gain understanding of the current state  
21 of knowledge and to identify potential research gaps (Whittemore et al., 2014).

22         Among the many types of research synthesis, a scoping review is the recommended  
23 method for relatively new research areas, and this allows for a broader view of the  
24 existing literature (Peters et al., 2015).

25

1     **1.1.5 Men's Health**

2             The field of men's health has drawn significant interest in recent years due to  
3     the increasing prevalence of chronic diseases and poor mental health among men.  
4     For instance, the Australian Institute of Health and Welfare (2019) reported that 50%  
5     of the Australian male population have chronic disease or have experienced a mental  
6     health problem. Furthermore, 50% of men in Australia do not engage in sufficient  
7     physical activity, and 70% are overweight or obese. The Australian Institute of  
8     Health and Welfare (2019) identified cardiovascular diseases, back problems, and  
9     mental and behavioral problems as the top three chronic diseases affecting men in  
10    Australia. In addition, research has shown that men have shorter life expectancy and  
11    are less likely to engage in health-promoting behaviors compared to women  
12    (Courtenay, 2011; Crimmins et al., 2019; Martin et al., 2008). Therefore, researchers  
13    have highlighted the need for more gender-sensitive programs targeting men (e.g.,  
14    Richardson & Smith, 2011).

15            Researchers acknowledge that, in general, engaging men in preventive health  
16    programs is challenging (White et al., 2011; Zwolinsky et al., 2013). However, men  
17    may be more receptive to programs involving physical activity interventions  
18    delivered in male-specific contexts (e.g., sporting clubs) as these programs tend to  
19    emphasize traditional masculine ideals (e.g., power, strength) (Gast & Peak, 2011).  
20    In a review of interventions that include physical activity promotion for men, Bottorff  
21    et al. (2015) reported that many of the available programs targeted aerobic exercise  
22    participation while very few focused on resistance training. The authors suggested  
23    that programs need to consider men's varying interests and preferences to be  
24    effective and highlighted the need for more programs to cater to the needs of  
25    different male sub-groups.

1           While health promotion programs involving sports and physical activity may  
2 facilitate engagement in men, there is evidence suggesting that men who lack  
3 experience in sports or those who are physically inactive often feel inferior and  
4 physically incompetent and, therefore, may not participate in such programs (Ashton,  
5 Hutchesson, et al., 2017; Ashton et al., 2015; Lozano-Sufrategui et al., 2016; Nielsen  
6 et al., 2014). Other forms of physical activity should be explored further as a means  
7 to engage men in health behaviors, particularly those who are not necessarily  
8 attracted to traditional male-oriented activities (e.g., sports). One such activity is  
9 yoga.

#### 10   **1.1.6 Yoga as a Potential Physical Activity and Health Program for** 11   **Men**

12           From a physical activity perspective, yoga can be seen as a physical practice  
13 embedded in a philosophy of holistic well-being (Vergeer et al., 2021). As such, the  
14 practice of yoga involves not only physical exercise but also guiding principles,  
15 values, and behavioral strategies that help promote holistic health and well-being.  
16 Research has shown that yoga practice is associated with many health behaviors  
17 including physical activity, healthy eating, reduced alcohol consumption, and non-  
18 smoking (Birdee et al., 2008; Bryan et al., 2013; Cramer et al., 2017; Watts et al.,  
19 2018). Yoga has also been used as a weight management and stress management  
20 program (Chong et al., 2011; Pascoe & Bauer, 2015; Rshikesan et al., 2016), which  
21 could benefit men. For example, a study in India which examined the effects of yoga  
22 intervention on obese male adults found yoga beneficial in improving anthropometric  
23 measures (Rshikesan et al., 2016). In another study exploring how and why  
24 Australian men with cancer practice complementary therapies, yoga and meditation  
25 were reported as tools that men use to cope with uncertainty, anxiety, and depression

(Klafke et al., 2014). Therefore, yoga has potential for improving the general health of men through physical activity and other health-promoting behaviors (e.g., eating moderately, managing stress).

Like any exercise program, yoga can be personalised to meet the needs of individual participants. It can be designed as an easy-to-perform and ‘beginner-friendly’ program which can be practiced in a variety of settings (e.g., yoga studios, gyms, workplace) (Balasubramaniam et al., 2012; Louie, 2014). The sequence and combination of *asanas* vary across different styles of yoga resulting in a wide range of exercise intensity (Ainsworth et al., 2011; Larson-Meyer, 2016; Ray et al., 2011). Yoga can be gentle and relaxing, such as in a Yin Yoga class, or it can be intense and challenging, building strength, flexibility, and endurance, like in a Power Yoga session. Yoga offers a variety of styles, focuses, and intensities that could meet the needs of different male subgroups. Yoga can be a transitional platform to introduce physical activity, especially among overweight or obese men (Rshikesan et al., 2016; Yang & James, 2016); a physical activity-based program for men who are stressed and depressed (Rocha et al., 2012); or a supplementary activity to prevent injuries and improve athletic performance (Atkinson, 2010; Wertman et al., 2016).

#### **1.1.7 Masculinity: A Potential Barrier and Facilitator to Yoga among Men**

With its focus on personal well-being and the preponderance of female participants, yoga is often associated with the female gender and the traditional understanding of femininity (i.e., self-care, seeking well-being, expressing emotions) (Sointu, 2011; Sointu & Woodhead, 2008). This may pose a hindrance to men (Vergeer et al., 2018), especially those who conform strongly to traditional notions of masculinity (i.e., competitive, self-reliant, risk-taker).

1            Masculinity has been identified as a key determinant of men's health  
2 behaviours (Griffith et al., 2016). As a psychological construct, masculinity has been  
3 studied from different perspectives (e.g., a single concept, an ideology, a source of  
4 strain, a socially constructed entity, or a blend of both an innate personality trait and  
5 a socially-influenced construct) (Smiler, 2004). As a unidimensional concept,  
6 masculinity is thought of either as (1) distinct and separate from femininity (i.e.,  
7 Androgyny Theories) or (2) related and direct opposite to femininity (i.e., Sex Role  
8 Theory). As an ideology, masculinity is conceptualised as a system of beliefs or  
9 social norms that govern men's behaviours. From the 'source of strain' perspective,  
10 masculinity becomes problematic when "*men judge themselves unable to cope with*  
11 *the imperatives of the male role or when a situation is viewed as requiring 'unmanly'*  
12 *or feminine behaviour.*" Masculinity is also thought of as socially constructed, which  
13 can exist in many different forms but always in relation to the hegemonic masculine  
14 ideal, or the dominant notion in a given society or culture at a given time or era  
15 (Connell, 2005; Connell & Messerschmidt, 2005).

16            In an Australian context, for example, the 'ideal man' shares similar  
17 characteristics with the typical hegemonic male in most Western societies (i.e.,  
18 white, heterosexual, able-bodied, strong, and muscular) but also displays qualities  
19 unique to Australian culture (e.g., 'mateship', rebelliousness) (Waling, 2016). Other  
20 forms of masculinities, therefore, exist in relation to the hegemonic ideal. These  
21 include marginalised masculinity (i.e., being disabled, non-white), subordinate  
22 masculinity (i.e., being overly emotional, effeminate), complicit masculinity (i.e.,  
23 lacking qualities of hegemonic masculinity but also not being threatened by the lack  
24 of these masculine characteristics), and inclusive masculinity (i.e., heterosexual men  
25 who display emotional intimacy with male friends, embracing traditionally feminine

1 behaviours without fear of being labelled as gay) (Anderson & McCormack, 2016;  
2 Anderson & McGuire, 2010; Connell, 2005). Finally, masculinity is currently  
3 understood as both an innate psychological trait residing within the individual that is  
4 also influenced by the social environment (or different contextual factors) (Smiler,  
5 2004).

6         The degree to which men conform to the prevailing social and cultural  
7 standards of being a man may influence their receptiveness towards yoga. Hence,  
8 considering these various perspectives of masculinity is essential when promoting  
9 health behaviours in men to ensure that programs benefit a wide diversity of male  
10 sub-groups (Saunders & Peerson, 2009; Smith, 2007). Gendered beliefs may be  
11 present not only in a ‘feminised’ activity like yoga but even in a ‘masculine’ activity  
12 such as resistance training. For instance, a cross-sectional study found that  
13 identification with traditional masculinity is associated with lower autonomous  
14 motivation and less participation in resistance training among young men (Howe et  
15 al., 2017). An awareness of the role of masculinity in men’s health and physical  
16 activity behaviours is, therefore, crucial in understanding men’s participation or non-  
17 participation in yoga.

#### 18 **1.1.8 Theoretical Frameworks for Understanding Yoga Participation**

19         Researchers have acknowledged the need for future studies to use theoretical  
20 frameworks to understand further the role of barriers, facilitators, and motives for  
21 yoga participation (Park et al., 2015; Vergeer et al., 2018). While theories have been  
22 applied in some studies, most were mainly used to interpret qualitative data  
23 deductively (e.g., Atkinson & Permuth-Levine, 2009; Franklin, 2002; Spadola et al.,  
24 2017), and very few were utilised to examine associations between theory-defined  
25 variables (e.g., Eggleston et al., 2011; Wertman et al., 2016). Thus, it remains

1 unclear which theoretical framework, if any, would best describe yoga participation  
2 behaviour.

3         Barriers, facilitators, and motives regarding participation in holistic  
4 movement practices such as yoga form a relatively new area of study and narrowing  
5 the focus to men reinforces their novelty as a research topic. The theoretical  
6 frameworks employed in previous studies (e.g., Health Belief Model, Social  
7 Contextual Model), as well as other potential models (e.g., Biopsychosocial-  
8 Spiritual, Health Action Process Approach, Expectancy-Value Theory, Socio-  
9 ecological Model) may be considered either to guide interpretation of qualitative data  
10 or the development of possible research hypotheses. At this stage, however, it is  
11 deemed necessary to maintain an open and broad perspective to allow flexibility in  
12 deciding which framework would best apply to understanding factors facilitating or  
13 hindering men's participation in this holistic movement practice.

## 14                                   **1.2 Research Questions**

15         This PhD project aims to answer the following research questions: (1) What  
16 is currently known about the barriers, facilitators, and motives to yoga participation  
17 among adults in the general population? (2) How do non-yoga practicing men  
18 perceive this holistic movement practice? (3) What psychosocial factors facilitated  
19 yoga uptake and continued participation among men? (4) Why do men practice  
20 yoga? and (5) What participation motives differentiate male from female yoga  
21 participants?

## 22                                   **1.3 Aims and Objectives of the Research**

23         This PhD-by-publication project consists of four studies and is aimed to  
24 understand men's barriers, facilitators, and motives for yoga participation. The four  
25 studies include one systematic scoping review and three primary empirical studies. In



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1 the first article, the main objective was to summarize the barriers, facilitators, and  
2 motives to yoga participation among adults in the general population as reported in  
3 the existing literature. Gaps in previous studies were also identified. In the second  
4 article, the purpose was to examine non-yoga practicing men's perceptions of yoga  
5 and explore potential strategies that could draw more men into yoga. In the third  
6 article, the aim was to identify the reasons men practice yoga and the facilitators that  
7 influenced their continued participation. In this study, the male yoga participants  
8 were also asked to share the barriers that they personally encountered and discuss the  
9 strategies that helped them overcome hindrances. Finally, the purpose of the fourth  
10 article was to examine yoga participation motives across different subgroups of yoga  
11 participants and between male and female yoga participants.

### 12 **1.4 Significance of the Study**

13 Studies have consistently reported that yoga participation is more common  
14 among women than among men, especially in western countries (Cramer et al., 2019;  
15 Vergeer et al., 2018; Wang et al., 2019). Yoga communities have started several  
16 initiatives to promote yoga among men men (e.g., Boys of Yoga, 2019; Broga, 2019;  
17 Fernance, 2017; Perri, 2016), but it remains unknown to what extent these efforts  
18 have been effective. Additionally, little is known about gender-specific facilitators  
19 and barriers to participating in yoga and other holistic movement practices (Vergeer  
20 et al., 2021; Wang et al., 2019), including the reasons underpinning the low yoga  
21 uptake among men (Park et al., 2016).

22 This PhD project aims to contribute to understanding the psycho-social  
23 factors facilitating or discouraging yoga participation, which is a crucial step in  
24 examining the potential of yoga and other holistic movement practices as  
25 interventions to promote health and well-being in the general population.

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1 Collectively, these four studies attempt to offer insights into men's perceptions of  
2 yoga, the barriers that hinders them from taking up the practice, men-specific  
3 facilitators for uptake and sustained participation, and strategies to encourage more  
4 men to take up this holistic movement practice. The findings of the studies can  
5 inform the promotion of yoga as a potential lifestyle and disease prevention program  
6 to improve the health of men. Men's health is as important as women's health and,  
7 hence, improving men's health is an essential step in improving population health  
8 (Baker, 2018).

1 **1.5 Definition of Key Terms**

2 Yoga – a form of physical activity involving postures, breathing regulation, and  
3 relaxation or meditation, associated with a philosophy of holistic well-being

4 Modern postural yoga – a term coined by De Michelis (2007) to refer to the form of  
5 yoga with postures or asanas as its main element.

6 Barriers – factors that hinders uptake or sustained participation or engagement in a  
7 particular behavior.

8 Facilitators – factors that encourage uptake or sustained participation or engagement  
9 in a particular behavior.

10 Participation motives – reasons that people give for engaging in physical activity.

11 Masculinity – a psychological construct conceptualised as a system of personal  
12 beliefs or social norms that influence men to engage or avoid certain  
13 behaviours (Smiler, 2004).

14 Two-step cluster analysis – a statistical procedure employed to identify groups or  
15 “clusters” within a dataset that share similar characteristics (Norusis, 2010).

16

## CHAPTER II

### Study 1

#### **When an activity is more than just exercise: A scoping review of facilitators and barriers for yoga participation**

This scoping review paper has been peer-reviewed and was accepted for publication in the *International Review of Sport and Exercise Psychology* on 15 September 2020. It was published online on 18 October 2020 and appears in the literature at the time of writing as:

Cagas, J. Y., Biddle, S. J. H., & Vergeer, I. (2020). When an activity is more than just exercise: A scoping review of facilitators and barriers for yoga participation. *International Review of Sport and Exercise Psychology*. doi:10.1080/1750984X.2020.1827448.

The format may differ from the accepted pre-copyedited version. It has been reformatted to remain consistent with the rest of the thesis.

#### **Rationale**

The scoping review method is a relatively new approach of research synthesis “that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesising existing knowledge” (Colquhoun et al., 2014, p. 1291). By providing an overview of available evidence around a particular topic, scoping review is particularly suitable for studying emerging research areas, summarising research from different disciplines, and identifying research gaps (Munn et al., 2018; Pham et al., 2014; Tricco et al., 2018). While the number of systematic reviews on the outcomes of yoga is increasing (Jeter et al., 2015), only one review thus far has summarized any demographic and

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psychosocial factors associated with yoga practice (Park et al., 2015), including such factors as interpersonal relationships and social support, personality, mindfulness, life stressors and coping, and religiousness/spirituality. While this review provided a good overview of yoga practice correlates, as the authors concluded “Many important questions remain” (p.469), including insights into facilitators and barriers to uptake and continued participation. Therefore, there remains a need to capture a wider range of factors influencing yoga uptake or non-uptake. This paper aimed to address this gap. Gaps and concepts identified in this scoping review informed the succeeding empirical studies included in this project.

## 2.1 Abstract

Barriers and facilitators for participating in sports and exercise may vary across different types of activities. Yoga, a comprehensive discipline originating in India, has increasingly gained a place among the physical activities on offer in modern-day society, where it is usually practiced in the form of physical postures, breath regulation and relaxation. Despite its increasing popularity and many potential health benefits, the uptake of yoga is quite low and appears mostly restricted to certain population subgroups. To elucidate factors affecting uptake, this scoping review aims to identify the range of facilitators and barriers for yoga participation in the general adult population. Eighty-eight studies mentioning factors facilitating or hindering yoga participation were identified from 10 electronic databases. Findings corresponding to study and participant characteristics were summarised quantitatively, while findings referring to facilitators and barriers were organised qualitatively using thematic analysis. Results identified facilitators and barriers in addition to those reported for conventional forms of physical activity (e.g., perceived mind-body-spiritual benefits, negative impressions of yoga). These may reflect additional features of yoga beyond exercise and will need further exploration. Understanding the different facilitators and barriers for yoga participation may be useful to enhance the promotion of yoga and consequently increase its uptake.

*Keywords:* yoga; barriers; facilitators; motives; perceived benefits

## 2.2 Introduction

Exercise psychology has always had a strong interest in psychological determinants of physical activity (Biddle & Vergeer, 2019). This includes a focus on facilitators and barriers to participation. A recent review (Kelly et al. 2016), for example, identified several facilitators to physical activity uptake and adherence including enjoyment, sense of well-being, prevention of illness and healthy ageing, and social support. Reported barriers included physical ailments or chronic conditions, lack of time and knowledge, social concerns, costs, lack of access to programs or facilities, and lack of motivation. While these factors reflect general facilitators and barriers for participation in physical activity, some studies suggest that factors affecting participation may vary across different types of physical activities (Bethancourt & Rosenberg, Beatty, & Arterburn, 2014; Molanorouzi, Khoo, & Morris, 2015). Participation motives have been seen to reflect the unique combination of features characterizing a physical activity, including psychological dimensions and its wider philosophy (Vergeer, 2018). It is possible that, at the same time, such features may also act as barriers.

In recent decades, “yoga” has increasingly gained a place among physical activities on offer. Yoga is a comprehensive practice with a long history (Feuerstein, 2008). Although, traditionally, yoga is not primarily a physical practice, the physical side of yoga has become its main identification within the Western world (De Michelis, 2007, 2008). This is evident, for example, in the regular mentioning of yoga in surveillance studies that ask people to list forms of physical activity they have engaged in (e.g., Vergeer et al., 2017). What we know of as yoga in most Western societies has also been called ‘modern postural yoga’ (De Michelis, 2007, 2008). In this paper, we define yoga as a physical practice embedded within the

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larger Yoga tradition and philosophy. Given this embedding and yoga including more than just physical exercise, there may be other barriers and facilitators beyond those cited for conventional physical activities. Studying these may add another dimension to our understanding of physical activity adoption and adherence.

As it is presently practised, yoga generally involves the practice of yoga postures (*asanas*), often combined with breath regulation and relaxation exercises (Singleton, 2010). It takes place within a supervised group exercise setting or unsupervised following a sequence learned from a teacher or an audiovisual tool (De Michelis, 2007). This physical form of practice exists in many styles and varies in terms of intensity and focus (Forseth & Hunter, 2019). For example, dynamic styles such as Vinyasa or Flow Yoga emphasize continuous and active movements while restorative forms like Yin Yoga stress longer stretch holds and relaxation. These different yoga styles may or may not integrate other more traditional yoga practice components such as attitude training (*yamas* and *niyamas*), cleansing techniques (*kriyas*), and moderate eating (*mitahara*) (De Michelis, 2008; Feuerstein, 2008; Singleton, 2008).

Yoga's philosophical foundation is commonly referred to as "The Eight Limbs of Yoga" (Feuerstein, 2008; Singleton, 2008). These 'limbs' include moral values (*yamas*), ethical observances (*niyamas*), postures (*asanas*), breath regulation (*pranayama*), sense withdrawal (*pratyahara*), concentration (*dharana*), meditation (*dhyana*), and integration (*samadhi*). This holistic philosophy of yoga is often de-emphasized when yoga is taught in health and fitness settings or delivered as a clinical intervention (Middleton, Andrade, Moonaz, Muhammad, & Wallen, 2015; Middleton et al., 2017; Brems, Colgan, Freeman, ... & Sulenes, 2016). While this can be advantageous from a health and physical activity promotion perspective by



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making yoga more acceptable to participants with different cultural backgrounds, it may lose the essence of yoga as a holistic lifestyle practice. Some studies suggest that yoga may provide more benefits when it is practised holistically (i.e., with ethical or spiritual elements) compared to when it is performed simply as a physical exercise (Gaiswinkler & Unterrainer, 2016; Smith, Greer, & Watson, 2011). Furthermore, different elements of the practice may result in different health outcomes (Cramer et al., 2019).

Many outcome studies have investigated the benefits of yoga in terms of health and disease prevention, showing both physical and psychological benefits (Cochrane, 2020). Systematic reviews have reported on the potential of yoga to improve a wide range of health-related outcomes, for example, cardiovascular risk factors (Cramer et al., 2014), psychological well-being (Hendriks, de Jong, & Cramer, 2017), and weight management (Lauche, Langhorst, Lee, Dobos, & Cramer, 2016). Moreover, some reviews have shown that yoga can have beneficial effects on various health parameters beyond those found for other forms of physical activity, including psychological effects on stress and depression (Ross & Thomas, 2010; Sivaramakrishnan et al., 2019). A number of observational studies suggest that regular yoga participation is associated with a variety of important health behaviours such as healthy eating, less alcohol consumption, and increased physical activity (Cramer et al., 2019; Watts, Rydell, Eisenberg, Laska, & Neumark-Sztainer, 2018). Yoga thus offers an integrative approach to health promotion that can target not only physical activity but also other key lifestyle behaviours such as healthy eating and stress regulation (Domingues, 2018; Field, 2016). Some researchers consider yoga as a potential low-cost strategy in promoting physical activity and mental health across different groups of people as it does not require any special

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equipment (Hartfiel, Clarke, Havenhand, Phillips, & Edwards, 2017; Mason, Schnackenberg, & Monro, 2017).

The holistic approach of yoga to health and well-being is widely acknowledged. Recognizing its potential to promote population health, the United Nations General Assembly (2015) launched the International Day of Yoga in 2014 as a global awareness-raising campaign. The World Health Organization (2013, 2018) promotes this campaign as part of its global health and physical activity promotion strategy. While yoga has become relatively popular, available data suggest that actual participation remains quite low and seems to be limited mostly to certain population subgroups. Studies in Australia and the United States have reported that 12-month prevalence of yoga use ranges between 3% and 9%, and that yoga participation is most common among young to middle-aged, healthy, and university-educated women (Cramer et al., 2016; Vergeer et al., 2017). These relatively low levels and discrepancies in yoga use underscore the need to investigate barriers and facilitators to yoga participation (Vergeer, 2019), as these could identify potential modifiable factors to target in promotional strategies or interventions, subsequently increasing uptake or long-term adherence (Biddle, Mutrie, & Gorely, 2015). This may be particularly relevant with respect to increasing uptake outside the typical demographics (Park, Braun, & Siegel, 2015; Vergeer et al., 2018).

Physical inactivity remains a global health issue (Guthold, Stevens, Riley, & Bull, 2018), and yoga can be a valuable tool to promote physical activity and other health behaviours. As noted above, yoga is embedded in a holistic philosophy and includes components beyond the physical, which sets it apart from more traditional forms of exercise or physical activity. It is an internal practice designed to cultivate

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inner awareness, self-discipline, and self-control (Feuerstein, 2008), and it involves a system of beliefs and values that can enhance social relations, overall well-being, and mind-body integration (Evans et al., 2009). These yoga-specific features warrant the questions to what extent common physical activity facilitators and barriers apply to yoga, and whether there may be additional facilitators and barriers. While numerous reviews have been published on the health outcomes of yoga (e.g., Cochrane, 2020), to the best of our knowledge, no review has been carried out that focuses on the facilitators and barriers for yoga participation, and this is a gap within the context of exercise psychology. Therefore, we conducted a scoping review with the aim of summarising the different factors facilitating and hindering yoga participation reported in the literature. The scoping review method is a relatively new approach of research synthesis used to provide an overview of available evidence around a particular topic. It is particularly suitable for studying emerging research areas, summarising research from different disciplines, and identifying research gaps (Munn et al., 2018; Pham et al., 2014; Tricco et al., 2018).

### **2.3 Methods**

Following the enhanced Arksey and O'Malley framework (Arksey & O'Malley, 2005; Levac, Colquhoun, & O'Brien, 2010) in conjunction with The Joanna Briggs Institute (2015) scoping review manual, we conducted a scoping review to identify the range of facilitators and barriers for yoga participation in general adult population, and to provide an overview of the existing literature around the topic. In addition, we referred to the PRISMA Scoping Review Checklist to ensure quality and adequacy of reporting (Tricco et al., 2018). A review protocol was developed, kept flexible and revised iteratively through team discussions as the

number and types of studies became clearer. The five stages of the scoping review method are described below.

### **2.3.1 Stage 1: Identifying the review question**

Guided by the mnemonic, ‘PCC’ (Population, Concept, and Context) (The Joanna Briggs Institute, 2015), we formulated the review question as: “What are the facilitators and barriers for yoga participation in the general adult population?”

### **2.3.2 Stage 2: Identifying the relevant studies**

To capture all possible papers for the review, we used the following concepts to create our search strategy: “facilitators” or “barriers” AND “yoga.” An initial search strategy was developed in consultation with the university research librarian who provided assistance in identifying all possible variations and synonyms for the three main concepts. We then reviewed and refined the search strategy through team discussions.

#### ***Search strategy***

The search strategy (Supplementary Material 1) was run in 10 electronic databases to retrieve potential records from inception until 21 September 2017 and with no language limitation. We identified additional papers through database update alerts and included those published until 31 December 2017. A further search took place in November 2019 to update the records since 2017. In addition to the database searches, we also manually searched the ProQuest theses and dissertation database, IndMed, and several yoga-specific journals (e.g., Yoga Mimamsa, International Journal of Yoga, International Journal of Yoga Therapy) for potential additional records. Record details were imported into the EndNote X9 reference manager software. We identified several key papers (i.e., papers explicitly examining facilitators and barriers including perceived benefits and participation motives) (e.g.,

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Atkinson & Permuth-Levine, 2009; Brems et al., 2015; Kidd & Eatough, 2017; Spadola et al., 2017; Wertman, Wister, & Mitchell, 2016) and manually searched their reference lists for other possible records not captured in the database search. We did not limit the search on specific types of papers nor age range of participants at this stage. However, we set the following criteria for further inclusion in the review:

### ***Population***

We were interested in yoga as practised in the general population. We included studies whose participants were: 18 years of age and over, practiced yoga (yoga participants/practitioners) or not (non-yoga participants/practitioners), and were asked for their views on facilitators or barriers for yoga participation. We excluded studies where participants were specifically recruited because of pre-existing clinical (physical or psychological) health conditions (e.g., Alexander et al., 2010).

### ***Concepts***

The main concepts of interest were yoga, barriers, and facilitators. Our focus was participation in posture- or *asana*-based yoga, which is sometimes referred to as modern postural yoga (De Michelis, 1995, 2007). Hence, we adapted a broad definition of yoga, as a mind-body physical activity involving the practice of postures and usually combined with breathing and relaxation or meditation (National Center for Complementary and Integrative Health, 2013). We excluded papers that explicitly examined only non-posture-based yoga styles (e.g., meditation only), and programs that used some elements of yoga, such as the Mindfulness-Based Stress Reduction program (MBSR).

Drawing on definitions used in reviews on facilitators and barriers to physical activity and health behaviours (Firth et al., 2016; Glowacki, Duncan, Gainforth, &

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Faulkner, 2017; Kelly et al., 2016), we defined ‘facilitators’ as factors or conditions reported to help, motivate, encourage, or enable individuals in taking up yoga or in maintaining regular participation; and ‘barriers’ as any factors or conditions reported to prevent, hinder, or discourage individuals from taking up yoga or continuing their participation. Researcher-identified variables that showed statistical association with yoga participation were set aside unless they were specifically identified as possible barriers or facilitators (Glowacki et al., 2017). For example, anxiety was considered as a facilitator if it was reported as “I do yoga to reduce my anxiety” but not “anxiety level was associated with yoga participation” (e.g., Butzer, Ahmed, & Khalsa, 2016).

### *Context*

We included studies of yoga participation in all possible contexts (e.g., health and well-being, professional self-care practice). However, we excluded papers where the focus was on specific clinical or medical conditions. We also removed papers if the data provided were from the perspectives of the program providers (e.g., yoga teachers, therapists), rather than from the participants themselves.

### **2.3.3 Stage 3: Selecting the relevant studies**

Potential records were screened in two stages. In the first stage, the lead author independently screened the titles and abstracts, and retained records that mentioned barriers, facilitators, reasons for doing and not doing yoga, perceived benefits, or experiences in yoga. Records on complementary and alternative therapy or medicine (CAM) were also retained at this stage as these studies often include yoga. In the second stage, the full-text papers of the records retained at the first stage were screened. CAM papers were retained only if relevant data (i.e., facilitators, barriers) were clearly referring to yoga. In both stages, the lead author independently screened all records, with the third author screening all excluded records and those

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labelled 'unsure 'to identify other potentially relevant papers. The two authors then discussed the discrepancies and retained relevant papers upon agreement.

At full-text screening stage, papers were excluded if: (1) no relevant data could be extracted, or if the relevant data could not be untangled from CAM; (2) the data did not directly come from the study participants; (3) the study did not refer to modern postural yoga, or the study referred to a yoga-inspired intervention; (4) the study participants were younger than 18 years old unless data on adults were included and reported separately; and (5) the participants had existing physical or psychological health issues.

We found very few of the studies had the explicit aim of identifying facilitators and barriers for yoga participation. Therefore, we adopted an inclusive approach similar to an earlier review (Thomas & Harden, 2008), and also included studies that did not explicitly examine facilitators and barriers to yoga participation (e.g., Seldin, 2014; Yang, 2017; Ylönen, 2010). For instance, Seldin (2012) examined women's body experiences of self-objectification and self-acceptance as it relates to their yoga practice. The findings included participants 'accounts of how and why they started doing yoga and the benefits that they experienced. We would have eliminated many similar studies if we restricted our review to include only papers that explicitly involved yoga participation facilitators and barriers in their aims (Sandelowski, Barroso, & Voils, 2007).

### **2.3.4 Stage 4: Charting the data**

As recommended for scoping reviews, data charting included study characteristics (e.g., year of publication, location of study, type of study design, context of study), participant characteristics, and findings relevant to the review question (The Joanna Briggs Institute, 2015; Tricco et al., 2018). Upon agreement on

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the essential data to chart, two authors independently extracted data on study and participants characteristics. The authors discussed and reconciled the discrepancies, decided on other possible data to include, and finalised the categorisation of variables. The author of one study (Ylönen, 2010, 2012) was contacted to ask for missing participants' details, which the author willingly supplied.

We were interested in the qualitative content of all potential facilitators and barriers for yoga participation. Hence, as recommended by Noyes et al. (Noyes et al., 2018; Noyes & Lewin, 2011), we extracted all relevant statements not only within the results section and whether or not they were illustrated by direct quotations, but also in abstract, methods or discussion sections where additional relevant data were cited. In studies using survey instruments with results reported quantitatively, we extracted the key concepts in the statements or survey items and treated the data qualitatively for further analysis (Pluye & Hong, 2014).

The lead author independently extracted findings pertaining to facilitators and barriers for yoga participation. As a sensitivity check and to improve rigor in data extraction (Tricco, Antony, et al., 2016), the third author conducted similar data extraction on five randomly selected papers (7.5% of the final included papers). The two authors then compared and discussed their extracted data. This exercise ensured that the lead author was able to chart relevant data thoroughly. Data were extracted using the qualitative data analysis software NVivo 12. We did not perform quality assessment of individual papers as it is not a key element of scoping reviews (Arksey & O'Malley, 2005; O'Brien et al., 2016; The Joanna Briggs Institute, 2015).

### **2.3.5 Stage 5: Collating, summarising and reporting the results**

In this stage, we conducted a frequency analysis on the data concerning characteristics of studies and participants, and reported the summary using



descriptive statistics. We then followed the steps of thematic synthesis (Braun & Clarke, 2006, 2013; Thomas & Harden, 2008) to summarise the findings on facilitators and barriers for yoga participation. First, through thorough line-by-line reading, the lead author carefully identified and extracted all relevant texts, statements and paragraphs of interest, using NVivo 12 (Braun & Clarke, 2013). The extracted data were then coded semantically to keep the meaning and content as close as possible to the original data (Braun & Clarke, 2006, 2013).

Although Thomas and Harden (2008) recommended an inductive approach to thematic synthesis, we used a hybrid inductive-deductive approach in order to maintain the descriptive nature of the review and to summarise findings based on how they were originally reported (Anderton & Ronald, 2017; Fereday & Muir-Cochrane, 2009). Specifically, findings clearly reported as facilitators, barriers, motives, or perceived benefits were deductively coded under separate domains. Codes categorised under each of these domains were then analysed inductively.

Next, the lead author developed descriptive themes from the data-driven codes under each domain, grouping together codes with similar contents. These themes were subsequently grouped together into higher-order themes. The third author reviewed and examined the generated codes, themes, and higher-order themes for accuracy and consistency at each stage of the process. The second author reviewed the final themes, and discussions with all three authors were held to clarify interpretations and generate themes that would best represent the findings.

## **2.4 Results**

### **2.4.1 Retrieval of potential records**

The search captured 11,811 potentially relevant records. This was reduced to 6,864 unique records after duplicate removal. An additional 98 records were

identified from other sources (i.e., manual search, database alerts), resulting to a total of 6,962 records screened at title and abstract level. Out of the 478 records considered for full-text screening, 472 papers were retrieved and screened for inclusion. One hundred and one ( $n = 101$ ) papers, reporting on 88 separate studies, were identified to contain relevant data and were included in the review. Figure 1 illustrates the flow of the scoping review screening stages.

[Figure 1]

#### **2.4.2 Characteristics of included studies**

The study characteristics are reported in Supplementary Material 2. To save space and enhance readability, for the remainder of the Results section the number in brackets refers to the study number as listed in Table 1. The year of publication ranged from 1999 to 2019 with 54 (53.5%) papers published from 2015 to 2019. Four non-English papers were included [62, 67, 69, 85]. The 101 papers consisted of 65 articles and 36 theses. Sibling papers (e.g., article and thesis referring to the same study) were counted as one, resulting in a total of 88 included studies. The studies reported data collected in the United States (49 studies/55.7%), the United Kingdom (8 studies/9.1%), Canada (6 studies/6.8%), India (6 studies/6.8%), and other countries (19 studies/21.6%).

To map the studies associated academic discipline, we used the Scimago database categorisation for subject area to classify the journals in which they were published (Scimago Lab, 2018). Theses and journals not listed in Scimago were categorised based on the academic department or journal title. Twenty-six studies (29.5%) came from the fields of Psychology, Education and Counselling; 25 studies (28.4%) from Health Sciences and Medicine; 12 studies (13.6%) from other Social and Behavioral Sciences; 11 studies (12.5%) from Sport, Exercise and Health; 8

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studies (9.1%) from Cultural and Religious Studies; and 6 (6.8%) from Tourism, Leisure and Recreation.

### ***Purpose and context of the studies***

Twenty-eight studies (31.8%) explicitly examined facilitators or barriers to yoga participation such as perceived benefits or outcomes of yoga [4, 24, 35, 45, 50, 61, 69, 78, 80, 82], motives or reasons for participation [43, 44, 50, 51, 55, 59, 64, 67, 76, 82], barriers to participation or adherence [4, 16, 46, 59, 74, 82], yoga use and practice characteristics [25, 46, 54, 59, 87, 88], experiences in yoga [24, 72, 78], perceptions or beliefs about yoga [46, 70, 73], and determinants or facilitators [17, 74]. The rest of the studies (60 studies /68.2%) did not explicitly investigate barriers or facilitators for yoga participation but reported relevant data. For example, 13 studies (14.8%) examined yoga as a form of self-care among professionals and its influence on their practice [19, 20, 21, 28, 29, 30, 32, 56, 57, 60, 75, 77, 83], while others focused on yoga as a tool or framework in investigating a variety of psychosocial and spiritual phenomena such as sense of self [22], change and transformation [1, 38, 81], spirituality and life meaning [8, 26, 27, 85], and social dynamics [71].

Fifteen studies (17.0%) were grounded in motivational or behavioural theories. These included the Health Belief Model [4], Life Course Theory [27], combined Health Belief Model and Life Course Theory [82], Theory of Planned Behaviour [17, 23], Self-Determination Theory [44, 55, 64, 86], Sport Commitment Model [44], Biopsychosocial Model [52], Trans-Theoretical Model [64], Social-Contextual Model [74], and Serious Leisure [7, 53]. A few studies proposed potential yoga-specific models for understanding yoga participation and outcomes. For instance, Henrichsen-Schrembs (2008) interviewed yoga students in Germany

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and proposed a yoga pathway model and typology of yoga practitioners based on Schütz's sociological theory of motivation, and Kishida et al. (2018) proposed a conceptual model of intra- and interpersonal outcomes of yoga participation [27, 35].

### *Types of studies*

Forty-eight studies (54.5%) were qualitative in nature, of which 14 (15.9%) adopted a general qualitative approach [4, 24, 28, 35, 49, 53, 56, 62, 65, 69, 70, 77, 79, 81]; 13 (14.8%) used a phenomenological [1, 8, 19, 20, 21, 30, 34, 38, 42, 47, 72, 75, 83] and 11 (12.5%) an ethnographic orientation [5, 31, 36, 37, 39, 40, 48, 58, 71, 84, 85]; 10 studies (11.4%) used other approaches (i.e., case studies [7, 18, 43], narrative inquiries [6, 22, 57], Grounded Theory [27], heuristic methodology [29], and qualitative formative [3, 74]). These studies employed various qualitative data collection techniques (i.e., interviews, focus groups, participant observation, journals) independently [e.g., 34] or in combination [e.g., 74].

Twenty-three studies (26.1%) entailed cross-sectional surveys [2, 10, 11, 16, 17, 23, 26, 44, 45, 50, 51, 54, 55, 60, 61, 63, 64, 67, 73, 76, 86, 87, 88]. The remaining studies comprised either mixed methods (5 studies/5.7%) [15, 25, 46, 68, 82] or were intervention or feasibility studies with post-intervention assessment, using surveys, interviews, or journals (12 studies/13.6%) [9, 12, 13, 14, 32, 33, 41, 52, 59, 66, 78, 80].

### *Characteristics of study participants*

Participant characteristics are presented in Supplementary Material 3. In a majority of studies, participants were individuals recruited because they practised yoga (52 studies/59.1%) [1, 2, 5, 11, 12, 17, 19, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 47, 48, 49, 50, 51, 53, 54, 55, 57, 58, 61, 62,

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64, 65, 71, 75, 76, 77, 79, 81, 82, 84, 85, 86]. Criteria for yoga experience in these studies ranged from less than a month [e.g., 76] to 20 years [e.g., 24]. Two studies (2.3%) entailed supplementary analysis of two U.S. National Health Survey data subsets, involving only respondents who reported to have used yoga for health reasons [87, 88].

In 23 studies (26.1%), participants were individuals participating in or having completed a yoga program, intervention [6, 8, 9, 13, 14, 15, 16, 18, 20, 32, 33, 41, 52, 56, 59, 66, 67, 68, 72, 78, 80], or yoga retreats [7, 37]. Groups included in these studies varied widely (e.g., employees participating in corporate wellness programs, older adults living in retirement community, university faculty and staff, police cadet trainees, etc). Eleven non-intervention studies (12.5%) involved both yoga participants and non-participants [3, 4, 10, 23, 46, 60, 63, 70, 73, 74, 83].

### *Number of participants, age, and sex*

The number of study participants ranged widely: from 1 [48] to 5,517 [76] in studies involving individuals who practised yoga; 4 [72] to 604 [59] in studies where participants were recruited for a yoga program, retreat or intervention; and 8 [83] to 478 [10] in studies involving both yoga participants and non-participants. The two national health surveys involved more than 30,000 respondents per study [87, 88]. In studies where average age was reported or could be computed, mean age ranged from 22.9 [6] to 82.2 years [3]; 5 studies involved older adults [3, 13, 31, 52, 70]. In 68 studies (77.3%), more than 50% of participants was female. Only 8 studies (9.1%) involved more than 50% male participants [14, 24, 33, 34, 42, 60, 69, 76], while 2 studies (2.3%) contained approximately equal numbers of male and female participants [87, 88]. In 10 studies (11.4%), gender information was unclear or not reported [5, 18, 36, 37, 38, 39, 40, 41, 43, 62].

### ***Styles of yoga***

Most of the studies (69/78.4%) focused on yoga practice in general; 11 (12.5%) reported the styles practiced by the participants [21, 23, 25, 42, 44, 50, 51, 54, 59, 66, 84]. The most common yoga styles documented were Hatha, Iyengar, Power, Vinyasa Flow, Ashtanga, and Yin/Restorative. In 19 studies (21.6%) that centered on one specific style or recruited participants of a specific yoga style, Ashtanga Yoga [5 studies: 1, 5, 38, 40, 56] and Iyengar Yoga [4 studies: 26, 39, 52, 61] were the most common. The other styles were Anusara Yoga [53], Hatha Yoga [36], Kripalu Yoga [33], Moksha Yoga [58], Phoenix Rising Yoga Therapy [72], Raja Yoga [24, 81], Silver Yoga [13], SVASA Integrated Yoga Therapy [32], and Vinyasa Yoga [43]. One study reported a higher number of men practising more challenging styles of yoga such as Bikram [54].

#### **2.4.3 Facilitators for yoga participation**

The factors facilitating yoga participation identified in this review were organised into five overarching themes: 1) perceived benefits of yoga, 2) psychological factors, 3) social influence, 4) personal life experience, and 5) characteristics of the yoga program (Figure 2).

##### ***Theme 1: Perceived benefits of yoga***

This theme pertains to a variety of perceived benefits, reported as participation motives, expected outcomes, and perceived gains. Charted in 86 studies (97.7%), they were categorized into: psychological, physical, social, mind-body and spiritual, and self-development.

##### ***Psychological benefits***

Three sub-categories of psychological benefits were mapped across 75 studies (85.2%): stress management and relaxation (47 studies/53.4%) [1, 4, 6, 9, 11,

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12, 14, 15, 18, 22, 23, 26, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 48, 50, 51, 52, 54, 55, 56, 59, 66, 68, 70, 73, 77, 78, 80, 82, 86, 88], emotion and energy regulation (41 studies/46.6%) [1, 2, 4, 6, 11, 15, 17, 21, 22, 23, 26, 27, 29, 31, 34, 36, 37, 38, 40, 43, 45, 46, 47, 48, 50, 52, 54, 56, 57, 61, 64, 65, 66, 68, 70, 76, 77, 78, 81, 82, 88], and mental clarity and focus (19 studies/21.6%) [1, 4, 9, 11, 14, 22, 29, 30, 36, 38, 43, 50, 64, 66, 68, 70, 76, 78, 88]. “Reducing stress” and “relaxation” were commonly cited as reasons for starting and continuing yoga in survey studies of yoga participants [50, 51, 54]; non-yoga participants in several qualitative studies [4, 73], including older adults [70], also mentioned these as perceived benefits of yoga. “Feeling better”, “calmer”, and “more focused” were mostly described in intervention and qualitative studies as benefits that encouraged continued participation [14, 23, 64, 78]. One study found that women were more likely to endorse motives related to feeling states than men [82].

### *Physical benefits*

Physical benefits were reported across 70 studies (79.5%). They included health and well-being (42 studies/47.7%) [1, 4, 6, 7, 9, 11, 12, 13, 14, 18, 22, 23, 26, 27, 28, 29, 31, 34, 36, 38, 40, 43, 44, 45, 50, 52, 54, 55, 56, 59, 61, 63, 64, 65, 66, 70, 73, 78, 81, 86, 87, 88], fitness and physical performance (39 studies/44.3%) [1, 4, 5, 10, 11, 13, 14, 17, 22, 23, 26, 27, 29, 31, 36, 38, 42, 43, 44, 45, 46, 47, 50, 51, 54, 55, 56, 58, 59, 64, 65, 66, 70, 76, 78, 80, 81, 82, 88], disease prevention and management (22 studies/25.0%) [4, 10, 11, 13, 14, 22, 26, 27, 29, 32, 43, 51, 50, 54, 59, 63, 64, 68, 70, 76, 81, 82, 87, 88], and weight management and appearance (21 studies/23.9%) [4, 10, 17, 20, 23, 43, 44, 45, 46, 50, 51, 52, 53, 54, 55, 56, 59, 61, 70, 73, 76]. Some participants cited general disease prevention and management as reasons for participation [51], while others indicated that yoga was beneficial in

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alleviating health conditions [59] or preventing and managing musculoskeletal problems [43]. Other health benefits reported in these studies were better sleep [11], better posture [22], enhanced sexual performance [4], improved immune function [27], improved breathing [14], and improved women's health [65]. Fitness and physical performance benefits included improved general fitness [11], flexibility [46], strength [44], and balance [70]. Several studies reported that men practised yoga mostly for reasons of physical health [82], to complement other physical activities [5, 49], or to improve athletic performance [88]. Weight management and appearance related motives such as staying in shape [50, 51], losing weight [84], and improving body image [65] were salient in studies involving predominantly women.

### ***Social benefits***

Perceived social benefits of yoga were extracted from 37 studies (42.0%) and were sub-categorised into developing or improving social relationships (21 studies/23.9%) [4, 10, 17, 20, 23, 43, 44, 45, 46, 50, 51, 52, 53, 54, 55, 56, 59, 61, 70, 73, 76] and having a sense of community (25 studies/28.4%) [1, 2, 4, 8, 10, 11, 15, 25, 27, 28, 30, 35, 45, 48, 51, 50, 52, 53, 56, 70, 71, 80, 82, 83, 86]. These perceived benefits were salient in studies involving mostly women. Some participants experienced a sense of community or belongingness through yoga, while others reported improved social relationships in both their personal and professional lives.

### ***Mind-body and spiritual benefits***

Two sub-categories were identified in 58 studies (65.9%): mind-body integration (36 studies/40.9%) [1, 5, 6, 11, 15, 17, 22, 27, 28, 29, 30, 31, 34, 35, 36, 38, 40, 43, 48, 50, 58, 64, 65, 66, 68, 69, 70, 72, 74, 77, 78, 79, 81, 82, 83, 88] and spirituality (37 studies/42.0%) [2, 6, 7, 8, 10, 13, 17, 19, 21, 22, 26, 27, 28, 30, 36,



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38, 39, 40, 42, 43, 45, 46, 47, 50, 51, 52, 54, 59, 61, 64, 66, 69, 73, 76, 81, 82, 85].

Some participants referred to yoga as ‘holistic ’and as something that they can ‘take outside the mat’; others believed that yoga encourages introspection, ‘grounding’, and experiencing life. Yoga was seen as a spiritual practice or as an activity that supports spirituality, improves spiritual health, or allows one ‘to be tuned with spiritual self’. In survey studies of yoga practitioners [50, 51], spirituality was reported as a primary reason for continued participation.

### *Self-development*

Self-development through yoga was charted in 59 studies (67.0%), and included both personal (58 studies/65.9%) [1, 3, 4, 5, 6, 8, 9, 11, 13, 19, 20, 21, 22, 24, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36, 38, 39, 40, 42, 43, 44, 47, 48, 50, 53, 54, 55, 56, 58, 61, 64, 65, 66, 68, 69, 70, 71, 72, 75, 77, 78, 79, 80, 81, 82, 83, 84, 85, 88] and professional development (11 studies/12.5%) [1, 14, 19, 21, 28, 29, 30, 43, 56, 75, 77]. Personal development entailed experiences of personal growth and inner transformation, including developing a better sense of self. The latter involved enhanced self-knowledge, self-control, self-trust, self-acceptance, and/or a greater understanding of the body. Participants also mentioned developing general knowledge, skills, and behaviours to manage their health and stress levels (i.e., eating healthier diet, exercising regularly, consuming less alcohol), as well as gaining an open-mindedness that allowed them to be more receptive of other people’s views and develop compassion towards them. Benefits associated with professional development were reported in studies involving professionals who practised yoga regularly or participated in a workplace yoga program. Improved job performance, attendance, professional skills, and overall functioning at work and at home were attributed to yoga participation.

***Theme 2: Psychological factors***

Three psychological factors reported to facilitate yoga participation were mapped across 36 studies (40.9%). They were intrinsic motivation, general positive attitudes toward yoga, and self-efficacy.

***Intrinsic motivation***

In 29 studies (33.0%), participants mentioned forms of intrinsic motivation, reported as interest (13 studies/14.8%) [1, 6, 8, 22, 24, 27, 29, 30, 36, 39, 64, 71, 83], enjoyment (6 studies/6.8%) [2, 10, 23, 30, 40, 73], becoming an integral part of life (12 studies/13.6%) [1, 26, 28, 29, 30, 34, 36, 37, 53, 77, 82, 85], and challenge or sense of achievement (6 studies/6.8%) [1, 9, 17, 22, 43, 65]. Some participants were interested in the philosophical underpinnings of yoga, curious about yoga, or saw yoga as something novel. Enjoyment was reported as reason for continued yoga participation and also as one of the motivess for undertaking yoga-related travel [2]. Sense of achievement includes mastering difficult poses [10] and overcoming physically challenging styles of yoga such as Ashtanga and vinyasa yoga [43, 65]. Participants in studies involving yoga practitioners mentioned that yoga became an important and valuable part of their lives, and this made them continue their practice [1, 26, 28, 29, 30, 34, 36, 37, 53, 77, 82, 85].

***General positive attitude towards yoga***

Participants in 8 studies (9.1%) expressed a general positive attitude towards yoga that influenced participation [17, 22, 23, 31, 36, 40, 47, 76]. This includes perceptions of yoga as hobby or leisure activity, as a way to take responsibility for oneself, and as inclusive or something that all people can do. Some participants expressed this as beliefs in the healing capacity of yoga.

### ***Self-efficacy***

Self-efficacy, or the belief in one's ability to perform the yoga postures or attend a class, was reported as a facilitator in 9 studies (10.2%) [1, 6, 23, 29, 38, 46, 47, 48, 50]. Some participants also mentioned enhanced self-efficacy as one of the many positive effects of yoga. Others mentioned that seeing other yoga participants that they could relate to (e.g., older women seeing women their age doing yoga) encouraged them to take up yoga or continue their participation.

### ***Theme 3: Social influence***

Social influence, cited either as reasons for initial or continued participation, was extracted in 40 (45.5%) studies. These social influences include the yoga instructor (22 studies/25.0%) [1, 4, 6, 9, 13, 25, 29, 30, 31, 32, 36, 38, 40, 53, 56, 62, 65, 66, 70, 73, 74, 82], recommendations by others (27 studies/30.7%) [1, 4, 10, 21, 23, 29, 30, 31, 36, 43, 45, 46, 48, 50, 51, 53, 56, 59, 64, 66, 67, 76, 82, 83, 85, 86, 88], and trends and media (8 studies/9.1%) [4, 36, 43, 51, 54, 74, 82, 85]. The yoga instructor was commonly mentioned as an important facilitator for continued participation and source of inspiration. Factors like the instructor's knowledge, sensitivity, communication style, experience, patience, and ability to create a supportive, non-threatening and safe environment were important in encouraging sustained participation. Recommendations to take up yoga came from family members, friends, spiritual advisers, and health professionals. Different forms of media including internet, TV and advertising, were reported to trigger interest that subsequently led to initial yoga participation. Exposure to promotional posters for yoga classes prompted some study participants to attend classes while others learned about yoga through print media or TV.

***Theme 4: Personal life experience***

Personal life experience was charted in 23 studies (26.1%), and included certain life events (13 studies/14.8%) [1, 5, 8, 27, 29, 30, 36, 43, 48, 57, 59, 61, 81], personal health condition (10 studies/11.4%) [4, 27, 29, 39, 43, 53, 57, 81, 82, 85], and previous experience in yoga or other physical activities (10 studies/11.4%) [1, 4, 22, 24, 36, 43, 46, 53, 70, 73]. Life events that prompted some participants to seek out yoga included, for example, moments of despair, anticipating change, going through a crisis, and feeling discontented with a traditional gym. Some participants noted that they found yoga while ‘seeking ’something good for the body or something that could connect their whole being. With respect to health conditions, some participants took up yoga to rehabilitate injuries or to alleviate back pain, while others pursued it to address mental health and emotional problems. Previous experience of yoga and other physical activities facilitated yoga participation. General positive experiences in yoga and any experienced changes that exceeded their expectations motivated some study participants to continue their participation.

***Theme 5: Characteristics of the yoga program***

Characteristics of the yoga program were charted as facilitators in 22 studies (25.0%) [1, 4, 9, 11, 12, 13, 18, 23, 24, 25, 30, 31, 40, 43, 46, 56, 58, 61, 65, 70, 74, 82]. Style preferences were seen; for example, some participants liked the physical challenges of more intensive yoga styles such as Ashtanga and vinyasa yoga, while others preferred more gentle and non-challenging methods suitable for older adults. Other program characteristics that were facilitative were easy access to yoga classes, availability of preferred yoga style, welcoming yoga studio with relaxed atmosphere, suitable class duration, acceptable class size, and the availability of easy-to-follow instructional materials to facilitate home practice.

#### **2.4.4 Barriers to yoga participation**

Thirty-eight out of the 88 studies (43.2%) mentioned barriers to yoga participation. These were organised into 1) psychological barriers, 2) negative impressions of yoga, 3) lack of resources, 4) social barriers, 5) characteristics of the yoga program, and 6) health issues (Figure 3). Barriers were found across all types of studies involving regular yoga participants, non-participants, and yoga program participants. Percentages presented in this section are based on those 38 studies.

##### ***Theme 1: Psychological barriers***

Participants in 22 studies (57.9%) reported psychological barriers for yoga participation. These included anticipated or previous negative psychological experience such as feelings of discomfort, overexertion, frustration, inability to cope with changes and embarrassment (13 studies/34.2%) [3, 4, 10, 16, 18, 23, 29, 36, 40, 50, 70, 73, 82]; lack of interest or motivation (9 studies/23.7%) [4, 16, 29, 31, 36, 46, 59, 60, 82]; and fear or perceived high risk of injury (10 studies/26.3%) [4, 9, 17, 23, 45, 50, 59, 69, 70, 73]. Some participants mentioned lack of self-confidence prevented them from taking up yoga (7 studies/18.4%) [2, 3, 9, 10, 23, 45, 50].

##### ***Theme 2: Negative impressions of yoga***

In 22 studies (57.9%), participants reported negative impressions of yoga that discouraged participation. Participants in 8 studies (21.1%) saw yoga as costly or expensive [4, 6, 10, 50, 59, 71, 73, 82]. In 9 studies (23.6%), some participants, particularly men, perceived yoga as a female-dominated activity and as mostly marketed to this demographic [4, 10, 23, 46, 63, 70, 71, 74, 82]. Yoga was also seen as inconsistent with certain training goals and perceived as either too easy or too difficult (6 studies/15.8%) [4, 23, 33, 38, 65, 70]. Those who did not practise yoga perceived it to be ‘difficult and demanding’. Some, especially men, saw it as lacking

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aerobic challenge. Other negative impressions of yoga included requiring flexibility and athleticism (7 studies/18.4%) [4, 10, 29, 45, 46, 70, 71], being racialised and only for white people (3 studies/7.9%) [6, 10, 71], conflicting with personal beliefs (10 studies/26.3%) [4, 10, 34, 45, 46, 53, 70, 73, 74, 75], and being inaccessible or exclusive (4 studies/10.5%) [7, 10, 23, 71].

### ***Theme 3: Lack of resources***

In 18 studies (47.4%), participants cited lack of resources as factors hindering yoga participation. In 14 studies (36.8%), participants mentioned lack of time, expressed as general time constraints due to work commitments, going to studios, and family obligations [1, 4, 9, 10, 16, 17, 23, 29, 50, 54, 50, 60, 74, 82]. Lack of access to a good yoga studio, parking space, and transportation (11 studies/28.9%) [1, 3, 4, 10, 17, 46, 52, 59, 60, 74, 82], lack of money (3 studies/9.7%) [10, 17, 54] and lack of knowledge about yoga, its different styles, and how to get started (5 studies/13.2%) [3, 9, 10, 46, 70], were also reported as barriers, particularly among non-participants.

### ***Theme 4: Social barriers***

Social barriers were identified in 10 studies (26.3%), and included yoga teachers, perceived lack of social connectedness and companionship, and media. Participants in 6 studies (15.7%) mentioned yoga instructors as barrier [1, 4, 23, 40, 59, 65]. Yoga teachers who are pushy or autocratic, and do not provide quality instructions were cited as reasons why people stop doing yoga. Yoga teachers' comments on other styles of yoga may also prevent students from exploring those styles. In 4 studies (10.5%), participants reported perceived lack of social connectedness (i.e., not fitting in) as a reason for not taking up yoga [16, 23, 70] and lack of companionship (i.e., friend stopped going) as a cause for dropping out [59].

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In 2 studies (5.3%), participants mentioned media (e.g., yoga magazines) as discouraging yoga participation, especially if media messages reinforce stereotypes of yoga practitioners or create unrealistic expectations [36, 71].

### ***Theme 5: Characteristics of the yoga program***

Participants in 9 studies (23.7%) expressed that certain characteristics of the yoga program could hinder continued participation [4, 6, 16, 17, 18, 29, 54, 65, 82]. Some participants mentioned characteristics such as not having enough class times, long classes (e.g., 90-minute classes), classes that are too challenging or too slow, and the outfits used in class as barriers for participation. Others noted that the excessive commercialisation of yoga and the inappropriate use of certain yogic practices or symbols (i.e., outside its original purpose or cultural context) discouraged people from pursuing yoga.

### ***Theme 6: Health issues***

Participants in 9 studies (23.7%) mentioned health issues or physical injury, including those that were non-yoga related, preventing them from taking up yoga or inhibiting continued participation [3, 4, 9, 10, 16, 17, 45, 65, 74].

#### **2.4.5 Facilitators and barriers specific to home practice**

Three of the 88 studies (3.4%) mentioned facilitators and barriers to home practice [9, 65, 74]. Facilitators included having access to materials such as a yoga manual, paper booklet of yoga poses, audio-video guides, and a smart phone app. Some participants mentioned that home practice provided them with time to learn and listen to their bodies and explore how to vary the practice – something they did not do as much in the studios. Barriers included lack of time, excessive work demands, family obligations, lack of space, exhaustion or tiredness, illness and other

body concerns, lack of discipline, lack of in-person instruction and group environment, and having a full stomach from dinner.

## **2.5 Discussion**

The aim of this scoping review was to map and describe the literature examining perceived facilitators and barriers for yoga participation in the general adult population. Given the long history of the study of facilitators and barriers in sport and exercise psychology, it is important to analyse these concepts in developing fields, such as yoga. Facilitators for yoga participation were categorized into perceived benefits of yoga, psychological factors, social influence, personal life experience, and specific characteristics of the yoga program. Barriers to participation were categorized as psychological barriers, negative impressions of yoga, lack of resources, social barriers, yoga program characteristics, and health issues. This is the first scoping review to analyse the literature in this way.

### **2.5.1 Study and participant characteristics**

There is an increasing trend in research that shows a focus on outcomes of involvement in yoga. However, research on factors facilitating or hindering yoga participation is still relatively scant (Jeter, Slutsky, Singh, & Khalsa, 2015). The finding that studies were spread across different disciplines has been reported by others (De Michelis, 2007; Weeks & Strudsholm, 2008) and may reflect a widespread interest in yoga and the various roles it can play, such as a leisure activity, health prevention strategy, complementary and alternative therapy, or spiritual practice.

Very few studies were conducted outside of the United States, even in countries where yoga has become relatively popular, such as the United Kingdom and Australia, or India where it originated. Given that yoga is being promoted



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worldwide as an activity for holistic health (United Nations General Assembly, 2015; World Health Organization, 2013, 2018), expanding the knowledge outside of North America would further advance understanding on how to increase yoga uptake and participation.

Men are under-represented in this area of research. We found only one study documenting male practitioners' experiences in yoga (Kidd & Eatough, 2017).

Although this finding was anticipated considering the dominance of female participants (Cramer et al., 2016; Ding & Stamatakis, 2014; Vergeer et al., 2017), future studies need to examine the barriers to yoga participation among men (Ross et al., 2013). Identifying reasons for the low uptake of yoga among men, including underlying psychological constructs like motivation, perceptions, and attitudes, would be helpful in understanding how to promote yoga to this population. This is an important issue for exercise psychology.

Many of the studies did not report the style of yoga practiced. Although there are common elements across yoga styles (i.e., breathing, postures, meditation), asana combinations and delivery approach vary widely across styles, resulting in different exercise intensities and participant experiences (Ainsworth et al., 2011; Larson-Meyer, 2016). Different styles of yoga may appeal to different types of people depending on their motives, preferences, and physical condition (Ross, Friedmann, Bevans, & Thomas, 2012). Future studies need to examine whether factors influencing participation, including psychosocial constructs and preferences, vary across different yoga styles (Park, Riley, & Braun, 2016; Ross et al., 2012; Wertman et al., 2016). This would allow better tailoring of yoga programs or messages to accommodate the needs of different individuals.

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The majority of the studies included in this scoping review were descriptive and a-theoretical. The few studies that were informed by psychological theories used theories that are common in health behaviour research (e.g., Transtheoretical Model, Health Belief Model) (Painter, Borba, Hynes, Mays, & Glanz, 2008). As already stated by others (Park, Riley, Bedesin, & Stewart, 2016), future research may need to consider a wider range of models of motivation, beliefs, expectancies, and potential barriers (e.g., Social Cognitive Theory, Personal Investment Theory, Social Identity Theory) to have a better understanding of adopting and maintaining yoga participation. Other less commonly used models or theories also need to be explored. For example, future research could use Spadola et al.'s (2017) model to examine how self-efficacy or social support mediate the influence of outcome expectations on yoga participation. Future studies could also apply models that include the spiritual domain (Evans, Tsao, Sternlieb, & Zeltzer, 2009; Hatala, 2013). Theory-informed studies can help identify the most salient factors influencing or hindering participation and improve understanding of the possible developmental pathway of yoga participation (Genovese & Fondran, 2017; Henrichsen-Schrembs & Versteeg, 2011). We recommend these as important directions for exercise psychology.

### **2.5.2 Facilitators and barriers for yoga participation**

Yoga is a physical activity that, when practised regularly, produces desirable physical and psychological health outcomes. Naturally, many of the facilitators and barriers for yoga participation we identified were similar to those reported in the wider physical activity literature (e.g., perceived health outcomes, social influence and support, lack of time and access) (Borodulin et al., 2016; Herazo-Beltran et al., 2017; Hoare, Stavreski, Jennings, & Kingwell, 2017; Horne & Tierney, 2012; Kelly

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et al., 2016). This is an important finding. However, we also found additional perceived benefits (i.e., mind-body-spirit and self-development) and barriers (i.e., negative impressions of yoga) not typically reported in more conventional types of physical activity (e.g., running or gym training). These reflect the holistic nature of yoga and further justify the need for the current scoping review. Some of these factors could act as both facilitators and barriers, depending on how they are perceived or experienced (e.g., spirituality, yoga instructors, media), and further work on this in exercise psychology is warranted. The use of qualitative methods will be essential.

The perceived holistic benefits of yoga, reported by both participants and non-participants, support the biopsychosocial-spiritual model proposed by Evans et al. (2009) as the best way to understand yoga as a holistic practice with multiple outcomes. Some participants cited participation motives not commonly found in other forms of physical activity, such as spirituality, spiritual well-being, and personal development. Ronkainen and Nesti (2019) noted that spirituality is often neglected in sport and exercise psychology. We believe that yoga can be an excellent context to study spirituality as a participation motive or outcome. Moreover, it is noteworthy that participation motives have a significant history in the field of sport and exercise psychology and have provided a foundation for subsequent theory development. Such descriptive approaches provide an important first step in understanding the psychology of motivation (Biddle, 1997). From our results, it is recommended that exercise psychologists pay greater attention to the importance of spirituality and personal development in understanding participation in yoga.

Participation motives and perceived benefits related to spirituality and self-development reflect the underlying philosophy of yoga, and this is where yoga

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differs from traditional forms of physical activity. Communicating these additional benefits in yoga promotion may attract people seeking more holistic approaches to health and well-being, and may sustain participation in those already doing yoga (Park, et al., 2016; Penman et al., 2012; Sohl et al., 2011). We also found, however, that these aspects can sometimes act as barriers. Spiritual facets of yoga could be off-putting for individuals with strong religious backgrounds. In these cases, emphasizing other elements of yoga might be more beneficial for encouraging yoga uptake and sustained participation. For instance, our findings suggest that some yoga participants, particularly men, acknowledge yoga more as a tool for mind-body integration. In practice, differentiated promotional messages can be created to appeal to different groups seeking different outcomes from yoga (Park et al., 2019). Future studies need to clarify which perceived benefits would be more appealing to certain population subgroups to strengthen the effectiveness of promotional messages.

Two important social agents that can help communicate the multiple benefits of yoga are the media and yoga instructors. However, we found that both of these can facilitate as well as inhibit interest and participation. Media represent an important source of information about holistic movement practices (Wang, Li, Choudhury, & Gaylord, 2019; Weeks & Strudsholm, 2008). The different forms of media (e.g., print, social media, internet) are valuable tools in promoting physical activity programs such as yoga because of their wider reach and potential to create public awareness (Abioye, Hajifathalian, & Danaei, 2013; Bauman & Chau, 2009; Noar, 2006). Unfortunately, yoga-related media constantly feature ‘thin-and-toned’, young, white, female yoga models, reinforcing stereotypes that may drive away potential participants, especially those who belong to the underrepresented population subgroups such as people of colour, men, and older adults (Webb,

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Vinoski, Warren-Findlow, Padro, et al., 2017). Many forms of media can disseminate proper information about yoga and its multiple health benefits, potentially addressing the lack of knowledge and the negative impressions of yoga. This is an area that future studies can explore as we know little about the content of promotional messages in yoga, nor about what messages could be used to influence increased uptake in underrepresented population subgroups (Vergeer et al., 2018). The development of greater knowledge and application of social marketing will help here, and sport and exercise psychologists need to be involved.

Yoga programs are generally delivered by yoga instructors in group settings. Hence, yoga instructors play a key role in motivating participants by creating a social-psychological environment that facilitates positive experience and promotes adherence. We found that yoga instructors can act as either facilitators or barriers in both beginner and experienced yoga participants, depending on how their teaching styles are perceived. Evidence from studies on motivational climate in exercise settings suggests that participants who perceive their instructors to be caring and focused on helping them work on their personal goals are more likely to report higher intrinsic motivation and commitment to exercise (Brown, Fry, & Moore, 2017). More work embedded in psychology is warranted in the context of yoga instructors. As yoga teacher training programs vary considerable across yoga styles and traditions and accrediting institutions, investigating the relationship between features of yoga teacher training and yoga teacher delivery styles might be a useful avenue for future research.

The impression of yoga as a feminine activity warrants attention. Yoga may be perceived as feminine because of characteristics such as grace, aesthetics, and self-expression, similar to dancing and gymnastics (Chalabaev, Sarrazin, Fontayne,

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Boiché, & Clément-Guillotin, 2013; Hardin & Greer, 2009; Koivula, 2001).

Additionally, the practice of yoga is embedded within the principles of self-care and well-being, generally associated with traditional feminine ideals (Sointu, 2011; Sointu & Woodhead, 2008). While this gender-typing of yoga may be helpful in increasing female participation, it can make yoga less appealing to men. It may be useful to explore ways of overcoming this barrier if yoga is to be promoted to different population subgroups. Gender-specific facilitators and barriers to participating in yoga and other forms of holistic movement practices remain understudied (Vergeer et al., 2017; Wang et al., 2019). As raised by previous researchers, future research can investigate why men are less likely to take up yoga (Ross et al., 2013; Vergeer et al., 2017) or explore how the constructs of femininity and masculinity play a role in facilitating or hindering yoga participation (Vergeer et al., 2018). Research from other physical activity settings shows the importance of gender-sensitised initiatives (Hunt et al., 2014).

Yoga is generally considered a low-cost intervention or prevention strategy for mental and physical health because it does not require any special equipment and can be practised in a variety of settings (Hartfiel et al., 2017; Mason et al., 2017). However, our findings show that yoga is perceived as an expensive activity, which can discourage participation. Interestingly, this issue was not raised in one study involving low-income participants, probably because free or subsidised yoga classes were offered in their community (Spadola et al., 2017). It is possible that offering free or low-cost yoga classes might address this barrier to some extent for low-income individuals. Some authors acknowledge the potential of yoga to be a cost-effective strategy in promoting public health but emphasise the need for more

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research concerning incorporating yoga into healthcare systems and schools (Khalsa, 2007; Mason et al., 2017).

This review makes a novel contribution to the extant exercise psychology literature by summarizing the range of facilitators and barriers for yoga. From a physical activity perspective, yoga can be regarded as a holistic movement practice in a sense of being embedded in a holistic philosophy of well-being and including elements beyond the physical (Vergeer, 2019). These non-physical elements have been found reflected in participants motives and subjective experiences in practices like 5Rhythms and tai chi (Vergeer, 2018; Yang et al., 2011), and this review shows that the elements beyond the physical can create additional barriers and facilitators not typically found in general physical activity contexts. Such elements have not been captured in any existing instruments measuring participation motives or outcome expectancies (e.g., Sebire, Standage, & Vansteenkiste, 2008), indicating the need to either update existing inventories or develop yoga-specific scales. Future research can examine whether these perceived outcomes and other facilitators and barriers identified in this review play key roles in the uptake or maintenance of yoga participation, and whether these facilitators and barriers are reflected across different forms of holistic movement practices (Vergeer et al., 2018).

We believe three directions are important in future research on facilitators and barriers to yoga use: 1) attention to the different styles of yoga, and the extent to which they offer the non-physical components of yoga; 2) looking more specifically at barriers and facilitators by sub-populations, and in this regard, define subpopulations not only by sociodemographic features but also by psychological characteristics, including needs and interests; it is quite possible that the attraction and barriers to yoga are at least to some extent associated with personal needs and

interests relating to the non-physical elements of yoga; and 3) treating ‘participation’ not just as a binary variable but considering different ways of engaging with yoga, particularly the extent to which people engage with the non-physical components of yoga. The study by Henrichsen-Schrembs (2008) offers an interesting model in this respect.

### **2.5.3 Strengths and limitations**

A major strength of this scoping review is the use of a broad search strategy with no date restriction, implemented across multiple databases and capturing a wide range of records including grey literature and non-English publications. The scoping review method is a relatively new approach that provides a comprehensive overview of the types of studies, methodology, and contexts used in the literature, and is the recommended method to map the available evidence around a particular topic, particularly emerging and still understudied research areas (Munn et al., 2018; Pham et al., 2014; Tricco et al., 2018). Furthermore, scoping reviews are used to summarize findings from studies that are heterogeneous in methods and discipline, and to identify gaps that can provide direction for future research (Tricco et al., 2018). This is the first review to address this topic for yoga.

We limited the review to generally healthy populations by excluding studies that explicitly recruited clinical populations. However, boundaries between those healthy and unhealthy are not clear-cut, and some studies may have included (non-identified) participants with medical conditions. This is possible in large-scale national surveys where the population is represented.

Although we identified the number of studies that cited certain facilitators and barriers, we did not take into account the participant numbers associated with each facilitator or barrier, thus the degree of evidence reflects study level, not



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participant level. Furthermore, by focusing on the scope of the available literature, our thematic analysis of facilitators and barriers identified these at a surface level, without analysing any contextual information offered in the studies. We were thus not able to specify specific facilitators or barriers for population subgroups. This would be a useful direction for future research.

Furthermore, this review did not assess the quality of the included papers which, although consistent with the scoping review methodology (Arksey & O'Malley, 2005; Levac et al., 2010; Peters et al., 2015), makes it difficult to gauge the quality of the findings or ascertain whether results might differ across studies varying by quality. Nonetheless, this review provides a groundwork for future inquiry by (1) locating a large volume of peer-reviewed and grey literature that could be used for future reviews and syntheses asking more focused questions (Brien, Lorenzetti, Lewis, Kennedy, & Ghali, 2010) and (2) identifying a large assortment of potential facilitators and barriers for yoga participation which future research could examine in more depth.

### **2.6 Conclusions**

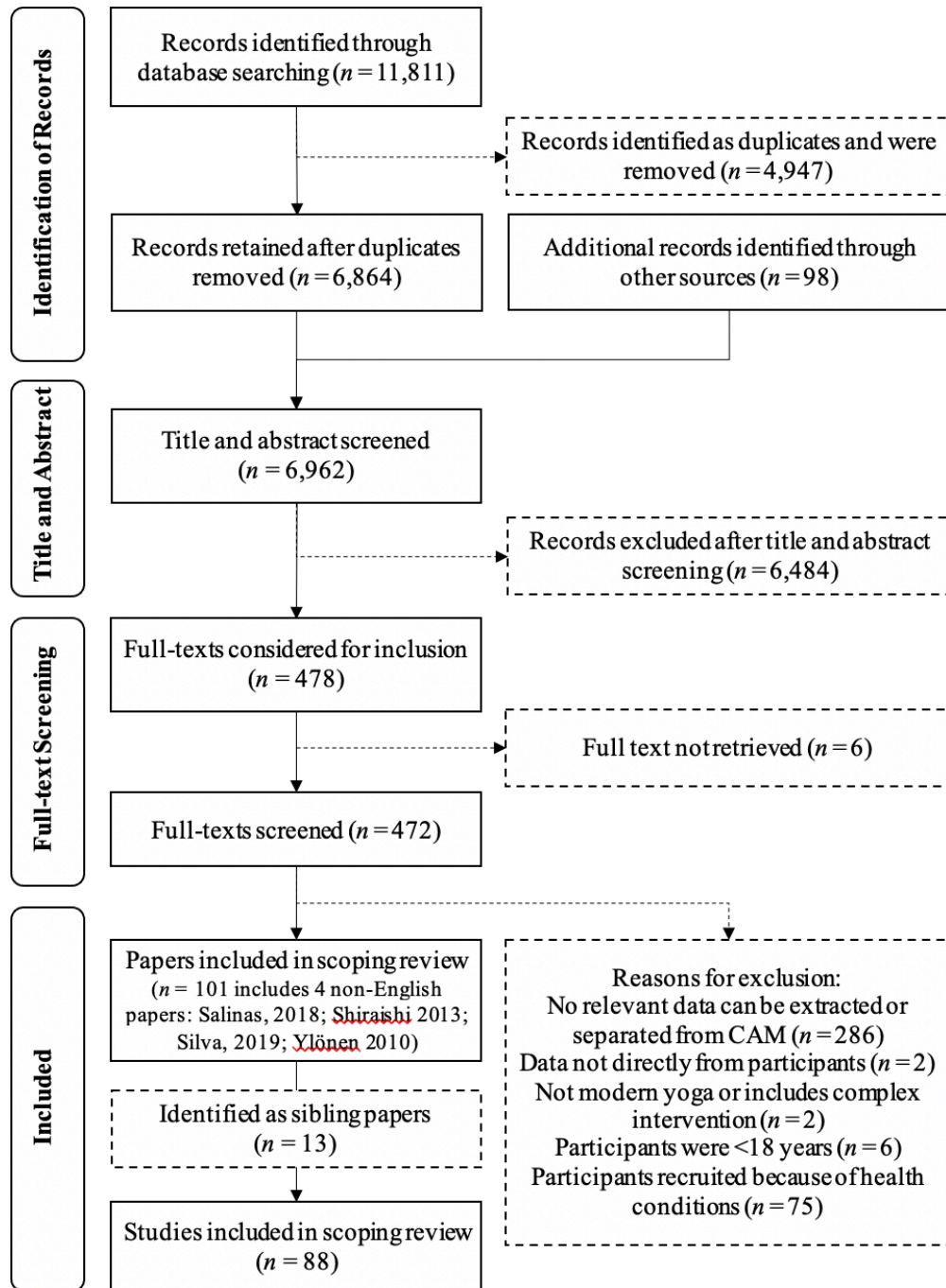
Because of its holistic nature, yoga occupies an unusual place in the landscape of physical activities of interest to exercise psychologists. This was reflected in the facilitators and barriers for yoga participation among adults identified in this scoping review. In addition to those typically reported for general physical activity, this review identified a number of facilitators and barriers which appear specific to yoga, and possibly to other holistic movement practices. Acknowledging these additional factors and studying their role can add to our understanding of physical activity adoption and adherence.

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While these findings are preliminary, it may still be useful for yoga teachers, studio owners, and allied health professionals to consider these different facilitators and barriers. With further research, these could be used to design promotional messages that focus on specific benefits valued by their target students or clients and disseminate information that reduce negative perceptions of yoga. Given yoga's potential as a low-cost health and physical activity program offering a more integrative approach to health and well-being, understanding these facilitators and barriers could optimise the promotion of yoga and potentially increase its uptake, especially among those outside the typical demographics. Exercise psychologists should play an important role in this.

## 2.7 Tables and Figures

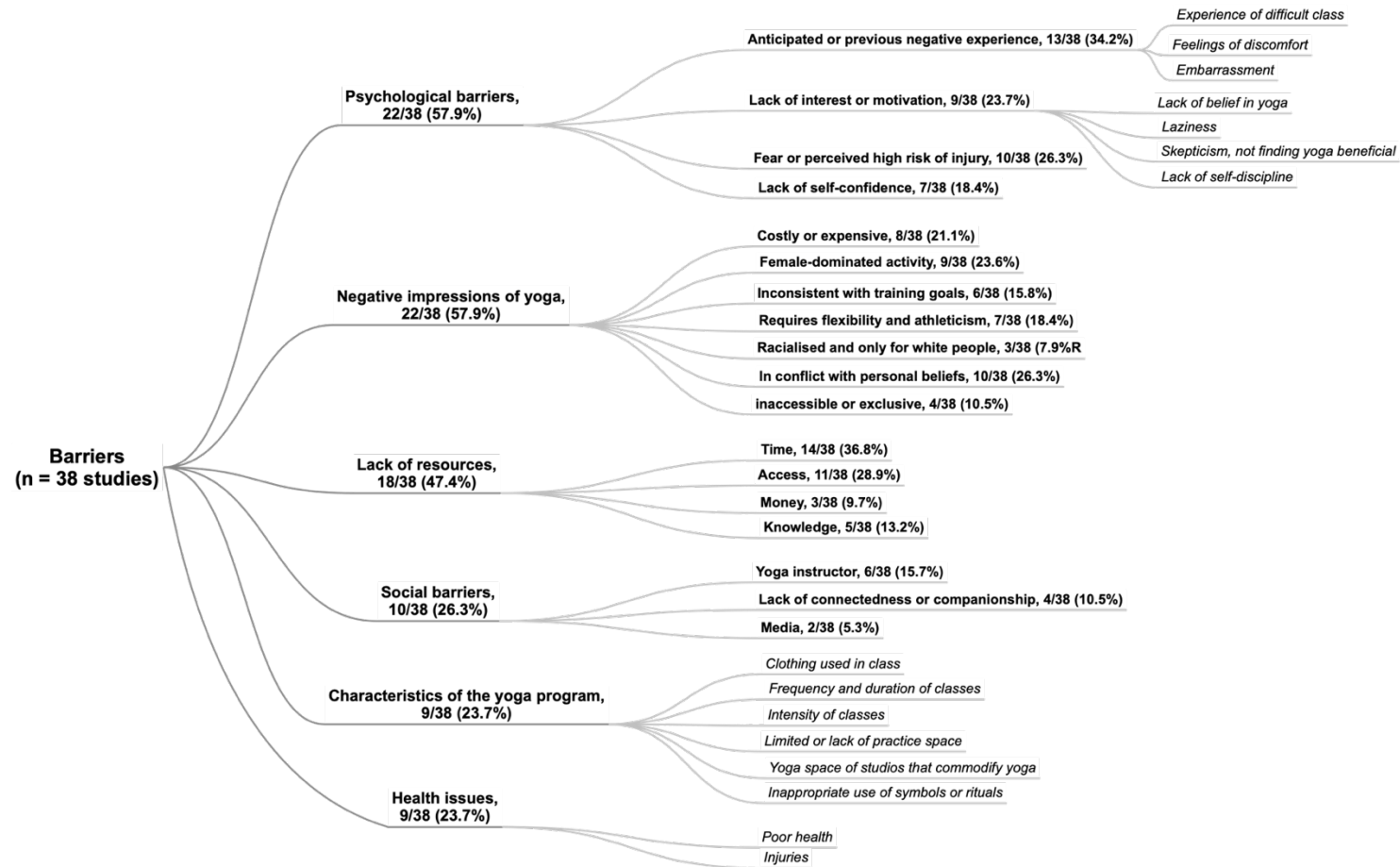
*Figure 1. Flow diagram of first search and screening process.*



*Figure 2. Map of yoga participation facilitators*



**Figure 3. Map of yoga participation barriers. \*Only 38 of the 88 studies (43.2%) mentioned barriers to yoga participation**



**Table 1. List of included studies**

<b>Study No.</b>	<b>Author (Year) Type of Paper (Article unless specified)</b>	<b>Citation details</b>	<b>Purpose of the Study</b>	<b>Reason/s for Inclusion</b>
1	Acebedo (2012) <i>Thesis</i>	Acebedo, A. (2012). <i>Phenomenological analysis of the transformational experience of self in Ashtanga Vinyasa Yoga practice</i> . (PhD Dissertation), Institute of Transpersonal Psychology, USA. Available from ProQuest Dissertations and Theses database. (UMI No: 3509612)	This research study employed a phenomenological analysis to describe and understand how Yoga's transformational process unfolds within the practitioner.	Reported perceived outcomes yoga participation
2	Ali-Knight and Ensor (2017)	Ali-Knight, J., & Ensor, J. (2017). Salute to the sun: An exploration of UK yoga tourist profiles. <i>Tourism Recreation Research</i> , 1-14. <a href="https://doi.org/10.1080/02508281.2017.1327186">https://doi.org/10.1080/02508281.2017.1327186</a>	This study employed an on-line survey to members of established yoga membership organisations with the aim of filling this inherent gap in the literature, establish an enhanced visitor profile, and explore the motivational factors that encourage yoga practitioners to participate in yoga tourism activities.	Reported motivation for yoga tourism activities as well as yoga itself
3	Ameli (2017)* <i>Thesis</i>	Ameli, S. (2017). <i>A needs assessment for the implementation of a yoga program within a senior</i>	The purpose of this DNP project is to explore interest in a yoga	Reported barriers to and perceptions of yoga

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		<i>living facility</i> . (PhD Dissertation), University of Arizona, USA. Retrieved from <a href="http://hdl.handle.net/10150/626680">http://hdl.handle.net/10150/626680</a>	program aimed at improving balance at a senior living facility.	
4	Atkinson and Permuth-Levine (2009)	Atkinson, N. L., & Permuth-Levine, R. (2009). Benefits, barriers, and cues to action of yoga practice: A focus group discussion. <i>American Journal of Health Behaviour</i> , 33(1), 3-14. doi:10.5993/AJHB.33.1.1	The purpose of this study was to explore perceived benefits, barriers, and cues to action for yoga among persons who practice it and those who do not to identify the behavioural determinants.	Explicitly examined perceived benefits, barriers, and facilitators to yoga participation
5	Atkinson (2010)	Atkinson, M. (2010). Entering scapeland: Yoga, fell and post-sport physical cultures. <i>Sport in Society</i> , 13(7-8), 1249-1267. doi:10.1080/17430431003780260	In this paper, I draw on ethnographic data collected among Ashtanga yoga practitioners in Canada and fell runners in the United Kingdom as a means of discussing the lived phenomenological experience of 'scapelands', and post-sport lifestyles.	Reported motives and perceived outcomes of yoga participation
6	Batacharya (2010) <i>Thesis</i>	Batacharya, J. S. (2011). <i>Life in a body: Counter hegemonic</i>	to investigate the subjective experiences of participants and the	Reported motives and perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		<i>understandings of violence, oppression, healing and embodiment among young south asian women.</i> (PhD Dissertation), University of Toronto, Canada. Retrieved from <a href="http://hdl.handle.net/1807/26152">http://hdl.handle.net/1807/26152</a>	agency they exercise in their day-to-day negotiations with structural inequities.	
7	Bowers and Cheer (2017)	Bowers, H., & Cheer, J. M. (2017). Yoga tourism: Commodification and western embracement of eastern spiritual practice. <i>Tourism Management Perspectives</i> , 24, 208-216. doi:10.1016/j.tmp.2017.07.013	<p>This paper examines the growth of interrelated tourism phenomena yoga tourism and spiritual tourism - both sit under the wider umbrella of wellness tourism.</p> <p>Accordingly, the key research question posed asks: What factors motivate attendance at yoga retreats? Most importantly, the extent to which yoga-related travel is imbued with spirituality is a key underpinning linkage to the research question, as well as considerations of ties to health and wellness motivations.</p>	Reported motivation for yoga tourism activities as well as yoga itself



Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
8	Brasch (2019)* Thesis	Brasch, K. (2019). <i>Exploring spiritual development through yoga teacher training</i> . (PhD Dissertation), Alliant International University, USA. Available from EBSCOhost PsycInfo database. (ProQuest Number: 13858924)	The purpose of this proposed study is to explore the role of yoga teacher training on the spiritual and moral development of individuals who further their understanding of yoga. The study will examine how these individuals' spiritual integrity may be affected through the deepening of their yoga practice and understanding of the yoga philosophy. The study will also look at: 1) how individuals' spiritual/religious identification influences their existing spiritual/religious connection; 2) how the individuals came to discover yoga; 3) their thoughts and feelings about yoga; 4) their mind/body experience since beginning their practice; 5) their emotional experiences through the deepening of their practice; and 6) their experiences of yoga in the context of their daily life.	Reported motives and perceived outcomes of yoga and yoga teacher training

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
9	Brems (2015)	Brems, C. (2015). A yoga stress reduction intervention for university faculty, staff, and graduate students. <i>International Journal of Yoga Therapy</i> , 25, 61-77.	The current study had the following two primary purposes: (1) to test the feasibility of bringing yoga into the academic workplace as a regular and valued activity, and (2) to assess whether the practice can reduce perceived stress and resultant symptoms	Reported perceived outcomes of yoga participation
10	Brems et al. (2015)	Brems, C., Justice, L., Sulenes, K., Girasa, L., Ray, J., Davis, M., ... Colgan, D. (2015). Improving access to yoga: Barriers and motivators for practice among health professions students. <i>Advances in Mind Body Medicine</i> , 29(3), 6-13.	To increase yoga practice among health professions students, an understanding must be developed of factors that interfere with or facilitate a regular yoga practice. The current study intended to identify such barriers and motivators.	Explicitly investigated facilitators and barriers to yoga participation
11	Bryan (2012) Thesis	Bryan, S. (2012). <i>Exploring associations between group yoga participation over time, psycho-social variables and exercise adherence</i> . (PhD Dissertation), Seton Hall University, USA. Retrieved from	The purpose of this study was to investigate whether a relationship exists between participation in a group yoga program over time and exercise adherence. Additional variables of interest and their relationship to yoga participation	Reported perceived outcomes of yoga participation

## CHAPTER II. When an activity is more than just exercise

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		<a href="http://scholarship.shu.edu/dissertations/1798">http://scholarship.shu.edu/dissertations/1798</a>	include: general well-being, exercise self-efficacy, group environment cohesion, and mindful eating.	
	Bryan et al. (2013)	Bryan, S., Parasher, R., Cahil, T., & Zipp, G. P. (2013). Yoga, mindful eating, and weight management. <i>Journal of Nutritional Therapeutics</i> , 2(4), 173-181. Retrieved from <a href="http://www.lifescienceglobal.com/pms/index.php/jnt/article/view/1575">http://www.lifescienceglobal.com/pms/index.php/jnt/article/view/1575</a>	Through a mixed method of inquiry, this study investigated the exercise and eating habits of adults who participate in yoga on a regular basis exploring facets of mindful eating, exercise habits, and body mass index.	
12	Chang (2017)* Thesis	Chang, G. (2017). <i>Yoga practice and its therapeutic benefits</i> . (Doctor of Applied Clinical Psychology Dissertation), Chicago School of Professional Psychology, USA. Available from EBSCOhost CINAHL database. (ProQuest Number:10642414)	The purpose of the study is to explore the connection between the practice of yoga and changes in self-esteem and/or physical self-perception.	Reported reasons for yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
13	Chen et al. (2007)	Chen, K.-M., Tseng, W.-S., Ting, L.-F., & Huang, G.-F. (2007). Development and evaluation of a yoga exercise programme for older adults. <i>Journal of Advanced Nursing</i> , 57(4), 432-441. doi:10.1111/j.1365-2648.2006.04115.x	The aims of the study were to (1) develop a safe and manageable yoga exercise programme specifically for older adults; (2) evaluate the appropriateness of the programme for older adults from a user perspective and (3) explore appropriate yoga practice frequency and practice preferences for older adults.	Reported perceived outcomes of yoga participation
14	Cowen (2010)	Cowen, V. S. (2010). Functional fitness improvements after a worksite-based yoga initiative. <i>Journal of Bodywork and Movement Therapies</i> , 14(1), 50-54. doi:10.1016/j.jbmt.2009.02.006	This study was undertaken to evaluate the benefits of yoga in a sample of firefighters. The overall hypothesis was that improvements in functional fitness, flexibility and perceived stress would be noted after participation in a series of yoga classes. A secondary hypothesis was that yoga would be favorably perceived and of interest to the firefighters as a worksite-based program.	Reported perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
15	Crowe and Puymbroeck (2019)*	Crowe, B. M., & Van Puymbroeck, M. (2019). Enhancing problem- and emotion-focused coping in menopausal women through yoga. <i>International Journal of Yoga Therapy</i> . doi:10.17761/2019-00020	This study was a secondary data analysis of a mixed methods embedded research study that explored the effects of yoga on symptoms associated with menopause. The primary study aimed to identify whether the frequency and/or severity of physiological menopausal symptoms decreased as a result of participation in yoga, and the extent to which participants' well-being and quality of life were influenced by yoga participation. This secondary analysis examines qualitative data from electronic journals and one-to-one semi-structured interviews.	Reported perceived outcomes of yoga participation
16	Dayananda et al. (2014)	Dayananda, H. V., Ilavarasu, J. V., Rajesh, S. K., & Babu, N. (2014). Barriers in the path of yoga practice: An online survey. <i>International Journal of Yoga</i> ,	The current study aims at evaluating the factors influencing adherence to yoga practices by those who had completed 1-month Yoga Instructors' course from a yoga university.	Explicitly examined barriers to yoga practice

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
17	Eggleston (2009) Thesis	Eggleston, B. (2009). <i>Psychosocial determinants of attending yoga classes: An application of the Theory of Planned Behaviour</i> . (PhD Dissertation), Indiana University, USA. Available from ProQuest Dissertations and Theses database. (UMI No. 3344775)	The purpose of this study was to apply the Theory of Planned Behaviour to understand intention to attend at least one yoga class each week for the next three months among individuals who have been attending yoga classes for at least three months (n = 157), and to observe if yoga is a form of serious leisure for individuals who attend at least one yoga class each week.	Explicitly examined facilitator (beliefs) for yoga participation. Conducted elicitation interviews to develop the questionnaire used in the study and reported expected outcomes of yoga participation
	Eggleston et al. (2011)	Eggleston, B., Middlestadt, S., Lindeman, A., McCormick, B., & Kocejka, D. (2011). Attending yoga classes: Applying the theory of planned behaviour. <i>International Journal of Health, Wellness &amp; Society</i> , 1(1), 37-47. doi:10.18848/2156-8960/CGP/v01i01/41014	To understand the psychological and social determinants of individuals attending yoga classes on a regular basis.  The study focused on the behavior of individuals who had been attending classes for at least three months and attended a minimum of	

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			one yoga class per week for an additional three months.	
18	Ferrer (2017)* Thesis	Ferrer, G. (2017). <i>A qualitative multiple case study of yoga and mindfulness techniques in commuters experiencing workplace stress</i> . (PhD Dissertation), Northcentral University, USA. Available from EBSCOhost PsycInfo database. (ProQuest Number:10288221)	The purpose of this qualitative multiple case study was to explore the support given and/or the barriers imposed by employers in providing yoga therapy for employees to help them to combat stress. The researcher explored this phenomenon by examining employer facilitation of and barriers to employees obtaining such therapy. In this study, yoga therapy was defined as yoga exercise classes given by a licensed professional in a designated location and available to all employees.	Reported perceived outcomes of yoga participation
19	Ford (2018)* Thesis	Ford, B. C. (2018). <i>'I felt safe in my body again': The experience of MFTs who practice yoga as self-care</i> . (PhD Dissertation), Alliant International University, USA.	The goal of this research was to explore the experience of MFTs who practice yoga as a primary form of self-care.	Reported perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		Available from EBSCOhost PsycInfo database. (ProQuest Number:10749669)		
20	Francesconi (2017)*	Francesconi, D. (2017). Yoga practice as in-service teacher education activity: Preliminary data from a qualitative study. <i>International Conference on Education and Educational Psychology</i> , 31, 848-856. doi:10.15405/epsbs.2017.10.82	The research question has been split in two different questions: (1) How does yoga teacher design, implement and evaluate the course? (2) What do participants (the school teachers) think and feel about the course? And how does it influence teachers' self-awareness?	Reported perceived outcomes of yoga participation
21	Giovengo-Gurrera (2018)* Thesis	Giovengo-Gurrera, S. (2018). <i>The lived experiences of school counselors participating in yoga: A hermeneutic phenomenological study of self-care</i> . (PhD Dissertation), Duquesne University, USA. Available from EBSCOhost PsycInfo database. (ProQuest Number:10266374)	The purpose of this study was to examine the lived experiences of school counselors participating in yoga. The primary objective of this research was to gain a thick, rich understanding of how school counselors experience the practice of yoga. A secondary objective of this study was to gain an understanding of how the regular practice of yoga can serve as a	Reported perceived outcomes of yoga participation



Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			method of self-care for school counselors.	
22	Grace (2016) Thesis	Grace, L. (2016). <i>Narrative inquiry into possible shifts in sense of self in seasoned yoga practitioners</i> . (PhD Dissertation), Saybrook University, USA. Available from ProQuest Dissertations and Theses database. (ProQuest No. 10174144)	The purpose of the study was to explore possible shifts in sense of self in seasoned U.S. yoga practitioners as described by them in their own words.	Reported perceived outcomes of yoga participation
23	Gulizia (2015) Thesis	Gulizia, T. (2015). <i>Determinants of yoga practice: An application of the Theory of Planned Behaviour</i> . (Master's Thesis), University of Nebraska, USA. Available from ProQuest Dissertations and Theses database. (UMI No. 1585563)	The purpose of this study is to determine the attitudes and beliefs (per the Theory of Planned Behaviour) college students have about practicing yoga regularly.	Conducted a focus group for the elicitation phase of the questionnaire development; Reported perceived outcomes of yoga participation
24	Halsall et al. (2016)*	Halsall, T., Werthner, P., & Forneris, T. (2015). Cultivating focus: Insights from dedicated yoga practice and the implications for mental health and well-being.	the purpose of this study was to learn more about the experiential nature of focus in yoga, and how this ability to focus might change over time. Specifically, the study	Explicitly examined perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		<i>Qualitative Research in Sport, Exercise and Health</i> , 8(2), 165-179. doi:10.1080/2159676x.2015.1099562	was guided by the following two questions: (1) What do individuals with an extensive dedicated yoga practice experience when they focus? (2) How has their ability to focus developed over time?	
25	Harden et al. (2019)*	Harden, S. M., Steketee, A. M., Kelliher, R., Mason, K. A., & Boyle, N. F. (2019). Using a studio-academic partnership to advance public health within a pragmatic yoga setting. <i>Journal of Primary Care and Community Health</i> , 10. doi:10.1177/2150132719874621	to explore psychosocial variables, behaviors, and perceptions of yoga practitioners.	Explicitly examined facilitators and perceptions of yoga
26	Hasselle-Newcombe (2005)	Hasselle-Newcombe, S. (2005). Spirituality and ‘mystical religion’ in contemporary society: A case study of British practitioners of the Iyengar method of yoga. <i>Journal of Contemporary Religion</i> , 20(3), 305-322. doi:10.1080/13537900500249806	This article addresses the under-researched, but very popular activity of yoga in contemporary Britain and attempts a preliminary sociological exploration of the religious and spiritual beliefs of yoga practitioners.	Reported motives and perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
27	Henrichsen-Schrembs (2008) <i>Thesis</i>	Henrichsen-Schrembs, S. (2008). <i>Modern life courses and the search for meaning in Germany</i> . (PhD Dissertation). Universität Bremen, Germany. Retrieved from <a href="https://elib.suub.uni-bremen.de/peid=D00104374">https://elib.suub.uni-bremen.de/peid=D00104374</a>	My aim is to genuinely understand why, on one hand, a particular person practices yoga for mostly physical reasons, while yet for another person the spiritual and philosophical dimension are of prime importance. How is the respective yoga practice related to the practitioner's life course? And how does this relate to the larger issues regarding the modernization of society?	Reported initial reasons for practising yoga and reasons for continuing the practice
	Henrichsen-Schrembs and Versteeg (2011)	Henrichsen-Schrembs, S., & Versteeg, P. (2011). A typology of yoga practitioners: Towards a model of involvement in alternative spirituality. <i>Practical Matters</i> (4), 1-19.	In a qualitative study of yoga practitioners in Germany, a typology was developed for understanding and categorizing the motivations of participants in yoga practice, resulting in the construction of four different types. Subsequently, the authors of this article explore the use of this	

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			yoga practice typology for other types of alternative spirituality.	
28	Hirsch (2009) Thesis	Hirsch, G. (2009). <i>Psychologists' perception of the influence of a regular yoga regimen on their professional practice</i> . (PhD Dissertation), Alliant International University, USA. Available from ProQuest Dissertations and Theses database. (UMI Number: 3343588)	This study focused on psychologists who maintain a regular yoga regimen, and their perceptions of the influence of a regular yoga regimen on their professional practice of psychology. The research questions that this study addressed were: Why and how is yoga helpful in psychologists' professional lives? How can yoga assist in addressing the unique self-care needs of psychologists? Can yoga, as a selfcare strategy, diminish the possibility of chronic stress and burnout in psychologists' lives? The study aimed to broaden the literature related to the importance of professional self-care practices.	Reported perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
29	Hong (2016) Thesis	Hong, R. (2016). <i>A heuristic study of the psychological and physiological effects of yoga and the influence of yoga practice on mental health clinicians</i> . (PhD Dissertation), The Chicaco School of Professional Psychology, USA. Available from ProQuest Dissertations and Theses database. (UMI No. 10119677)	The study objectives were to describe the psychological and physiological experiences of mental health clinicians who practiced yoga; to describe how the use of yoga practice may impact how mental health clinicians addressed occupational stress; to extract and compile from mental health clinicians' stories common themes, and to create individual portraits of each clinician as well as a composite group portrait.	Reported perceived outcomes of yoga participation
30	Huffman (2015) Thesis	Huffman, L. (2015). <i>The impact of yoga on the lives of psychotherapists</i> . (PhD Dissertation), Institute for Clinical Social Work, USA. Available from ProQuest Dissertations and Theses database. (UMI No. 3707282)	The purpose of this research project was to study the perceived impact of yoga practice on the personal and professional lives of psychotherapists.	Reported motives and perceived outcomes of yoga participation
31	Humberstone and Cutler-Riddick (2015)	Humberstone, B., & Cutler-Riddick, C. (2015). Older women, embodiment and yoga practice.	The inquiry was therefore designed to explore the bodily and mental experience of yoga participation in	Reported perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		<i>Ageing and Society</i> , 35(06), 1221-1241. doi:10.1017/s0144686x1400018x	older women and to attempt to understand the nexus of embodied experience, subjectivity and 'exercise' process.	
	Humberstone and Stuart (2016)	Humberstone, B., & Stuart, S. (2016). Older women, exercise to music, and yoga: Senses of pleasure? <i>Journal of Aging and Physical Activity</i> , 24(3), 412-418. doi:10.1123/japa.2015-0115	This paper examines the lived experience of older women participants in (a) a low-impact exercise to music (ETM) class and (b) a yoga class to uncover what is important for them in taking part in these classes.	
32	Jagannathan et al. (2012)	Jagannathan, A., Hamza, A., Thirthalli, J., Nagendra, H. R., Nagarathna, R., & Gangadhar, B. N. (2012). Development and feasibility of need-based yoga program for family caregivers of in-patients with schizophrenia in India. <i>International Journal of Yoga</i> , 5(1), 42-47. doi:10.4103/0973-6131.91711	This paper describes the development of a yoga program aimed to reduce burden and improve coping of family caregivers of inpatients with schizophrenia in India.	Reported perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
33	Jeter et al. (2013)	Jeter, P. E., Cronin, S., & Khalsa, S. B. S. (2013). Evaluation of the benefit of a Kripalu Yoga program for police academy trainees: A pilot study. <i>International Journal of Yoga Therapy</i> , 23(1), 24-30. Retrieved from <a href="http://www.iajtjournals.org/doi/pdf/10.17761/ijyt.23.1.3x94511x3u47n0q5">http://www.iajtjournals.org/doi/pdf/10.17761/ijyt.23.1.3x94511x3u47n0q5</a>	This study used a pre–post design to examine whether participation in a Kripalu yoga program would reduce stress, tension, and fatigue; improve mood; and increase mindfulness among trainees. We hypothesized that participants would demonstrate pre- to post intervention reductions in perceived stress and related symptoms and demonstrate improved mood and increased mindful awareness immediately following the yoga intervention.	Reported perceived outcomes of yoga participation
34	Kidd and Eatough (2017)	Kidd, M., & Eatough, V. (2017). Yoga, well-being, and transcendence: An interpretative phenomenological analysis. <i>Humanistic Psychologist</i> , 45(3), 258-280. doi:10.1037/hum0000068	Yoga is thriving in the West, but how much is known about the relationship between the practice and overall well-being? The purpose of this empirical study was to explore this relationship from an experiential, qualitative perspective.	Reported motives and perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
35	Kishida et al. (2018)*	Kishida, M., Mama, S. K., Larkey, L. K., & Elavsky, S. (2018). "Yoga resets my inner peace barometer": A qualitative study illuminating the pathways of how yoga impacts one's relationship to oneself and to others. <i>Complementary Therapies in Medicine</i> , 40, 215-221. doi: <a href="https://doi.org/10.1016/j.ctim.2017.10.002">https://doi.org/10.1016/j.ctim.2017.10.002</a>	The purpose of this qualitative study was twofold: (1) to better understand how yoga practitioners perceive intra- and interpersonal outcomes of their yoga practice, and (2) to develop a conceptual model of yoga effects on intra- and interpersonal outcomes that may underlie the "relational" influences of yoga.	Explicitly examined perceived outcomes of yoga participation
36	Konecki (2006)	Konecki, K. (2006). The process of becoming a hatha-yoga practitioner. <i>Qualitative Sociology Review</i> , 12(1), 6-40. Retrieved from <a href="http://www.qualitativesociologyreview.org/ENG/Volume36/QSR_12_1_Konecki.pdf">http://www.qualitativesociologyreview.org/ENG/Volume36/QSR_12_1_Konecki.pdf</a>	This paper undertakes the problem of perceiving and feeling the body in the process of acquiring the identity of a hatha-yoga practitioner.	Reported motives and perceived outcomes of yoga participation
37	Lalonde (2012) Thesis	Lalonde, A. M. G. (2012). <i>Embodying asana in all new places: Transformational ethics, yoga tourism and sensual</i>	This dissertation explores and documents the movement of yoga-motivated travelers to tourism locales with no historical	Reported perceived outcomes of yoga participation



## CHAPTER II. When an activity is more than just exercise

Study No.	Author (Year) <i>Type of Paper</i> <i>(Article unless specified)</i>	Citation details	Purpose of the Study	Reason/s for Inclusion
		<i>awakenings</i> . (PhD Dissertation), University of Victoria, Canada. Retrieved from <a href="http://hdl.handle.net/1828/4453">http://hdl.handle.net/1828/4453</a>	connection to yoga, asking questions about 1) how yoga travelers' activities fit in larger contexts of ethical tourism and cross-cultural consumption as yoga travels across borders, 2) the role yoga plays in practitioners' lives, shaping health, gender, sexuality, and lifestyle, 3) outcomes of sustained contemporary yoga practice on the bodies of practitioners, including affective transformation through bodily manipulation, the expansion of sensual awareness through breath, auditory techniques, meditation and mind-body synthesis, 4) how these bodily transformations are interpreted and applied to contemporary life through syncretic adaptations of yoga ethics from classical yoga texts with contemporary ethical discourses of environmentalism and consumer choice, and 5) how	

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			yoga tourists and the owners of yoga tourism locales view, interact with, and mobilize “foreign” locals and locales through sustainable development narratives and ideas of global community and universal spirituality.	
38	Langøien (2012)	Langøien, L. J. (2012). Yoga, change and embodied enlightenment. <i>Approaching Religion</i> , 2(2), 27-37. doi:10.30664/ar.67501	I will argue that the practice of Ashtanga yoga represents an embodiment of a religio-spiritual practice, which for the dedicated practitioner is an encompassing disciplining of both body and mind.	Reported motives and perceived outcomes of yoga participation
	Langøien (2013) Thesis	Langøien, L. J. (2013). <i>"Pay attention - Listen to your heart!" Unfolding practice, changing realities and awareness of the embodied self in Ashtanga Yoga</i> . (PhD Dissertation), Norwegian University of Science and Technology, Norway. Retrieved	Having done fieldwork among Ashtanga yoga practitioners in Mysore, India, I in this thesis want to explore how the personal experience of a physical practice can influence a globally distributed practice and worldview, while such personal experiences are also socially modulated and gain	

Study No.	Author (Year) <i>Type of Paper</i> <i>(Article unless specified)</i>	Citation details	Purpose of the Study	Reason/s for Inclusion
		from <a href="http://hdl.handle.net/11250/271425">http://hdl.handle.net/11250/271425</a>	significance from global discourses. The personal practice of Ashtanga yoga, does not unfold in a vacuum. I will explore the interchanges between individual experience and globally distributed communities of practice, and how yoga as a practice unfolds and is embodied. Yoga is a personal practice, but it is also a social one. As the students in Mysore unfold their practice, knowledge is created, and their realities are altered. Change can, for some students, be gradual and partial, while for others, it can be abrupt and total. In either case, transformation is a major trait that is associated with yoga practice, and I will explore how this comes about.	
39	Lea (2009)	Lea, J. (2009). Liberation or limitation? Understanding Iyengar yoga as a practice of the self. <i>Body</i>	This paper uses ethnographic and interview research data to explore the relation with the self	Reported perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		& Society, 15(3), 71-92. doi:10.1177/1357034x09339100	experienced in the practice of Iyengar yoga (one of the most popular contemporary forms of yoga). Drawing on Smith's call for more research on the 'bodily performance and experience of yoga' (2007: 30), and echoing his assertion that it is important to attend to the 'researcher's own experience as well as the exegesis of others' (2007: 31, original emphasis), the article constructs a 'personal' account mapped through corporeal surfaces and depths.	
40	Lea et al. (2016)	Lea, J., Philo, C., & Cadman, L. (2016). 'It's a fine line between ... self discipline, devotion and dedication': Negotiating authority in the teaching and learning of Ashtanga yoga. <i>Cultural Geographies</i> , 23(1), 69-85. doi:10.1177/1474474015569993	This article looks at the production and shaping of the self via Ashtanga yoga, a bodily practice, growing in significance in Western cultures, which can involve a radical form of (re)shaping the self. In particular, it looks at the interaction of external and internal sources of authority, including the yoga student's own expertise of	Reported perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			themselves (experiential authority), the authority of the practice and the authority of the teacher.	
41	Lee (2018)* Thesis	Lee, R. (2018). <i>Perceptions of stress: Employee participation in a yoga class</i> . (Doctor of Nursing Practice Dissertation), Walden University, USA. Available from EBSCOhost CINAHL database.	The purpose of this Doctor of Nursing Practice (DNP) project was to examine the hospital's Made for Your Health EWP yoga program to determine its effectiveness in reducing employee stress, improving their health, and self-care. The practice focus question was: How do participants in an EWP yoga class perceive the impact of the program on their stress reduction and health promotion activities? The project will demonstrate that: (a) informed stakeholders and decision makers will evaluate the program for employee accessibility including nurses; (b) based on the evidence from the information collected from the participants, will demonstrate the need to expand the	Reported perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			program to other sites and help in improving workforce health, and (c) yoga practice may contribute to improving the delivery of services, may show a return on investment (ROI), and improve patient satisfaction.	
42	Leledaki (2014)*	Leledaki, A. (2012). Body-selves and health-related narratives in modern yoga and meditation methods. <i>Qualitative Research in Sport, Exercise and Health</i> , 6(2), 278-300. doi:10.1080/2159676x.2012.712994	The article explores the stories of engagement with modern yoga and meditation (MYM) methods of a group of long-term practitioners from the combined perspective of body and narrative.	Reported perceived outcomes of yoga participation
43	Lewis (2008)	Lewis, C. S. (2008). Life chances and wellness: Meaning and motivation in the 'yoga market'. <i>Sport in Society</i> , 11(5), 535-545. doi:10.1080/17430430802196538	In the interest of gaining an insider's understanding of personal exercise habits, this study analyses the meanings and motivations brought by individuals to their Vinyasa yoga practice in the setting of a private, urban studio.	Explicitly examined motives for yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
44	Lian et al. (2017)	Lian, C. W., Hock, C. K., Azmi, M. A., Md Hamsani, N. A., Ci, Y. E., & Ni, Y. Y. (2017). Commitment and motivation in practicing yoga among adults in Kuching, Sarawak. <i>Indian Journal of Traditional Knowledge</i> , 16, S81-S87. Retrieved from <a href="http://nopr.niscair.res.in/handle/123456789/42276">http://nopr.niscair.res.in/handle/123456789/42276</a>	This study aims to study the way in which yoga practitioners are motivated and how it affects their commitment in practicing it. In addition, it also aims to determine the association between sociodemographics, yoga practicing patterns, nutritional status, and, motivation and commitment to yoga practice.	Explicitly examined motives for yoga participation
45	Lovas (2011) Thesis	Lovas, J. (2011). <i>Perceived benefits of yoga participants enrolled in different yoga styles</i> . (Bachelor's Thesis), California Polytechnic State University, San Luis Obispo, USA. Retrieved from <a href="https://digitalcommons.calpoly.edu/rptasp/14/">https://digitalcommons.calpoly.edu/rptasp/14/</a>	<p>The purpose of this study was to examine the perceived benefits of participants enrolled in different styles of yoga at the Yoga Centre studios in San Luis Obispo and Arroyo Grande.</p> <p>This study attempted to answer the following research questions: (1) What are the highest rated benefits participants receive from yoga overall? (2) What are the highest rate benefits for each of the three main style groupings? (3) What are</p>	Explicitly examined perceived benefits of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			common initial fears amongst those new to yoga? (4) What are common reasons for beginning a yoga practice?	
46	Marques (2018)* Thesis	Marques, D. S. (2018). <i>Exploring barriers, beliefs, knowledge, experiences, and emotions related to yoga practice among a racially and ethnically diverse sample</i> . (PhD Dissertation), University of Miami, USA. Available from EBSCOhost PsycInfo database. (ProQuest Number:10930164)	The purpose of this exploratory study is to elucidate potential psychosocial, financial, and cultural factors underlying the differences in yoga practice between nonLatino/a White individuals and ethnic and racial minority populations.	Explicitly examined facilitators and barriers to yoga participation
47	Moorman (2013) Thesis	Moorman, T. E. (2013). <i>Female, hatha yoga students' lived experience of body image: A phenomenological study</i> . (PhD Dissertation), Capella University USA. Available from ProQuest Dissertations and Theses database. (UMI No. 3559901)	The purpose of the research study was to explore the lived body image experiences of healthy women who practice yoga and study yoga philosophy	Reported perceived outcomes of yoga participation



Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
48	Myers (2017)	Myers, K. (2017). Yoga as sanctuary: A valuable mind-body intervention for the lesbian community. <i>International Journal of Yoga Therapy</i> , 27(1), 15-24. doi:10.17761/1531-2054-27.1.15	<p>Using this qualitative method and retrieving data from my personal journals, daily workout journals, experiences as a lesbian-identified participant in yoga classes, and yoga instructor, I turn the research lens on myself in order to examine my sociological life story.</p> <p>In this article, I use poetic autoethnography (defined below) to discuss yoga as a healing mind-body intervention for me and other members of the lesbian community.</p>	Reported perceived outcomes of yoga participation
49	Öznlabant and Alvarez (2019)*	Öznlabant, E., & Alvarez, M. D. (2019). A socio-cultural perspective on yoga tourism. <i>Tourism Planning and Development</i> . doi:10.1080/21568316.2019.1606854	<p>The purpose of this investigation is to bring light on socio-cultural aspects of yoga tourism.</p> <p>The current research aims to shed light into the topic of socio-cultural aspects of yoga tourism, in particular issues concerning the interaction between the yoga</p>	Reported motives for yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			tourists and the host communities. The research examines the topic from the perspective of the tourists as it investigates the perceptions of Turkish yoga tourists toward socio-cultural issues in the host destinations.	
50	Park et al. (2016a)	Park, C. L., Riley, K. E., Bedesin, E., & Stewart, V. M. (2016). Why practice yoga? Practitioners' motivations for adopting and maintaining yoga practice. <i>Journal of Health Psychology</i> , 21(6), 887-896. doi:10.1177/1359105314541314	The present study aimed to examine people's motivations for adopting and maintaining yoga practice.	Explicitly examined motives and perceived outcomes of yoga participation
	Park et al. (2016b)	Park, C. L., Riley, K. E., & Braun, T. D. (2016). Practitioners' perceptions of yoga's positive and negative effects: Results of a national United States survey. <i>Journal of Bodywork and Movement Therapies</i> , 20(2), 270-	This study aimed to characterize perceptions of both positive and negative changes practitioners reported in physical and psychosocial domains.	

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		279. doi:10.1016/j.jbmt.2015.11.005		
51	Park et al. (2019)*	Park, C. L., Quinker, D., Dobos, G., & Cramer, H. (2019). Motivations for adopting and maintaining a yoga practice: A national cross-sectional survey. <i>Journal of Alternative and Complementary Medicine</i> . doi:10.1089/acm.2019.0232	To address these issues, the authors conducted a national cross-sectional online survey of 1,702 yoga practitioners in Germany, asking about demographic information and motives for initiating and continuing yoga practice.	Explicitly examined motives for yoga participation
52	Patel et al. (2011)	Patel, N. K., Akkihebbalu, S., Espinoza, S. E., & Chiodo, L. K. (2011). Perceptions of a community-based yoga Intervention for older adults. <i>Activities, Adaptation, and Aging</i> , 35(2), 151-163. doi:10.1080/01924788.2011.574256	This qualitative pilot study was designed to examine the perceptions and self-reported effects of Iyengar yoga in a convenience sample of independent older adults, age 65 or older, who attended a weekly Iyengar yoga session at a local retirement community.	Reported perceived outcomes of yoga participation
53	Patterson et al. (2016)	Patterson, I., Getz, D., & Gubb, K. (2016). The social word and event travel career of the serious yoga	The aim of this research is to demonstrate how yoga can be undertaken as a form of serious	Reported motives and perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		devotee. <i>Leisure Studies</i> , 35(3), 296-313. doi:10.1080/02614367.2014.962583	leisure and to determine if highly involved yoga participants are motivated to engage in event-tourism experiences.	
54	Penman (2008) <i>Thesis</i>	Penman, S. (2008). <i>Yoga in Australia: Results of a national survey</i> . (Master's Thesis), RMIT University, Australia. Retrieved from <a href="https://researchbank.rmit.edu.au/eserv/rmit:6110/Penman.pdf">https://researchbank.rmit.edu.au/eserv/rmit:6110/Penman.pdf</a>	Therefore, the primary research 'question' was to describe yoga in Australia; to conduct a wide-ranging investigation into the practice of yoga in Australia by means of a national survey.	Explicitly examined motives and perceived benefits of yoga participation
	Penman et al. (2012)	Penman, S., Cohen, M., Stevens, P., & Jackson, S. (2012). Yoga in Australia: Results of a national survey. <i>International Journal of Yoga</i> , 5(2), 92-101. doi:10.4103/0973-6131.98217	The survey aimed to investigate the styles commonly practiced, characteristics of practitioners, motivation for practice, dietary and lifestyle choices, perceived benefits or otherwise of practice, and the characteristics of yoga-related injuries.	
55	Petracovschi (2014)	Petracovschi, S. (2014). Motivation in practicing yoga & pilates and satisfying the need for	The purpose of this paper is to analyze the type of motivation of Yoga and Pilates practitioners.	Explicitly examined motives for yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		self-knowledge. <i>Timisoara Physical Education &amp; Rehabilitation Journal</i> , 7(13), 117-122. doi:10.1515/tperj-2015-0020		
56	Pittoello (2016)	Pittoello, S. R. (2016). Exploring the contributions of a yoga practice to counsellor education. <i>Canadian Journal of Counselling and Psychotherapy</i> , 50(2), 91-107. Retrieved from <a href="https://cjc-rcc.ucalgary.ca/article/view/60926/pdf">https://cjc-rcc.ucalgary.ca/article/view/60926/pdf</a>	Students in a master's of education counselling program were offered an Ashtanga Vinyasa yoga course, and were asked to explore their experience with and the perceived outcomes of engaging in a yoga practice.	Reported perceived outcomes of yoga participation
57	Pizzuto (2018)* Thesis	Pizzuto, D. (2018). <i>Contemplative practices in higher education: Examining faculty perspectives</i> . (PhD Dissertation), Seton Hall University, USA. Available from EBSCOhost PsycInfo database. (ProQuest Number:10784795)	How do faculty view contemplative practices? How do professors explain their impact? And how do students respond to these initiatives? Answers to those questions are largely absent in existing research. From policy perspective, this study adds value to the broader picture of contemplative practices in higher education by making faculty	Reported perceived outcomes of yoga participation

Study No.	Author (Year) <i>Type of Paper</i> <i>(Article unless specified)</i>	Citation details	Purpose of the Study	Reason/s for Inclusion
			<p>voices heard, such that they can dialogue with policymakers and stakeholders. The goal of this study is to understand faculty perceptions of contemplative practices. Specifically, my main objective is to gain insight into the essential experience of employing contemplative practices in college teaching. The study is guided by one overarching research question and four sub-questions: 1. How do faculty members perceive contemplative practices in their teaching? a. How do faculty implement contemplative practices? b. How do faculty members come to utilize contemplative practices in their teaching? c. How do contemplative practices impact academic professional identity? d. How do faculty members describe the benefits of these practices for themselves and their students?</p>	

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
58	Popovic (2010) Thesis	Popovic, M. L. (2010). <i>Stories of (my)nd and body and soul: An ethnography through hockey, figure skating, and yoga</i> . (PhD Dissertation), The University of Western Ontario, Canada. Available from ProQuest Dissertations and Theses database. (UMI No. AAINR73391)	"Moksha Rose from the Heart: A Prosaic and Poetic Embodiment of Yoga Autoethnography" is an artistic autoethnographic work that contemplates the essence of yoga and considers "what is meaningful?". Integrating multiple embodied and reflexive voices, I share my understandings of Moksha yoga as student, instructor, and doctoral scholar to show the complexities within the processes of writing embodied experiences and personal meaning. The interdisciplinary, layered text blurs research genres to consider yoga culture and to reflect on the connections between mind, body, and soul.	Reported perceived outcomes of yoga participation
	Popovic (2012)	Popovic, M. L. (2012). Moksha rose from the heart: A prosaic and poetic embodiment of yoga	(not stated)	

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		autoethnography. <i>Cultural Studies - Critical Methodologies</i> , 12(1), 30-42. doi:10.1177/1532708611430484		
59	Quilty et al. (2013)	Quilty, M. T., Saper, R. B., Goldstein, R., & Khalsa, S. B. S. (2013). Yoga in the real world: Perceptions, motivators, barriers, and patterns of use. <i>Global Advances in Health and Medicine</i> , 2(1), 44-49. doi:10.7453/gahmj.2013.2.1.008	The purpose of this study is to survey a non-clinical population to better understand yoga use in a real world setting.  Through this study, we aim to understand why individuals begin or return to yoga class, their perceptions of yoga, how they practice (eg, frequency, duration, location, and practice aides), and barriers to practice.	Explicitly examined motives and barriers for yoga participation
60	Ramamoorthy et al. (2015)	Ramamoorthy, A., Jeevakarunyam, S. J., Janardhanan, S., Jeddy, N., Vasan, S. A., Raja, A., & Ikram, P. (2015). Survey on utility of yoga as an alternative therapy for occupational hazards among dental practitioners. <i>Journal of Natural</i>	...this cross-sectional study was designed to evaluate the adoption of yoga techniques as an alternative therapy in treatment of physical and psychological occupational hazards among dental	Reported perceived outcomes of yoga participation



Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
61	Ross et al. (2013)	Ross, A., Friedmann, E., Bevens, M., & Thomas, S. (2013). National survey of yoga practitioners: mental and physical health benefits. <i>Complementary Therapies in Medicine</i> , 21(4), 313-323. doi:10.1016/j.ctim.2013.04.001	general practitioners in Chennai, India.  The purpose of this analysis is to describe the practice patterns (years of practice, number of classes per month, class size and length, days per month of home practice) and practice habits (styles of yoga practiced, types of poses practiced, breath work, and meditation) of yoga practitioners. A second objective is to describe the health habits (food choices including fruit, vegetable, and meat consumption; activity levels; smoking status; and caffeine and alcohol consumption) and health characteristics (general health, health conditions, BMI, sleep, fatigue, mindfulness, subjective well-being, and social support) of yoga practitioners, and to compare these with national norms, when	Explicitly examined perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			available. The final objective is to explore practitioners' beliefs regarding the relationship between their yoga practice and their health.	
	Ross et al. (2014)	Ross, A., Bevans, M., Friedmann, E., Williams, L., & Thomas, S. (2014). "I am a nice person when I do yoga!!!" A qualitative analysis of how yoga affects relationships. <i>Journal of Holistic Nursing</i> , 32(2), 67-77. doi:10.1177/0898010113508466	To develop a better understanding of how yoga practice affects one's interpersonal relationships.  The researchers used content analysis to explore the phenomenon of how the practice of yoga affects one's relationships by qualitatively analyzing written comments made by participants.	
62	Salinas (2018)*	Salinas, Y. M. (2018). Emotional patterns of interactions in yoga practice in Chilean educational backgrounds. <i>Cultura Y Religion</i> , 12(2), 23-42.	This study describes the emotional patterns of interactions that emerge during and as a result of yoga practice.	Reported perceived outcomes of yoga participation
63	Saper et al. (2004)	Saper, R. B., Eisenberg, D. M., Davis, R. B., Culpepper, L., & Phillips, R. S. (2004). Prevalence	Despite yoga's apparent popularity, to the best of our knowledge, there have been no published studies of	Reported perceived benefits of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		and patterns of adult yoga use in the United States: Results of a national survey. <i>Alternative Therapies in Health &amp; Medicine</i> , 10(2), 44-49.	the prevalence and patterns of yoga use in the United States. In order to better understand this phenomenon, we analysed previously collected by unreported data on yoga use from our 1998 national survey of American adult complementary and alternative medicine (CAM) use.	
64	Scott (2012) Thesis	Scott, S. R. (2012). <i>Yoga, motivation, and the stages of change</i> . (Master's Thesis), The University of West Florida, USA. Retrieved from <a href="http://etd.fcla.edu/WF/WFE0000368/Scott_Sheramy_Rebecca_201301_MA.pdf">http://etd.fcla.edu/WF/WFE0000368/Scott_Sheramy_Rebecca_201301_MA.pdf</a>	This study examined Self Determination Theory and the Transtheoretical Model of Change and how these approaches apply to yoga as a form of exercise.	Explicitly examined motives for yoga participation
65	Seldin (2012) Thesis	Seldin, C. K. (2012). <i>The effects of yoga on the female body experience: Self-objectification to self-acceptance</i> . (PhD Dissertation), Massachusetts	The purpose of this qualitative study is to examine the nuances of women's body experiences in relationship to their yoga practices, highlighting the role of self-	Reported perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		School of Professional Psychology, USA. Available from ProQuest Dissertations and Theses database. (UMI No. 3610212)	objectification and the shift towards self-acceptance. This study also explores women's experiences with feminine versus masculine approaches to yoga.	
66	Shestopal (1999) <i>Thesis</i>	Shestopal, A. L. (1999). <i>Psychological effects of physical exercise and yoga</i> . (PhD Dissertation), University of Massachusetts Amherst, USA. Available from ProQuest Dissertations and Theses database. (UMI No. 9841923)	The current project was intended to examine the effects of attending physical education (PE) courses on the well-being of students at a large state university.	Reported perceived outcomes of yoga participation
67	Shiraishi (2013)	Shiraishi, J. C. (2013). Perfil dos praticantes de ioga em um ambiente universitário [Profile of yoga practitioners in a university environment]. <i>Revista Ciencia em Extensao</i> , 9(3), 53-60. Retrieved from <a href="http://ojs.unesp.br/index.php/revista_proex/article/view/777">http://ojs.unesp.br/index.php/revista_proex/article/view/777</a>	The objective of the research was to describe the profile of the yoga practitioners of the project, exploring their interests and motivations.	Explicitly examined interests and motives for yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
68	Siegel (2016)	Siegel, P., Goncalves, A. V., da Silva, L. G., Bartolomei, L., Barreto, M. J., Furlanetti, M. R., . . . de Barros, N. F. (2016). Yoga and health promotion, practitioners' perspectives at a Brazilian university: A pilot study. <i>Complementary Therapies in Clinical Practice</i> , 23, 94-101. doi:10.1016/j.ctcp.2015.05.005	The purpose of this paper is to present the results of the Program Yoga and Health Promotion offered to 18 participants, lecturers, workers and students of the State University of Campinas, Brazil.	Reported perceived outcomes of yoga participation
69	Silva and Rosado (2019)*	Silva, C. P., & Rosado, A. B. (2019). Yoga and psychosocial effects: Listen to the voices of Portuguese experienced yoga teachers. <i>Cuadernos de Psicologia del Deporte</i> , 19(1), 121-146.	This study intends to know the opinions of expert teachers of Yoga, Portuguese, with much experience of practice and Yoga teaching, about the psychosocial effects of Yoga practice. To know also if Yoga influenced their lives and to report testimonies that evidences their perception of the psychosocial effects of this practice.	Explicitly examined perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
70	Sivaramakrishnan et al. (2017)	Sivaramakrishnan, D., Fitzsimons, c., Mutrie, N., & Baker, G. (2017). Perceptions of yoga among older adults: A qualitative approach. <i>Annals of Yoga and Physical Therapy</i> , 2(4), 1035. Retrieved from <a href="http://austinpublishinggroup.com/yoga-physical-therapy/">http://austinpublishinggroup.com/yoga-physical-therapy/</a>	The aim of this study is to: (1) Explore the perceptions of yoga in adults over 65 years, (2) Understand why yoga is a female dominated activity, (3) Provide guidance for yoga instructors, (4) Provide strategies for promoting yoga in the older adult population	Explicitly examined perceived benefits and barriers to yoga participation
71	Smith and Atencio (2017)	Smith, S., & Atencio, M. (2017). "Yoga is yoga. Yoga is everywhere. You either practice or you don't": A qualitative examination of yoga social dynamics. <i>Sport in Society</i> , 20(9), 1167-1184. doi:10.1080/17430437.2016.1269082	In this study, then, we are concerned with how practitioners in the San Francisco region conceptualize their yoga participation.  In this paper, we first outline the paucity of research examining yoga from a critical sociocultural perspective. We leverage this view to investigate how participants actually take up and negotiate what is often framed as a healthy and inclusive popular activity.	Reported perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
72	Sneed (2018)* Thesis	Sneed, J. (2018). <i>Phenomenological inquiry into Phoenix Rising Yoga Therapy</i> . (PhD Dissertation), Oklahoma State University, USA. Available from EBSCOhost PsycInfo database. (ProQuest Number:10194299)	The purpose of this study was to explore the experiences of people who receive PRYT sessions. This included not only the experience within the sessions, but also how these sessions impacted the participants' perceptions of their day-to-day lives. The following research questions were addressed: 1. 2. What are the clients' experiences of the phenomenon of PRYT? How does receiving PRYT sessions impact the clients' lives?	Explicitly examined experiences in yoga. Reported perceived outcomes of yoga participation
73	Sohl et al. (2011)	Sohl, S. J., Schnur, J. B., Daly, L., Suslov, K., & Montgomery, G. H. (2011). Development of the Beliefs about Yoga Scale. <i>International Journal of Yoga Therapy</i> (21), 85-91.	The current study took the first steps toward developing and validating a scale to assess behavioral beliefs about practicing yoga in the general U.S. population. Knowledge of beliefs about yoga will lead to an increased understanding of who decides to practice yoga and why. This scale could also be applied to improve recruitment and retention	Explicitly examined facilitator (beliefs) for yoga participation. Reported beliefs of yoga and perceived benefits of participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			in yoga intervention research and to better address the beliefs of new yoga students in general.	
74	Spadola et al. (2017)	Spadola, C. E., Rottapel, R., Khandpur, N., Kontos, E., Bertisch, S. M., Johnson, D. A., . . . Redline, S. (2017). Enhancing yoga participation: A qualitative investigation of barriers and facilitators to yoga among predominantly racial/ethnic minority, low-income adults. <i>Complementary Therapies in Clinical Practice</i> , 29, 97-104. doi:10.1016/j.ctcp.2017.09.001	The aims of the present study are to: (1) investigate beliefs and attitudes of yoga and perceived barriers and facilitators of yoga participation and home yoga practice among racially/ethnically diverse individuals recruited from a low-income housing community; and (2) inform researchers on future recruitment, study design, and intervention practices for a future acceptability and feasibility study investigating the effects of yoga on sleep.	Explicitly examined barriers and facilitators to yoga participation
75	Taylor (2016)* Thesis	Taylor, J. V. (2016). <i>The experiences of school counsellors who integrate yoga into a comprehensive school counselling program: A phenomenological approach</i> . (PhD Dissertation),	The purpose of this study was to explore the experiences of school counsellors who integrate yoga into a comprehensive school counselling program. The primary research question of focus was:	Reported perceived outcomes of yoga participation



Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		Virginia Commonwealth University, USA. Available from EBSCOhost PsycInfo database. (ProQuest Number: 10145795)	what are the experiences of school counsellors who integrate yoga into a comprehensive In this study, I sought to understand specific and creative ways school counsellors use yoga in their schools, along with perceived benefits, limitations, program supports, and future directions for school counsellors, counsellor educators, and researchers.	
76	Telles et al. (2017)	Telles, S., Sharma, S. K., Singh, N., & Balkrishna, A. (2017). Characteristics of yoga practitioners, motivators, and yoga techniques of choice: A cross-sectional study. <i>Frontiers in Public Health</i> , 5, 184. doi:10.3389/fpubh.2017.00184	The present survey on Indian respondents aimed at determining: (i) the characteristics of yoga users, (ii) the primary reason why people chose to practice yoga, and (iii) the yoga technique of their choice.	Explicitly examined motives for yoga participation
77	Valente and Marotta (2005)	Valente, V., & Marotta, A. (2005). The impact of yoga on the professional and personal life of the psychotherapist. <i>Contemporary</i>	The intent of this study was to explore the impact of a regular practice of yoga in the personal and professional lives of	Reported perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		<i>Family Therapy</i> , 27(1), 65-80. doi:10.1007/s10591-004-1971-4	psychotherapists and to uncover any specific benefits that may be particularly important in addressing the special needs of psychotherapists. Hence, the questions were: What are the perceptions of psychotherapists who engage in a regular practice of yoga regarding the impact yoga has made in their personal and professional lives? Can the effects of yoga facilitate professional growth in one's career in psychotherapy? Can the effects of yoga assist in addressing the unique self-care needs of psychotherapists?	
78	Villate (2015)	Villate, V. M. (2015). Yoga for college students: An empowering form of movement and connection. <i>The Physical Educator</i> , 72, 44-66. Retrieved from <a href="https://js.sagamorepub.com/pe/article/view/3590">https://js.sagamorepub.com/pe/article/view/3590</a>	The purpose of this study was to determine the impact of participating in a semi-weekly yoga class at a university on college students' lives.	Explicitly examined perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
79	Voltz (2018)* Thesis	Voltz, D. I. (2018). <i>The experience of the self among yoga teachers: A generic qualitative inquiry</i> . (PhD Dissertation), Capella University, USA. Available from EBSCOhost PsycInfo database. (ProQuest Number:10745723)	<p>The purpose of this generic qualitative research study was to provide an understanding of the experience of yoga and the self from the perspective of yoga teachers and to expand upon the existing literature relating to yoga and the self. The study of yoga and the self is represented by few qualitative peer-reviewed studies.</p> <p>This research study sought to answer the research question: How do yoga teachers describe their experience of the self?</p>	Reported perceived outcomes of yoga participation
80	Walter (2018)* Thesis	Walter, A. A. (2018). <i>Select psychological and physical impacts of therapeutic yoga for informal caregivers: A feasibility study</i> . (PhD Dissertation), Clemson University, USA. Available from EBSCOhost PsycInfo database. (ProQuest Number:10837483)	This study aims to build on the body of research that examines therapeutic yoga interventions for ICGs. The purpose of this study is to determine the psychological and physical effects of participating in an 8-week therapeutic yoga intervention for ICGs. The concept	Explicitly examined perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			of this study partially stems from the small but promising research on yoga interventions for ICGs, as well as the research that has revealed the need to enhance focus on promoting health and well-being for ICGs (Reinhard, Given, Petlick, & Bemis, 2008). Research Questions This study will aim to answer the mixed methods research questions: 1. What are the perceived psychological and physical benefits of the therapeutic yoga intervention for ICGs? 2. Is a therapeutic yoga intervention for ICGs feasible?	
81	Werner (2017)* Thesis	Werner, K. L. (2017). <i>Yoga as a transformative process: Exploring Patanjali's Ashtanga Yoga</i> . (PhD Dissertation), Saybrook University, USA. Available from EBSCOhost PsycInfo database. (Proquest Number: 10157580)	The purpose of this study was to explore and analyse the lived experiences, in particular transformative experiences, of long-term yoga practitioners (who are also teachers) who practice and follow Patanjali's eight-limbed Ashtanga yoga. By using the	Reported motives and perceived outcomes of yoga participation

Study No.	Author (Year) <i>Type of Paper</i> <i>(Article unless specified)</i>	Citation details	Purpose of the Study	Reason/s for Inclusion
			<p>qualitative research method of interviewing and thematic data analysis, this study sought to uncover the transformational processes of yoga that are revealed through its philosophy and experiential knowledge.</p> <p>Investigating the lived experiences of Ashtanga yoga through the viewpoint of the researcher and participants, this study contributes to the pool of knowledge about Ashtanga yoga, transformative processes, and transpersonal psychology.</p>	
82	Wertman et al. (2016)	Wertman, A., Wister, A. V., & Mitchell, B. A. (2016). On and off the mat: Yoga experiences of middle-aged and older adults. <i>Canadian Journal on Aging</i> , 35(2), 190-205. doi:10.1017/S0714980816000155	This article explores potential differences in yoga practice between middle-and older-aged adults; to examine life course pathways into yoga and motivations to practice, as well as perceived barriers and health benefits; the present study is unique in that it compares the	Explicitly examined perceived benefits, motives, and barriers to yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			experiences of middle-aged and older persons in terms of pathways into yoga, motivations for practicing yoga, perceived barriers, and perceived health benefits.	
83	Wiggins (2018)* Thesis	Wiggins, E. C. (2018). <i>A phenomenological study: The lived experiences of holistic counsellors and their development of self-efficacy</i> . (PhD Dissertation), Adams State University, USA. Available from EBSCOhost PsycInfo database. (ProQuest Number:10809234)	The purpose of this study is to gain insight into the experiences of holistic counsellors, particularly their experiences in gaining competence and self-efficacy in utilizing holistic counselling methods. Specifically, the research will focus on the methods yoga, aromatherapy, mindfulness, and walking therapy. This phenomenological study will focus on counsellors who are currently using holistic or integrative methods in the United States.	Reported perceived outcomes of yoga participation
84	Yang (2017)* Thesis	Yang, L. (2017). <i>The self-reflexive project of women yoga practitioners in late modernity: An ethnography study of Hong Kong</i>	The chronological order of the ethnographic operation is a significant data per se. As I have reiterated, considering the	Reported motives and perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		<i>yoga studios</i> . (PhD Dissertation), The Chinese University of Hong Kong, Hong Kong, China. Available from EBSCOhost PsycInfo database. (ProQuest Number:10663750)	development of the body industry in this metropolis city, I have two different types of studios to complete my investigation. But my concern with this selection not only based on a theoretical level. It is easy to locate myself first in Pure, since it is a most popular and influential yoga centre in Hong Kong and I was a member there as an ordinary practitioner before my research. At the same time, I pick out LCY among the studios across Hong Kong Island, Kowloon and the New Territories. Thus I have two different identities in these studios: an ordinary yoga beginner in Pure while an advanced yoga enthusiast in LCY. Correspondingly, I have different concerning to resolve the research inquiries of body and self-reflexivity in these two comparative cases. Giddens theorizes the concept of reflexivity	

Study No.	Author (Year) <i>Type of Paper</i> <i>(Article unless specified)</i>	Citation details	Purpose of the Study	Reason/s for Inclusion
			<p>based on structure and agency duality. Therefore in Pure, before exploring the self-reflexivity of the individuals, I will firstly analyse:</p> <p>1. In late-modern Hong Kong, how healthy yogic body is constructed in a globalized 48 yoga studio like Pure? By understanding how modern yoga practice is commodified and institutionalized in late-modern Hong Kong, I can resolve my research focus on self-reflexivity and reflexive self-project theorized by Giddens (1991, p.180, p. 258): 2. What is the self-reflexivity of women yoga practitioners in Pure, and how does it influence practitioners to re-examine their life projects in terms of body and life trajectories? 3. In LCY, how does the spirituality that they believe in and discursively express as energy relate to the reflexivity referred by Giddens (1984, 1991), and how does it</p>	



Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
			influence practitioners to re-examine their life projects in terms of body and life trajectories?	
85	Ylönen (2010) Thesis	Ylönen, H.-L. (2010). <i>Kokemuksia kokonaisuudesta: tutkielma kehoillisuuden ja maailmankatsomuksen suhteesta buenosairesilaisten joogaavien katolisten keskuudessa</i> [Experiences of completeness: A study of the relationship between the body and worldview among the Cuban people of Buenos Aires]. (Master's Thesis), University of Jyväskylä, Jyväskylä, Finland. Retrieved from <a href="https://jyx.jyu.fi/handle/123456789/26801">https://jyx.jyu.fi/handle/123456789/26801</a>	(Google translation from Finnish) My research questions are: 1. Why are Catholic scholars interested in yoga psycho-physical-spiritual doctrines? 2. What is the role of Catholicism and yoga in the worldview of the individual and what is the interaction between them? 3. Are spirituality and body in the search for meaningful life of an individual, and if so how? And finally: 4. How do yoga's new ways of moving and experiencing physical fitness affect the practitioner's identity, his way of perceiving himself as defined by Goffman (1986: 56-57) as a physical, moral, social and spiritual being?	Reported motives and perceived outcomes of yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
	Ylönen (2012)	Ylönen, H.-L. (2012). Creating meaningful space: Yoga practice transforming bodily habits of 'being-in-the-world'. <i>Approaching Religion</i> , 2(2), 38-42. Retrieved from <a href="https://journal.fi/ar/article/view/67502/27799">https://journal.fi/ar/article/view/67502/27799</a>	I was interested in finding out how Catholics interpret yoga practice: what place yoga presents in these individuals' worldview, how spirituality and religiousness intertwine in a search for meaningful life, and how new ways to move and experience the body can change these individuals' ideas of themselves and the world.	
86	Zajac and Schier (2011)	Zajac, A. U., & Schier, K. (2011). Body image dysphoria and motivation to exercise: A study of Canadian and Polish women participating in yoga or aerobics. <i>Archives of Psychiatry &amp; Psychotherapy</i> , 4, 67-72.	The aim of this study was threefold. Firstly, to examine whether participation in yoga or aerobics is related to different body image outcomes. The second aim was to examine the relationship between motivation to exercise and body image and the last goal was to investigate the differences in body image and motivational orientations between Polish and Canadian women.	Reported motives for yoga participation

Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
87	Birdee et al (2008)	Birdee, G. S., Legedza, A. T., Saper, R. B., Bertisch, S. M., Eisenberg, D. M., & Phillips, R. S. (2008). Characteristics of yoga users: Results of a national survey. <i>Journal of General Internal Medicine</i> , 23(10), 1653-1658. doi:10.1007/s11606-008-0735-5	To characterize yoga users, medical reasons for use, perceptions of helpfulness, and disclosure of use to medical professionals.	Explicitly examined reasons for use and perceptions. Reported perceived outcomes of yoga participation
88	Cramer et al. (2016)	Cramer, H., Ward, L., Steel, A., Lauche, R., Dobos, G., & Zhang, Y. (2016). Prevalence, patterns, and predictors of yoga use: Results of a U.S. nationally representative survey. <i>American Journal of Preventive Medicine</i> , 50(2), 230-235. doi:10.1016/j.amepre.2015.07.037	The purpose of this study was to investigate the prevalence, patterns, and predictors of yoga use in the U.S. general population.	Explicitly examined facilitators (predictors) of yoga participation. Reported reasons for using yoga among general population
	Stussman et al. (2015)	Stussman, B. J., Black, L. I., Barnes, P. M., Clarke, T. C., & Nahin, R. L. (2015). Wellness-related use of common complementary health approaches among adults: United States, 2012.	This report presents national estimates of selected wellness-related reasons for the use of natural product supplements, yoga, and spinal manipulation among U.S. adults in 2012. Self-reported	Reported reasons for using yoga and also perceived outcomes

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Study No.	Author (Year) Type of Paper (Article unless specified)	Citation details	Purpose of the Study	Reason/s for Inclusion
		<i>National Health Statistics Reports</i> , November 4(85), 1-12. Retrieved from <a href="https://www.cdc.gov/nchs/data/nhsr/nhsr085.pdf">https://www.cdc.gov/nchs/data/nhsr/nhsr085.pdf</a>	perceived health outcomes were also examined.	
	Cramer et al. (2018)*	Cramer, H., Sundberg, T., Schumann, D., Leach, M. J., & Lauche, R. (2018). Differences between vegetarian and omnivorous yoga practitioners - Results of a nationally representative survey of US adult yoga practitioners. <i>Complementary Therapies in Medicine</i> , 40, 48-52. doi:10.1016/j.ctim.2018.07.012	To examine the prevalence of vegetarianism among yoga practitioners, and to explore differences and similarities between yoga practitioners who also use vegetarian diet and those who do not.	Reported reasons for yoga practice, anticipated and experienced outcomes
	Evans et al. (2018)*	Evans, M. W., Ndetan, H., Ka Shekhon, V., Williams, R. J., Oliver, B., Perko, M., . . . Singh, K. P. (2018). Adult use of complementary and integrative approaches to improve athletic performance. <i>Alternative</i>	The study intended to assess the use of integrative care by adult athletes in the United States as well as their satisfaction with it, as reported in the 2012 National Health Interview Survey (NHIS).	Reported reasons for using yoga

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<b>Study No.</b>	<b>Author (Year) Type of Paper (Article unless specified)</b>	<b>Citation details</b>	<b>Purpose of the Study</b>	<b>Reason/s for Inclusion</b>
		<i>Therapies in Health Medicine,</i> 24(1), 30-37.		

\*Studies identified in the 2019 search update

***Supplementary Material 1: Scoping Search Strategy and Results***

(8 November 2019 update)

	<b>Search Strategy</b>	<b>Database</b>	<b>No. of Results (September 2017)</b>	<b>Notes</b>	<b>No. of results (November 2019; search limited from 2017-onwards)</b>	<b>Notes</b>
1	(yoga) AND ((facilitator? OR enabl* OR "perceived benefit" OR "perceived benefits" OR motiv* OR reason? OR experience? OR meaning* OR correlate? OR determinant? OR barrier? OR hurdle? OR constraint? OR obstacle?))	PubMed  <a href="https://www.ncbi.nlm.nih.gov/pubmed">https://www.ncbi.nlm.nih.gov/pubmed</a>	537	Journal articles only. Searched in ALL FIELDS for both concepts	214	
2	( ALL ( yoga ) AND TITLE-ABS-KEY ( ( ( facilitator? OR enabl* OR "perceived benefit" OR "perceived benefits" OR motiv* OR reason? OR experience? OR meaning* OR correlate? OR determinant? OR barrier? OR hurdle? OR constraint? OR obstacle? ) ) ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "cp" ) OR LIMIT-TO ( DOCTYPE , "ip" ) )	Scopus	2,519	document type restricted to articles, conference papers, articles in press	1355	

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	<b>Search Strategy</b>	<b>Database</b>	<b>No. of Results (September 2017)</b>	<b>Notes</b>	<b>No. of results (November 2019; search limited from 2017-onwards)</b>	<b>Notes</b>
3	(TS=(yoga) AND TS=((facilitator? OR enabl* OR "perceived benefit" OR "perceived benefits" OR motiv* OR reason? OR experience? OR meaning* OR correlate? OR determinant? OR barrier? OR hurdle? OR constraint? OR obstacle?))) AND DOCUMENT TYPES: (Article OR Proceedings Paper)	Web of Science Core Collection	535	Document types restricted to articles and proceedings paper	321	
4	(TS=(yoga) AND TS=((facilitator? OR enabl* OR "perceived benefit" OR "perceived benefits" OR motiv* OR reason? OR experience? OR meaning* OR correlate? OR determinant? OR barrier? OR hurdle? OR constraint? OR obstacle?))) AND DOCUMENT TYPES: (Article OR Proceedings Paper)	MEDLINE	601	Document type restricted to articles only	270	
5	(yoga) AND ((facilitator? OR enabl* OR "perceived benefit" OR "perceived benefits" OR motiv* OR reason? OR experience? OR meaning* OR correlate? OR determinant? OR barrier?	PsychINFO	584	Used default search. Academic journals & dissertations	171	

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	<b>Search Strategy</b>	<b>Database</b>	<b>No. of Results (September 2017)</b>	<b>Notes</b>	<b>No. of results (November 2019; search limited from 2017-onwards)</b>	<b>Notes</b>
	OR hurdle? OR constraint? OR obstacle?))			only. (excluded books)		
6	(yoga) AND ((facilitator? OR enabl* OR "perceived benefit" OR "perceived benefits" OR motiv* OR reason? OR experience? OR meaning* OR correlate? OR determinant? OR barrier? OR hurdle? OR constraint? OR obstacle?))	Academic Search Ultimate	498	Used default search. Academic journals & conference papers only.	214	
7	(yoga) AND ((facilitator? OR enabl* OR "perceived benefit" OR "perceived benefits" OR motiv* OR reason? OR experience? OR meaning* OR correlate? OR determinant? OR barrier? OR hurdle? OR constraint? OR obstacle?))	SPORTDiscus	99	Used default search. Academic journals only.	44	
8	(yoga) AND ((facilitator? OR enabl* OR "perceived benefit" OR "perceived benefits" OR motiv* OR reason? OR experience? OR meaning* OR correlate? OR determinant? OR barrier?	CINAHL	197	Used default search. Academic journals and	312	



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	<b>Search Strategy</b>	<b>Database</b>	<b>No. of Results (September 2017)</b>	<b>Notes</b>	<b>No. of results (November 2019; search limited from 2017-onwards)</b>	<b>Notes</b>
	OR hurdle? OR constraint? OR obstacle?))			dissertations only.		
9	(yoga) AND ((facilitator? OR enabl* OR "perceived benefit" OR "perceived benefits" OR motiv* OR reason? OR experience? OR meaning* OR correlate? OR determinant? OR barrier? OR hurdle? OR constraint? OR obstacle?))	EBSCO Health Source: Nursing? Academic Edition	102	Used default search. Academic journals only.	46	
10	yoga and TITLE-ABSTR-KEY(((facilitator? OR enabl* OR "perceived benefit" OR "perceived benefits" OR motiv* OR reason? OR experience? OR meaning* OR correlate? OR determinant? OR barrier? OR hurdle? OR constraint? OR obstacle?))	ScienceDirect	1,465	Journals only	1,727	The search field seems to have changed. Couldn't run the same search string so used this instead:  yoga AND (facilitator OR enabler OR "perceived

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	<b>Search Strategy</b>	<b>Database</b>	<b>No. of Results (September 2017)</b>	<b>Notes</b>	<b>No. of results (November 2019; search limited from 2017-onwards)</b>	<b>Notes</b>
						benefit" OR reason OR experience OR meaning OR correlate OR determinant OR barrier OR hurdle OR constraint OR obstacle)
	Total (journal articles, conference papers, dissertations, and articles in press)		7,137		4,674	

***Supplementary Material 2. Characteristics of included studies***

<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
1	Acebedo (2012) USA	Psychology (Transpersonal Psychology)	Yoga as tool for transformation	Qualitative-Phenomenological approach	Interview
2	Ali-Knight (2017) UK	Tourism Studies (Leisure and Recreation)	Yoga as tourism activity	Quantitative Survey (descriptive, cross-sectional, or correlational)	Online survey
3	Ameli (2017)* USA	Thesis: Nursing	Yoga for health promotion in older adults	Feasibility study (Descriptive design)	Paper-based survey
4	Atkinson (2009) USA	Social Sciences (Health)	Yoga for health promotion	Qualitative (Others)	Focus Groups
5	Atkinson (2010) Canada	Social Sciences (Cultural Studies)	Yoga as a physical culture	Qualitative-Ethnography	Informal personal and group discussions
6	Batacharya (2010) Canada	Psychology (Counselling Psychology)	Yoga as an activity to examine psycho-social issues	Qualitative-Narrative analysis	Interview
7	Bowers (2017) India	Business, Management and Accounting	Yoga as tourism activity	Qualitative-Case study	Participant Observation, Interview, Survey

<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b> (Tourism, Leisure and Hospitality)	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
8	Brasch (2019)* USA	Thesis: Psychology	Yoga and religion/spirituality	Qualitative-Phenomenological approach	Interview
9	Brems (2015a) USA	Medicine (Medicine)	Yoga practice for health and allied professions	Quantitative Survey (descriptive, cross-sectional, or correlational)	Online survey
10	Brems (2015b) USA	Medicine (Complementary and Alternative Medicine)	Yoga for stress reduction	Pre-post test design	Exit Survey
11	Bryan (2012, 2013) USA	Health Professions (Nutrition)	Yoga for health promotion	Mixed methods	Survey (2 open-ended questions)
12	Chang (2017)* USA	Thesis: Psychology	Yoga for health promotion	Pre-post test design	Online survey (1 item on interest leading to yoga practice)
13	Chen (2007) Taiwan	Nursing (Nursing)	Yoga for health promotion in older adults	Feasibility study (post-pilot intervention evaluation)	Interview (post-intervention)

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<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
14	Cowen (2010) USA	Medicine (Complementary and Alternative Medicine)	Yoga for health promotion in worksite	Pre-post test design	Survey (follow-up)
15	Crowe (2019)* USA	Medicine (Complementary and Alternative Medicine)	Yoga for health promotion (Women's health)	Mixed methods embedded study	Electronic journals and interviews
16	Dayananda (2014) India	Health Professions (Yoga)	Yoga for health promotion	Survey (descriptive, cross-sectional, or correlational)	Online survey
17	Eggleston (2009, 2011) USA	Health Professions (Health and Wellness)	Yoga for health promotion and serious leisure	Survey (descriptive, cross-sectional, or correlational)	Elicitation study (method not reported) and survey questionnaire
18	Ferrer (2017)* USA	Thesis: Psychology	Yoga for stress reduction	Qualitative-Case study	Interview
19	Ford (2018)* USA	Thesis: Psychology	Yoga as professional self-care practice	Qualitative-Phenomenological approach	Interview
20	Francesconi (2017)* Italy	Social and Behavioural Sciences	Understanding the influence of a yoga course on high school teacher's self-awareness	Qualitative-Phenomenological approach	In-field observations, interviews, document analysis

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<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
21	Giovengo-Gurrera (2018)* USA	Thesis: Education and Counseling	Yoga as professional self-care practice	Qualitative-Phenomenological approach	Interview, field notes, self-reflection journal
22	Grace (2016) USA	Thesis: Psychology	Yoga as tool for transformation	Qualitative-Narrative inquiry	Interviews
23	Gulizia (2015) USA	Thesis: Sport, Exercise and Health	Yoga for stress reduction in college students	Survey (descriptive, cross-sectional, or correlational)	Primarily survey but used focus group in the elicitation study
24	Halsall (2016)* Canada	Health Professions (Sports Science)	Yoga and mental health and well-being	Qualitative (Others)	Interview
25	Harden (2019)* USA	Medicine (Public Health)	Yoga and health promotion	Mixed methods	Interview
26	Hasselle-Newcombe (2005) UK	Social Sciences (Cultural Studies)	Yoga and religion/spirituality	Survey (descriptive, cross-sectional, or correlational)	Survey
27	Henrichsen-Schrembs (2008, 2011) Germany	Social Sciences (Religious/Cultural Studies)	Yoga and religion/spirituality	Qualitative (Others)	Interviews

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<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
28	Hirsch (2009) USA	Thesis: Psychology	Yoga as professional self-care practice	Qualitative-Phenomenological approach	Interviews
29	Hong (2016) USA	Thesis: Psychology	Yoga as professional self-care practice	Qualitative (Others)	Interviews
30	Huffman (2015) USA	Thesis: Social Work	Yoga as professional self-care practice	Qualitative-Phenomenological approach	Interviews
31	Humberstone (2014, 2016) UK	(2014) Social Sciences (Health)	(2014) Yoga and the experience of pleasure in older women	Qualitative-Phenomenological approach	(2014) Interviews, participant observation
		(2016) Health Professions (Sports Science)	(2016) Yoga and the ageing body among older women	Qualitative-Case study	(2016) Interviews, focus groups, participant observation
32	Jagannathan (2012) India	Health Professions (Yoga)	Yoga as professional self-care practice	Feasibility study (post-pilot intervention evaluation)	Exit survey

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<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
33	Jeter (2013) USA	Medicine (Medicine)	Yoga for stress management and/or mindfulness	Pre-post test design	Evaluation survey
34	Kidd (2017) UK	Psychology (Applied Psychology)	Yoga for well-being	Qualitative-Phenomenological approach	Interviews
35	Kishida (2018)* USA	Medicine (Complementary and Alternative Medicine)	Yoga and social relationships	Qualitative (Others)	Interviews
36	Konecki (2006) Poland	Social Sciences (Social Sciences)	Yoga as practice	Qualitative-Ethnography	Interviews, participant observation, autoethnography
37	Lalonde (2012) Costa Rica, Canada, Italy, Bulgaria, Turkey, France	Social Sciences (Anthropology/Cultural Studies)	Yoga as tourism activity	Qualitative-Ethnography	Participant observation recorded in field notes, interviews, reflective yoga practice recorded in yoga journal
38	Langøien (2012, 2013) India	Social Sciences (Anthropology/Religious Studies)	Yoga as practice/tool for transformation	Qualitative-Phenomenological-approach	Interviews, participant observation



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<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
39	Lea (2009) UK	Social Sciences (Health)	Yoga as tool for transformation (a practice of the self)	Qualitative-Critical discourse	Interview
40	Lea (2016) UK	Social Sciences (Cultural Studies)	Yoga as tool for experiencing authority	Qualitative-Critical discourse	Interviews, diaries, participant observation
41	Lee (2018)* USA	Thesis: Health Sciences and Medicine	Yoga and stress reduction	Qualitative (Others)	Interviews
42	Leledaki (2014)* UK	Health Professions (Sports Science)	Yoga and health	Qualitative-Phenomenological approach	Interviews
43	Lewis (2008) USA	Social Sciences (Cultural Studies)	Yoga as (commodified) practice	Qualitative-Case study	Interviews, participant observation
44	Lian (2017) Malaysia	Medicine (Complementary and Alternative Medicine)	Yoga for health promotion	Survey (descriptive, cross-sectional, or correlational)	Survey
45	Lovas (2011) USA	Psychology	Yoga for health promotion	Survey (descriptive, cross-sectional, or correlational)	Online Survey
46	Marques (2018)* USA	Thesis: Education and Counseling	Yoga for racial and ethnic minorities	Mixed methods	Interviews

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<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
47	Moorman (2013) USA	Social and Behavioural Sciences	Yoga and body image	Qualitative-Phenomenological approach	Interviews
48	Myers (2017) USA	Medicine (Medicine)	Yoga as mind-body intervention (sanctuary for LGBT)	Qualitative-Ethnography	Journals
49	Öznlbant (2019)* Turkey	Tourism Studies (Leisure and Recreation)	Yoga as tourism activity	Qualitative (Others)	Interviews
50	Park (2016a, 2016b) USA	(2016a) Psychology (Applied Psychology)  (2016b) Medicine (Complementary and Alternative Medicine)	Yoga for health promotion	Survey (descriptive, cross-sectional, or correlational)	Online survey
51	Park (2019)* Germany	Medicine (Complementary and Alternative Medicine)	Yoga for health promotion	Survey (descriptive, cross-sectional, or correlational)	Online survey
52	Patel (2011) USA	Health Professions (Gerontology)	Yoga for older adults	Qualitative (Others)	Focus groups

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<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
53	Patterson (2016) Australia	Business, Management and Accounting (Tourism, Leisure and Hospitality)	Yoga as a form of serious leisure; Yoga and the social world	Qualitative (Others)	Interviews
54	Penman (2008, 2012) Australia	Health Professions (Yoga)	Yoga for health promotion	Survey (descriptive, cross-sectional, or correlational)	Online Survey
55	Petracovschi (2014) Romania	Health Professions (Physical Education and Rehabilitation)	Yoga for health promotion	Survey (descriptive, cross-sectional, or correlational)	Survey
56	Pittoello (2016) Canada	Psychology (Counselling and Psychotherapy)	Yoga as professional self-care practice	Qualitative (Others)	Interviews, focus groups, survey
57	Pizzuto (2018)* USA	Thesis: Education and Counseling	Implementing contemplative practices in higher education	Qualitative-Narrative study	Interview
58	Popovic (2010, 2012) Canada	Social Sciences (Cultural Studies)	Yoga as tool in finding meaning	Qualitative-Ethnography	Journal entries, ethnographic observations, poetic representations of actual experiences, interviews,

Study No.	First Author (Year) and Place of Study	Subject Area (Category)	Context	Type of Study	Method/s of Collecting the Relevant Data
					poetry, and introspective writing
59	Quilty (2013) USA	Medicine (Medicine)	Yoga for health promotion	Survey (descriptive, cross-sectional, or correlational)	Online Survey
60	Ramamoorthy (2015) India	Medicine (Medicine)	Yoga as professional self-care practice	Survey (descriptive, cross-sectional, or correlational)	Survey
61	Ross (2013, 2014) USA	(2013) Medicine (Complementary and Alternative Medicine)	Yoga for health promotion	Survey (descriptive, cross-sectional, or correlational)	Online Survey
		(2014) Nursing (Nursing)	Yoga for health promotion	Qualitative (Others)	Online Survey (open-ended items)
62	Salinas (2018)* Chile	Thesis: Culture and Religious Studies	Emotional experiences in yoga	Qualitative (Others)	Interviews and focus groups
63	Saper (2004) USA	Medicine (Complementary and Alternative Medicine)	Yoga for health promotion	Quantitative (Cross-Sectional)	Telephone Survey

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<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
64	Scott (2012) USA	Thesis: Psychology	Yoga for health promotion	Quantitative (Cross-Sectional)	Survey
65	Seldin (2014) USA	Thesis: Psychology	Yoga and experiencing the body in women	Qualitative	Interview
66	Shestopal (1999) USA	Thesis: Psychology	Yoga compared to traditional exercise to promote well-being	Mixed methods	Interviews
67	Shiraishi (2013) Brazil	Psychology (Behavioural Science)	Yoga for health promotion in university settings	Quantitative (Cross-Sectional)	Survey
68	Siegel (2016) Brazil	Medicine (Complementary and Alternative Medicine)	Yoga for health promotion in university settings	Mixed methods	Written responses to a trigger question (written interview)
69	Silva (2019)* Portugal	Psychology (Applied Psychology)	Yoga and its psychosocial effects	Qualitative (Others)	Interviews
70	Sivaramakrishnan (2017) UK	Health Professions (Yoga and Physical Therapy)	Yoga for health promotion in older adults	Qualitative (Others)	Focus Groups and interviews
71	Smith (2017) USA	Social Sciences (Cultural Studies)	Yoga and its social dynamics	Qualitative-Critical discourse	Interviews

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<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
72	Sneed (2018)* USA	Thesis: Psychology	Understanding experiences in yoga	Qualitative-Phenomenological approach	Journals and interviews
73	Sohl (2011) USA	Medicine (Medicine)	Yoga for health promotion and intervention	Survey (descriptive, cross-sectional, or correlational)	Survey
74	Spadola (2017) USA	Medicine (Complementary and Alternative Medicine)	Yoga for health promotion in minority groups (ethnic, low-income)	Qualitative (Others)	Focus Groups and interviews
75	Taylor (2016)* USA	Thesis: Education and Counseling	Yoga as professional tool and self-care practice	Qualitative-Phenomenological approach	Interviews
76	Telles (2017) India	Medicine (Public Health)	Yoga for health promotion	Survey (descriptive, cross-sectional, or correlational)	Survey
77	Valente (2005) USA	Psychology (Clinical Psychology)	Yoga as professional self-care practice	Qualitative	Interviews
78	Villate (2015) USA	Health Professions (Physical Education)	Yoga for stress reduction in college students	Qualitative (Others)	Journals

<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
79	Voltz (2018)* USA	Thesis: Psychology	Yoga and the experience of the self	Qualitative (Others)	Interviews
80	Walter (2018)* USA	Thesis: Tourism Management	Yoga as professional self-care practice	Feasibility study (post-pilot intervention evaluation)	Focus groups and interviews
81	Werner (2017)* USA	Thesis: Psychology	Yoga as a transformative process	Qualitative (Others)	Interviews
82	Wertman (2016) Canada	Social Sciences (Health Social Sciences)	Yoga for health promotion	Mixed Methods (Embedded design)	Surveys, interviews
83	Wiggins (2018)* USA	Thesis: Education and Counsellng	Yoga as professional tool and self-care practice	Qualitative-Phenomenological approach	Interview
84	Yang (2017)* China	Thesis: Gender Studies	Yoga in late modernity	Qualitative-Ethnography	Interviews and participant observation
85	Ylonen (2010, 2012) Argentina	Social Sciences (Religious/Cultural Studies)	Yoga and religion/spirituality	Qualitative-Ethnography	Interviews

<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
86	Zajac (2011) Poland and Canada	Psychology (Clinical Psychology)	Yoga compared to traditional exercise to promote positive body image	Survey (descriptive, cross-sectional, or correlational)	Survey
87	Birdee (2008)	Medicine (Medicine)	Yoga for health promotion (understanding yoga users' characteristics)	Survey (descriptive, cross-sectional, or correlational)	Survey
88	Cramer (2016)	Medicine (Public Health)	Yoga for health promotion (understanding yoga users' characteristics)	Survey (descriptive, cross-sectional, or correlational)	Survey
	Stussman (2015)	Medicine (Public Health)	Yoga for health promotion (understanding yoga users' characteristics)	Survey (descriptive, cross-sectional, or correlational)	Survey
	Cramer (2018)*	Medicine (CAM)	Yoga for health promotion (understanding yoga users' characteristics)	Survey (descriptive, cross-sectional, or correlational)	Survey



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<b>Study No.</b>	<b>First Author (Year) and Place of Study</b>	<b>Subject Area (Category)</b>	<b>Context</b>	<b>Type of Study</b>	<b>Method/s of Collecting the Relevant Data</b>
	Evans (2018)*	Medicine (CAM)	Yoga for health promotion (understanding yoga users' characteristics)	Survey (descriptive, cross-sectional, or correlational)	Survey

\*Studies identified in the 2019 search update

***Supplementary Material 3. Characteristics of study participants***

<b>Study No.</b>	<b>Author (Year)</b>	<b>No. of Participants (% Females, if reported)</b>	<b>Participants</b>	<b>Age</b>	<b>Yoga Experience</b>	<b>Yoga Style</b>
1	Acebedo (2012)	5 (80%)	Yoga practitioner(s)	M = 39.6; SD = 11.3	Experience ranged from 1.5 to 15 years	Ashtanga Yoga
2	Ali-Knight (2017)	170 (89%)	Yoga practitioners (active members of UK-based yoga associations, Yoga Scotland and British Wheel of Yoga)	18-24 yo - 2.3% 25-34 yo - 13.5% 35-44 yo - 23.4% 45-54 yo - 26.3% >55 yo - 35.5%	0-2 years (11.63%) 3-5 years (11.63%) 5-10 years (15.12%) >10 years (61.63%)	Not specified
3	Ameli (2017)*	12 (75%)	Older adults living in a senior living facility	M = 87.2 years Range: 80-100 years	3 participants had taken yoga in the past.	Not specified
4	Atkinson (2009)	50 (74%)	non-practitioners, beginners, intermediate practitioners	Range: 22-59 years	Practitioners (> 1 year) Practitioners (< 1 year) non-practitioners (never practiced yoga)	Not reported
5	Atkinson (2010)	34 group discussions with yoga practitioners	Yoga practitioners and runners	Not reported	Not reported	Ashtanga Yoga

Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
		21 group discussions with fell runners  (not reported)				
6	Batacharya (2010)	15 (100%)	Young South Asian women who participated in the yoga workshop	M = 22.9, SD = 2.3  Range: 19-27	Mixed experience (7 no experience, the rest have varied experiences)	Not specified
7	Bowers (2017)	55 for survey questionnaire and 25 for one-on-one in-depth interviews (not clear if overlapping) (78.8%)	Yoga program participants (Yoga travellers/visitors to Govardhan Eco Village in 2014 and 2015)	51.5% 31-45yo  42.4% 18-30yo	57.6% traveling with a Jivamukti group 30.1% solo travellers 78% identified as yoga or spiritual traveller	Govardhan Eco village (Radhanath Swami) [ISKCON-related]
8	Brasch (2019)*	9 (78%)	Yoga participants who had completed in-person 200-hour yoga teacher training	M = 31.8, SD = 6.0  Range: 23 – 43 years	Range of 15 months to 15 years  M = 8.1, SD = 4.0	Not specified

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
9	Brems (2015a)	44 (91%)	University faculty, staff, and graduate students over 18 years of age who participated in a 10-week yoga program)	M = 39.0, SD = 13.1 Range: 23-66	3 (6.8%) reported to having prior regular yoga practice 7 (15.9%) reported prior exposure to yoga 34 (77.3%) reported having never engaged in a yoga practice	Not specified
10	Brems (2015b)	478 (78%)	Health profession students who were yoga participants and non-participants	M = 28.6, SD = 5.9	(Based on stage of readiness) Yogis were self-reported active practitioners Contemplators were those who were not actively practising but had intention to start Non-yogis were those without intention nor active practice.	Not specified

Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
11	Bryan (2012, 2013)	87 (82%)	Apparently healthy males and females 18 years or older who participate in yoga classes at least one class per week consistently (i.e., one or more classes per week on a weekly basis)	M = 47.0 Range: 18-78	No further details reported	Not specified
12	Chang (2017)*	85 (62.4%)	New yoga students	M = 29.5	No prior exposure to yoga practices	Not specified
13	Chen (2007)	14 (100%)	Community-dwelling older adults aged 60 and over; independent or mildly dependent; who participated in a 1-month Silver yoga group practice	M = 68.9, SD = 9.1 Range: 60-86	No previous training in any form of yoga	Silver Yoga

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
14	Cowen (2010)	108 (4%)	Firefighters who participated in a 6-week worksite yoga classes	M = 40.6, SD = 9.2 Range: 22-60	81.5% (n = 88) had no prior experience with yoga	Not specified
15	Crowe (2019)*	12 (100%)	Participants of a 2x/week Iyengar-based sessions for 10 weeks	Range: 40-65	Yoga inactive or having more than 5 years of absence from regular yoga practice	Iyengar-based
16	Dayananda (2014)	281 (52%)	Individuals who completed 1-month yoga instructor's course at a yoga university	M = 34.5, SD = 10.4	73% (204) practice daily 13% (37) once a week 3% (8) once a month 10% (29) only in times of real need 1% (3) never	Not specified
17	Eggleston (2009, 2011)	157 (87%)	Yoga practitioners recruited through yoga studios; who had been attending classes for at least 3 months and	M = 45.6, SD = 12.7	No further details reported	Not specified

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
			attended a minimum of one yoga class per week for an additional 3 months			
18	Ferrer (2017)*	10 (not reported)	Employees who commute and participated in employer-offered yoga training program	Not reported	Not reported	Yoga therapy
19	Ford (2018)*	10 (90%)	Marriage and family therapists who practice yoga regularly (one time per week or more)	M = 33.8, SD = 7.2	Not reported	Not specified
20	Francesconi (2017)*	24 (92%)	High school teachers who participated in a yoga course as part of in-service training program	Not reported	Not reported	Not specified

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
21	Giovengo-Gurrera (2018)*	6 (100%)	School counsellors who have been practicing yoga for a minimum of 5 years	M = 47, SD = 18.1 Range: 26-65	5 years (3) 7 years (1) 11 years (2)	Vinyasa flow, vinyasa power yoga
22	Grace (2016)	6 (67%)	Seasoned yoga practitioners	3 between 30 and 50 3 over 50  Range: 30-65	7-25 years of practice	Not specified
23	Gulizia (2015)	111 (76%)	College students who were yoga participants and non-participants	Md = 22  Range: 19-Over 25	28 (25.2%) of the 111 students were current yoga practitioners (i.e., most practising for less than one year)	hatha/ basics/ intro, vinyasa/ power/ ashtanga, yin/ restorative, other
24	Halsall (2016)*	8 (37.5%)	Yoga practitioners who had maintained a dedicated yoga practice for a minimum of 20 years	Not reported	Not reported	Raja Yoga



Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
25	Harden (2019)*	138 (91.3%)	Yoga practitioners attending classes in yoga studios	M = 25.8, SD = 14.1 Range: 19-72	M = 3.1, SD = 2.7	Warm flow, flow, donations, basic flow, power flow, gentle yoga, Yin, Hot flow mix, hot flow set, hot 26x2, yoga basics, prenatal yoga, aerial, restorative hammock yoga
26	Hasselle-Newcombe (2005)	188 (84%)	Yoga practitioners participating in a weeklong yoga retreat	M = 47, SD = 10 Range: 23-76	11-15 years, attend one class per week, practice at home 3-5 hours per week	Iyengar Yoga
27	Henrichsen-Schrembs (2008, 2011)	27 (70%)	Yoga students from 4 different yoga classes	Range: 23-61	Some at least 8 years on a regular basis, some have only recently (a year ago) started to practice yoga.	Iyengar, Hatha yoga plus yoga nidra, vini yoga, Kundalini
28	Hirsch (2009)	12 (75%)	Licensed psychologists who practiced yoga	M = 45.1, SD = 7.4 Range: 34-65	No further details reported	Not specified

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
			regularly; practiced yoga for a minimum of one time a week for 30 minutes and had to have practiced yoga for at least six months			
29	Hong (2016)	10 (80%)	Mental health clinicians who had practiced some form of yoga, and felt that it had significant impact in their lives.	Range: 25-60	No further details reported	Not specified
30	Huffman (2015)	8 (75%)	Psychotherapists who practice yoga on a regular basis	M = 49.5, SD 9.2 Range: 32-63	The participants' yoga practices started for them at widely varying ages – from the teen years, for some, to mid-life for others. They now practice anywhere from one to seven days a	Not specified

Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
					week, with the majority doing vinyasa style, challenging “flow” yoga; but many have and do dabble in various forms and styles.	
31	Humberstone (2016)	17 (8 yoga group, 9 exercise to music group) (100%)	Yoga participants and non-participants (Yoga participants of an intact yoga group; women who had participated in yoga for more than 5 years)	(Yoga group) Range: 56-72  (Exercise to music group) Range: 59-77	No further details reported	Not specified
	Humberstone (2014)	12 (100%)	Yoga participants and non-participants	Range: 50-72	had participated in yoga for between 5 to 34 years.	Not specified
32	Jagannathan (2012)	5 (not reported)	Family caregivers of in-patients with schizophrenia who participated in a daily one-hour yoga sessions for 7 days	M = 49.6, SD = 19.5	Not reported	Svyasa Integrated Yoga Therapy

Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
33	Jeter (2013)	42 (7%)	Police academy trainees who participated in six 75-min class program held during the 20-week police academic training	M = 28.3, SD = 4.6	No further details reported	Kripalu Yoga
34	Kidd (2017)	5 (0%)	Men who practice yoga regularly	M = 47.4 Range: 37-61	Over 4 and 35+ years (estimated mean = 16.1 years)	Not specified
35	Kishida (2018)*	107 (92.6%)	Yoga participants who practiced yoga at least once a week	M = 41.2, SD = 15.9 Range: 18-76	M = 8.17, SD = 7.13 years	Not specified
36	Konecki (2006)	Not reported	Yoga practitioners	Not reported	Not reported	Hatha Yoga
37	Lalonde (2012)	7 plus participant observations (not reported)	Yoga participants engaged in yoga tourism	Not reported	Not reported	Not specified
38	Langøien (2012, 2013)	6 (50%)	Yoga practitioners	Not reported	Not reported	Ashtanga Yoga

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<b>Study No.</b>	<b>Author (Year)</b>	<b>No. of Participants (% Females, if reported)</b>	<b>Participants</b>	<b>Age</b>	<b>Yoga Experience</b>	<b>Yoga Style</b>
39	Lea (2009)	Not reported but quotes were provided by 3 yoga practitioners (not reported)	Yoga practitioners	Not reported	Not reported	Iyengar Yoga
40	Lea (2016)	Data came from 2 who practice Ashtanga and also from several Ashtanga teachers (50%)	Yoga practitioners	Not reported	Not reported	Ashtanga Yoga
41	Lee (2018)*	20 (not reported)	Employees participating in an employee wellness program	Not reported	Not reported	Not specified
42	Leledaki (2014)*	7 (28.6%)	Yoga practitioners with at least 9 years of practical involvement with one or more modern yoga and meditation methods	Not reported	3 of the 7 participants practiced yoga between 10-13 years	Ashtanga yoga Iyengar yoga
43	Lewis (2008)	9 (not reported)	Yoga students attending classes in	Not reported	Not reported	Vinyasa Yoga

Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
			a private vinyasa yoga studio			
44	Lian (2017)	109 (86%)	Yoga practitioners practising yoga regularly for more than 6 months	M = 40.1, SD = 10.2 56 (51.4%), ≤40yo 53 (48.6%), >40yo	80% practice yoga for 5 years and below  14.7% practiced yoga for more than 5 years.	Hatha, Vinyasa, Universal, Yin, others
45	Lovas (2011)	163 (88%)	Yoga participants who were members of various yoga centres	18-25yo 44(27.3%) 26-40yo 44 (27.3%) 41-60yo 51 (31.7%) 60 and over, 20 (12.4%) No response 2 (1.2%)	15.53% <1 year 41.61% 1-4 years 25.47% 5-10 years 8.7% 11-29 years 8.7% 30+ years	Vinyasa flow, Hatha, Restorative, Yoga basics, Yin, Gentle, Iyengar, Heated, Ashtanga, Others
46	Marques (2018)*	474 (49%) participated in the survey	With and without yoga experience;	M = 37, SD = 12 Range: 19-77	72% were not practicing yoga at the time of the study	Not specified

Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
		16 (56%) were interviewed	racially and ethnically diverse	Range: 24-67 years	50% were not practicing yoga	
47	Moorman (2013)	11 (100%)	Female hatha yoga practitioners who practice the physical postures at least 2.5 hours per week and study yoga philosophy	M = 44.8, SD = 9.9 Range: 29-62	Practice hours ranged from 2.5 to 10 hours per week at the time of the study and number of years practiced ranged from 7 to 35 plus years	Not specified
48	Myers (2017)	1 (100%)	Yoga participant	46	Teaching (yoga) for 8 years and "working out" for 20 years	Not specified
49	Öznalbant (2019)*	15 (80%)	Yoga professionals and practitioners who engaged in yoga tourism	M = 37.1, SD = 9.7 Range: 26-58	M = 6.8, SD = 6.6 years Range: 1-23 years	Not specified
50	Park (2016a, 2016b)	542 (93.4%)	Yoga participants who have taken at least 5 yoga classes	Yoga teacher participants ranged in age from 18 to 78	Average of 8 years and 5 months (SD = 7.67 years); lifetime	Power yoga/ power vinyasa,

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
			within the past 3 months	years; M = 42.2, SD = 11.9  360 yoga students who were not also yoga teachers ranged in age from 18 to 85 years; M = 45.8, SD = 14.0	hours of yoga practice 2,760.62 hours, SD = 4,325.57	Iyengar yoga, Hatha yoga  Power yoga, Iyengar, Hatha, Vinyasa, other
51	Park (2019)*	1,702 (88.9%)	Yoga practitioners in Germany	M = 47.2, SD = 10.7 Range: 19-87	M = 12.7, SD = 9.9 Range: 0.8-54 years	Ashtanga yoga, (traditional) hatha yoga, Iyengar yoga, Kundalini yoga, Krishnamacharya Tradition/Viniyoga, Power yoga, Sivananda Yoga/Yoga Vidya, others
52	Patel (2011)	12 (100%)	Yoga program participants (independent older adults living in retirement	Range: 68-89	Not reported	Iyengar Yoga



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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
			community who attended a 12-week beginners Iyengar yoga)			
53	Patterson (2016)	15 (100%)	Yoga practitioners (serious yoga devotee)	M = 28.7 Range: 21-49	Half a year to over 20 years of experience, with an average of 6.7 years	Anusara, Bikram, Hot, Moksha
54	Penman (2008, 2012)	3,892 (86%)	Yoga participants	M = 41.4, SD = 11.6	9.17 years (SD = 9.34) since first starting  5.62 (SD = 5.96) years of regular practice	Meditation, general, Satyananda, hatha, Iyengar, Dynamic, others, hybrid, ashtanga, Bikram, contemporary classical, Gita, synergy, Yoga in daily life
55	Petracovschi (2014)	58 (100%)	Yoga participants and non-participants	16-58	Not reported	Not specified
56	Pittoello (2016)	9 (89%)	Counsellors and counsellors in training with mixed	Not reported	wide variety of experience of yoga	Ashtanga Yoga

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
			yoga experience who participated in a yoga course		(details not reported)	
57	Pizzuto (2018)*	19 (68.4%)	Higher education faculty member who implement contemplative practice(s) in their classrooms	Not reported	Not reported	Not specified
58	Popovic (2010, 2012)	1 (100%)	Yoga practitioner	Not reported	Not reported	Moksha Yoga (heated)
59	Quilty (2013)	604 (86%)	Participants of a 4-week beginner yoga program within a network of 5 yoga studios	Md = 35.5 Range: 18-67	Beginners	Hatha, Kundalini, Ashtanga
60	Ramamoorthy (2015)	394 (36%)	Dental practitioners who were yoga participants and non-participants	<30 years (68) 30-40yo (29) >40yo (3)	9.6% were doing yoga	Not specified

Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
61	Ross (2013)	1,043 (84%)	Yoga practitioners	M = 51.7, SD = 11.7 Range: 18-87	2 months to 25 years (M = 11.4; SD = 7.5)	Iyengar Yoga
	Ross (2014)	171 (86%)		M = 55, SD = 11.3 Range: 23-80	Less than 1 to more than 25 years (M = 12.0, SD = 7.6)	
62	Salinas (2018)*	8 (67%)	Instructors and students in educational institutions offering yoga	Not reported	Not reported	Not specified
63	Saper (2004)	2,050 (weighted) (68.2% yoga users; 50.9% non-users)	Participants who used yoga in the previous 12 months and current yoga users	Users ( $n = 154$ ) 18-33 years 29.1 (4.2) 34-53 years 54.4 (4.4) $\geq 54$ years 16.5 (3.2)	Current yoga users (used yoga in the past 12 months) Yoga users (used yoga in their lifetime) Non-user (did not use yoga in their lifetime)	Not specified

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
64	Scott (2012)	164 (84%)	Regular yoga participants	M = 37.0, SD = 14.1 Range: 18-81	Average of 4.3 years of participation (SD = 5.4)	Not specified
65	Seldin (2014)	7 (100%)	Females who have practiced yoga consistently (at least twice a week) for approximately one year or more	M = 32.6, SD = 8.3 Range: 22-49	2 to 12 years (Mean = 7 years)	Not specified
66	Shestopal (1999)	Study 1: 97 (42 yoga, 28 exercise, 27 control)  Study 2: 20 (10 yoga, 10 exercise)  (81%)	College students participating in PE courses (exercise and yoga)	Not reported	Not reported	Hatha yoga, Iyengar yoga

Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
67	Shiraishi (2013)	55 (71%)	Participants of a university extension program (yoga club)	M = 26.6, SD = 8.8 Range: 18-61	45% practiced yoga for the first time in the project, with an average practice time of 9 months.	Hatha Yoga and Iyengar Yoga
68	Siegel (2016)	18 (83%)	Participants of yoga and health promotion program for university faculty, staff, and students	Range: 20-62	27 yoga classes in 3 months	Not specified
69	Silva (2019)*	10 (50%)	Experienced yoga teachers	Range: 40-95	M = 45.8, SD = 16.5	Not specified
70	Sivaramakrishnan (2017)	19 (74%)	Older adults with and without yoga experience	M = 74 Range: 65-84	Not reported	Not specified
71	Smith (2017)	5 (60%)	Participants with diverse yoga experience	M = 31.4, SD = 7.1 Range: 22-41	1 novice (tried free yoga classes) 2 intermediate 2 experienced	Not specified

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
72	Sneed (2018)*	4 (100%)	Women who received 5 yoga sessions	Range: 28-54	Not reported	Phoenix Rising Yoga
73	Sohl (2011)	426 (74%)	Participants with or without yoga experience	M = 40.7, SD = 13.5	60% of the sample had tried yoga in the past	Not specified
74	Spadola (2017)	24 (75%)	Racial/ethnic minority, low-income adults with or without yoga experience	M = 47.9, SD = 15.7 Range 20-81	Not reported	Not specified
75	Taylor (2016)*	10 (100%)	Licensed school counsellors who practice yoga and integrated yoga into school counselling program	Not reported	Maintained a personal practice of 4-20 years, average of 8-11 years.	Not specified
76	Telles (2017)	5,157 (33%)	Participants of a public event on yoga	M = 33.4, SD 17.3	< a month 7.0% 1-12 months 54.4% 13-60 months 23.8% 60 months and above 14.7%	Not specified

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
77	Valente (2005)	6 (83%)	Psychotherapists who routinely included yoga in their daily lives	Range: 35-58	These participants, who on average practiced yoga 2–7 days each week, had been doing so from 3.5 to 30 years	Not specified
78	Villate (2015)	60 (95%)	College students enrolled in the yoga PE class	Range: 18-30	2x a week for 1 hr 15min per session, one semester	Not specified
79	Voltz (2018)*	10 (90%)	Yoga teachers who have at least 5 years of experience	M = 35.7, SD 6.6	No further details reported	Not specified
80	Walter (2018)*	8 (87.5%)	Informal caregivers who participated in an 8-week yoga program	M = 68.0, SD = 7.4	Not reported	Not specified
81	Werner (2017)*	5 (80%)	Long-term yoga practitioners (10 years or more) who were also teachers (5 years or more)	M = 35.8, SD = 7.6	M = 13.6, SD = 1.5 years)	Raja Yoga

Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
82	Wertman (2016)	452 (78%)	Middle- and older-aged adults who practice yoga regularly	M = 52.7, SD = 8.6 Range: 40-82	Participants tended to practice yoga in a studio (63.5%) for 60 minutes (33.4%), 2 times a week (21.9%)	Not specified
83	Wiggins (2018)*	8 (100%)	Licensed counsellors who self-identified as using holistic methods in their work (some reported using yoga)	Not reported	Not reported	Not specified
84	Yang (2017)*	25 interviews, 11 were used in the study (100%)	Yoga practitioners practising in yoga studios	Not reported	Not reported	Hatha, Ashtanga, vinyasa, Anusara, Iyengar, anti-gravity or Aerial yoga, Bikram yoga, Kundalini, restorative and detox, hot hatha



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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
85	Ylonen (2010, 2012)	10 (60%)	Yoga practitioners who were also Catholics	M = 49.2, SD = 13.7 Range 23-79	Not reported	Not specified
86	Zajac (2011)	138 (100%)	Women participating in yoga or aerobics	M = 27.9, SD = 10.7 Range: 17-67	Not reported	Not specified
87	Birdee (2008)	31,044 total respondents. Paper focused on the 1,593 yoga users. (76% users, 51% non-users)	Representative sample of US adult general population	M = 39.5 (yoga users)	Not reported. Only criterion was the used yoga for health in the last 12 months	Not specified
88	Cramer (2016); Stussman (2015); Cramer (2018); Evans (2018)	34,525 total respondents 4,422 (13.2%) lifetime prevalence of yoga use for health reasons (48.6% never used yoga; 72% ever used yoga; 74% used yoga in the past 12 months)	Sample of US adults aged 18 and over who participated in the 2012 NHIS adult alternative medicine or complementary health supplements	Never used yoga ( $n = 195,971,306$ ) 18-29yo (20.8%) 30-39yo (15.9%) 40-49yo (18.0%)	Not reported. Only criteria were participants had ever used yoga in their lifetime and in the last 12 months	Not specified

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
				50-64yo (26.2%)		
				65+ yo (19.1%)		
				Ever used yoga		
				( <i>n</i> = 30,998,492)		
				18-29yo (27.2%)		
				30-39yo (23.5%)		
				40-49yo (17.3%)		
				50-64yo (22.8%)		
				65+ yo (9.3%)		
				Used yoga in the		
				past 12 months		
				( <i>n</i> = 20,955,758)		

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Study No.	Author (Year)	No. of Participants (% Females, if reported)	Participants	Age	Yoga Experience	Yoga Style
				18-29yo (29.4%)		
				30-39yo (24.8%)		
				40-49yo (17.4%)		
				50-64yo (21.1%)		
				65+ yo (7.2%)		

*\*Studies identified in the 2019 search update*

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## CHAPTER III

### Study 2

#### **Yoga not a (physical) culture for men? Understanding the barriers for yoga participation among men**

This paper has been peer-reviewed and was accepted for publication in *Complementary Therapies in Clinical Practice* on 12 November 2020 as an original investigation. It was published online on 18 November 2020 and appears in the literature at the time of writing as:

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The published version may differ from the accepted pre-copyedited version.

#### **Rationale**

The scoping review described in the previous chapter revealed that men are underrepresented in studies mentioning barriers and facilitators for yoga participation. The search identified only one study that exclusively recruited yoga practicing men (i.e., Kidd & Eatough, 2017), indicating a gap in the literature. This suggests that the identified barriers and facilitators to yoga participation may mostly reflect those of women. A study involving an Australian representative sample reported that the prevalence of yoga participation among men is less than one percent (Vergeer et al., 2017). Hence, studies focusing on men are necessary to help understand why relatively few men do yoga. Furthermore, the scoping review found that previous studies generally lack participants who are non-yoga practitioners (Spadola et al., 2017). Park et al. (2016) also highlighted the need to understand how non-yoga participants perceive yoga and how these perceptions would influence uptake or non-uptake.

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One possible reason for male underrepresentation is the perception of yoga as an activity for women. As discussed in the previous chapter, yoga may be perceived as a female activity because of its many feminine qualities (e.g., grace, aesthetics, self-expression) (Chalabaev, Sarrazin, Fontayne, Boiché, & Clément-Guillotin, 2013; Hardin & Greer, 2009; Koivula, 2001), and its association with traditionally feminine domains of self-care and well-being (Sointu, 2011; Sointu & Woodhead, 2008). Men might have limited understanding of yoga's many benefits. Research on outcome expectancy (Williams et al., 2005) suggests that people who perceive an activity (e.g., yoga) as beneficial are more likely take it up.

From a wider men's health promotion perspective, soliciting men's opinion is important for the effective promotion of health programming for men (Lefkowich et al., 2017). Examining yoga participation barriers and facilitators from the perspective of non-yoga practicing men is therefore a necessary first step in understanding how to encourage more men to take up yoga. This study was, therefore, undertaken to examine non-yoga practicing men's perceptions of yoga, to elucidate barriers and possible facilitators for yoga participation. Yoga is broadly defined in this study as an *asana*-based practice performed alone or in an instructor-led group exercise setting. Men who were not practicing yoga regularly (i.e., at least once a week in the last 6 months) were interviewed and asked about the barriers that stop men from taking up yoga. Avenues or strategies that could encourage yoga uptake among men were also explored.

### 3.1 Abstract

Yoga offers an integrated approach to health and well-being that could potentially benefit men. This qualitative descriptive study examined men's perceptions of yoga, and identified barriers and possible facilitators for participation. Twenty-one non-yoga participant men, 18-60 years old, and living in Queensland, Australia, were interviewed. Two major barriers were identified using thematic analysis: (1) preference for other forms of physical activity, and (2) gender-related perceptions and pressures, (i.e., perception of yoga as feminine, and presence of "bloke" culture and masculine ideals in society). Potential facilitators included: (1) acceptability of yoga among men, (2) providing brief information sessions, and (3) men-only classes. The non-competitive nature of yoga, in addition to being predominantly undertaken by women, makes it less appealing for men living in Australia. These barriers need to be considered if yoga is to be promoted as an option for men, particularly those not drawn to traditional sports or exercise.

*Keywords: yoga promotion, men's health, masculine ideals, alternative fitness, sports and exercise stereotypes*



## **3.2 Introduction**

### **3.2.1 Background**

In the last two decades, men's health has received increasing attention from researchers and policy-makers due to men's worsening performance in many health outcomes. It has been reported that compared to women, men are more likely to have lower life expectancy, higher prevalence of chronic diseases, and poorer mental health [1-4]. In Australia, for instance, life expectancy for men is 5 years less than for women [5]. Moreover, approximately 50% of Australian men suffer from chronic diseases and mental health problems, and around 40% do not meet the minimum physical activity recommendations for health [5, 6].

Men's health researchers acknowledge that men are generally difficult to engage in health promotion programs because these programs are often delivered in group-based settings and tend to be seen as inherently feminine [7-9]. Courtenay [10] argued that men avoid activities associated with femininity as a way to maintain their masculine identity and research has identified beliefs surrounding masculinity as an important factor influencing men's health behaviors [11, 12]. Specifically, conformity to traditional hegemonic masculinity, the dominant form of masculinity in most Western countries, which is associated with being white, heterosexual, middle class, and having stereotypical masculine characteristics (e.g., physical strength, dominance, emotional restraint), can act as a barrier for engagement in health promotion behaviors among men [13].

Some authors suggest that health promotion through physical activity may be more appealing and acceptable for men, as men generally value being fit and active [14-16]. Previous reviews reported that physical activity is regarded as a masculine domain and might be an effective avenue in promoting health among men, especially

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if it aligns with hegemonic masculine ideals (i.e., is vigorous and strength-building) [15]. Many intervention programs targeting men have been implemented in sporting contexts, capitalizing on sports being a masculine domain [e.g., 17, 18, 19]. While these programs have been successful in promoting healthy lifestyle behaviors, they may be targeting only men interested in traditionally male sports (e.g., rugby, football) or those who fit the hegemonic masculine mold. There are men outside this sub-group who may benefit from other non-sports based programs. Studies have reported that even for exercise or going to the gym, young men who were physically inactive often felt inferior and embarrassed to go [20, 21].

It has been stated that men are not a homogenous group [7] and some men may have developed an aversion to sports, or physical activity in general, making them vulnerable to physical inactivity and related chronic diseases [22]. Certainly, there is sufficient room to explore other programs that could cater to the needs and interests of different male sub-groups [15, 23, 24]. One such program is yoga, a form of physical activity that combines breathing, meditation, and postures [25]. Yoga offers an integrated approach to health, having the potential to promote lifelong health and physical activity behaviors among men, and it is popular in most Western countries [26].

Yoga can be classified as a holistic movement practice [27, 28] that originates from the philosophical and spiritual traditions of India [29, 30]. It has developed into several modern forms, with ‘postural yoga’ being the most widely practiced in Western societies [31, 32]. This form often de-emphasizes the philosophical underpinning of yoga and puts greater emphasis on postures or *asanas* [32]. The traditional practice of yoga, however, is well-rounded and comprises comprehensive lifestyle practices that include not only physical activity (i.e., posture practice

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integrated with breathing and relaxation) but also meditation, ethical principles, moderate diet, and cleansing techniques [29]. These different elements are intended to be practiced in an integrated manner to achieve overall health and well-being.

Yoga has potential to promote not only physical activity but also other healthy lifestyle behaviors [33-37]. For instance, studies suggest that regular yoga practice is associated with higher levels of physical activity, healthier eating behaviors, less alcohol consumption, and non-smoking [33-37]. Some studies imply that these healthy behaviors may be more common in those who also embrace the philosophical aspect of yoga [37-39]. Health authorities worldwide recognize the potential contribution of yoga in health promotion and support efforts for its increased uptake [40-44]. Many systematic reviews have reported on a wide range of health benefits including improved cardiovascular risk factors [45], psychological well-being [46], weight-related outcomes [47], stress and anxiety [48, 49], and back pain [50, 51]. Yoga can be utilized as a low-cost self-care strategy to promote physical and mental health [43, 52-54]; it can be a gentle way to start regular exercise [55]; and it can be a modality to improve athletic performance [56]. Despite these possibilities, available evidence suggests that the uptake of yoga remains relatively low, particularly among men [37, 57-59].

Studies have consistently reported that yoga participation is more common among women than among men [25, 57, 59, 60]. In Australia, prevalence of yoga participation among men is only about 1% [27, 28, 61]. Several initiatives can be found where yoga communities have started to promote yoga among men [e.g., 62, 63-65], but it remains unknown to what extent these efforts have been effective. Additionally, little is known about the reasons underpinning the low yoga uptake among men [26].

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Previous studies examining barriers and facilitators for yoga participation generally involve very few male participants and therefore the findings may mostly reflect those endorsed by women. The barriers and facilitators reported in these studies generally resembled those found for conventional and non-holistic forms of physical activity [66-70], such as lack of time, cost, lack of information, expectations of negative side effects, and perceived benefits and social support. Some studies reported that yoga is sometimes associated with South Indian religious beliefs and this religious connotation can turn away potential participants [66, 71]. For the small number of male respondents in these studies, some common barriers appeared to be negative preconceptions of yoga as a feminine/female-dominated activity, lacking aerobic challenge, requiring flexibility, and being of inappropriate intensity (i.e., too easy or too difficult) [66-70]. Clearly, there is a need to further understand how men perceive yoga and to identify reasons for non-participation among men without yoga experience or those who have dropped out [26, 70, 72, 73].

### 3.2.2 Objectives

This study was undertaken to examine non-yoga practicing men's perceptions of yoga, to elucidate barriers and possible facilitators for yoga participation. Yoga is broadly defined in this study as an *asana*-based practice performed alone or in an instructor-led group exercise setting. We considered men who were not practicing yoga regularly (i.e., at least once a week in the last 6 months) as non-yoga participants. In this paper, we examined barriers that stop men from taking up yoga and explored avenues or strategies that could encourage yoga uptake among men.

### 3.3 Methods

We adopted a qualitative descriptive approach [74, 75]. Grounded in a naturalistic perspective, the qualitative description method aims to provide

straightforward and low-inference descriptions of the phenomenon of interest (i.e., using language that is close to the collected data) which is particularly useful for under-researched topics like the subject in this study [76, 77].

### 3.3.1 Participants

Employing a maximum variation sampling method [78], we recruited non-yoga participant men across different age-groups and levels of physical activity behavior. Men who were at least 18 years old, lived in the Greater Brisbane Region in Queensland, Australia, and had not taken up yoga regularly (i.e., consistently practicing at least once a week) in the past 6 months, were invited to participate. Twenty-four men responded, of which 21 were interviewed. For the remaining three, a suitable interview time could not be arranged.

Participants' ages ranged from 18 to 60 years ( $M = 35.0$ ;  $SD = 12.6$ ). Most participants were of white ethnicity and employed. The majority were partnered and a few had children. A wide range of education levels was also represented. Most of the participants reported engaging in some form of physical activity (e.g., badminton, jogging/running, gym/weight training) regularly and some had somewhat limited yoga experience. Details are reported in Table 1.

**Table 1. Demographic characteristics of the participants**

Characteristic	(total <i>n</i> = 21) <i>n</i>	%
Age (years)	<i>M</i> = 35.0	<i>SD</i> = 12.6
Education		
<Year 12	2	9.5%
Year 12	7	33.3%
Vocational	1	4.8%
Associate Diploma	3	14.3%
Bachelor	6	28.6%
Masters	2	9.5%
Race/Ethnicity		
White	15	71.4%
Asian	4	19.0%
Middle Eastern	1	4.8%
Bi-racial	1	4.8%
Relationship		
Single	9	42.9%
Partnered	12	57.1%
With caring responsibilities		
Yes	5	23.8%
No	16	76.2%
Engaging in regular physical activity*		
Yes	13	61.9%
No	8	38.1%

\*defined as engaging in physical activity 3 or more days a week for 30 minutes or more each day  
[71]

### **3.3.2 Data collection**

Each participant was interviewed face-to-face by the lead author following an interview guide. Open-ended questions were used to explore perceptions of barriers for yoga participation among men, possible participation motives, perceived potential benefits, and personal interest in taking up yoga (e.g., Why do you think some men do not practice yoga?). The interview guide (Supplemental file) was piloted on three male acquaintances before it was finalized, resulting in some minor changes to the guide.

The interview was structured into four sections: warm-up, main questions, brief presentation, and follow-up questions. As introduction, participants were asked whether they considered themselves physically active or not active. Participants who were active were then asked to provide details of their physical activities, including motives and perceived benefits; those who were inactive were asked about their reasons for not doing any physical activity. The next section focused on the main questions. After these questions were exhausted, a brief introduction to yoga was provided by the interviewer. Before and after this brief presentation, each participant was asked to rate the level of his interest to take up yoga using a 10-point scale (this was used as a prompt to further explore potential barriers and facilitators rather than to measure change in interest). The last section focused on questions exploring strategies on how to best promote yoga to men.

### **3.3.3 Procedure**

Upon receiving ethical approval from the University of Southern Queensland's Human Ethics Committee, recruitment advertisements were posted in health clubs, yoga studios, and social media (e.g., Facebook). The lead author also enlisted the assistance of individuals in his personal and professional network to

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invite potential participants for the study. According to Oliffe and Mróz [79], referral to potential participants by mutual friends or colleagues can be an effective recruitment strategy for men as they generally do not volunteer to participate in research.

Men who expressed interest to participate in the study were sent copies of the research information sheet, consent form, and interview questions. After confirming availability, an interview was scheduled. Most of the interviews ( $n = 17$ ) were conducted in a private meeting room on the University campus, while a few ( $n = 4$ ) took place in other locations (e.g., private homes, yoga studios). On the day of the interview, participants completed the consent form and were given the opportunity to ask questions. Interviews were audio-recorded and lasted between 30 to 60 minutes. Upon completion of the interview, participants were offered a grocery voucher valued at AUD(\$ 15 as a token of appreciation for their time.

### **3.3.4 Data analysis**

We analyzed the data following an inductive and essentialist approach to thematic analysis [80-82]. This approach subscribes to semantic-level coding and analysis of data, providing a straightforward summary and description of participants' views and experiences [83]. Following this approach, the data were analyzed in six iterative stages: data familiarization, code generation, theme development, review of candidate themes, theme refinement, and write up. To ensure rigor in conducting the thematic analysis, we referred to the step-by-step approach recommended by Nowell et al. [84].

As part of data familiarization, the lead author transcribed all interviews verbatim, and further engaged with the data by thorough reading of each transcript, noting down initial thoughts and observations. Data segments relevant to the research



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questions were identified and labelled, using semantic codes to remain as close as possible to the participants' own language. Candidate themes were subsequently developed from these codes and visualized into a thematic map. The third author, performing the role of a 'critical friend', reviewed these candidate themes and offered points for reflections and alternative explanations [85, 86], following which the lead author reviewed and refined the candidate themes. Raw data under each theme were revisited to ensure that data extracts were coherent and consistent with the theme they fell under. Names and descriptions of each theme were then written up, and finally, all three authors met to review and agree on the final interpretation of the themes.

*Research team and reflexivity.* In accordance with the consolidated criteria for reporting qualitative studies [87], we report below the characteristics of the research team members and their relationship with the participants to provide insight into how their personal experiences and biases might impact the conduct of the study and shape interpretation. The lead author is a PhD candidate, yoga instructor and practitioner, with previous experience in qualitative research methods. He conducted all interviews, transcription, and data analysis. As a participant of several gendered physical activities (i.e., dance, cheerleading), he is aware of the stereotypes attached to these forms of physical activities, including yoga. He came across yoga when he was seeking a movement-based practice that centered on holistic health and well-being. Due to his strong Christian background, he initially doubted if he should continue practicing yoga because of its association with Indian spirituality. However, he enjoyed the physical and mental discipline, and after more than 10 years of practicing and teaching, he acknowledges yoga as a holistic form of physical activity integrated in a philosophy that can be taken as a way of life or a spiritual practice. To

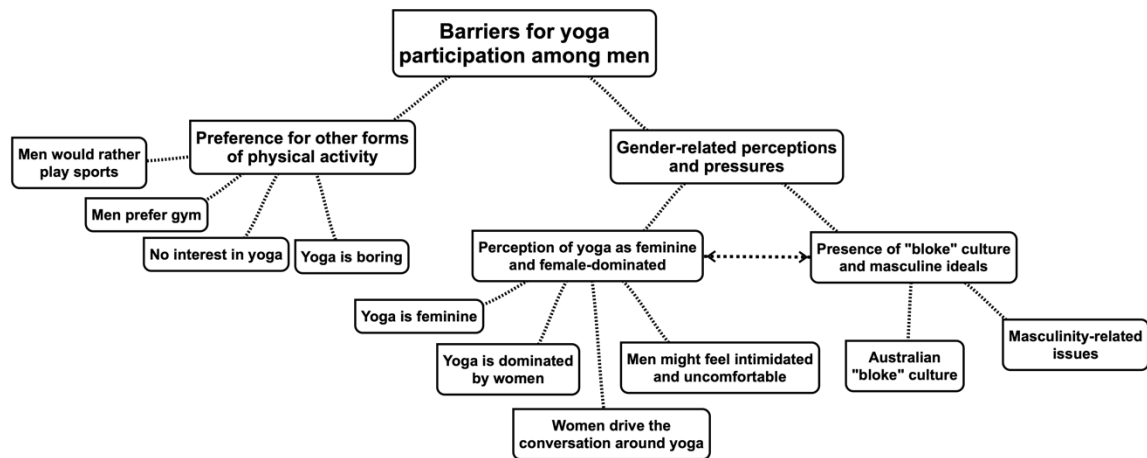
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maintain reflexivity, the lead author kept a journal throughout the study, and regularly discussed his thoughts and reflections with the third author to monitor any personal biases. The second author is an experienced senior academic and research supervisor in exercise psychology and public health. The third author is a senior sport and exercise psychology researcher experienced in qualitative methods who acted as a ‘critical friend’ throughout the process of theme development. Both the 2nd and 3rd authors attend regular weekly yoga classes at the university.

### 3.4 Results

We identified two salient themes reflecting barriers to yoga participation which could be specific to men: 1) preference for other forms of physical activity; and 2) gender-related perceptions and pressures, specifically the perception of yoga as a feminine and female-dominated activity, and the presence of “bloke” culture and masculine ideals in the society. We also described potential facilitators including 1) the acceptability of yoga among men as a supplementary activity, therapeutic exercise, and alternative practice; 2) providing brief information sessions; and 3) offering men-only classes. These themes represent the views of non-yoga participant men across different age groups, physical activity levels, and previous yoga experience.

**Figure 1. Thematic map of barriers to yoga**



### 3.4.1 Barriers to yoga

#### *Men prefer other forms of physical activity*

Throughout the interviews, the participants noted that men generally prefer sports, gym training and other forms of physical activities. The majority of participants expressed they would rather play sports because they did not see yoga as beneficial. Having tried yoga in the past, one participant admitted that yoga did not give him any immediate rewards unlike getting on a treadmill. Lacking intensity, yoga was perceived as boring.

*"(Yoga) wouldn't be for me. It's not the funnest sport. I like the high adrenaline cycling, running, fast paced kind of sport. That's my traditional sports that I've always been growing up to do and what I'm used to do." (Participant 18, 23 years old, physically active)*

Some participants explained that yoga is not on top of the list of activities when men think of exercise. They believed that men are more inclined to take up traditional activities like rugby, running, or gym training as these activities were commonly taught in physical education or promoted in mainstream media.

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*"I guess that's down to the perception of sports and exercise. Guys like me, when they think of exercise, they don't think, Ah! Yoga is on top of the list. They'd think gym, sports like football, rugby, all that sort of stuff (and) running... I think maybe because of the perception that yoga isn't very active." (Participant 1, 21 years old, active)*

Several participants who had some yoga experience felt yoga was useful for flexibility and core training. However, they still enjoyed sports and gym training more. A few participants were already satisfied with their current activities and hence did not see the need for yoga. They believed yoga did not give them the same enjoyment and satisfaction as their present activities.

*"Because yoga is slow, it's maybe less appealing for myself. When I found badminton, that keeps me going. Because I enjoy the game. I enjoyed winning and losing, a little bit of competition spirit. In that sense, I'm getting exercise. It's a bit of satisfaction if you do well. In yoga, there's no fun involved. Whereas in badminton, there's fun in there, it's social (as well)" (Participant 11, 38 years old, active)*

Although many of the participants understood the value of yoga as a form of physical activity and appeared receptive to trying it out, more than half of them expressed a general lack of intention to take up yoga citing reasons such as lack of time, need for more motivation, laziness, and yoga not being a priority.

#### ***Gender-related perceptions and pressures***

Many of the comments touched on perceptions, expectations and pressures that were associated with gender. Almost all participants said that yoga is often perceived as feminine not only because of its fundamental features but also because

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it is widely popular among women. Some men linked this feminine perception of yoga to the wider issue surrounding social and cultural expectations of being a man.

#### *Yoga is a feminine and female-dominated activity*

The perception of yoga as a feminine and female-dominated activity was prominent across all interviews. While the majority of participants acknowledged yoga is for everyone regardless of age, gender, or cultural background, they believed that yoga is predominantly perceived as a feminine activity, and therefore less appealing for men. The participants explained that this perception may be associated with the nature of yoga being a light-intensity exercise involving mostly stretching, breathing, and mindfulness.

*“I have many friends who do it, (both) men and women. But there are some men who are looking at it as a female exercise or female activity because (in yoga) you are just sitting and breathing, and you’re not doing anything.” (Participant 6, 27 years old, active)*

*“It’s a whole mindfulness thinking of self... it’s viewed as being a feminine activity.” (Participant 14, 50 years old, not active)*

Several participants, including those with previous yoga experience, mentioned that the overrepresentation of female participants in yoga could be a barrier for men. One participant described a stereotype of yoga participants as “mothers in their active wear, driving an SUV and going out for breakfast after yoga”. For men who had not tried yoga, the media was an important factor in shaping the perception of yoga as female-dominated. The conversation around yoga is also largely female-driven, several of the participants believed. They noted that most of those who spread information about yoga are women and the marketing of yoga also tends to target women.

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*"I think social media has a pretty big impact on it. When you see something about yoga online on the internet, it's usually portrayed with a female. Not so often do you see pictures of men doing it. I have (seen pictures of men) but nowhere to the extent as females. The word of mouth as well. When I heard information about it, it's been majority females have told me about it or asked me to come." (Participant 20, 20 years old, active)*

Several participants suggested that some men might feel intimidated and uncomfortable participating in an activity with a room full of women. Men might feel embarrassed for standing out and for not doing the exercises properly. Two participants pointed out that men might also feel intimidated because some women may not be welcoming of them in their yoga class.

#### ***"Bloke" culture and masculine ideals***

Some participants attributed men's reluctance to take up yoga to the Australian "bloke" culture that expects men to be strong, tough and resilient. Because yoga is perceived as feminine and un-manly, participants explained that there is a stigma associated with the practice that men try to avoid.

*"Men won't do yoga because of this masculine perception of society, like, if you do something girly, then you would consider that as gay or feminine, which men always want to avoid. That's pretty much the reason why men won't do yoga at all." (Participant 19, 25 years old, not active)*

Statements indicated that Australian masculinity emphasizes men play rugby, drink beer, and that Australian men generally distance themselves from activities that are considered "soft" and "girly" to avoid being called a "poofteer". One participant believed this issue was not restricted to Australia.

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*“In Australia particularly... it’s all around the world. We still have issues with what is a boy’s sport, what is a girl’s sport. ...Guys as well think it’s not very macho. For guys around my age it’s becoming less of an issue, but it’s still a pretty big issue particularly for older generations. In Australia, there’s a big emphasis on guys play rugby, they drink beer, and they don’t do anything that they think is soft, which might be yoga, or other stuff. It’s like an idea of Australian masculinity. And it’s sort of very restrictive and can be quite powerful, in a way, that it sort of enforced socially.” (Participant 13, 22 years old, just started being active)*

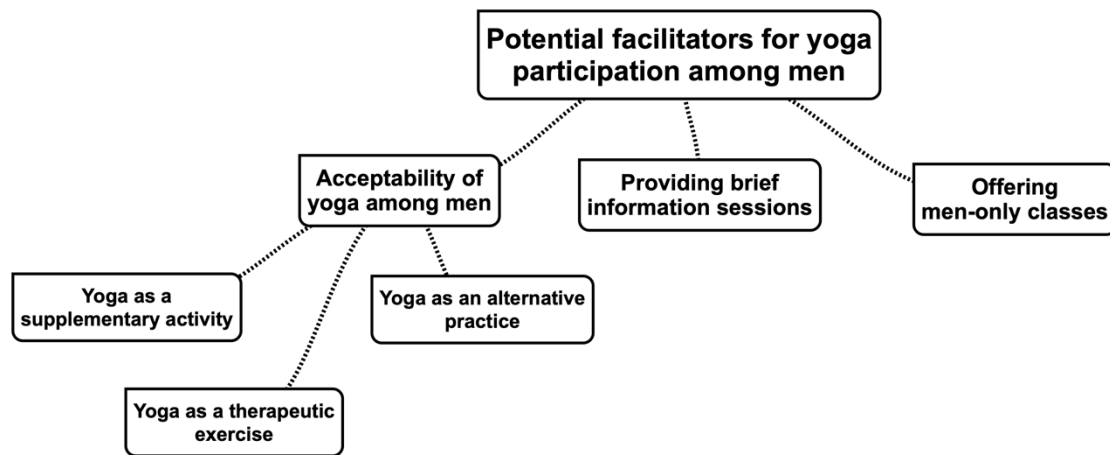
Although many of the participants believed that there are men who practice yoga and men should probably do it, they still did not consider yoga a culture for men. A few participants associated this dislike of yoga among men with the wider men’s health issue.

*“Why men don’t like yoga? How many blokes (think about their) health? How many times do you actually have to nail someone down to go see a doctor? Blokes don’t like thinking about themselves.” (Participant 14, 50 years old, not active)*

#### **3.4.2 Possible facilitators**

Throughout the interviews, several possible facilitators were mentioned and explored. These include 1) acceptability of yoga among men, 2) providing brief information sessions, and 3) offering men-only classes.

*Figure 2. Thematic map of potential facilitators*



*Acceptability of yoga among men*

Yoga was generally seen as a form of physical activity that involved stretching, breathing and relaxation. A few participants mentioned that they understood yoga to have some spiritual aspect based on their observations of other men and sometimes on personal experiences. Participants also believed that in certain instances men might be more open to yoga and that certain types of men might be drawn to yoga.

*Yoga as a supplementary physical activity*

More than half of the men interviewed in this study exercised or played sports regularly, and several of them had tried yoga in the past. Drawing from their personal experiences and their observations of other men, they described yoga as a valuable supplementary exercise for flexibility, core strength, or muscle recovery. However, their yoga engagement had usually been short-term and purely for instrumental reasons. None of the physically inactive participants mentioned yoga as a potential supplementary activity except for one participant who knew male ballet dancers who did yoga as part of their core strengthening program.



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*"I know guys who've done yoga maybe once or twice but don't stick through it. A lot of them are doing it as a release of muscle. The people I know who do yoga, they do it for a short period of time to work with their other activities such as running, such as boxing. Because... flexibility is a massive part of any sport and yoga is great for developing that, and to give a strong core. I don't really know that many people who are doing yoga as their primary activity. But I do know people who do it as part of their training regime."* (Participant 15, 39 years, active)

The participants expressed more interest in trying yoga after the presentation but said they would only take it up as a supplementary activity because they were already satisfied with their current exercise or sports engagement.

*"Definitely if my training was more. The more intense I get into training, I definitely will be taking yoga up again. If someone asks me this certain question, if I was gonna take up yoga solely as a primary activity, that will be a lower down on that number. But if it were to take it up alongside something, it will be a 10. If it was just primarily yoga, it will be like a 3."* (Participant 15, 39 years old, active)

#### ***Yoga as a therapeutic exercise***

Some participants believed in the potential of yoga as a therapeutic exercise beneficial in facilitating deep tissue stretching and healing. They conveyed interest in taking up yoga if they got injured and could no longer do their usual activities. Three participants who had back issues believed yoga would be beneficial for them as a corrective exercise and for pain relief.

*"I actually found out yoga was really good for flexibility. It was really good for core strength. But I just think that a lot of men just don't think of yoga as an actual physical activity. They would think of it as more a rehabilitation. Like if you*

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*have an injury and you want to stretch it out. That's why they'd probably do it."*

*(Participant 2, 32 years old, active)*

Some participants had personally experienced, or had heard of friends being recommended by their physiotherapists to take up yoga as a supplementary strengthening and stretching exercise. They believed that yoga should be promoted more as a therapeutic exercise and that men would be more motivated in taking it up if they had a referral from their health specialist.

*"I think that men are more sold to yoga as a rehabilitation exercise than a physical activity. Like for example, my physiotherapist recommended it when I hurt myself one time. He recommended yoga to help stretch out and something like that. I think it should probably be promoted more for rehabilitation or stretching."*

*(Participant 2, 32 years old, active)*

#### ***Yoga is for certain types of men***

The participants generally had positive attitudes towards yoga but some felt that yoga might appeal better to men with certain characteristics, for example, living in cities, or being physically active. Open-mindedness, maturity, natural calmness, and having a natural interest in mindfulness or New Age practices were also associated with a stronger attraction to yoga.

*"Why they would have chosen yoga? I don't know if I could pinpoint that but there is a common theme with the kind of people they are. They're very calm for one, very lean, always quite thin. They're not like your footy player, big beefcake or whatever. They've got that same demeanor of calm. They're very almost slow spoken in their speech. They're very easy to get along with, very understanding, open-*

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*mindful kind of people. I would almost hypothesize that maybe they're attracted to it because of their personality." (Participant 3, 23 years old, active)*

Several participants suggested that men who live in metropolitan areas may be more open to taking up yoga compared to those living in rural areas. They implied that compared to men in the country, men in the city tend to have broader perspectives and are more open to trying new ways of training the body like yoga.

*"Probably the farther you go out (to the country), the less people would do it. If you went out into the West and got to ask the farmer or a cowboy if they're gonna do yoga, they'd be like, 'No', than men in the city." (Participant 15, 39 years old, active)*

Others suggested that yoga may appeal to men who are already active as these men generally enjoy physical exercise. They believed that men who participate in sports like running, triathlon, and boxing tend to explore other types of physical activities to continuously improve their fitness or athletic performance. When asked if yoga would attract certain types of men, one participant said:

*"I would say that the stereotypes are going to be distance athletes. It's not going to be the power lifters because their muscles don't work like that. It's going to be people who need flexibility like runners, triathletes, boxers, or jiu jitsu. Those sort of wrestling activities where you put yourself in pretzels." (Participant 14, 50 years old, not active).*

Other stereotypes of men who are more likely to take up yoga mentioned by some participants were men who are lean and skinny, "gay boys" (similar to stereotypes given to male ballet dancers), and those who do not have home caring duties. Some participants also believed younger men (in their 20s) at present are

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more open-minded and therefore they would be more receptive to yoga, while others believed the opposite, saying that yoga may appeal to more mature men.

#### ***Providing brief information sessions***

Many of the participants agreed that there is still a general lack of awareness and understanding of yoga among men. They believed the brief presentation was helpful in clarifying some of their misconceptions about yoga, and that it allowed them to learn about the lesser known aspects of yoga, like the ethical principles. Various participants had no knowledge of the different yoga styles, the spiritual component of yoga, nor the other supporting lifestyle practices (e.g., healthy eating, attitude training). One participant mentioned that he had not taken up yoga because it was unfamiliar.

Most of the participants reported higher interest in yoga after learning about its less frequently mentioned benefits (e.g., mental health, de-stressing while getting fit, benefits on the spinal muscles). Some participants shared that the presentation made them realize that yoga could be appealing because it can be tailored to meet different needs. Several suggested that highlighting yoga's mental health benefits and strength aspects may appeal better to more men.

*"I think coming over on to the more strength side would then tease more men, and emphasizing a strength workout. Maybe putting more body weight exercises in between the poses, making it a workout, not a circuit, but more of a focus on, maybe squats, things that are gonna build strength. That would then tease more men to do it because they're walking out of there feeling as though they've got what they've paid for sort of thing." (Participant 15, 39 years old, active).*

More than half of the participants, however, expressed a general lack of interest in taking up yoga after the presentation, citing reasons such as 'flexibility is

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not a priority at the moment', 'not liking the idea of committing to a weekly session', 'having other priorities', and 'laziness'.

#### ***Offering men-only yoga classes***

To the majority of participants, offering occasional men-only classes or workshops would be more useful in drawing more men to yoga than offering men-only classes on a regular basis. In their view, men simply need to learn the basics in a safe environment where they do not have to feel embarrassed or anxious, as they might be in a women-dominated space. A number of the participants believed that men-only classes also might remove the stigma associated with yoga being a female activity.

*"I think to begin with... to initiate the interests of males, a purely male only class would be good. Because then it gets the men in there. It makes them realize that there are other men doing it as well. And the instructor's a man. That would be quite beneficial if you did have a men-only class. I'm not too sure if you need to have it all the time, or just to begin with to get men interested." (Participant 18, 23 years old, active)*

Several participants believed, however, that offering men-only classes would not attract more men into yoga for cultural reasons. They explained that while some men might be unperturbed doing yoga in a room full of women, they would be uncomfortable doing so in a room full of men.

*"Probably not. Poofster! I'm not gonna sit in a room full of blokes! There's that innate, very Aukka-Aussie (culture). Australians, whilst we're happy to be in a crowd, say in a concert, if you're walking up and down the street, people tend to keep their distance. It's a cultural thing." (Participant 14, 50 years old, not active)*

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A few of the participants grew up in cultures where gender segregation is still practiced (e.g., South Asia, Middle East) and expressed preference for a separate class for men.

### 3.5 Discussion

The aim of this study was to identify barriers and potential facilitators for yoga participation among men. Our findings indicate that yoga does not appeal to men because (1) men prefer other forms of physical activity, and (2) there are gender-related perceptions and pressures that hinder men from pursuing yoga. These barriers need to be considered when promoting yoga to men. Yoga is often seen as a gentle, less challenging, and feminine activity involving mainly stretching and relaxation [66, 70, 88]. Such perceptions do not fit well with motives of competition and skill mastery that generally drive men's participation in sports and exercise [89, 90].

Consistent with previous research [70, 88, 91-93], we found that men prefer vigorous and competitive physical activities that require skills and practice (e.g., sports or gym training). While postural yoga practice does involve skill mastery similar to sports, this is often deemphasized in lieu of its non-competitive nature [94, 95]. Yoga teachers, for instance, often remind students to let go of ego and competition in yoga classes. It has been suggested that perhaps the lack of score-keeping and male camaraderie found in sports makes yoga less appealing to men [96]. The in-the-moment focus required in yoga may also be challenging to men who prefer outcome orientations associated with competition or skill mastery. These qualities may undermine yoga's attractiveness as a type of fitness activity for men.

Although there are physically demanding yoga styles requiring more strength and stamina (e.g., Power Yoga), participants often described yoga as a gentle activity

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involving flexibility and mindfulness, and popular among women. Such descriptions are often found for activities stereotyped as feminine (e.g., gymnastics, ballet) [97, 98]. This feminine perception is reinforced by the preponderance of women in yoga. Research suggests that physical activities with predominantly female participants are also more likely to be stereotyped as feminine [99]. As reported in previous studies [66, 68, 69, 88], this feminine perception acts as barrier for men.

Many of our participants' perceptions about yoga were formed from what they had seen in various forms of media. Because yoga is heavily marketed towards women [100, 101], there are very few images of men doing yoga. One study suggests that men may not feel confident in doing yoga when exposed to stereotypical images of yoga participants (i.e., young, thin and toned women) [102]. Mahalik et al. [103] reported that men's health behaviors are influenced by their perceptions of what other men do. Perhaps, as some men in our study inferred, having more visible male role models would help make yoga a more normative practice among men.

The "bloke" culture and standards of masculinity (i.e., hegemonic masculinity) operating in many societies [104], including Australia [105], also restrain men's engagement in many feminine-coded activities, including yoga. Sports and fitness media and marketing often emphasize traditional masculine ideals (i.e., strength, power) [106, 107], likely reinforcing men's existing beliefs about masculinity and pressuring them to maintain social expectations. Beliefs surrounding masculinity have been identified as an important determinant of men's health behaviors [10, 13, 108]. Men who hold strong traditional masculine beliefs, for example, enact these beliefs not only by pursuing competitive and challenging physical activities, but also by avoiding any activities associated with femininity [10].

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Men are already difficult to engage in health promotion programs [7-9], and therefore collectively, these barriers contribute to a huge challenge in promoting yoga among men. Nevertheless, we acknowledge that there *are* men who practice yoga and their numbers may be slightly increasing, at least in the United States [109]. Our study identified several stereotypical perceptions of yoga-practicing men, such as, men who are open-minded, mature, unthreatened by being surrounded by women, already active and seeking ways to improve physical performance, and naturally interested in holistic practices. These stereotypes may be particularly limiting to participation if men do not identify with these images. It has been suggested that when using complementary and alternative medicine, including yoga, men justify their use by citing pragmatic motives (e.g., injury prevention) and emphasizing the physical aspect of the practice [110]. Hence, highlighting the practical benefits of yoga would be helpful.

### **3.5.1 Implications for promoting yoga to men**

The barriers identified in this study are distinct yet potentially interlinked. Men's preference for vigorous and challenging physical exercise may be influenced by societal perceptions and pressures related to gender. These barriers may be difficult to change. Nevertheless, some practical guidelines can be deduced from the findings. Tailoring messages based on the target male subpopulation may be necessary as some of these suggestions appear contradictory.

#### ***Promote yoga as a supplementary physical activity***

Similar to previous studies [69, 111], our findings indicate that physically active men may take up yoga as a supplementary exercise to improve flexibility or to prevent injuries. In the United States, yoga has been reported as the most common complementary and alternative approach used to enhance athletic performance [56],



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and many elite athletes profess to have used yoga [112]. Yoga offers combined flexibility, strengthening, and relaxation training which seems to attract men who are seeking modalities that could complement their primary activity. Offering yoga within traditional sport and fitness settings (e.g., gyms, sports clubs) could attract this subpopulation of men [88], particularly if emphasis is placed on yoga as a supplementary exercise, highlighting its potential to enhance athletic performance.

#### ***Promote yoga as a therapeutic exercise***

Yoga can be particularly beneficial for men who are injured, have health issues, or those who are generally inactive and unfit. Gentle yoga styles (e.g., Yin Yoga) are safe and accessible enough for unfit men or those with limited mobility to begin exercising. There is some evidence that yoga can be a transitional platform to introduce physical activity, especially among overweight or obese men [55, 113]. Yoga programs can be performed in a variety of settings, potentially removing the barrier of fear of embarrassment [114, 115].

#### ***Promote yoga through healthcare practitioners and significant others***

Being recommended by others was often cited as a reason for yoga uptake [69, 116]. Promoting yoga through healthcare practitioners, such as physiotherapists, could be an important introductory pathway to yoga for men [117], particularly older men or those with injuries [88]. Eliciting the support of female significant others, especially those who do yoga themselves, could also be useful.

#### ***Recommend yoga styles that match men's motives***

Recommending a yoga style that fits men's participation motives may increase the likelihood of men adopting and maintaining a yoga practice. While yoga is generally considered as a light-intensity activity, there are physically demanding styles of yoga (e.g., Ashtanga Yoga, Bikram Yoga) which may appeal better to men

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as reported in previous studies [34]. The men in our study, however, seemed unaware of the different yoga styles. It may be useful to inform men of the differences and similarities across styles, and encourage them to choose styles that meet their needs.

#### ***Provide brief information sessions***

Our participants said they found the brief information session helpful in making them understand yoga beyond stretching and relaxation. Similar to a study involving university students [102], the men without any yoga experience felt confident in their ability to do yoga after learning more about it. As an important first-step in drawing more men to yoga, yoga service providers (e.g., studios, teachers) could provide regular and brief yoga presentations designed specifically for men. It may be useful to highlight the additional physiological benefits offered by yoga (e.g., parasympathetic nervous system activation, mind-body integration [54, 118]) in these short educational sessions.

#### ***Offer occasional men-only classes***

Our participants generally agreed that men-only classes could be useful in drawing more men to yoga [88]. Some believed that once men feel more confident in yoga, participating in mixed gender classes, even though these classes may still be dominated by women, should no longer be an issue. A few men thought men-only classes might be perceived as effeminate, however. Nonetheless, there is some research that suggests that the perception of yoga as feminine could change once men have actually experienced a class [119]. Offering occasional men-only classes could provide an opportunity for men to experience yoga firsthand and help them understand its potential benefits [120].

***Create a space that is more welcoming of men***

Acknowledging the yoga studio as a female space, two men in our study asked if men are even welcomed in that space. Similar to the gym environment where there are perceived boundaries of feminine and masculine spaces [121], men might feel that they are crossing the “gendered lines” in yoga and therefore choose not to participate to avoid possible repercussions (e.g., feeling like an intruder, not feeling welcome, feeling embarrassed). While future studies could further clarify this, some strategies suggested for healthcare services [122] may be used in making the yoga environment more welcoming of men (e.g., posting images of men doing yoga, using marketing strategies that appeal to men).

***Promote the holistic aspects of yoga***

Yoga promotes mindfulness, self-care and holistic well-being [123, 124]. While these attributes are often associated with femininity which may discourage men [10], there are men who naturally gravitate towards yoga and similar practices because of their interests, personality or cultural background. Yoga also promotes compassion and non-judgement which makes it a safe and open space for all men, including LGBTQ participants [69]. Therefore, promoting yoga as a holistic practice remains important not only to stay true to its fundamental tenets but also in keeping yoga desirable for men seeking more than just physical exercise.

**3.5.2 Future directions**

The barriers identified in this study could be linked to traditional perceptions of masculinity [104], which is often associated with poor health behaviors among men [125]. Men who endorse such forms of masculinity would avoid yoga because rejecting such feminine-stereotyped activity is a way to demonstrate these traditional masculine beliefs [10]. However, some studies have shown that endorsement of

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hegemonic masculinity ideals, at least some of its facets [126], is not always problematic. Men who engage in health-promoting practices (e.g., healthy eating, use of complementary and alternative medicine) negotiate these ideals by providing pragmatic reasons to justify their behaviors [110, 127]. Masculinity has been studied from different perspectives (e.g., biological sex, gender role, and social construct) [128, 129]. As a social construct, masculinity may take different forms (e.g., subordinate, marginalized, complicit) other than hegemonic masculinity [104], and intersect with men's age, sexuality, social class, and cultural background [130]. Future research may unpack the influence of different configurations of masculinity in relation to yoga participation. More in-depth investigations using social-constructivist perspectives would be useful here.

Overcoming the barriers identified in this study could be worthwhile for two reasons. First, the practice of yoga involves not only physical and mental exercises but also attitude training which could potentially encourage men to engage in other health behaviors [131]. Second, Smith [132] noted that "men are not a homogeneous group" and therefore it may be important to tailor health promotion programs to meet the needs of different male sub-groups. Australia, for example, is a multi-cultural country with almost a third of its male population born overseas [5]. Yoga may be used as an alternative healthy lifestyle intervention program among culturally and linguistically diverse male populations who might not participate in interventions involving sports [e.g., 19] or online programs [e.g., 23]. Furthermore, yoga can be a non-threatening option for men who might feel uncomfortable participating in traditionally-masculine sports or fitness activities [20-22, 69]. Future studies can explore this further.

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Keeping men involved in yoga is another challenge as a number of our participants had tried yoga in the past but did not continue. As people endorse different motives for seeking different types of physical activity [89], it is possible that men end their yoga participation once it had served its purpose (e.g., therapy, supplementary training). Perhaps these men were only interested in yoga for its instrumental physical value, or they were not introduced to the other aspects of yoga in a way that help them stay engaged. Previous studies suggest that an integrated practice of yoga, one that dedicates time to other aspects of yoga beyond asanas, may be essential for continued enjoyment and engagement [131, 133]. Future research could explore whether introducing the other aspects of yoga would keep men engaged after their original intention for doing yoga has been fulfilled.

### **3.5.3 Strengths and limitations**

This study has several strengths and limitations. First, the study involved a heterogeneous sample of men representing different age groups, physical activity levels, and cultural backgrounds. The themes therefore may resonate with other men sharing the same characteristics and experiences with our participants [134]. Some themes (e.g., “bloke” culture and masculine ideals), however, may only be specific to the Australian context. We also did not factor socio-economic status hence it was not possible to determine whether barriers differ across different strata. Future studies may investigate perceptions and barriers in more homogeneous, underrepresented, and at-risk groups of men, particularly those not physically active, and across different socioeconomic status. Second, participants talked willingly about yoga providing rich qualitative data. However, they were self-selecting and recruited mainly through the lead author’s personal and professional networks. Recruitment flyers posted in onsite and online community boards did not enlist any potential

participants. Third, participants had a relative high awareness of the benefits of yoga and expressed interest in taking it up. This could be a social desirability bias. We strived to minimize this by explaining the purpose of the study before each interview and assuring confidentiality [135]. Finally, the lead author is a yoga practitioner familiar with the discourses surrounding yoga. While his experiences and values may have influenced how the data was interpreted, analysis and interpretation were undertaken carefully to remain at the semantic level. He remained reflexive throughout the study and held regular discussions with the third author who acted as a critical friend, reviewing the themes and offering points for reflection [86]. Nevertheless, we acknowledge that there may be other interpretations of the data.

### **3.6 Conclusion**

This study adds to the growing body of literature exploring barriers and facilitators for yoga participation. To our knowledge, this is the first study to document perceptions of yoga from the viewpoint of non-yoga practicing men. Our findings suggest that the barriers for yoga participation among men are associated with individual preference and gender-related perceptions and pressures. The non-competitive nature of yoga, its perceived lack of intensity, association with femininity, and popularity among women appear to be the reasons why yoga does not appeal to men. However, the potential benefits of yoga are widely acknowledged among men and yoga is generally acceptable as a therapeutic exercise or supplementary exercise. Health professionals, in addition to yoga teachers, studio owners, and other physical activity program developers, could therefore play roles in making yoga more accessible for men. Findings could provide directions in promoting yoga among men, ultimately increasing uptake and the likelihood that more men will experience the potential benefits of yoga.

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## CHAPTER IV

### Study 3

#### **“Men need role models”: Exploring the facilitators and barriers for yoga participation among men**

This paper has been submitted as a manuscript to a sport and exercise science journal on 1 April 2021 and is under review at the time of writing. It is formatted in accordance with TF-Standard Chicago AD as specified in the target journal.

#### **Rationale**

The potential of yoga to promote holistic health and well-being in the general population is increasingly evidenced (Cramer et al., 2014; Hendriks et al., 2017) and widely acknowledged (United Nations General Assembly, 2015; World Health Organization, 2018). It can thus be expected that there would be public health benefits from more men doing yoga. In the previous chapter, two themes representing barriers for yoga uptake among men were presented: (1) men prefer other forms of physical activity, and (2) there are gender-related perceptions and pressures that hinder men from pursuing yoga. These perceptions, however, were from men who have no or limited yoga experience. As past studies have shown (Cartwright et al., 2020; Cramer, 2015; Vergeer et al., 2017; Vergeer et al., 2018; Wang et al., 2019), there are men who practice yoga albeit few in numbers.

Research on men’s health suggests that men are influenced by their perceptions of what other men do (Mahalik et al., 2007). Participants in the previous chapter inferred that having more visible male yoga participants might provide role models and help to make yoga a more normative practice among men. There is some evidence suggesting that the number of men practicing yoga is increasing (Wang et al., 2019). As suggested in the previous chapter, men may take up yoga as a



supplemental activity or as a therapeutic exercise. Pressure from female partners may also have an impact (Brenton and Elliott 2014). To date, however, only one study has examined male yoga participants’ experiences in yoga (i.e., Kidd & Eatough, 2017). Additional research involving male yoga participants would allow for a better understanding of the facilitators for uptake and sustained yoga participation among men. These men would be able to share also some useful strategies to overcome the perceived barriers.

Understanding male yoga participants’ motives for initiating and maintaining a yoga practice over time is an important starting point as this may provide information on factors that make men interested in this holistic movement practice. In this article, the aim was to identify the facilitators for uptake and continued yoga participation among male yoga practitioners. It was anticipated that these men could provide valuable insights concerning why men might start doing yoga, factors that help them engage in the practice, and any barriers that men may face, as well as strategies to overcome them.

#### 4.1 Abstract

As generally practised in contemporary societies, yoga is a holistic form of physical activity taken up by participants for various reasons. Studies have shown that people initially state physical and mental health reasons for taking up yoga but cite different motives such as spirituality for continuing. Despite the growing popularity of yoga as a form of health-enhancing physical exercise, available data suggest that uptake of yoga among men remains consistently low compared to women. To understand the barriers and facilitators for yoga uptake and continued participation among men, four focus group discussions and one interview were conducted involving 11 male and four female yoga participants. Using thematic analysis, four themes were identified: men need encouragement and advice from trusted others, men need to try yoga more than once, men encounter gender-related perceptions and issues, and men take up yoga for a variety of reasons. The findings suggest that men generally acknowledge the therapeutic benefits of yoga and take up yoga for instrumental reasons and upon others’ recommendations. These findings contribute to understanding factors influencing or hindering yoga participation among men and may inform recruitment and promotional strategies for both drawing more men into yoga and encouraging them to stay, which is essential for experiencing yoga’s long-term health benefits.

*Keywords:* yoga, holistic movement practices, masculinities, men’s health, social support,

## 4.2 Introduction

Physical exercise and sports are often considered masculine domains (Messner 2007; Andreasson and Johansson 2014). Research has consistently shown that more men participate in physical exercise and sports than women (Chalabaev et al. 2013; Bennie et al. 2019). However, there are physical activities that tend to stereotypically be seen as feminine. Possessing a higher degree of feminine characteristics and a preponderance of female participants, they appear less appealing to men (Chalabaev et al. 2013; Plaza et al. 2016; Sobal and Milgrim 2017). One such activity is yoga.

Yoga originated from India’s philosophical traditions, designed as a holistic practice for personal growth and inner transformation (Feuerstein 2008; Rao 2017). However, modern-day yoga has evolved into a physical culture (De Michelis 2007, 2008), recognised by world authorities as a form of physical activity that people can undertake for health and well-being (United Nations General Assembly 2015; World Health Organization 2018). Yoga can be classified as a holistic movement practice, a physical activity embedded within a holistic philosophy for health and well-being (Vergeer, Johansson, and Cagas 2021). Practising yoga traditionally includes various techniques (e.g., postures, meditation, cleansing procedures) and ethical principles (Feuerstein 2008; Gard et al. 2014). However, the more esoteric elements are often deemphasised in Western societies, leaving only postures, breathing, and relaxation as the main elements (e.g., Clarke et al. 2018).

This posture-based yoga practice exists in many forms, varying in focus and intensity (Forseth and Hunter 2019). Some styles, like Vinyasa Yoga, place specific emphasis on breath and movement synchronisation, creating a dynamic and challenging practice; others, such as Yin Yoga, focus on the therapeutic and

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relaxation aspects resulting in a restorative experience (McCrary 2013). While yoga has become a typical physical activity offered in health and recreation programs, available data suggest that actual participation remains relatively low and seems to be dominated by a particular population subgroup (i.e., well-educated, middle to upper-income women) (Park, Braun, and Siegel 2015; Clarke et al. 2018; Vergeer et al. 2018; Wang et al. 2019). The low rate of yoga participation among men is acknowledged in popular media, and many lay articles have been written on why men should do yoga (e.g., Stiefel 2019). Some initiatives to encourage more men into yoga have also been created within yoga communities (e.g., Izzon 2019; Perri 2016). However, the extent to which these initiatives have successfully drawn more men to yoga remains unknown. Gender-specific facilitators and barriers to taking part in holistic movement practices, including yoga, have not been given much academic attention (Vergeer, Johansson, and Cagas 2021).

Previous studies discussed several reasons why men seem less likely than women to take up yoga. First, yoga is often seen as a gentle and non-competitive physical activity that emphasises mindful awareness and movements. Research suggests that men generally prefer vigorous and competitive physical activities that require strength and skill mastery (Spadola et al. 2017; van Uffelen, Khan, and Burton 2017; Cagas, Biddle, and Vergeer 2021). Second, yoga is heavily marketed towards women and perceived as a female activity (Vinoski et al. 2017; Webb et al. 2017; Cagas, Biddle, and Vergeer 2021). Participation in physical activities stereotyped as feminine, such as yoga, could be problematic for men, especially if they hold strong traditional masculine beliefs (Courtenay 2000b). Third, yoga is often delivered in a group format similar to group fitness classes associated with women doing aerobics (Andreasson and Johansson 2014; Xu, Fan, and Brown 2019).

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Participating in activities associated with women may be seen as counter-normative to being a man, triggering social evaluation concerns and gender role conflicts in men (Salvatore and Marecek 2010; O'Neil 2013). Hence, men distance themselves from feminine activities like yoga to avoid being seen as weak, incompetent, or effeminate (Courtenay 2000b).

That there are men who practise yoga is not in question. Most of the yoga teachers who helped spread yoga to Western societies were men, including gurus of the two most influential modern postural yoga styles (i.e., Ashtanga and Iyengar Yoga) (Goldberg 2016; Sarbacker 2014). In the United States, Wang et al. (2019) reported that there might be an increasing number of men practising yoga, but they remain a small percentage of participants compared to women. Some studies suggest that men may take up yoga as a supplemental activity or as a therapeutic exercise (Cagas, Biddle, and Vergeer 2021) or when pressured by their female partners (Brenton and Elliott 2014). Commensurate with their low participation rates, men do not feature strongly in yoga research, with most studies including a preponderance of women. To the best of our knowledge, very few studies have examined men's perceptions of yoga (i.e., Kidd and Eatough 2017; Cagas, Biddle, and Vergeer 2021). More research is needed to understand perspectives from men who practise yoga at varying levels of commitment.

### **The present study**

The potential of yoga to promote holistic health and well-being in the general population is increasingly evidenced (Cramer et al. 2014; Hendriks, de Jong, and Cramer 2017; Cramer et al. 2018) and widely acknowledged (United Nations General Assembly 2015; World Health Organization 2018). It can thus be expected that there would be public health benefits from more men doing yoga, and in that

light, examining barriers and facilitators to men’s participation is important.

Although there are a considerable number of studies exploring the barriers and facilitators for yoga participation among adults (Cagas, Biddle, and Vergeer 2020), these studies mostly represent female participants. Factors influencing men’s participation or non-participation in yoga are less understood and rarely addressed in the research literature. Therefore, this study was undertaken to explore the facilitators and barriers associated with yoga uptake and continued participation from the perspective of yoga-participating men. As these men could draw from personal experiences, it was expected that they could provide valuable insights concerning why men might start doing yoga, factors that help them engage in the practice, and any barriers that men may face, as well as strategies to overcome them. Such insights are an essential first step to support wider uptake of yoga beyond the currently dominant participant group.

### **4.3 Methods**

This study used a qualitative descriptive approach (Bradshaw, Atkinson, and Doody 2017). This approach provides straight-forward and low-inference descriptions of the phenomenon of interest and is deemed particularly useful for under-researched topics (Kim, Sefcik, and Bradway 2017; Neergaard et al. 2009). Taking a realist perspective (Vaismoradi, Turunen, and Bondas 2013), we developed themes based on a semantic reading of the data, derived primarily from focus groups with men and women who regularly participate in *asana*-based yoga classes.

#### **4.3.1 Participants of the study**

A total of eleven male yoga participants ( $M = 37.7$ ;  $SD = 10.5$ ; *Range*: 20-53) took part in the study. They attended one of three focus group sessions conducted in February and March 2019. One participant was interviewed separately as he could

not take part in any of the group sessions. To deepen and widen perspective, we also conducted follow-up interviews with two focus group participants who were teachers, as well as an additional focus group involving four female yoga participants ( $M = 46.3$ ;  $SD = 9.2$ ; *Range*: 35-57) to capture the perspectives of the opposite sex. Each focus group consisted of 3-4 participants recruited through the lead author’s professional network and studios/gyms located in the Greater Brisbane region in Queensland, Australia. Participants were required to have practised yoga at least once a week for three months prior to the focus group. A maximal variation sampling strategy was used to include participants with a wide range of yoga experience (*Range*: 3 months to 28 years; *Median* = 3.0 years). Except for two men, all participants were known to the lead author prior to the study. They were aware of the lead author’s research project and participated willingly. Each participant was offered a \$25 grocery voucher to compensate for their time.

#### **4.3.2 Data collection**

A face-to-face focus group method was used to encourage open-ended discussion and elicit a wide range of views of the research topic (Braun and Clarke 2013; Kidd and Parshall 2000). We developed a focus group guide (Supplementary material), which was pilot-tested on a small group of yoga-practising men and finalised with minimal changes.

Each focus group began with general introductions and warm-up questions to make participants feel comfortable and build rapport with the other participants. The discussion started with a sharing of what made one first take up yoga. Discussion topics then focused on factors that helped participants maintain a regular practice, their views on why other men do not practise yoga, and what would help in encouraging these men to try yoga.

### **4.3.3 Procedures**

The Human Research Ethics Committee at the University of Southern Queensland approved the protocol of this study (Approval No. H18REA217). Advertisements were posted on social media accounts of yoga studios and fitness centres where the lead author had personal access. Individuals who expressed interest in participating in the study were invited to attend one of the scheduled focus group sessions. An effort was made to ensure that each men’s group included men with diverse yoga experience to elicit multiple viewpoints and generate rich discussions (Braun and Clarke 2013). Several days before each session, personal information sheets and consent forms were emailed to the participants to be completed at their convenience. A list of discussion topics was also sent to allow participants to reflect and process their thoughts about the subject (Olliffe and Mróz 2005). Participants submitted their signed informed consent electronically or as a hard copy.

Before each session, the lead author verbally sought permission to audiotape the discussion before turning on the recording device and asking the first question. Each focus group discussion took place in a meeting room on a university campus, was digitally recorded and lasted between 1.5 to 2 hours. The lead author moderated all group sessions and was assisted by one other member of the research team. As a form of member checking (Kidd and Parshall 2000), the moderator summarised the discussion at the end of each question before moving to the next question. This process allowed the participants to confirm or clarify their responses. Each focus group was followed by a debriefing between the lead author and the assistant moderator to reflect upon the discussion and note relevant points, common themes, and challenges. The lead author also facilitated the additional and follow-up interviews.



#### **4.3.4 Data analysis**

NVivo 12 (2018) was used to facilitate the data analysis. We followed an inductive and essentialist approach to thematic analysis (Braun and Clarke 2013, 2019), which allowed us to examine the semantic features of the data and provide a straight-forward summary and descriptions of participants’ views and ideas expressed in the discussions (Braun, Clarke, and Rance 2015). The process involved six iterative steps. First, as a means of data immersion, the lead author himself transcribed the audio recordings verbatim, read and reread the transcripts thoroughly, noting down initial thoughts and observations of potentially relevant data items. Potential identifiers were removed from the transcripts, which were then checked for accuracy by the third author. Second, codes were developed from semantic content of data segments, using a combination of broad-brush (i.e., coding exchanges between group members) and fine-grained (i.e., coding lines spoken by one participant) coding (Kidd and Parshall 2000). Third, codes containing similar ideas were grouped and interpreted to generate several candidate themes. Acting as ‘critical friends,’ the third and fourth authors reviewed these candidate themes independently and offered alternative interpretations and additional points for reflections (Smith and McGannon 2018; Sparkes and Smith 2014). Fourth, actual data under each theme were revisited to ensure coherence and consistency. Fifth, each theme was defined and assigned a name derived from the data. Finally, illustrative quotations were chosen to accompany the written report. All authors agreed on the final interpretation of the themes. In addition to following the recommended approach in improving rigour and trustworthiness of the thematic analysis (Nowell et al. 2017), we emailed a summary of the themes and their descriptions to all male participants for member reflections (Smith and McGannon

2018). They were asked to reflect on the report and share any additional thoughts, including how they handled the barriers themselves or advice they might have for other men to overcome those obstacles. Five out of 11 (45.5%) responded.

Researcher background and experience are essential considerations in qualitative research (Creswell 2007). In this study, the lead author is an Asian male doctoral student in his early 40s with considerable experience in university lecturing and handling group discussions. He is also a yoga practitioner and instructor with many years of teaching experience in a multi-cultural environment. He maintained a reflective journal throughout the study, and discussed his reflections regularly with the third and fourth authors to monitor any personal preconceptions (they acted as ‘critical friends’ throughout the process of theme development, offering their insights in the interpretation of the candidate themes) (Smith and McGannon 2018). The third author is also a doctoral student with some yoga experience, while the fourth author is a senior sport and exercise psychology researcher experienced in qualitative methods. The second author is an experienced senior academic and research supervisor in exercise psychology and public health.

#### 4.4 Results

Participant characteristics are reported in Tables 1 and 2. We used pseudonyms and altered some identifying details to maintain confidentiality. All participants identified as white except for two female participants, who identified as Asian and mixed race. Most participants (87%) were physically active beyond yoga. Four of the 11 men (36.4%) and 3 of the four women (75.0%) considered yoga their primary form of physical activity. The majority (78.6%) of participants attended yoga classes 1-3 times per week and listed Vinyasa, Yin, general Yoga, and Ashtanga as their styles of practice.

The participants welcomed the opportunity to share their thoughts and ideas as they felt the topic is not often discussed. The men spoke openly about why they started doing yoga and why very few men take up yoga. We identified four overarching themes to capture the discussions (Figure 1): (1) men need encouragement and recommendations from others; (2) men need to try yoga more than once; (3) men struggle with gender-related perceptions and issues, and (4) men take up yoga for a variety of reasons. These themes represented data drawn primarily from the men’s focus group. Data from the women’s group are presented as a comparison or point of contrast.

*Table 1. Participant characteristics*

Group	Pseudonym	Age	Ethnicity	Educational background	Occupation	Relationship status	Yoga experience and style
1	Oliver	36	White	Vocational qualification	Technical service officer	Partnered	3 years; no specific yoga style
1	William	20	White	Year 12 or Secondary School	Administrative staff	Single	3 months; no specific yoga style
1	Stephen	37	White	Bachelor	Sales manager	De facto	1 year and 2 months; Yin Yoga, VinYin, Hot Yoga
2	Thomas	50	White	Less than Year 12 or Secondary School	Gym instructor	Single	9 years and 2 months; multi-style
2	James	28	White	Bachelor	Software engineer	Married/Civil Partnership	3 years; Vinyasa, Aerial
2	John	51	White	Master's	Public servant; Part-time yoga teacher	Partnered	28 years; Ashtanga Vinyasa; other “modern” vinyasa
2	Henry	40	White	Less than Year 12 (Secondary School)	Builder	Single	3 years; Ashtanga, Yin
3	Noah	30	White	Bachelor	Yoga teacher	Single	4 years and 3 months; Yin,

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Group	Pseudonym	Age	Ethnicity	Educational background	Occupation	Relationship status	Yoga experience and style
							Gentle, Restorative
3	Jack	40	White	Bachelor	Self-employed	Married/Civil Partnership	6 months; Vinyasa
3	Liam	30	White	Year 12 (Secondary School)	Administrative officer	Single	10 months; no specific yoga style
4	Mia	57	White	Year 12 (Secondary School)	Business owner	Married/Civil Partnership	3 years; Vinyasa
4	Berta	44	Asian	Master's	Marketing professional	De facto	3 years; Yin
4	Grace	49	Mixed	Master's	Marketing professional	De facto	3 years and 6 months; Yin, Gentle, Vinyasa
4	Stella	35	White	Year 12 (Secondary School)	Auditor	De facto	4 years and 3 months; Yin, Vinyasa
*	Paul	53	White	Associate Diploma	Wardsman	Married/Civil Partnership	3 years and 8 months; multi-styles

**Table 2. Summary of participant characteristics**

	Male	Female	Total
<b><i>Age</i></b>			
Mean	37.7	46.3	40.0 years
Standard Deviation	10.5	9.2	10.6 years
<b><i>Ethnicity</i></b>			
White	11	2	13
Asian	1		1
Mixed	1		1
<b><i>Employment status</i></b>			
Full-time	7	3	10
Part-time	2	1	3
Self-employed	2		2
<b><i>Educational attainment</i></b>			
Less than Year 12 or Secondary School	2		2
Year 12 or Secondary School	2	2	4
Vocational qualification	1		1
Associate diploma	1		1
Bachelor	4		4
Masters	1	2	3
<b><i>Relationship status</i></b>			
Single	5		5
Partnered/De facto	3	3	6
Married/Civil partnership	3	1	4
<b><i>Years practicing yoga</i></b>			
< 1 year	3		3
1-3 years	4	2	6
> 3 years	4	2	6
<b><i>Frequency of class attendance</i></b>			
1x per week	3		3
2x per week	2		2
3x per week	3	3	6
4x per week			
5 or more times per week	3		3
Not attending classes at the moment		1	1
<b><i>Doing home practice</i></b>			
No	7	1	8
Yes	4	3	7
<b><i>Frequency of home practice</i></b>			

	Male	Female	Total
No response	1		1
1-2x per week	1	3	4
4-5x per week	1		1
More than 5x per week	1		1
<b><i>Yoga as the primary physical activity</i></b>			
No	7	1	8
Yes	4	3	7
<b><i>Engagement in regular physical activity</i></b>			
Have only begun engaging in regular physical activity within the last 6 months	2		2
Have been engaging in regular physical activity for longer than 6 months	9	4	13

#### 4.4.1 Men need encouragement and advice

In all groups, participants discussed how encouragement and advice from trusted others might be vital for men. Recognising the preponderance of female participants in yoga, they believed that having more visible and diverse male role models could inspire other men. Participants further noted the importance of the yoga teacher in facilitating continued yoga participation among men. However, they also described instances when yoga teachers become barriers.

##### ***Family, friends, peers, and health professionals***

Several men did not consider yoga beneficial until someone encouraged them to do it. The encouragement came from their partners, family members, friends, or colleagues.

*It was almost like, even for the three of us, it's like someone... it's like things got to a point where you almost have to go. Like it was people were telling you, you needed this, or it's not considered. I guess (William) already said that, like you wouldn't naturally consider it as part of your fitness. Like you needed someone to tell (you), 'Hey, you need to do this.' (Oliver, 36)*

## CHAPTER IV. “Men need role models”

Some men were advised by their health professionals to take up yoga to self-manage their pains and injuries.

*I think it was either the physio- or massage therapist that I went to suggested doing or trying Yin (yoga). I tried it, and it was really good for relieving that tension. I'm getting rid of all the pain. From there on, I just started sort of exploring and seeing what else is there. (James, FGD2)*

### **Male role models**

Participants noted the lack of diversity in male representation in yoga. They believed that yoga-related media and marketing were aimed primarily towards women, or the lean, flexible, and athletic men.

*What are the predominant images and messaging that men are receiving about yoga? Oh, it's feminine. It's women. It's Lululemon. It's leotards. It's hot chicks with beads doing dancer's pose on a beach with crashing waves. If the imagery is towards men, it's people like Dylan Verner, your muscle guy covered in tattoos doing one-armed handstands. That's more like Cirque du Soleil.... The messaging is really imbalanced. (John, 51)*

Some participants, including women, did not know any other men who did yoga except those they had met in class. They believed there is a need for more diverse male representation and role models in yoga to encourage uptake. Several men recalled memories of other men in their lives who served as role models (e.g., fathers or male friends who did yoga) and fostered their interest in yoga. Some described how seeing other men in the class motivated them.

*My first entry point was meditation. As a kid growing up, my dad was a daily meditator... he'd get home from work, go to his lounge room and his chair, and sit for at least half an hour on most days. He'd come out really chill, and that's just what we did. (John, 51)*

*I have actually pushed myself more seeing like a couple of other guys in the group going, damn it, if they can do this, I have to do this (too). It does push you. (Jack, 40)*



When asked to reflect on the findings, Oliver’s response succinctly captured this theme:

*They also need some role models who openly practise yoga and promote the benefits of it. Men probably need to see masculine counterparts participating, or f(or) all body types. Examples would be NRL football players, military, firefighters, personal trainers, boxing/MMA fighters, tradies, etc.*

***Yoga teachers and their teaching approach***

Yoga teachers were identified as important facilitators for continued participation among men. Yoga style, class content, delivery approach, and personal characteristics were all associated with the teacher. Participants emphasised the importance of finding a teacher whose teaching style matches what men seek from yoga.

*I’m gonna say it all depends on the instructor. We had a few different instructors, and one was very vocal and talked a lot and, I guess, trying to make it fun like a bit of a laugh. I was like, no. I need it to be quiet and reflective. I think whoever is instructing really need to pair well with them in order for it to work well. (Oliver, 36)*

*That (yoga style) is part of what the instructor is because different instructors have different styles. So, I like (this particular teacher’s) style, and hence I’ve been to (his) class more than once. (Jack, 40)*

While some participants noted that the gender of the teacher is not crucial, others expressed a preference for male teachers. They explained that male teachers tend to have a more pragmatic approach to teaching, use less flowery words, and tend to offer more structured and challenging classes.

*We have both male and female teachers in the studio that (my partner) and I go. And you see the guy who gives the class on Monday. His class is very popular. And so, for myself, I like to have a guy as an instructor. It’s a bit more challenging that I find... his class is very well-structured. (Stephen, 37)*

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*Teaching approach as a barrier.* Participants also discussed how some teachers could make men lose their interest in yoga. When teachers do not create the vibe that men expect in a class or introduce elements that men did not expect, disappointment or dropout may follow.

*There are styles that I just couldn't click with. Because they were not what I went there for. I didn't go for relaxation, for example. I didn't go to just to hear somebody's ideas about breathing and why we breathe, you know. To open up your (chakra)... (For) me personally, (it's) being tired and the fact that my muscles have been used. I get disappointed in the whole breathing thing, or if I go and I feel like I haven't exercised. I need to exercise for me to feel happy that I've actually done something. My muscles need to hurt for me to go. I need to feel that I've worked out. (Jack, 40)*

Men who practised yoga for physical reasons did not resonate with the chanting of *mantras* because they felt it does not belong in a “fitness” class, nor is it a part of Western culture. A few of the men grew up in a religious environment, and the chanting reminded them of rituals and prayers, which they reported as repulsive.

*I still find the chanting weird. But speaking to my wife, she really likes it.... I'm going to say initially that it might be because it's in some other language, but that would be completely false. Because even in English, I still find it weird. That might be the fact that I went to church my whole life, and I really resent saying religious things out loud. I find it a bit embarrassing. (Jack, 40)*

*...the language around yoga as well. Like the different styles, I guess the traditional names of the poses and things. I think that could be a turnoff as well. (Oliver, 36)*

Nevertheless, most participants understood that these elements are integral ingredients of some teachers' teaching styles. They continued to take part in these teachers' classes because the teachers created other experiences that met their needs. Still, one participant believed these aspects of yoga might be off-putting to some men, especially if introduced early in the process of participation.

### **4.4.2 Men need to try yoga more than once**

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Like in any other physical activity, participants believed men need to try yoga more than once and sample different yoga styles, allowing them to understand how yoga could benefit them. Several male participants shared how they initially thought yoga was not beneficial for them until they experienced a few classes.

*(I thought yoga) was not something that would be suitable for me, but that's just a lack of understanding of it. I didn't really have much of an idea of the whole reasoning behind it. And once I did a session, I sort of realise it's a way of helping you relax. I didn't really understand how it would be useful for me. (William, 20)*

Most male participants did not realise the existence of many different yoga styles when they started. They encouraged men to explore other yoga styles and find the one that resonates with them.

*Probably, I would say that people should be encouraged to know that there's a huge diversity and variety out there. And they can shop around. And that they can explore different styles until they find something that suits them. And not to necessarily give up after 1 or 2 (sessions) but try to find a version that resonates with them. (John, 51)*

Participants discussed the importance of seeing the results for men. However, they advised other men to avoid the “quick fix” mentality and understand that, similar to gym training, results in yoga take time and require regularity of practice. They stressed it would take more than one session for men to understand yoga and experience its many potential benefits.

*I reckon like the results are very important. ... Results might come in a week, a month, or it might take a long time. ... I think that regularity, making it a habit is really important. (John, 51)*

*It could probably help if you tell them that it's something like going to the gym, you don't just quit after one gym 'cause you don't get anything out of the first session, really. Just your kind of... you get there, the first introduction. So just like anything else, to persist for at least a few sessions and to really understand if it's something that resonates with you. 'cause otherwise, you don't get anything done. (James, 28)*

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Participants believed men’s competitive nature makes them generally want to be good at a skill immediately and may lead them to feel discouraged when they realise an activity is not as easy as they thought it would be. William and Oliver shared that they knew someone who likely felt discouraged and stopped coming to yoga because he struggled with the yoga positions due to a lack of flexibility.

*I guess that’s probably a male thing as well. Like you wanna go in there, be good at it straight away. ... You got to overcome that. I tried to give him words of encouragement that first day where I said I couldn’t touch my toes, because like you do need someone to tell you to keep coming. (Oliver, 36)*

When asked to comment on men-only classes, some participants believed that offering it regularly may not be necessary. Men will eventually realise that yoga is a personal practice, and sharing space with women should not be an issue.

*I think it might. Initially, and then I think men will be comfortable enough to go to a mixed class. (Liam, 30)*

However, a men-only introductory workshop could provide an opportunity for men to try yoga in a safer environment and build confidence before easing into the female-dominated yoga space.

*I think it’s more about that initial kind of getting over themselves, that initial phase of having a safe space to practise and realising that other men do it as well. And that would, I think, also help to introduce them to other men. So, I think if there was like a four-week course, if there could be beer involved afterward, I think that would probably work with the Australian men. (Grace, 49)*

One female participant cautioned not to accommodate men too much to the point of losing the message and values of yoga.

*I do feel though that in wanting to get men into yoga, I don’t think that we should baby them too much to try to get them in. You know what I mean by trying to... we don’t want to, or I don’t think we have to accommodate too much. (Mia, 57)*

#### 4.4.3 Gender-related perceptions and issues

When explicitly discussing barriers to yoga uptake, participants noted there is still a lack of understanding surrounding yoga, especially among men. They described how yoga is often stereotyped as a feminine and female-dominated flexibility exercise, leading to feelings of vulnerability and embarrassment in men taking part in a yoga class.

##### ***‘Men go to the gym; girls do yoga.’***

That men are typically competitive and prefer high-intensity, vigorous workouts was a common discussion across all three male groups. Participants explained that, unlike weight training and interval training, many men perceive yoga to not be challenging enough to consider it as a physical activity.

*It is perceived as being too passive. Men want something much more amped up, much more vigorous. They wanna sweat, they wanna huff, they wanna puff. Generally, they go to a gym, huff and puff, or they'll do running, or things that actually high-cardio and exerting. They wanna break a sweat (and) lift heavy things. Really exert and work hard. Like... spend time on the exercise bike and do a high-intensity interval training or something like that... they wanna feel like they've really done something. (John, 51)*

Several men initially believed yoga was an activity that women did because they could not go to the gym. This feminine perception of yoga was also discussed among female participants.

*I guess there's also the perception that it's a thing that girls do. It's not something for men. Men go to the gym, girls go to the yoga class. That's how things go. (James, 28)*

*I think definitely that it's more a feminine form of exercise and that it's not very masculine. Because I think there's definitely (a belief) in Society, in general, that you know, it's big muscles and heavy weights, and how-heavy-can-you-lift type of thing that sort of extends to the way that people sort of perceiving yoga to be, and that it's just a woman type of exercise. (Stella, 35)*

##### ***Feeling vulnerable, incompetent, and embarrassed***

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Participants noted that being in a room full of women could make some men feel vulnerable and embarrassed. These unpleasant feelings could arise from realising that yoga - at least some styles - is not as easy as they thought it would be.

*... there's a whole class full of women, middle-aged women, and even young women. It could be an element of feeling uncomfortable because you're in a yoga pose. It's a place of vulnerability. If you don't feel like you belong there, or if you feel like you're the wrong gender, it could be a barrier to continuing. And even like walking into a yoga studio, some men might see it as feminine because of the kind of branding around it. (Noah, 30)*

Other issues might be a fear of embarrassment, fear of not being good at yoga, or fear of what other people might think. Men could feel incompetent for not being able to do the poses well, comparing themselves to the more flexible women or any athletic men who might be present in the class. These feelings of vulnerability and incompetence could discourage men from continuing.

*I have a friend who had some kind of injury with his hamstring, and the physiotherapist recommended that he do yoga. He went to a yoga class (and) he was the only man. He stayed at the back, and they were doing downward dog. He was like, 'all I could see was all these women bending over in front of me!' He was so embarrassed that he just left the class, and he never went back. (Stella, 35)*

Some female participants mentioned they had been unsuccessful in motivating their spouses to take up yoga regularly, possibly due to these fears.

*I've been trying to get my partner to do yoga for years, and I've successfully only got him to get a couple of classes at that time. I think the very first time we went, he thought that it was going to be easy. So, it was a little bit of a shock to the system that it wasn't because I think he thought it was like a girl thing... I think once he got past the idea that it's gonna be easy, I think he felt very embarrassed that he was so incompetent at it. (Grace, 49)*

The women also discussed how yoga provides a quiet personal space to focus on the self, which they thought could be confronting, particularly to the stereotypical

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man who is not in touch with his emotions and does not enjoy being alone with his thoughts.

*... maybe it's going to bring up things. Being alone with your thoughts that they don't wanna have brought up, and especially in public. So, I can see that it can be quite confronting. And Australian men in particular (it's like) they're not allowed to have emotions! They have beer! (Grace, 49)*

When asked to reflect on these barriers, the men mentioned several strategies to overcome these obstacles. These included commitment to their health and fitness, having a strong sense of self, and personally experiencing the benefits of regular participation.

*I certainly experienced all of these barriers in my first two years. I pushed through as I am quite disciplined with my health and fitness and trusted the gentleman who introduced yoga to me. (Thomas, 50)*

*The perception of yoga was a reason I didn't try yoga earlier as I didn't feel comfortable going to yoga as the only man in the studio. ... Resilience and a strong sense of self ensured that I disregarded the perception and attended yoga practice. (Liam, 30).*

*I encountered some of these issues when I first attended yoga due to being the only male. However, the benefits I experienced far outweighed my original concerns. (Paul, 53)*

Oliver pointed out that feeling a little vulnerable is normal when trying something new. According to him, ‘some people fear being judged by others if they are not immediately good at something, or they fear the people they will be “trying something new” would not be supportive and understanding.’ He added that ‘men are unlikely to try something new on their own without a friend/partner with them.’ For Liam, having a class in the workplace with familiar faces and a welcoming yoga environment made it easier to feel more comfortable in yoga.

### 4.4.4 Men take up yoga for a variety of reasons

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While most men took up yoga to gain flexibility, increase mobility, or cope with physical injuries or mental issues, a small number of men pursued yoga as an alternative form of spiritual practice from the start. With continued participation, some men discovered the potential of yoga for personal development.

### ***A way to (re)gain mobility and flexibility***

All participants acknowledged the functional benefits of yoga. For these reasons, yoga particularly appealed to men who played sports or danced when they were younger. These men took up yoga to regain the mobility and flexibility they once had.

*When I was younger, I did gymnastics, and then at a certain age went to the gym to maintain the physical strength. After all the years of being in the gym, I started feeling more and more sore and having less mobility. So that's why I was interested in doing yoga, to gain the flexibility and the mobility again. (Stephen, 37 years old)*

### ***A tool to cope with physical and mental health issues***

For several men, yoga provided a tool to cope with physical injuries or with stress and anxiety. A few participants sustained injuries from playing sports intensively when they were younger and found yoga beneficial in managing these old injuries.

*The reason why I started was because I was doing a lot of sporting activities in my early 20s, a lot of soccer and things like that, and I got a bad knee injury. I had a torn ACL. One side of my body was always compensating for the broken side. I was getting a lot of pain and a lot of problems on the side that was compensating. ... I tried Yin, and it was really good for relieving tension. I'm getting rid of all the pain. (James, 28).*

Yoga was also beneficial for men dealing with stress or anxiety. Some men started doing yoga to manage their nervousness or to cope with work-related stress.



*Because I was pretty stressed last year at work, I wasn't really having a very good, easy time with my mental issues... I eventually attended and realised its capability, and it's a tool, in a sense, to be able to get a better headspace. (William, 20)*

***A path for personal and spiritual development***

Some men acknowledged yoga's potential for personal growth, recounting how practising yoga regularly helped them develop attributes like self-confidence, self-awareness, non-judgmental attitudes towards themselves and others, and a sense of gratitude. However, these men associated yoga more with fitness than with spirituality; they considered the chanting and other overt spiritual elements off-putting. Still, they seemed to value yoga's contemplative and meditative aspects, mentioning these as reasons they kept returning to class.

*It makes you less of a judger. ... for me, yoga can indeed slow me down, and I think by slowing down, it can make people more aware and being aware of other people... But you will also become more aware of yourself. What your own state of mind is. ... What I experience at the end of yoga class is some kind of gratitude. I also have the impression, a lot of teachers try to facilitate that a bit, the gratitude that you could do the practice, that you have a practice together with other people. Yeah, sometimes I can really feel gratitude after a practice. I think that yoga makes us or makes me a nicer person. (Stephen, 37)*

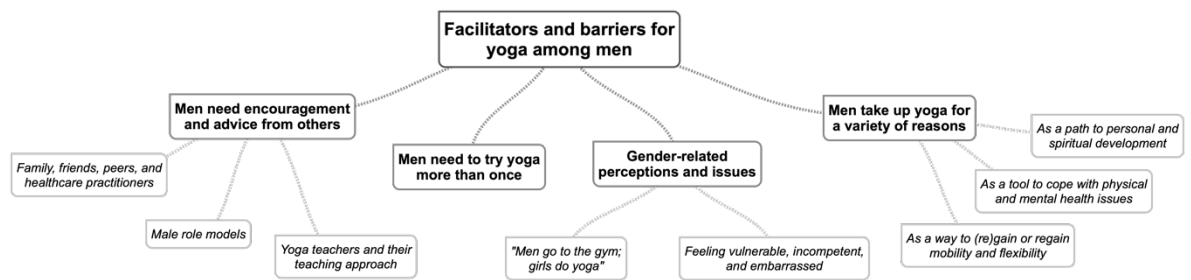
*I started doing yoga three years ago, just from a DVD that my ex-wife had. It was a sun salutation, and I dug it because it was a way of giving gratitude. I'm a big believer in what you give out is what you get. I was looking at other ways of giving gratitude and that was what sun salutations did. Everything went from there, and I loved it. I've been doing it more and more ever since. (Henry, 40)*

Four men, including the two teachers, understood yoga as a spiritual practice, engaging in its psycho-philosophical underpinnings and other more esoteric elements (e.g., chanting). For Noah, yoga was a spiritual path from the beginning, and he described his first yoga experience as “a lightning bolt” that his teacher transmitted to him and the rest of the class. John explained that men who are more inclined

toward a spiritual disposition would embrace the spiritual aspects of yoga, while those who are not will merely do it for exercise.

*It's polarising. It's either all or nothing. If you are inclined toward a spiritual disposition or embracing the spirituality of yoga, it's natural. It's easy to open up and it will open up in entirety. But if you are not that way inclined, it's black and white. You will not. There's no halfway, there's no shades of grey. So, you got all or nothing. Men who are inclined towards embracing the spiritual aspect of yoga, or the holistic aspect of yoga, will naturally gravitate that way, and they will find it natural, easy, fulfilling, and rewarding as the lifestyle manifest. (John, 51)*

**Figure 1. Thematic map of facilitators and barriers for yoga among men**



## 4.5 Discussion

Although yoga is practised as a form of physical activity in modern-day societies, it offers benefits beyond those provided by conventional exercise (e.g., personal growth, spiritual well-being) (Cagas, Biddle, and Vergeer 2020). Yoga, however, is predominantly practised by women, making it unappealing for many men (Cagas, Biddle, and Vergeer 2021). Yet, there are men who practise yoga. Through focus groups, we obtained the views of a number of these men on facilitators and barriers for men's yoga uptake and continued participation. We captured a wide range of perspectives, from men who were relatively new to yoga to those who had been practising for decades, and identified four themes: (1) men need

encouragement and advice, (2) men need to try yoga more than once, (3) men may struggle with gender-related perceptions and issues, and (4) men take up yoga for a variety of reasons.

#### **4.5.1 Social influence and support**

Consistent with previous studies on yoga (Park et al. 2019; Wertman, Wister, and Mitchell 2016) and the broader physical activity literature (Bauman et al. 2012; Scarapicchia et al. 2016), we identified social support and influence as critical facilitators for yoga uptake and continued participation among men. For most men, yoga was not an activity that they considered until someone recommended it to them. Promoting yoga through significant others and healthcare practitioners may thus be an important strategy to encourage more men to try yoga (Cagas, Biddle, and Vergeer 2021). For example, family, friends, or partners could give men a free trial membership in a yoga studio and offer to go to the yoga class together. Yoga teachers and healthcare practitioners could inform men on what type of yoga class to take and provide encouragement and positive feedback after class, supporting men’s self-efficacy and continued participation (Scarapicchia et al. 2016).

However, the female participants in our study noted they had been unsuccessful in motivating their male partners. A meta-analysis reported that the association between social support (i.e., from friends, peers, or significant others) and actual physical activity engagement remains inconclusive (Scarapicchia et al. 2016). Men might feel coerced into doing yoga and therefore feel less inclined to participate. However, some studies on the use of complementary and alternative medicine suggest pressure from female partners is one justification men often cite for engaging in feminine-stereotyped activities like yoga (Brenton and Elliott 2014;

Keshet and Simchai 2014). Future studies should seek to clarify further what dynamics operate in partner persuasion regarding yoga participation.

***The role of the yoga teacher***

Yoga is often taught in a teacher-led, group class format. As such, yoga teachers play a vital role in creating a class environment that facilitates positive experiences and fosters motivation. Our participants emphasised the importance of finding a good teacher who offers classes that match men’s expectations regarding content, delivery, and experience. This could shift men’s focus to yoga’s benefits and overcome barriers related to the feminine perceptions about yoga. Yoga teachers, however, can act either as facilitators or barriers, depending on how they are perceived (Cagas, Biddle, and Vergeer 2020). Previous studies suggest that yoga teachers encourage adherence when they are relatable, compassionate, attentive to students, communicate clearly, provide safe instructions and appropriate modifications, and encourage students to build their practice (Park et al. 2013; Spadola et al. 2017). Having a consistent teacher also develops a relationship that can support sustained engagement.

However, yoga is a movement practice embedded within a holistic philosophy for health and well-being (Vergeer, Johansson, and Cagas 2021). Thus, some teachers incorporate spiritual elements (e.g., chanting) in their classes, which participants, particularly men, may find unappealing. Several men in our study did not associate yoga with spirituality and found the chanting of mantras in class off-putting. Providing spiritual messages is an undesirable yoga teacher behaviour identified in a previous study (Park et al. 2013). Motivation to continue participation may decrease among men, especially for beginners, if their expectations of a yoga class, including the content and the teachers’ behaviours, are unmet (Konecki 2006).

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This could also lead to feelings of discomfort, stress, and anxiety, potentially resulting in dropout (Park et al. 2013; Cagas, Biddle, and Vergeer 2020). As previous studies had predominantly female participants, it is important for future studies to examine desirable yoga teacher behaviours from men’s perspectives. There is a need to understand to what extent yoga instructors incorporate the holistic and philosophical aspects of yoga in their class delivery, and how receptive men are to these elements (Vergeer, Johansson, and Cagas 2021).

Although there are attempts to establish a minimum level of training and qualification for yoga instructors (e.g., Yoga Alliance, British Wheel of Yoga, Yoga Australia), the competencies of yoga instructors vary widely as yoga is unregulated in most countries and not a licensed profession (Sherman 2012). Also, teacher-training programs differ significantly across yoga styles or traditions. Some yoga traditions are taught in an autocratic, corrective, and straight-forward approach, instilling physical and mental discipline, while others are presented in a more open, calm, and suggestive manner, cultivating relaxation and mindfulness. Even within similar yoga styles, the practice may also be interpreted and taught differently depending on the yoga teacher’s teaching orientation and background. The instructional language used may also differ among teachers, not only because of differences in training but also because of gender. One participant noted that male instructors tend to use more instructive, straight-forward, and less emotional language compared to female instructors. Such behaviours could be interpreted as a way of dissociating oneself from the feminine aspect of yoga, similar to men who work in non-traditionally male occupations (Simpson 2016). Future work needs to explore gender differences in teaching styles, as well as examine how the interaction

between teachers’ gender and behaviours and men’s participation motives affects adherence.

#### **4.5.2 Gender-related perceptions and issues related to yoga**

Similar to previous findings (Cagas, Biddle, and Vergeer 2020, 2021), we found the perception of yoga as a feminine and female-dominated activity as a major restricting factor for men. Research suggests that involvement in leisure activities such as sport or exercise is influenced not only by individual interests and preferences but also by societal ideologies about the gender-appropriateness of those activities (Wiley, Shaw, and Havitz 2000). In Australian society, for example, sporting prowess and competitiveness, mate-ship, heterosexuality, and ability to prove oneself through physical force are the prevailing ideals of hegemonic masculinity (Coles 2008). Popular media reinforce these ideals by placing a stronger emphasis on men being lean, muscular, physically strong, and competitive (Lewington, Sebar, and Lee 2018). Although recent studies suggest these standards may be changing (Adegbosin et al. 2019; Lewington, Sebar, and Lee 2018), representations of traditional masculine ideals remain in media and publications targeting men (Lewington, Sebar, and Lee 2018; Waling et al. 2018).

Taking up yoga, an activity associated with women and performed in a group exercise environment, might evoke social evaluation concerns in men as they engage publicly in a counter-normative behaviour (Salvatore and Marecek 2010). Our findings indicated that some men might be reluctant to take up yoga for fear of being vulnerable (e.g., both in clothing and actual performance of *asanas*) and perceived lack of physical ability (e.g., not flexible enough), supporting previous research on yoga (Sivaramakrishnan et al. 2017; Wertman, Wister, and Mitchell 2016; Cagas, Biddle, and Vergeer 2021) and physical activity among men (Ashton et al. 2015;

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Ashton et al. 2017). Men might also feel they are ‘invading’ or ‘encroaching’ on women’s space when they attend a class in yoga studios. As reported by male participants in a previous study (Atkinson and Permuth-Levine 2009), this feeling of encroachment could further elicit social evaluation in men, especially those who are new to yoga.

Many of our participants equated men’s fears of vulnerability and revealing emotions with men’s ego and masculinity issues. Men who adhere strongly to hegemonic masculine norms may be more prone to masculinity threat (Mishkind et al. 1986) and may be especially anxious about being judged negatively because of the feminine stereotype attached to yoga. This fear of social judgement could also be a result of how men are represented in various forms of media (Waling 2016; Waling et al. 2018). Research suggests that men experiencing masculinity threat feel the need to represent themselves as heterosexual and avoid or distance themselves from any perceived feminine activities, such as yoga (Hunt et al. 2016). Because yoga is often taught in a group class format, the yoga teacher controls the content, vibe, and pace of the class. Although it was not discussed as an issue by our male participants, men who strongly believe that men need to be self-reliant and dominant might find it difficult to relinquish the control of their ‘exercise’ to an instructor, especially if it is a woman or a man of subordinate status (Courtenay 2000a; Mahalik, Good, and Englar-Carlson 2003). Perhaps men’s concerns regarding the suitability of the teacher may reflect some of this type of undercurrent.

While yoga is often considered a socially inclusive practice that welcomes anyone regardless of age, gender, or ethnicity, the perceived barriers attached to yoga (e.g., being a white female-dominated activity) are generally acknowledged even among yoga practitioners (Smith and Atencio 2017). At the same time, it is

suggested that yoga is a self-directed, individualised practice, and therefore the perceived barriers can be overcome by self-determination and self-responsibility (Smith and Atencio 2017). Our participants shared that personally experiencing the benefits of yoga outweighed their initial concerns about being the only male in the class, which consequently led to their continued participation. Determination and having a strong sense of self were also crucial in helping them overcome those barriers. Perhaps similar to men who engage in other feminine-stereotyped activities such as veganism (Mycek 2018), complementary and alternative medicine (Brenton and Elliott 2014), and health (Verdonk, Seesing, and de Rijk 2010), men who do yoga rationalise their participation by focusing on the practical benefits they gain from yoga and in the process downplay the femininity attached to the activity.

#### **4.5.3 Diversity among men**

Research shows that men do not belong to one homogeneous group, and they express their masculinities in different ways (Courtenay 2011; Connell and Messerschmidt 2005; Lomas 2013). While some men in our study rationalised their yoga participation in ways that align with traditional masculinity, others openly embraced the emotional and spiritual experiences associated with yoga. Contrary to suggestions from previous studies that men do not associate yoga with spirituality and are less likely than women to take up yoga for this reason (Park et al. 2019; Kidd and Eatough 2017), several men in our study became involved in yoga for spiritual reasons. This suggests that similar to men who meditate (Lomas 2013), men who do yoga can enact a different form of masculinity, one that allows them to appreciate the holistic aspect of yoga. Such men are able to reinterpret (e.g., embracing softness as part of being a man) or resist (e.g., citing pragmatic reasons for taking up yoga) traditional masculine norms allowing them to participate in feminine activities



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without experiencing gender conflict (Lomas 2013). It is therefore crucial to acknowledge differentiation among men and recognise that some men will be more open to the holistic aspects of yoga, beyond just the physical (e.g., philosophy, esoteric practices).

The men in our study seem to fit within a typology of yoga practitioners identified by Henrichsen-Schrembs (2008): (1) Exercisers - men who were regular exercisers and former gymnasts/dancers, who sought yoga as a physical exercise to regain mobility and flexibility; (2) Self-Helpers - men who were injured or stressed, seeking relief from physical pain or mental health issues; (3) Explorers - men who took up yoga initially for health and discovered its potential for personal development; and (4) Yogis - men who were interested in yoga as a holistic and spiritual practice. In our present study, all three men who viewed yoga as a spiritual practice were also yoga teachers. Henrichsen-Schrembs (2008) suggested that individuals who consider yoga as a spiritual practice often end up doing yoga teacher training to deepen their practice or to become teachers. Spirituality was one of the most common reasons for continued yoga participation among teachers and non-teachers identified in previous studies (Park et al. 2019; Park et al. 2016). These studies, however, included predominantly female participants. Future research may need to examine how important spirituality is as a reason for continued participation among non-teacher male yoga participants.

### **4.5.4 Strengths and limitations**

While the findings contributed to our understanding of why men may or may not take up yoga, several limitations must be considered. First, despite the objective of recruiting a variety of men from different walks of life and with varying degrees of yoga experience (including styles of practice), most men in this study were

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educated and of middle-to-high socioeconomic status. While this reflects the typical sociodemographic profile of yoga practitioners (Park, Braun, and Siegel 2015; Clarke et al. 2018; Vergeer et al. 2018), the facilitators and barriers identified here may not represent those of low-income men. However, the results were similar to a previous study involving low-income adults (Spadola et al. 2017). We also did not ask men about their sexuality. Based on the discussions and personal knowledge of the first author, it is assumed that most of them were heterosexual. There was also a lack of racial diversity, as all men were of white ethnicity. Men of a non-white racial background may hold different values or beliefs surrounding yoga. Given yoga’s current demographics (Vergeer et al. 2018; Cramer et al. 2016; Cartwright et al. 2020), it may be a challenge to find non-white and low-income men involved in yoga. Finding and interviewing such men, however, might provide valuable insights into the barriers and facilitators of these demographics. It is important to note that male yoga participants living outside these predominantly white societies may have different experiences in yoga. A study from India reported that the percentage of male yoga participants is almost the same as females (Mishra et al. 2020), suggesting that in such societies, men value yoga as much as women. Second, although the focus group format allowed men to share their yoga experiences with other men, it kept us from a more in-depth exploration of individual issues. However, we mitigated this to some extent by conducting two follow-up interviews to supplement the focus group data and asking participants to reflect on the findings and state how they overcame barriers. Five of the 11 men responded and provided additional data. It would be beneficial for future studies to use other forms of inquiry (e.g., interpretive phenomenology) to deepen our understanding of men’s experiences in yoga. Lastly, the men in our study practised only either restorative (e.g., Yin Yoga)

or dynamic (e.g., vinyasa or Ashtanga) styles of yoga in either gym or studio settings; other men may practise different yoga styles (e.g., Iyengar) and in other venues (e.g., martial art clubs). Future research will have to investigate how yoga barriers and facilitators vary across styles and settings.

#### **4.6 Conclusion**

This study provided insight into yoga-practising men’s perspectives on facilitators and barriers for yoga participation among men. The findings suggest that men generally acknowledge the therapeutic benefits of yoga and take up yoga for instrumental reasons and upon others’ recommendations. They also face gender-related issues which can be addressed by actually taking classes and experiencing the benefits themselves. Additionally, yoga teachers need to create an inclusive environment that encourages adherence among men. These findings add to the small but growing body of literature on men’s experiences in yoga. Despite this study’s limitations, we believe our work can be a starting point for understanding participation facilitators and barriers in yoga and other holistic movement practices (e.g., tai chi). Given that yoga attracts men with varying interests, promotional messages may need to be diversified, emphasising different aspects of yoga, to appeal to a broader group of men. This could draw more men into yoga and encourage continued participation, which is essential in gaining the long-term benefits of yoga.

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practice that did not match their expectations, which could lead to discontinued participation.

*about ###’s and ###’s classes is that they’re really good at pushing people beyond their limits. I find, even if I don’t think I can do stuff, I end up doing it because they’re really good at stepping people through. I think that style of teaching would be better than somebody who just only teaches to a certain point or something like that so that the guys who do have the strength can kind of go, ‘oh, look what I can do’” (Grace, FGD4)*

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## Theme 2: Men need to try yoga more than once

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This theme represents the most salient message of most men to other men: try yoga, attend at least 3 classes, and explore the many different styles.

*“Yeah, I feel like if you just manage to get, then that’s the trouble. Get guys in a room, and just stay stick with this for weeks. Then they would continue it. It’s that just got to get them past that like ahm... what is sounds, self-confidence thing. Like the self-esteem or I don’t know.” (William, FGD1)*

*“Just try a few times and trust me it’s gonna work your muscles really well. and stretch and all that. So... ignore the other stuff but... ahm... but it’s just... I’d say, give it a go. Like give it a good go and make a decision after a few classes.” (Jack, FGD4)*

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### Theme 3: Gender-related perceptions and issues

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This theme represents the main barrier for yoga participation for men, according to the participants. Participants noted that there is still lack of understanding surrounding yoga, especially for men. Yoga is perceived as soft and passive exercise consisting only of stretching and relaxation, lacking in intensity or challenge that men typically seek in physical exercise. Participants suggested that perhaps men who had tried yoga in the past stopped doing yoga because they either felt vulnerable or incompetent in class, which is typically filled with women, and a few lean and athletic men. This was mentioned as barriers to both yoga uptake and continued participation.

Men go to the gym; girls do yoga

*“I guess in a hyper masculine and gym-junkie sort of body-building way, yoga would be considered the soft exercise in a stereotypical way. It is interesting to speak to people (that) you go to yoga, ‘oh, I go to yoga,’ and they immediately think that you just sit and stretch for a while and that’s all you really do.”*  
(Liam, FGD3)

Feeling vulnerability, incompetent, and embarrassed

*“I think the very first time we went, he thought that it was going to be easy. So it was a little bit of a shock to the system that it wasn’t. I think he thought it was like a girl thing and it’s not as strong as that. I think he felt very embarrassed that he was so incompetent at it. ... I think he finds it very intimidating to be in a room full of women and be incompetent. ...”* (Grace, FGD4).

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## Theme 4: Men take up yoga for a variety of reasons

This theme represents the different reasons given by the participants for taking up yoga. Some men who participated in the focus groups took up yoga to recover from physical injuries, while others started yoga to cope with stress and anxiety. Some participants were regular exercisers, or former athletes and dancers, and did yoga to gain flexibility and mobility. A few had a natural interest in personal and spiritual development, and pursued yoga as a way to understand and improve themselves, or to explore an alternative spiritual practice.

A way to (re)gain mobility and flexibility

*“I did yoga because I just wanted to get back my flexibility that I had when I used to dance a lot and so I just knew that through the stretching of yoga that would help.” (Liam, FGD3)*

A tool to cope with physical and mental health issues

*“If you have to sell it to me, you could sell it to me (in) two ways... build muscle. The other one you could (emphasise) the relaxation. Have you got back aches? Do you need to see a back person? A chiropractor? Why don’t you try yoga first? Because that’s another thing yoga healed me from backaches. I stopped having backaches because of all these stretching.” (Jack, FGD3)*

A path for personal and spiritual development

*“I didn’t have any ideas (about yoga). It was really a class that I went to. My yoga teacher, who was my yoga teacher for 4-5 years after that, is kind of like this lightning bolt, it was kind of transmission from her at the front of the class. For me, (it) always started off as something spiritual, and that was my first impression of yoga.” (Noah, FGD3)*

*“...you’re always learning about yourself and how you can be a better person. Like yoga taught me to be a better father.” (Thomas, FGD2)*

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## CHAPTER V

### Study 4a

#### **Why do people do yoga? Examining motives across different types of yoga participants**

This paper has been submitted as a manuscript to a sport and exercise psychology journal on 18 May 2021 and is under review at the time of writing. It is formatted in accordance to the APA 7<sup>th</sup> Edition guidelines as specified in the target journal.

#### **Rationale**

As shown in Chapter II, perceptions of yoga and participation motives play an important role as facilitators for participation. Because of its embedded mind-body and spiritual essence, yoga can be practiced not merely as an exercise program but also as a psycho-spiritual discipline. The previous study (Chapter IV) found that some men do yoga for health and fitness while others do it for more holistic reasons, suggesting that this differentiation also applies to men. While this finding is aligned with previous studies reporting that people can see yoga either as a form of physical exercise or as a spiritual activity (Sivaramakrishnan et al., 2017; Spadola et al., 2017), it is somewhat contrary to earlier suggestions that men do yoga mostly for pragmatic reasons (i.e., exercise or therapy) and are less likely than women to do yoga for spirituality (Kidd & Eatough, 2017; Park et al., 2019). There is a need to investigate in more detail to what extent men's motives for doing yoga differ from women's motives. An issue that may be complicating this comparison is that within yoga participants in general there may be variations in interest in the psycho-spiritual aspects of yoga.

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Using a qualitative methodology, Henrichsen-Schrembs (2008) was first to empirically demonstrate the existence of various yoga participant subgroups based on their reasons for engagement. To date, however, only one study (Genovese & Fondran, 2017) has provided preliminary support to Henrichsen-Schrembs' proposed model (2008). In their study, Genovese and Fondran (2017) identified three clusters of yoga practitioners using body image satisfaction and expressions of spirituality as clustering variables. While the authors described two clusters to resemble Henrichsen-Schrembs' Yogis and Exercisers, they did not use participation motives and psycho-spiritual engagement in yoga as grouping variables, which were the major components of Henrichsen-Schrembs' model. This quantitative study based on an online survey was, therefore, conducted to address this limitation.

Due to the paper-based format of the thesis, this study will be presented in two chapters. The overall purpose of the study was to examine whether subgroups of yoga participants could be identified based on their views of yoga (i.e., a physical exercise or a psycho-spiritual activity) and engagement in yoga's psycho-spiritual underpinnings and whether those subgroups differ in participation motives, as well as any gender differences related to subgroups and motives. Specifically, this chapter (Chapter V) focuses on identifying the subgroups of yoga participants and examining group differences in participation motives. The succeeding chapter (Chapter VI) examines gender differences in participation motives, overall and within-participant subgroups.

### 5.1 Abstract

*Background:* Yoga is a holistic movement practice offering not merely physical exercise but also opportunities for mind-body integration and spiritual growth. Participation motives in yoga may therefore vary depending on whether participants approach yoga mainly as a physical exercise or a psycho-spiritual discipline.

*Objective:* This study aimed to (1) identify subgroups of yoga participants based on their perceptions of yoga and level of engagement in its psycho-spiritual underpinnings, and (2) determine the motives that best differentiate the identified subgroups.

*Design:* Cross-sectional

*Methods:* 546 yoga participants aged 18-73 years ( $M = 39.99$ ,  $SD = 11.85$ ) completed an online survey, which included sections measuring perceptions of yoga, motives for participation, engagement, and practice characteristics.

*Results:* Using a two-step cluster analysis, three subgroups of yoga participants were identified: (1) Exercisers, (2) Yogis, and (3) Postural Yogis. MANCOVA indicated significant differences in participation motives across yoga participant subgroups. Follow-up discriminant function analyses revealed that spirituality, mind-body integration, and coping/stress management contributed the most in distinguishing the three participant subgroups.

*Conclusions:* The results show that identifiable subgroups exist among yoga participants, with varying motives for participation. Yoga-related studies and promotional messages need to consider how yoga is understood by the intended participants and highlight the motives that match the target subgroups to increase uptake, reduce dropout, and encourage sustained participation.

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*Keywords:* yoga, holistic movement practices, participation motives, exercise psychology, typology



## 5.2 Introduction

Participation motives, or the reasons people have for engaging in physical activity (Markland & Ingledew, 2007), have been extensively studied in exercise psychology. Studies have shown that participation motives vary across different physical activity contexts (Molanorouzi et al., 2015; Vallerand & Young, 2014). In exercise, for example, participants are generally motivated by health and fitness, whereas in sports, participants are more driven by competition and personal challenge (Molanorouzi et al., 2015; Vallerand & Young, 2014). Understanding why people engage in physical activity is essential in developing messages that effectively target their needs to encourage uptake and sustained participation (Kilpatrick et al., 2005).

Previous studies typically compared participation motives between sport and exercise contexts (e.g., Vallerand & Young, 2014). However, participation motives may also vary within a particular activity, making it possible to identify subgroups of participants that share similar motives and other characteristics. For instance, Ogles (2003) identified different subgroups of marathon runners based on their motives. These subgroups ranged from runners who valued all the aspects of marathon running to participants driven mainly by personal goal achievement and competition. Work in this area, however, is still limited. There is also an emerging category of physical activity that offers not only opportunities for movements and physical exercise but also self-exploration, contemplation, and psycho-spiritual work (Vergeer et al., 2021). These non-competitive, non-performance-oriented physical activities termed holistic movement practices (HMPs), are grounded in holistic philosophies of well-being, potentially offering benefits beyond those provided by conventional physical activities (Cagas et al., 2020; Vergeer et al., 2021). Given this

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holistic orientation, the reasons people engage in HMPs may therefore range from the purely physical to the transcendental. For instance, in 5Rhythms, a holistic dance-movement practice, Vergeer (2018) identified holistic motives such as spirituality, personal growth, mind and body, in addition to (and sometimes outweighing) health and fitness motives.

The most well-known HMP, yoga, has become a prominent part of the present-day physical activity landscape. Yoga, by origin, is a psycho-spiritual discipline that has evolved into a physical culture referred to as modern postural yoga (De Michelis, 2008). Modern postural yoga emphasizes the practice of *asanas* (postures), and in this offers not only physical activity but also a movement-based alternative form of spirituality (Sarbacker, 2014). This embedded spirituality sets yoga apart from conventional forms of physical activity. Modern posture-based yoga exists in many different forms, varying in terms of *asana* sequence and philosophical content (Jain, 2014; Kapsali, 2012; McCrary, 2013). The spiritual dimensions of yoga may act as an additional attraction to those seeking more meaningful physical disciplines (Sarbacker, 2014; Vergeer et al., 2021).

The holistic nature of yoga may thus result in varying participation motives, with yoga participants endorsing motives not commonly assessed in physical activity participation motives research (Cagas et al., 2020; Markland & Ingledew, 1997; Molanorouzi et al., 2014). For instance, several studies have reported that although the primary reasons for participation were mostly associated with physical exercise (e.g., health, fitness, stress relief), participants also cited spirituality as additional motive (Cagas et al., 2020; Cartwright et al., 2020; Park et al., 2019). Spirituality was also cited as a common reason for continuing yoga participation. Most studies have not considered, however, if there were subgroups among participants in the

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strengths of spiritual or other motives. Some preliminary qualitative works suggest that subgroups of yoga participants exist and that motives may vary depending on the extent to which participants are interested in yoga as a physical exercise, a tool for personal growth, a form of therapy, or a philosophical worldview (Henrichsen-Schrembs, 2008).

Henrichsen-Schrembs (2008; Henrichsen-Schrembs & Versteeg, 2011) proposed four types of yoga participants: 1) Exercisers/Pragmatists. These are participants who are predominantly interested in yoga for fitness and wellness; 2) Explorers, or participants who practice yoga not only for health but also for self-development or exploration. The Exercisers/Pragmatists and the Explorers are said to have a relatively smooth life course prior to yoga; 3) Self-Helpers. These are participants who practice yoga for therapy and self-help; and finally, 4) Yogis or Mystics. These are those who have embraced yoga as a life path or a spiritual and philosophical worldview. Henrichsen-Schrembs (2008) surmised that the first two types had smooth life paths while the latter two had experienced some major adverse life events which prompted them to seek yoga. Self-Helpers and Yogis were also highly-involved in yoga's spiritual underpinnings and were more likely to become teachers compared to Exercisers and Explorers. Only one study (Genovese & Fondran, 2017) thus far has provided some preliminary support to Henrichsen-Schrembs' proposed model (2008). Using a cluster analysis approach, Genovese and Fondran (2017) identified three types of yoga participants with varying levels of interest in spirituality and body image satisfaction. However, they did not assess the participants' understanding of yoga and motives for participation, which were some of the key variables in Henrichsen-Schrembs' proposed typology. As the authors noted, additional research is needed to confirm these findings.

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With the prevailing public health issues of physical inactivity and poor mental health, promoting HMPs could contribute to overall physical activity and health promotion. Their holistic nature can provide benefits beyond those offered by conventional forms of physical activities (Cagas et al., 2020). Understanding how present-day yoga participants view yoga and examining if participation motives differ depending on such views, may help differentiate promotional messages of yoga to appeal to different population sub-groups. Therefore, this study examined yoga participation motives across different types of participants. We first explored if we could identify subgroups of yoga participants based on their perceptions of yoga and level of yoga involvement. We then examined differences in participation motives across these yoga participant subgroups.

### 5.3 Methods

This is a cross-sectional study involving participants, 18 years old and over, who had practised yoga at least once a week for three months. Yoga is defined in this study as a holistic movement practice (Vergeer et al., 2021), modern postural yoga (De Michelis, 2008), or any type of yoga practice that emphasizes *asanas* as its main ingredient. A recommended minimum sample size was determined a-priori for MANOVA ( $n = 345$ ) (Faul et al., 2007) and for factor analysis ( $n = 347$ ) (Soper, 2020). Computations were based on anticipated effect size of .25, power level of .8, and probability level of .05.

#### 5.3.1 Survey design and measures

An online questionnaire consisting of several sections was used for data collection. Each section collected data on: (1) yoga practice characteristics\*, (2)

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\* Data were collected at the onset of the 2020 COVID 19 pandemic restrictions. Participants were therefore asked to consider their practice behaviours before the government lockdowns and social distancing measures were put in place.

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perceptions of yoga, (3) changes, if any, in yoga practice behaviours due to the COVID-19 pandemic, (4) participation motives in yoga, (5) yoga involvement, and (6) personal and socio-demographic characteristics. In this paper, we focused the analyses on perceptions of yoga, yoga involvement, and participation motives.

### ***Perceptions of Yoga***

We used four items to assess the extent to which participants considered yoga a physical, mental, spiritual, and lifestyle practice. Participants responded to each item using a 4-point Likert scale ranging from 0 (not at all) to 3 (very much).

### ***Yoga Immersion***

The Yoga Immersion Scale (YI-S: Gaiswinkler et al., 2015) measures an individual's degree of involvement in the psycho-spiritual aspects of yoga. We translated the original German version (Gaiswinkler et al., 2015) to English, following a standard translation procedure involving three fluent German and English bilinguals (Banville et al., 2000). Following several rounds of team discussions, a final English version was produced upon agreement of all three translators. Participants were asked to indicate their level of agreement using a six-point Likert scale which ranged from 1 (totally disagree) to 6 (totally agree). A yoga involvement score was obtained by taking the mean of all 10 items. In this study, the scale's internal consistency was high ( $\alpha = 0.92$ ).

### ***Participation motives in yoga***

We adapted the Exercise Motivation Inventory-2 (EMI-2: Markland & Ingledew, 1997) to assess a broad range of yoga participation motives. The EMI-2 is a 51-item inventory consisting of 14 scales representing various motives for exercise. As the EMI-2, however, does not adequately capture holistic motives for yoga participation (Cagas et al., 2020). We included six new scales to assess reasons

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related to mind-body integration, spirituality, general coping, centering and mindfulness, personal growth and transformation, and supplementary activity. Items for each new scale were extracted from studies included in Cagas et al.'s review and rephrased to be consistent with the wording of EMI-2 items. Three yoga-practising academic colleagues evaluated the contents of the new items. They were provided with a definition for each scale and a list of proposed statements, and asked to rate the extent to which the items under each scale aligned with the definition, provide additional comments, and/or suggest new statements if necessary. We discussed this feedback and retained items with high inter-rater agreements. Additional items were included via consensus. Twenty-eight (28) new items (Supplementary File 1) were included making the total number of items for this section 79. Participants were asked whether or not the statements were true for them personally. They responded on a 6-point Likert scale ranging from 0 (Not at all true for me) to 5 (very true for me).

### *Socio-demographic and yoga practice characteristics*

Participants were asked to indicate their age, gender, country of residence, ethnicity, employment, partner status, educational attainment, subjective social status, and teacher status. Details of yoga practice were assessed using items adopted from previous studies (i.e., Ayala et al., 2018; Uebelacker et al., 2019). Participants indicated how long they had been practising yoga, the age when they first started doing yoga, their primary style of yoga, frequency of practice, duration, location, and other practice components.

### **5.3.2 Procedures**

Upon obtaining ethical approval from the USQ Human Research Ethics Committee (H20REA109), study advertisements with a link to the online survey

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were posted on various social media platforms and the University mailing list.

Endorsement from Yoga Australia was also sought, who then promoted the study in their monthly e-newsletter. Data were collected anonymously through the USQ online survey platform from June until the end of November 2020. The first page of the online survey included information about the study. After indicating consent, participants were led to the first section of the questionnaire. Data from both incomplete and completed surveys were saved directly on the internal university server. Participants who completed the survey were offered an opportunity to win one of ten AUD\$25 gift vouchers.

### **5.3.3 Data analyses**

Data analyses were performed using IBM SPSS Version 27 (IBM Corp., 2020). Preliminary data inspection did not identify any significant issues with normality and outliers (Hair et al., 2013). Prior to each multivariate analysis, multivariate outliers were examined using Mahalanobis distance. Data were summarized using descriptive statistics. A two-step cluster analysis (Tkaczynski, 2017) was performed to create clusters of different yoga participant subgroups. The acceptability of the resulting cluster solution was subsequently validated using four techniques (Tkaczynski, 2017): (1) checking if the silhouette measure of cohesion and separation is above 0.2, indicating a fair separation distance between clusters, (2) examining if all the variables within the solution are statistically significant across clusters, (3) including variables with a predictor importance rating of above 0.2, and (4) comparing the cluster solution when the sample is randomly split into two complementary subgroups of 50% each.

Potential multicollinearity issues were identified after examining the correlation matrix of the 20 participation motives. A Principal Axis Factoring (PAF)

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with Oblimin Rotation was performed to address these issues and reduce the items into a manageable number of factors. A multivariate analysis of covariance (MANCOVA) was conducted to examine differences in participation motives across types of yoga participants. Age, years of practice, and teacher status were entered as covariates. Significant main effects were followed-up with discriminant function analysis (DFA) to identify the motives that contribute most to the group differences. Statistical significance was set at  $p < .05$ , which was adjusted for follow-up multiple group comparisons to reduce the probability of Type I error.

### 5.4 Results

#### 5.4.1 Participant characteristics

Overall, 1119 individuals accessed the link to the online questionnaire with 546 (48.8%) respondents completing and submitting the survey. The sample included yoga participants from the Philippines (55.9%), Australia (28.9%), and other countries (15.2%). Average age was 39.99 years ( $SD = 11.85$ ; *Range* 18-73 years). The majority were female (73.1%), Asian (62.5%), employed full-time (47.6%), married (38.5%), and holding a Bachelor's degree (44.5%). Relative to other people in their country, most participants positioned themselves slightly above mid-point ( $M = 6.21$ ,  $SD = 1.72$ , *Range* 1-10) of the subjective social spectrum (Adler & Stewart, 2007). Nearly a third of participants ( $n = 149$ , 27.3%) were yoga teachers. Table 1 presents the general characteristics of the participants.

#### *[Table 1]*

Table 2 summarizes the yoga practice characteristics of the participants. Participants' total years of practice ranged from 1 to 50 years ( $M = 6.79$  years;  $SD = 6.55$ ). Starting age varied from 5 to 68 years old ( $M = 32.95$ ,  $SD = 10.81$ ). Vinyasa Yoga (32.1%) and Ashtanga Yoga (28.3%) were the most common primary styles of



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practice, and 379 (69.4%) reported practising other styles at least once a month.

Participants were more likely to practice under supervision of a teacher ( $M = 2.53$ ,  $SD = 1.19$ , *Range* 0-4) than unsupervised ( $M = 2.28$ ,  $SD = 1.17$ , *Range* 0-4),  $t(545) = 2.58$ ,  $p = .01$ ,  $d = 2.21$ . Those who practiced in a supervised setting were less likely to practice unsupervised,  $r = -.76$ ,  $p < .001$ .

### *[Table 2]*

#### 5.4.2 Preliminary Analyses

##### *Perceptions of yoga*

The inter-item correlation matrix showed moderate correlations between the mental, spiritual, and lifestyle items ( $r$  coefficient value ranging from .43 to .53). A small negative correlation was also observed between the physical and spiritual items ( $r = -.13$ ) (Supplementary File 2). To avoid multicollinearity issues in the subsequent multivariate analysis, a Principal Components Analysis (PCA) with Varimax rotation was conducted, which extracted two components. These components were labelled (1) perception of yoga as a physical practice (1 item) and (2) perception of yoga as a psycho-spiritual practice and lifestyle (3 items,  $\alpha = .72$ ), and were subsequently used as 2 of the 3 clustering variables.

##### *Yoga participation motives*

Principal Axis Factoring (PAF) with Oblimin Rotation extracted 12 factors. Assumptions for PAF (Hair et al., 2013) were met with the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value of .954 and significant Bartlett's Test of Sphericity,  $\chi^2(3081) = 39452.50$ ,  $p = .000$ , indicating that factorability was appropriate. Using Kaiser's criterion and Scree test, 12 factors were retained, explaining a total of 71.55% of the variance.

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Results of Monte Carlo parallel analysis suggested retaining only the first 8 factors. However, the last 4 factors (positive feelings, challenge, flexibility, and stress management) represented salient motives in yoga based on previous studies. Therefore, we retained the 12 factors subsequently labelled: (1) Mind-Body Integration (MBI), (2) Weight Management and Appearance (WMA), (3) Competition and Social Recognition (COM), (4) Supplementary Activity (SUP), (5) Spirituality (SPI), (6) Health and Fitness (HFI), (7) Affiliation (AFF), (8) Ill-Health Avoidance (IHA), (9) Positive Affect (PAF), (10) Challenge (CHA), (11) Nimbleness (NIM), (12) Coping and Stress Management (COP). Factor loading cut-off of .30 was applied.

Mean, standard deviation and Cronbach's  $\alpha$  of each factor are shown in Table 4. Comparing the mean scores across the 12 motives using repeated measures MANOVA revealed statistically significant differences, Wilk's  $\lambda = .099$ ,  $F(11, 519) = 430.90$ ,  $p < .001$ ,  $\eta_p^2 = .901$ . Pairwise comparisons indicated the top motives for yoga participation were PAF ( $M = 4.19$ ,  $SD = .96$ ), HFI ( $M = 4.14$ ,  $SD = .95$ ) and NIM ( $M = 4.14$ ,  $SD = 1.06$ ). COM ( $M = .98$ ,  $SD = 1.07$ ) was the least endorsed motive.

### 5.4.3 Main Analysis 1: Classifying the Types of Yoga Participants

Using the total sample ( $n = 546$ ), we identified three types of yoga participants after conducting a two-step cluster analysis on three clustering variables: perception of yoga as a physical practice, perception of yoga as a psycho-spiritual practice, and yoga immersion. The analysis identified three clusters with very good fit. The sample size was deemed adequate to identify potentially reliable and valid segments based on the variables (Hair et al., 2013) (i.e., each cluster has  $>100$  cases). There was a good separation distance between groups, with the average silhouette

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measure of cohesion and separation value of .5. The ratio of sizes of the largest to the smallest cluster was 1.59. This three-cluster solution was replicated when the sample was randomly split into half.

The perception of yoga as a physical practice (1.00) had the highest predictive importance to cluster formation and the most relevant in defining differences amongst the three clusters (Supplementary File 3). Cluster 1 was labelled “Exercisers” ( $n = 132$ , 24.2%) and included participants with a high perception of yoga as a physical practice, low perception of yoga as a psycho-spiritual lifestyle practice, and low yoga immersion. Cluster 2 was labelled “Yogis” ( $n = 204$ , 37.4%) and included participants with low physical practice perception score, but high psycho-spiritual practice perceptions, and high yoga immersion. Finally, Cluster 3 was labelled “Postural Yogis” ( $n = 210$ , 38.5%) and included participants with high scores in all three input variables. All the variables within the solution were statistically significant across clusters, Pillai’s Trace = 1.35,  $F(6, 1052) = 360.81$ ,  $p < .001$ ,  $\eta_p^2 = .67$ .

We carried out four separate analyses to examine if cluster membership was associated with age, gender, teacher status, and years of practice. Results revealed significant association between cluster membership and teacher status,  $\chi^2(2) = 51.61$ ,  $p < .001$ . No association between cluster membership and gender was found. Separate ANOVAs indicated significant differences across the three clusters in terms of age, Welch’s  $F(2, 315.323) = 3.545$ ,  $p = .030$ , years of practice, Welch’s  $F(2, 341.71) = 5.65$ ,  $p = .004$ , and spirituality, Welch’s  $F(2, 305.68) = 37.40$ ,  $p < .001$ . Inspecting the means showed that Exercisers ( $M = 42.57$ ,  $SD = 13.219$ ) were younger than Yogis ( $M = 39.12$ ,  $SD = 11.151$ ) and Postural Yogis ( $M = 39.21$ ,  $SD =$

11.403). Yogis ( $M = 7.89$ ,  $SD = 7.25$ ) had been practising longer than Postural Yogis ( $M = 6.50$ ,  $SD = 6.28$ ) and Exercisers ( $M = 5.54$ ,  $SD = 5.54$ ).

*[Table 3]*

#### 5.4.4 Main Analysis 2: Differences in Participation Motives across

##### Types of Yoga Participants

After removing 7 multivariate outliers (Mahalanobis' distance values  $> 32.91$ ,  $p = .001$ ), we conducted a MANCOVA on 530 participants. Results indicated significant main effects of Participant Type, Pillai's Trace = .612,  $F(24, 1026) = 18.86$ ,  $p < .001$ ,  $\eta_p^2 = .306$ . The four covariates were also significant: age, Pillai's Trace = .125,  $F(12, 512) = 6.07$ ,  $p < .001$ ,  $\eta_p^2 = .125$ ; gender, Pillai's Trace = .132,  $F(12, 512) = 6.48$ ,  $p < .001$ ,  $\eta_p^2 = .132$ ; years of practice, Pillai's Trace = .071,  $F(12, 512) = 3.25$ ,  $p < .001$ ,  $\eta_p^2 = .071$ ; and teacher status, Pillai's Trace = .046,  $F(12, 512) = 2.07$ ,  $p = .017$ ,  $\eta_p^2 = .046$ .

A discriminant function analysis (DFA) with prior probabilities computed from equal group sizes was carried out as a follow-up on the main effects of participant type. Results indicated two significant canonical functions contributed to effectively discriminate the three groups. Function 1 (eigenvalue = 1.09), accounted for 85.6% of the total model variance, Wilk's  $\lambda = .405$ ,  $\chi^2(24) = 471.03$ ,  $p < .001$ . The canonical correlation associated with the first eigenvalue was .72, which implies that 52.1% of the variance in the discriminant function derived scores was accounted for by participant type. Function 2 (eigenvalue = .18), accounted for 14.4% of the model variance, with a corresponding canonical correlation of .39, Wilk's  $\lambda = .85$ ,  $\chi^2(11) = 87.6$ ,  $p < .001$ . The functions correctly classified cases into three types of yoga participants by 67.7%.

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Based on the structure matrix (Supplementary File 4), SPI (.88), MBI (.78), and COP (.48) contributed most to group differences. HFI (.83), NIM (.82), CHA (.71), PAF (.60), WMA (.56), IHA (.53), AFF (.31), COM (.28) and SUP (.18) provided additional contributions. Comparing the discriminant scores across Types of Participants showed significant differences for Function 1,  $F(2, 527) = 285.77, p < .001, \eta^2 = .52$ , and Function 2, Welch's  $F(2, 301.92) = 301.92, p < .001, \eta^2 = .16$ . *Post hoc* analyses showed statistically significant differences across all three groups in both Function 1 and Function 2 discriminant scores. SPI, MBI, and COP differentiated Exercisers from Yogis and Postural Yogis, and Yogis from Postural Yogis. The graph of the functions at group centroids (Supplementary File 5) shows that Yogis rated these motives higher than Postural Yogis and Exercisers. However, they scored the lowest in all other motives compared to Postural Yogis and Exercisers.

Additional analyses using separate one-way ANOVAs were performed to examine differences across Types of Yoga Participants on two items: “advice from doctor/physiotherapist” and “to recover from injury/illness”. Significant difference was found only on the second item, Welch's  $F(2, 326.417) = 11.209, p < .001, \eta^2 = .041$ . Postural Yogis reported higher scores in “to recover from injury/illness” compared to Yogis and Exercisers.

### 5.5 Discussion

This study aimed to identify subgroups of yoga participants based on their perceptions of yoga (i.e., as a physical practice or as a psycho-spiritual discipline), and their level of involvement in yoga's psycho-spiritual underpinnings. It also examined whether participation motives in yoga varied across the identified subgroups. Using a cluster analytical approach, we identified three distinct profiles

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of “Exercisers”, “Yogis”, and “Postural yogis”. Overall, the results indicated that participation motives in yoga vary in accordance with the participants’ view of yoga and psycho-spiritual engagement.

### **5.5.1 Types of yoga participants**

Prior studies have indicated that people see yoga either as a form of physical exercise or as a spiritual activity (Sivaramakrishnan et al., 2017; Spadola et al., 2017). This was also observed in our data which depicted two perceptions of yoga: (1) yoga is a physical practice and (2) yoga is a lifestyle, mental, and spiritual discipline. According to Govindaraj (2016), most people practise only the physical component of yoga, and therefore they often equate yoga with physical exercise. This perception is evident in the frequent mentioning of yoga in physical activity and fitness surveys as a form of physical activity (e.g., Vergeer et al., 2017).

In this study, about two-thirds of the participants had an understanding of yoga beyond physical exercise. The perception of yoga as a psycho-spiritual discipline is consistent with previous studies showing that yoga is also presented as a form of mind-body and spiritual practice in mainstream media (Antony, 2018; Kapsali, 2012). Yoga, traditionally, includes a variety of mental and lifestyle practices aimed to help the practitioner reach a state of physical, psychological and spiritual integration (Feuerstein, 2008). While we used three separate items to assess the non-physical aspects of yoga, the items were interrelated and correlated strongly into a single factor, suggesting that participants who considered yoga as mental practice also saw it as a lifestyle and spiritual discipline.

Combining the perceptions of and engagement in yoga, this study found three profiles of yoga participants. Albeit not an exact replication, these profiles seem to reflect the typology suggested by Henrichsen-Schrembs (2008). The “Exercisers”

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and the “Yogis” in the present study share the same label and descriptions with two of Henrichsen-Schrembs’ (2008) typology. The “Postural Yogi”, however, could be an overlap between Henrichsen-Schrembs’ (2008) “Self-Helper” and the “Explorer”. Henrichsen-Schrembs (2008) previously acknowledged the possibility of overlap between profiles. Similar to Genovese and Fondran’s (2017) study, our findings showed that some subgroups of yoga participants were more psycho-spiritually engaged than others. In particular, “Exercisers” mainly considered yoga as a physical practice and were not interested in yoga’s psycho-spiritual underpinnings. The “Yogis” and the “Postural Yogis” were both highly involved in the philosophy and spirituality of yoga but differed significantly on their view of yoga as a physical practice. Like the “Exercisers”, “Postural Yogis” considered yoga as a physical practice to a great extent. “Yogis” also understood yoga as a physical practice but not to the same extent as the “Exercisers” and “Postural Yogis.” More work is needed to verify these findings. Future studies may need to use different assessments or include different scales to tap into the other aspects of Henrichsen-Schrembs’ (2008) typology. Nevertheless, our findings showed that yoga participants held different perceptions of yoga and varied in the degree of their engagement in yoga’s psycho-spiritual underpinnings.

### **5.5.2 Participation motives in yoga**

Consistent with previous studies (Cagas et al., 2020; Cartwright et al., 2020), the results showed that people engage in yoga primarily for psychological and physical reasons. Overall, positive affect, health and fitness, and nimbleness were the highest-rated motives in this study. Positive affect pertains to motives of enjoyment (“because I find yoga satisfying in and of itself”) and revitalization (“because I find yoga invigorating”). Enjoyment is a form of intrinsic motivation that facilitates

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physical activity adherence (Kelly et al., 2016; Ryan et al., 1997). Although enjoyment is typically linked to sports participation (Molanorouzi et al., 2015), modern postural yoga involves a physical discipline requiring skill and mastery similar to sport (e.g., gymnastics) (Sarbacker, 2014), enabling similar enjoyment. A study comparing motives across different physical activities found that individuals engaging in body-movement practices, such as yoga, endorsed intrinsic motives similar to sports participants (e.g., competence, interest/enjoyment, social reasons) (Hsu & Valentova, 2020). Enjoyment has also been reported as a reason for continued yoga participation (Cagas et al., 2020), which implies that similar to physical exercise, increasing participants' enjoyment in yoga can lead to increased intention and long-term adherence (Aaltonen et al., 2014).

Yoga is often seen as a non-competitive exercise that encourages self-acceptance (Atkinson & Permeth-Levine, 2009; Evans et al., 2009). Hence, it was not surprising that competition and social recognition motives were the least endorsed. This finding aligns with previous research showing that yoga participants place less value on motives pertaining to others' expectations and competition compared to participants of other forms of physical activity (Roychowdhury, 2018). The goal of yoga as a psycho-spiritual practice is to transcend the ego, which can be translated into a decreased desire for acknowledgement or social approval (Feuerstein, 2008). However, because this study relied on self-report, participants may have answered in a manner expected of yoga practitioners (e.g., be non-competitive, ego-less). Some recent research has suggested that in some contexts, the original objective of yoga to pacify the ego may be undermined for the opposite, encouraging ego enhancement rather than restrain (Antony, 2016). To what extent this happens and whether there was a social desirability bias need further research.



### **5.5.3 Motive differences across types of yoga participants**

It is noteworthy that, overall, spirituality ranked in the middle of the motives list. Yoga's spirituality is generally associated with eastern philosophical traditions (Feuerstein, 2008; Jain, 2014), which could pose as hindrance for people who find these teachings incompatible with their personal beliefs (Cagas et al., 2020). Some authors argue that the spiritual facet of modern yoga is often left flexible and ambiguous to make it more acceptable to people of different cultural and religious backgrounds (Antony, 2018; Kapsali, 2012). Mind-body integration, i.e., motives pertaining to developing mindfulness, personal growth, and inner transformation, have been reported to facilitate continued yoga participation (Cagas et al., 2020). In our study, participants rated mind-body integration higher than spirituality which might suggest that, overall, the mind-body aspect of yoga may be more prominent as a motivator than its spirituality dimension and may be more acceptable for those who consider yoga predominantly a physical exercise.

When participant type was taken into account, spirituality, along with mind-body integration and coping/stress management, emerged as an important motive that explained the existence of the different subgroups. This is consistent with previous qualitative research demonstrating that some yoga participants were motivated primarily by health and fitness while others were interested in spirituality, self-exploration and personal growth (Henrichsen-Schrembs, 2008; Henrichsen-Schrembs & Versteeg, 2011). Previous studies have reported that while initial motives for yoga participation may be physical or psychological in nature, they often change over time to include spirituality (Cartwright et al., 2020). Indeed, a number of studies have identified spirituality as a common reason for continued participation in yoga (Cagas et al., 2020; Ivtzan & Jegatheeswaran, 2015; Park et al., 2016).

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In the present study, the spiritual motive was more prominent in Yogis and Postural Yogis who had been practising longer than Exercisers. There is thus an implication that with continued practice, interest in the spiritual and non-physical dimensions of yoga may grow (Ivtzan & Jegatheeswaran, 2015; Park et al., 2016), along with a desire for greater immersion in the practice. However, longitudinal research is needed to shed light on the processes involved in this. For example, we do not know whether people with latent interest in psycho-spiritual matters will find more in yoga and are more likely to continue. Further research will need to investigate whether there is a developmental process operating here and examine under which conditions Exercisers become Yogis and under which conditions they do not.

Spirituality as a motive for physical activity participation is understudied in sport and exercise psychology (Ronkainen & Nesti, 2019). Connecting with something beyond the physical body is an implicit message in many holistic movement practices (Vergeer et al., 2021), and thus HMPs provide an excellent context to study spirituality as a motive for physical activity participation. Understanding spirituality, however, can be complicated as it can have multiple expressions (MacDonald, 2005). It has been conceptualized in various ways to include beliefs in the existence of parapsychological phenomena, intrinsic religious orientations, mystical experiences, and seeking purpose and sense of meaning (MacDonald, 2005). Follow-up studies are needed to understand how the various expressions of spirituality influence uptake and continued yoga participation (Büssing et al., 2012).

Coping and stress management were among the motives distinguishing Yogis and Postural Yogis from Exercisers. Dealing with difficult life events, changes,

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mental health and/or emotional problems, have all been reported as reasons for yoga uptake in the general adult population (Cagas et al., 2020). Henrichsen-Schrembs' findings (Henrichsen-Schrembs, 2008; Henrichsen-Schrembs & Versteeg, 2011) imply that yoga practitioners who come to yoga as a result of experiencing difficult or challenging life situations, and that these practitioners are more likely to become involved in the deeper dimensions of yoga. Future studies need to investigate to what extent stress relief or spiritual coping underlie such involvements (Pargament, 2013). Whether people with these types of experiences are more likely to become "Yogis" or "Postural yogis" also needs further study.

Existing theories commonly used in understanding participation motivation in physical activity do not include motives such as spirituality, mind-body integration, and inner transformation (Ronkainen & Nesti, 2019). Such motives are salient in yoga and other forms of holistic movement practices, however (Cagas et al., 2020; Vergeer, 2018), representing intrinsic forms of motivations which could be emphasized to foster optimal engagement and other desirable outcomes (Sebire et al., 2009; Vansteenkiste et al., 2010). Previous work in exercise contexts suggests that participation motives are influenced by personal dispositions and life goals (Ingledew & Markland, 2008; Ingledew et al., 2009). Future work on yoga and other holistic movement practices could examine to what extent personality and predispositions towards spirituality influence people to seek these types of practices, or to what extent participants become more open to inner work or transcendental experiences after sustained participation (Vergeer et al., 2021).

### **5.5.4 Implications to practice**

The findings of this study provide additional empirical support to the idea that not all yoga participants share similar views of yoga, which has some important

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implications. Categorizing yoga participants according to how they consider yoga and their engagement level to its psycho-spiritual underpinnings offers insights for developing promotional messages to encourage increased uptake and sustained participation. Identifying yoga participants with similar profiles can help tailor marketing strategies and develop classes offering different yoga elements. For instance, yoga instructors and studios can be more specific with the type of yoga they offer to attract the kind of participants that they seek. Highlighting the motives that are consistent with what participants seek might increase uptake and remove preconceived barriers and misconceptions about yoga. From a wider physical activity context, Morris and Roychowdhury (2020) suggested that motivational profiling could maximize satisfaction and reduce dropout.

Participation motives related to spirituality and mind-body integration reflect the holistic nature of yoga, and this is where yoga differs from conventional forms of physical activity. Highlighting these in yoga promotion messages may attract people seeking alternative forms of spirituality (Henrichsen-Schrembs & Versteeg, 2011) or those who want more holistic approaches to health and well-being. Communicating these benefits could also encourage sustained participation in those already doing yoga (Park et al., 2016).

On the other hand, the psycho-spiritual aspect of yoga could also be de-emphasized when yoga is offered in health and fitness settings (Middleton et al., 2015; Middleton et al., 2017) to make it more acceptable to people who only seek an alternative form of physical activity. However, de-emphasizing the psycho-spiritual dimensions of yoga has been a concern for yoga communities (Douglass & Tiwari, 2006) as it may lose the essence of yoga as a holistic lifestyle practice. Research suggests that the different elements of yoga are associated with different health

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outcomes (Cramer et al., 2019). Hence, yoga might provide more benefits when it is practised holistically (i.e., with ethical or spiritual elements) compared to when it is performed merely as a physical exercise (Gaiswinkler & Unterrainer, 2016). Early research also suggests that continued yoga participation may lead to increased spirituality even when teachers do not use verbal instructions that contain holistic and spiritual messages in class (Büssing et al., 2012; Csala et al., 2020). Yoga teachers can gradually introduce the other dimensions of yoga to allow participants to appreciate the holistic beneficial effects of yoga.

The potential of yoga as a supplementary training program for sports can also be emphasized when promoting increased yoga uptake among men. Research has shown that yoga is one of the complementary and integrative approaches that people commonly use to improve athletic and sports performance (Evans et al., 2018). Men, in particular, would take up yoga to supplement their existing training regimen (Cagas et al., 2021).

Assessing how people see yoga when conducting yoga surveys would be useful to differentiate participants who perceive yoga as a physical exercise from those who see it as a holistic movement practice. Future studies could then compare participation motives across different types of yoga participants and participants of conventional physical activities. As mentioned in a previous review (Cagas et al., 2020), exercise psychologists should pay greater attention to the importance of spirituality and mind-body integration in understanding yoga participation. Considering participant type as a covariate in yoga intervention studies may also contribute to an understanding of yoga's mechanisms and effects.

### **5.5.5 Strengths and limitations**

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This is the first study to include a full range of participation motives and demonstrate the existence of different subgroups associated with different constellations of motives in yoga. Nevertheless, some limitations should be noted.

First, studies on participation motives tend to be descriptive, and this study is no exception. However, descriptive studies can be used as a starting point to understand further people's motivation to engage in yoga and other HMPs from a more theoretical perspective (Biddle et al., 2021). As we found in this study, spirituality and mind-body integration were salient motives for participants who consider yoga more than just physical exercise. These motives may represent forms of intrinsic motivation, which could be further investigated using existing motivation theories. However, more existential and humanistic approaches may be needed to understand deeper experiences in yoga (Ronkainen & Nesti, 2019). More work is also needed to examine any reasons for dropout (Park et al., 2019).

Second, spirituality, mind-body integration, coping, and supplementary activity appear as additional factors which should be incorporated in participation motivation questionnaires in yoga and other HMPs. In previous studies (e.g., Park et al., 2019), these motives were assessed at the nominal level (i.e., via checklist) forcing participants to identify only one reason for participation. Research has shown that physical activity participants may possess multiple equally important motives that sustain their commitment (Vallerand & Young, 2017). We addressed the limitations of previous works by using an existing exercise motivation inventory and adding items pertaining to holistic motives. However, while we reported the preliminary validity and reliability indices of this extended inventory, we would encourage further psychometric analyses and item refinement.

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Third, the cross-sectional design of this study does not allow for an analysis of how motives may change over time. Longitudinal studies are needed to understand the mechanisms that drive motivational changes and how these changes influence sustained participation and engagement in the holistic aspect of yoga. Finally, due to the study design and data collection method, self-selection bias is possible. Hence our findings may not be generalizable beyond the study sample. However, we made an effort to recruit yoga participants across a broad range of demographics and practice styles. Nevertheless, future studies could focus on one particular yoga style and examine if the results of the present study could be replicated.

### 5.6 Conclusion

Yoga is a holistic movement practice that provides opportunities for physical activity, personal growth, and spirituality. The findings of this study point to the importance of considering how people view yoga when examining motives in yoga participation, and of the existence of different subgroups of yoga participants, reflecting the nature of yoga as a holistic movement practice (Vergeer et al., 2021). Although the top motives for yoga participation were consistent with previous studies, there were significant differences across types of yoga participants. Compared to Exercisers, Postural Yogis and Yogis were more motivated by spirituality, mind-body integration, and coping and stress management. The results of this study add to our understanding that some people are merely interested in yoga for its health and fitness benefits, while others consider yoga as more than just physical exercise and become more involved in its psycho-spiritual teachings. These findings will be useful in creating differentiated promotional messages to attract new participants seeking different outcomes from yoga, or when developing context-

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specific yoga instructional contents. Exercise psychology and other allied health practitioners need to consider different messages in encouraging increased yoga uptake and highlight the motives that match the views and motives of the target subgroups.



## 5.7 Tables and Supplementary Materials

**Table 1.** General characteristics of the participants ( $n = 546$ )

<b>Variables</b>	<b>Total</b>
<b>Age</b>	
Mean and SD	39.99 ± 11.845
Range	18 to 73 years old
<b>Gender</b>	
Male	138 (28.9%)
Female	399 (73.1%)
Others	9 (1.6%)
<b>Country of Residence</b>	
Australia	158 (28.9%)
Philippines	305 (55.9%)
Others	83 (15.2%)
<b>Ethnicity</b>	
White	172 (31.5%)
Asian	341 (62.5%)
Mixed-race	13 (2.4%)
Others	20 (3.7%)
<b>Employment</b>	
Employed full-time	260 (47.6%)
Employed part-time	46 (8.4%)
Self-employed	139 (25.5%)
Studying full-time	35 (6.4%)
Retired	20 (3.7%)
Stay at home parent/carers	16 (2.9%)
Unemployed	15 (2.7%)
Other	15 (2.7%)
<b>Partnership Status</b>	
Single	180 (33.0%)
Partnered or in a relationship	125 (22.9%)
Married/Civil partnership/De facto	210 (38.5%)
Divorced/separated	28 (5.1%)
Other (e.g., widower)	3 (0.5%)
<b>Highest Educational Attainment</b>	
Less than Year 12 or equivalent	6 (1.1%)
Year 12 or High School diploma	29 (5.3%)
Vocational or Associate Diploma	40 (7.3%)
Bachelor	243 (44.5%)
Postgraduate diploma/certificate	60 (11.0%)
Master's degree	122 (22.3%)
Doctorate	46 (8.4%)
<b>Socio-economic Ladder</b>	
Mean and SD	6.21 ± 1.72
Range	1 - 10
<b>Teacher status</b>	
Non-teachers	397 (72.7%)
Teachers	149 (27.3%)

**Table 2.** Characteristics of yoga practice

<b>Variables</b>	<b>Mean and SD</b>	<b>Range</b>
Total number of years practising	6.79 ± 6.55	1 to 50 years
Age when first started	32.95 ± 10.81	5 to 68 years
	<b>Yes</b>	<b>No</b>
Practiced other styles at least once a month?	379 (69.4%)	167 (30.6%)
Separate pranayama/meditation practice	344 (63.0%)	202 (37.0%)
<b>Yoga style practiced</b>	<b>Regularly</b>	<b>At least once a month</b>
Ashtanga Yoga	149 (28.3%)	157 (28.8%)
Bikram or Hot Yoga (26x2)	13 (2.4%)	67 (12.3%)
Hatha Yoga	33 (6.0%)	128 (23.4%)
Jivamukti Yoga	-	17 (3.1%)
Iyengar Yoga	7 (1.3%)	23 (4.2%)
Power Yoga	18 (3.3%)	134 (24.5%)
Sivananda Yoga	1 (0.2%)	7 (1.3%)
Vinyasa Yoga	175 (32.1%)	182 (33.3%)
Yin/Gentle/Restorative	27 (4.9%)	233 (42.7%)
Yoga (general)	53 (9.7%)	103 (18.9%)
Yoga (multi-styles)	63 (11.5%)	-
Other styles	7 (1.3%)	-
<b>Practice supervision</b>	<b>With a teacher</b>	<b>Without a teacher</b>
Never	41 (7.5%)	38 (7.0%)
Rarely	62 (11.4%)	108 (19.8%)
Sometimes	143 (26.2%)	159 (29.1%)
Most of the time	169 (31.0%)	144 (26.4%)
Always	131 (24.0%)	97 (17.8%)
<b>Frequency</b>		
Less than once a week	72 (14.3%)	100 (19.7%)
1-2x per week	200 (39.6%)	149 (29.4%)
3-4x per week	158 (31.3%)	128 (25.2%)
5-6x per week	43 (10.5%)	92 (28.1%)
7 or more	22 (4.4%)	39 (7.7%)
<b>Duration</b>		
Mean and SD	69.42 ± 19.88	52.56 ± 29.62
Range	15 to 120 min	5 to 180 minutes
<b>Location</b>		
Yoga studio	356 (70.5%)	21 (4.1%)
Gym or fitness centre	72 (14.3%)	18 (3.5%)
At work or corporate setting	19 (3.8%)	1 (0.2%)
At home	40 (7.9%)	457 (90.0%)
Others (e.g., community hall, church)	18 (3.6%)	11 (2.2%)

**Table 3.** Descriptive statistics of participation motives by participant subgroups resulting from cluster analysis

<b>Motives</b>	<b># items</b>	<b><math>\alpha</math></b>	<b>Overall (<i>n</i> = 530)</b>	<b>Exercisers (<i>n</i> = 127)</b>	<b>Yogis (<i>n</i> = 198)</b>	<b>Postural Yogis (<i>n</i> = 205)</b>
<b>Positive Affect</b>	5	.86	4.19 $\pm$ 0.96	3.68 $\pm$ 1.34	4.18 $\pm$ 0.84	4.57 $\pm$ 0.61
<b>Health and Fitness</b>	6	.89	4.14 $\pm$ 0.95	3.96 $\pm$ 0.90	3.90 $\pm$ 1.02	4.55 $\pm$ 0.61
<b>Nimbleness</b>	3	.85	4.14 $\pm$ 1.06	4.28 $\pm$ 0.86	3.73 $\pm$ 1.23	4.53 $\pm$ 0.69
<b>Mind-Body Integration</b>	14	.97	3.90 $\pm$ 1.24	2.54 $\pm$ 1.33	4.28 $\pm$ 0.78	4.40 $\pm$ 0.73
<b>Coping and Stress Management</b>	7	.94	3.77 $\pm$ 1.23	2.78 $\pm$ 1.35	3.96 $\pm$ 1.00	4.23 $\pm$ 0.93
<b>Ill-Health Avoidance</b>	4	.81	2.99 $\pm$ 1.35	2.58 $\pm$ 1.27	2.86 $\pm$ 1.31	3.44 $\pm$ 1.28
<b>Spirituality</b>	6	.97	2.80 $\pm$ 1.72	0.78 $\pm$ 0.91	3.68 $\pm$ 1.23	3.20 $\pm$ 1.47
<b>Challenge</b>	5	.83	2.77 $\pm$ 1.36	2.28 $\pm$ 1.24	2.56 $\pm$ 1.32	3.33 $\pm$ 1.20
<b>Supplementary Activity</b>	4	.94	2.41 $\pm$ 1.78	2.64 $\pm$ 1.67	2.16 $\pm$ 1.70	2.53 $\pm$ 1.88
<b>Weight Management and Appearance</b>	8	.94	2.39 $\pm$ 1.48	2.24 $\pm$ 1.46	2.08 $\pm$ 1.39	2.84 $\pm$ 1.45
<b>Affiliation</b>	4	.87	1.76 $\pm$ 1.44	1.46 $\pm$ 1.39	1.69 $\pm$ 1.41	2.06 $\pm$ 1.45
<b>Competition and Social Recognition</b>	8	.89	0.98 $\pm$ 1.07	0.84 $\pm$ 0.95	0.90 $\pm$ 1.02	1.16 $\pm$ 1.14
<sup>1</sup> <i>doctor/physiotherapist advised me</i>	1	-	0.50 $\pm$ 1.23	0.33 $\pm$ 0.97	0.52 $\pm$ 1.24	0.58 $\pm$ 1.34
<sup>2</sup> <i>help recover from an illness/injury</i>	1	-	2.01 $\pm$ 1.96	1.52 $\pm$ 1.74	1.83 $\pm$ 1.89	2.48 $\pm$ 2.05

<sup>1,2</sup>These 2 items were specifically mentioned by men in previous studies as reasons for practicing yoga

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### Supplementary File 1. Additional scales and their corresponding items

Scale	Items
<b>Centering and mindfulness</b>	1 to feel centered 2 to feel grounded 3 to experience being in the present moment 4 to develop mindfulness
<b>General Coping</b>	1 to deal with a difficult or demanding situation 2 to better cope better with life or changes in my life 3 to better cope with some challenging life events 4 to develop skills to help me cope better with difficult issues
<b>Mind-body Integration</b>	1 to have a better mind-body connection 2 to connect my mental and physical self 3 to develop a more integrated sense of mind and body 4 to experience harmony of mind and body
<b>Personal growth and transformation</b>	1 to develop a greater sense of myself 2 to develop a greater understanding of my body 3 because yoga fits with my general journey of personal growth 4 because yoga allows me to explore different parts of myself 5 because yoga helps me to get to know myself at a deeper and more profound level 6 because yoga changed me as a person (or because I believe yoga can change me as a person)
<b>Spirituality</b>	1 to connect to something beyond (e.g., spirit, divine, god, higher consciousness)  2 to explore spirituality 3 to seek spiritual experience 4 to practice spirituality 5 for spiritual growth 6 to improve my spiritual health and well-being

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**Supplementary activity**

1 as a supplementary activity to my sport or other physical activity

2 as a supplementary recovery technique to my sport or physical activity

3 because it will help me in my sport or other physical activity

4 because it complements my sport and other physical activity

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**Supplementary File 2.** Correlation matrix of the perception items ( $n = 546$ )

<b>To what extent did you consider yoga...</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>physical</b>	<b>mental</b>	<b>spiritual</b>	<b>lifestyle</b>
<b>a physical practice</b>	2.44	.69	-			
<b>a mental practice</b>	2.55	.65	<i>n.s.</i>	-		
<b>a spiritual practice</b>	1.96	1.03	-.13**	.53***	-	
<b>a lifestyle</b>	2.21	.91	<i>n.s.</i>	.43***	.50***	-

*Note: \*\*. Correlation is significant at the .01 level; \*\*\*. Correlation is significant at the .001 level.*

**Supplementary File 3.** Three-cluster solution and variable importance

Variable	Importance	Cluster 1	Cluster 2	Cluster 3
Label		Exercisers	Yogis	Postural Yogis
		<b>132</b> <b>(24.2%)</b>	<b>204</b> <b>(37.4%)</b>	<b>210</b> <b>(38.5%)</b>
Physical practice	<b>1.00</b>	2.66	1.72	3.00
Psycho-spiritual	<b>0.74</b>	1.31	2.42	2.65
Yoga immersion	<b>0.63</b>	3.08	4.88	4.77

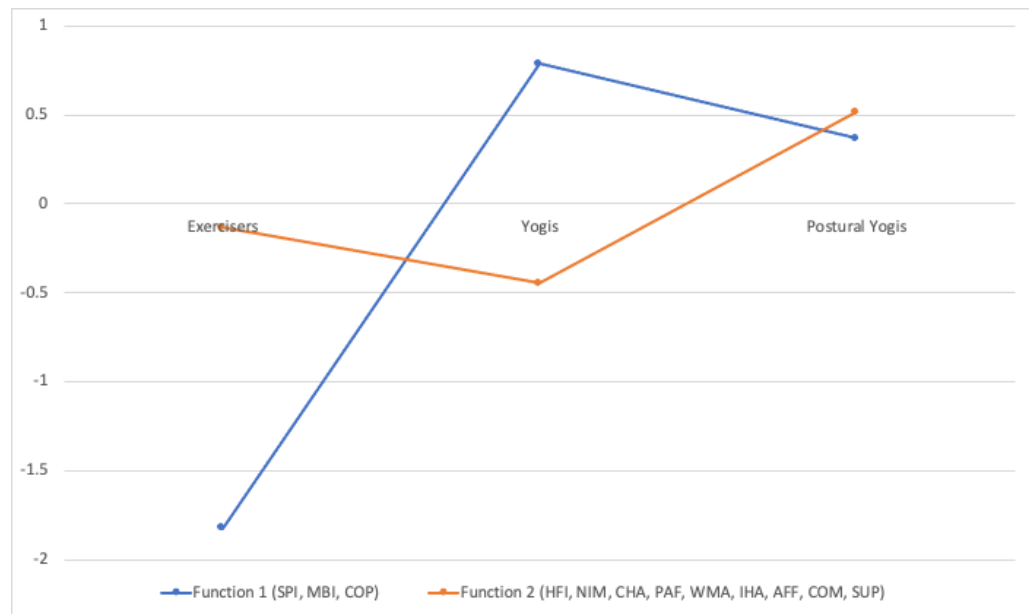
**Supplementary File 4.** Structure coefficients for types of yoga participants  
canonical functions

<b>Motives</b>	<b>Canonical structure coefficients</b>	
	<b>Function 1</b>	<b>Function 2</b>
<b>Spirituality</b>	.877*	-.006
<b>Mind-body integration</b>	.776*	.468
<b>Coping and stress management</b>	.480*	.475
<b>Health and fitness</b>	.070	.825*
<b>Nimbleness</b>	-.122	.812*
<b>Challenge</b>	.171	.707*
<b>Positive affect</b>	.301	.600*
<b>Weight management and appearance</b>	.023	.562*
<b>Ill-health avoidance</b>	.149	.529*
<b>Affiliation</b>	.101	.310*
<b>Competition and social recognition</b>	.056	.281*
<b>Supplementary activity</b>	-.083	.180*

*Note: \*Largest absolute correlation between each variable and any discriminant function;  
Canonical structure coefficient of .30 was considered.*



**Supplementary File 5.** Graph of functions 1 and 2 at group centroid



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## **CHAPTER VI**

### **Study 4b**

#### **Examining differences in participation motives and conformity to masculine norms between male and female yoga participants**

This paper is in preparation at the time of writing. It is planned to be submitted as a manuscript to either a physical activity or men's health journal. It is formatted in accordance to the APA 7<sup>th</sup> Edition guidelines.

#### **Rationale**

Findings from the previous chapter (Cagas et al., under review) identified three subgroups of yoga participants according to their perceptions of yoga and level of psycho-spiritual engagement. Motives for yoga participation varied in accordance with the participants' view of yoga and psycho-spiritual engagement. The results described in Chapter IV (Study 3: Cagas et al., under review) suggest that male yoga participants may also vary in terms of their perceptions of yoga and interest in its spiritual dimension. The paper presented in this chapter focused on the question whether motives for yoga participation between male and female participants still vary when their perception and level of psycho-spiritual engagement are taken into consideration.

Research has shown that men and women endorse different reasons for engaging in physical activities (Molanorouzi et al., 2015; van Uffelen et al., 2017). However, men and women may also have the same motivation for participating in leisure activities. For instance, although research suggests that men are less likely to endorse motives related to appearance and physical condition compared to women (Molanorouzi et al., 2015), some studies involving only male participants found these motives to be just as important (Ashton et al., 2015; Ashton, Morgan, et al.,



2017). Men do not share similar values, interests, background, and identity (Smith, 2007); hence, different subgroups of men may have varied reasons for engaging in physical activity. For example, Ashton et al. (2017) reported that obese and inactive young men were more likely to exercise to lose weight; those who were active exercised to improve sporting performance; and young married men were more likely to exercise to improve fitness while single men exercised more to attract a potential partner.

The purpose of the paper described in this chapter was, therefore, to examine whether participation motives in yoga vary between male and female participants and whether such differences, if any, can still be observed when the yoga participant subgroups are taken into account. Finally, participation motives within each gender were also examined.

## 6.1 Introduction

Studying the reasons why people take part in physical activities, including yoga, is vital in understanding physical activity behaviour and informing strategies to promote higher levels of engagement (Molanorouzi et al., 2015; Morris & Roychowdhury, 2020). Research on participation motives in physical activity suggests that the reasons people engage in sport or exercise may vary across gender (Molanorouzi et al., 2015; van Uffelen et al., 2017). It is typically reported that men are more likely to exercise or play sports for competitive reasons compared to women (Deaner et al., 2016; Grogan et al., 2006). Molanorouzi and colleagues (2015), for instance, found that men were driven by competition and improving their skills or personal best when engaging in physical activity, whereas women were more motivated by physical appearance and health/fitness. Understanding the reasons men and women pursue physical activity is essential in developing differentiated messages that effectively target the needs of both genders (Kilpatrick et al., 2005).

Similar to physical activity, people may take up yoga for a variety of reasons. Studies on yoga participation have also observed differences in participation motives between male and female yoga participants (Brems et al., 2015; Park et al., 2019). A German study, for example, found that female yoga participants were more likely than male participants to cite spirituality as a reason for yoga participation (Park et al., 2019). Findings from a qualitative study involving non-yoga practicing men suggest that generally men are less likely to be interested in yoga but may acknowledge its potential benefits and might be open to take it up as a supplement to their existing training program (Cagas et al., 2021). However, not all men share the same needs and interest (Bottorff et al., 2015; Hunt et al., 2014), including views on

yoga. It is possible that men who consider yoga a psycho-spiritual practice would do yoga for spiritual reasons as much as women. There is a need to further examine gender differences within yoga (Cartwright et al., 2020), including motives for participation and considering people's perception of yoga.

Research has identified masculinity as an important determinant of men's health behaviours (Griffith et al., 2016). Masculinity, as an ideology, is a system of personal beliefs or social norms that influence men's behaviours (Smiler, 2004). There are existing gender role norms operating in society that expect men (and women) to behave in particular ways (Mahalik, Locke, et al., 2003). For example, in Australia and most Western societies, men are expected to be heterosexual, able-bodied, strong, and muscular (Connell, 2005; Waling, 2016). Men are also expected not to share their emotions and they tend not to seek help from others (Mahalik, Locke, et al., 2003). The extent to which men conform to these masculine norms can be a factor influencing their openness to yoga. How conformity to certain masculinity norms differ across different types of yoga participants has not been explored in previous studies.

## **6.2 Purpose of this Study**

The present study aimed to examine differences in motives for yoga participation and conformity to masculinity norms between male and female yoga practitioners. More specifically, we first examined whether participation motives and conformity to masculine norms vary between male and female participants. We then examined whether these differences would still be observed when taking participant type in consideration. Finally, we examined each gender separately and investigated whether participation motives and conformity to masculine norms differ across different participant types.

### **6.3 Methods**

#### **6.3.1 Participants of the Study**

Yoga participants, at least 18 years old and having practiced yoga once a week for three months prior to the onset of the 2020 COVID 19 pandemic, were recruited for the study. A minimum sample size ( $n = 345$ ) with anticipated effect size of .25, power level of .80, and probability level of .05 was determined using G\*Power program (Faul et al., 2007). Study advertisements with a link to the online questionnaire were posted on various social media platforms (e.g., Facebook, Instagram, Twitter), Yoga Australia's e-newsletter, and the University mailing list. Out of the 1119 individuals who accessed the link, 546 (48.8%) completed the survey. Respondents were from the Philippines (55.9%), Australia (28.9%), and other countries (15.2%). Mean age was 39.99 years ( $SD = 11.85$ ) and ranged from 18 to 73 years. More than half of the respondents identified as female (73.1%), and Asian (62.5%). Most of the respondents were employed full-time (47.6%), married (38.5%), and had attained a Bachelor's degree (44.5%). Years of practice varied widely from 1 to 50 years ( $M = 6.79$  years;  $SD = 6.55$ ). Respondents practiced mostly Ashtanga Yoga (28.3%) and Vinyasa Yoga (32.1%). The sociodemographic characteristics of the respondents are summarized in Table 1.

**Table 1.** General characteristics of the participants ( $n = 546$ )

Variables		Total	Male	Female	Others
Sample size		546	138 (28.90%)	399 (73.10%)	9 (1.60%)
Age					
	Mean and SD	39.99 (SD = 11.85)	41.94 (SD = 12.09)	39.43 (SD = 11.76)	35.00 (SD = 7.75)
	Range	18 to 73 years	21 to 69 years	18 to 73 years	26 to 47 years
Country of Residence					
	Australia	158 (28.90%)	42 (30.40%)	114 (28.60%)	2 (22.20%)
	Philippines	305 (55.90%)	57 (41.30%)	242 (60.70%)	6 (66.70%)
	Others	83 (15.20%)	39 (28.30%)	43 (10.8%)	1 (11.10%)
Ethnicity					
	White	172 (31.50%)	59 (42.80%)	113 (28.30%)	0 (0.00%)
	Asian	341 (62.50%)	66 (47.80%)	268 (67.20%)	7 (77.80%)
	Mixed-race	13 (2.40%)	5 (3.60%)	7 (1.80%)	1 (11.10%)
	Others	20 (3.70%)	8 (5.80%)	11 (2.80%)	1 (11.10%)
Employment					
	Employed full-time	260 (47.6%)	70 (50.70%)	186 (46.60%)	4 (44.0%)
	Employed part-time	46 (8.4%)	9 (6.50%)	36 (9.00%)	1 (11.10%)
	Self-employed	139 (25.5%)	38 (27.50%)	99 (24.8%)	2 (22.20%)

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<b>Variables</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Others</b>
<b>Studying full-time</b>	35 (6.4%)	6 (4.30%)	27 (6.80%)	2 (22.20%)
<b>Retired</b>	20 (3.7%)	10 (7.20%)	10 (2.50%)	0 (0.00%)
<b>Stay at home parent/carer</b>	16 (2.9%)	0 (0.00%)	16 (4.00%)	0 (0.00%)
<b>Unemployed</b>	15 (2.7%)	2 (1.40%)	13 (3.30%)	0 (0.00%)
<b>Other</b>	15 (2.7%)	3 (2.20%)	12 (3.00%)	0 (0.00%)
<b>Partnership Status</b>				
<b>Single</b>	180 (33.0%)	46 (33.30%)	130 (32.60%)	4 (44.40%)
<b>Partnered or in a relationship</b>	125 (22.9%)	40 (29.00%)	83 (20.80%)	2 (22.20%)
<b>Married/Civil partnership/De facto</b>	210 (38.5%)	46 (33.30%)	161 (40.40%)	3 (33.30%)
<b>Divorced/separated</b>	28 (5.1%)	5 (3.60%)	23 (5.80%)	0 (0.00%)
<b>Other (e.g., widower)</b>	3 (0.5%)	1 (0.70%)	2 (0.50%)	0 (0.00%)
<b>Highest Educational Attainment</b>				
<b>Less than Year 12 or equivalent</b>	6 (1.1%)	1 (0.70%)	5 (1.30%)	0 (0.00%)
<b>Year 12 or High School diploma</b>	29 (5.3%)	6 (4.30%)	22 (5.50%)	1 (11.10%)
<b>Vocational or Associate Diploma</b>	40 (7.3%)	16 (11.60%)	22 (5.50%)	2 (22.20%)
<b>Bachelor</b>	243 (44.5%)	51 (37.00%)	190 (47.60%)	2 (22.20%)
<b>Postgraduate diploma/certificate</b>	60 (11.0%)	11 (8.00%)	48 (12.00%)	1 (11.10%)
<b>Master's degree</b>	122 (22.3%)	39 (28.30%)	80 (20.10%)	3 (33.30%)

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Variables	Total	Male	Female	Others
<b>Doctorate</b>	46 (8.4%)	14 (10.10%)	32 (8.00%)	0 (0.00%)
<b>Socio-economic Ladder</b>				
<b>Mean and SD</b>	6.21 ± 1.72			
<b>Range</b>	1 - 10			
<b>Teacher status</b>				
<b>Non-teachers</b>	397 (72.7%)	93 (67.40%)	297 (24.40%)	7 (77.80%)
<b>Teachers</b>	149 (27.3%)	45 (32.60%)	102 (25.60%)	2 (22.20%)
<b>Type of yoga participant</b>				
<b>Exerciser</b>		40 (29.00%)	90 (22.60%)	2 (22.20%)
<b>Yogi</b>		51 (37.00%)	149 (37.30%)	4 (44.40%)
<b>Postural Yogi</b>		47 (34.10%)	160 (40.10%)	3 (33.30%)

### **6.3.2 Measures**

#### ***6.3.2.1 Motives for yoga participation***

An adapted version of the Exercise Motivation Inventory-2 (EMI-2: Markland & Ingledew, 1997) was used in this study. Although the EMI-2 measures a broad range of motives for exercise, it does not adequately capture other motives for yoga participation identified in previous studies (Cagas et al., 2020). Twenty-eight (28) new items were included to assess motives related to spirituality, mind-body integration, general coping, centering and mindfulness, personal growth and transformation, and supplementary activity. Details on the process of developing these new items and the preliminary factor analysis have been reported elsewhere (Cagas et al., under review). The adapted EMI-2 consisted of 12 factors: spirituality (SPI), (“for spiritual growth”), mind-body integration (MBI) (“to have a better mind-body connection”), coping and stress management (COP) (“to better cope with some challenging life events”), health and fitness (HFI) (“to feel more healthy”), nimbleness (NIM) (“to maintain flexibility”), challenge (CHA) (“to give me goals to work towards”), positive affect (PAF) (“because it makes me feel good”), weight management and appearance (WMA) (“to lose weight”), ill-health avoidance (IHA) (“to prevent health problems”), affiliation (AFF) (“to spend time with friends”), competition and social recognition (COM) (“to show my worth to others”), and supplementary activity (SUP) (“because it will help me in my sport or other physical activity”). Internal reliability coefficients of these factors ranged from .85 to .97. Using a 6-point Likert-type scale ranging from 0 (Not at all true for me) to 5 (Very true for me), participants indicated whether, or not, the statements were true for them personally.

#### ***6.3.2.2 Conformity to Masculinity Norm***



The Conformity to Masculine Norms Inventory (Hammer et al., 2018; Mahalik, Locke, et al.; Parent & Moradi, 2009) assesses conformity to nine traditional masculine norms: (1) emotional control (i.e., emotional restriction and suppression), (2) winning (i.e., strong desire to win), (3) playboy (i.e., desire for multiple or noncommitted sexual relationships), (4) violence (i.e., penchant for violence or physical confrontations), (5) self-reliance (i.e., aversion to seeking help or desire to solve problems on one's own), (6) risk-taking (i.e., proclivity for high-risk behaviors), (7) power over women (i.e., perceived control over women), (8) primacy of work (i.e., considering work as a major focus of life), and (9) heterosexual self-presentation (i.e., aversion to being thought of as gay or importance of presenting oneself as heterosexual). Conformity to masculine norms may function differently in different contexts (Mahalik et al., 2003). For example, while greater conformity to emotional control in general has been found to be negatively associated with psychological help seeking (Wong et al., 2017), it has also been found to act as a protective buffer helping men to control anger and stress (Levant & Wilmer, 2014). It has been suggested that selecting the norms that are theoretically salient to the topic that one is investigating is important (Owen, 2011). As the survey was already quite long with the adapted version of the EMI-2, we only included three norms: (1) heterosexual self-presentation (6 items,  $\alpha = .88$ ), (2) emotional control (6 items,  $\alpha = .87$ ), and (3) self-reliance (5 items,  $\alpha = .85$ ). They were selected for the following reasons: (1) yoga is an activity that can be perceived as feminine and female dominated (Cagas et al., 2021); therefore, male yoga participants may feel pressured to present themselves as heterosexual to avoid being thought of as gay, and (2) yoga is a practice that fosters self-regulation (Gard et al., 2014) and self-care (Alexander et al., 2015; Middleton, 2013); hence, both male and female yoga

participants should demonstrate similar levels of emotional control and self-reliance. Participants indicated the extent to which they agreed or disagreed with each statement using a 4-point scale which ranged from 0 (strongly disagree) to 3 (strongly agree). According to Mahalik et al. (2003), this 4-point scaling corresponds to four levels of conformity (i.e., extreme non-conformity, moderate non-conformity, moderate conformity, and extreme conformity). Means for each subscale were computed, with higher scores reflecting greater conformity.

### ***6.3.2.3 Types of yoga participants***

Using a cluster analytical approach, participants were categorized into Exercisers, Yogis, and Postural Yogis. Details of the analysis have been reported in Cagas et al. (under review). “Exercisers” were yoga participants who considered yoga mainly as a physical practice and were not spiritually-involved ( $n = 132$ ; 30.3% males, 68.2% females, 1.5% others); “Yogis” were participants who perceived yoga less as a physical practice and more as a psycho-spiritual discipline and were highly immersed in its psycho-spiritual teachings ( $n = 204$ ; 25% males, 73.04% females, 1.96% others), and; “Postural yogis” were those who understood yoga both as a physical practice and a psycho-spiritual discipline, and were also highly involved in its psycho-spiritual aspects ( $n = 210$ ; 22.38% males, 76.19% females, 1.43% others).

### **6.3.3 Data analysis**

Data analyses were conducted in IBM SPSS Version 27 (IBM Corp., 2020). Preliminary data screening was performed prior to each analysis (Hair et al., 2013). Descriptive statistics of all variables of interest were computed. In this paper, data analyses were conducted in stages.

In Analysis 1, a multivariate analysis of covariance (MANCOVA) was performed to examine differences in participation motives between male and female

yoga participants, with age, years of practice, and teacher status entered as covariates. The analysis was repeated without the covariates (i.e., MANOVA). This multivariate analysis was then followed-up with Discriminant Function Analysis to identify the combination of motives that best distinguish the genders.

In Analysis 2, the data were split by participant subgroup and the gender analysis was repeated. As the sample sizes per subgroup were not sufficient for multivariate analyses, multiple independent sample *t*-tests with Bonferroni corrections were conducted. Participation motives across different male and female yoga participant subgroups were examined using multiple ANOVAs with Bonferroni corrections.

In Analyses 3 and 4, separate MANOVAs were conducted to examine participation motives across male and female yoga participant subgroups, respectively. For each analysis, a discriminant function analysis (DFA) was conducted as a follow-up on the significant effects of participant type.

In Analysis 5, a multivariate analysis of covariance (MANCOVA) was conducted to determine whether levels of conformity to three masculine norms differ between male and female yoga participants, by examining gender differences in general and when taking yoga participant subgroups into account. Age, years of practice, and teacher status were entered as covariates. Statistical significance was set at  $p < .05$ , which was adjusted for follow-up multiple group comparisons to reduce the probability of Type I error.

## **6.4 Results**

### **6.4.1 Motives for Yoga Participation**

As shown in Table 2 below, the top motives for yoga participation were PAF ( $M = 4.19$ ,  $SD = .96$ ), HFI ( $M = 4.14$ ,  $SD = .95$ ) and NIM ( $M = 4.14$ ,  $SD = 1.06$ ).

COM ( $M = .98$ ,  $SD = 1.07$ ) was the least endorsed motive. These patterns were similar for males and females when examining the plots of means (Figure 1).

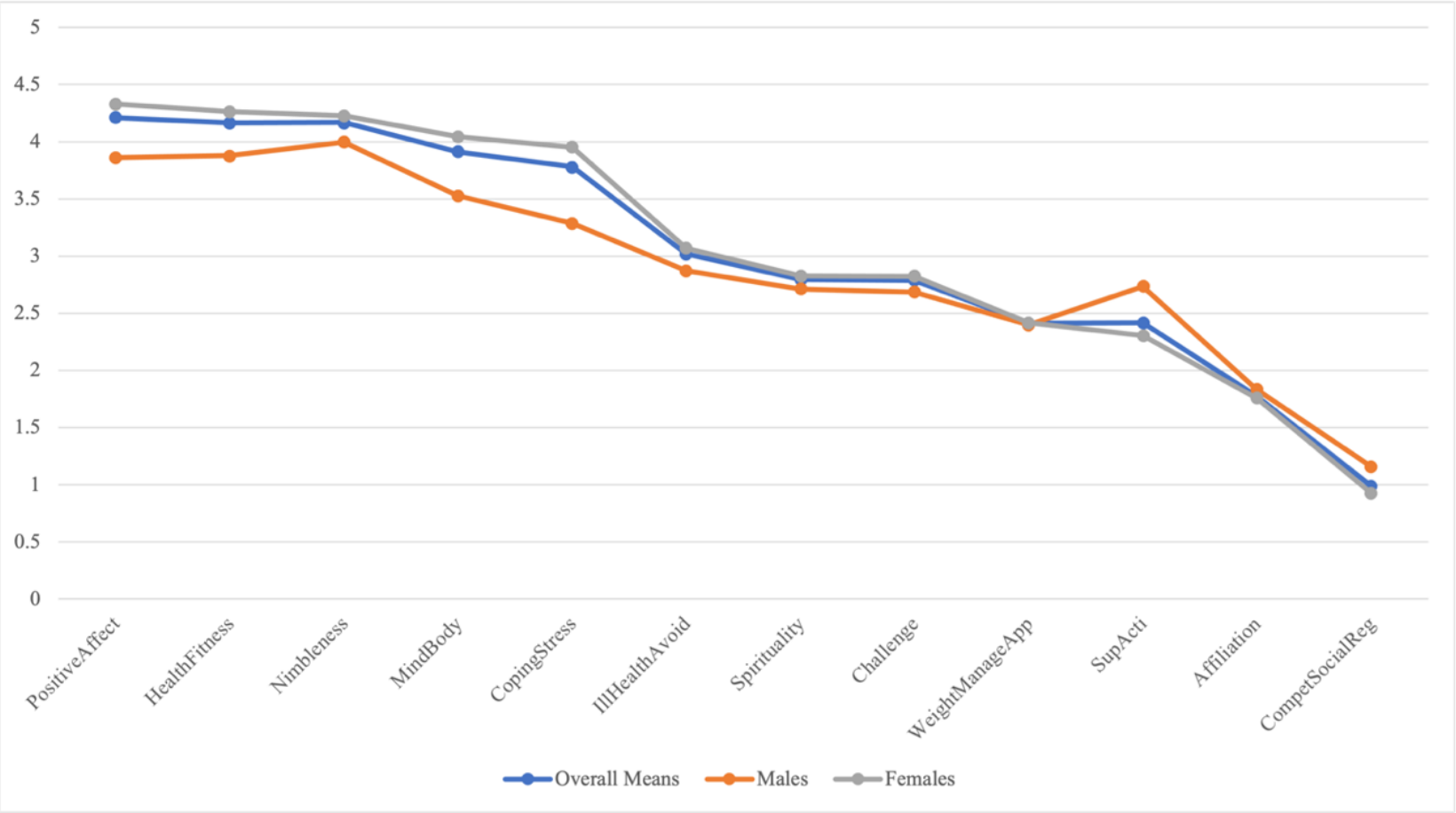
However, as it appears in the figure, male yoga participants reported lower scores in most motives compared to female participants, except for SUP, COM, and AFF.

**Table 2.** Descriptive statistics of participation motives by gender

Motives	Overall		Male		Female	
	M	SD	M	SD	M	SD
<b>Positive Affect (PAF)</b>	4.19	0.96	3.86	1.18	4.33	0.77
<b>Health and Fitness (HFI)</b>	4.14	0.95	3.88	1.03	4.27	0.84
<b>Nimbleness (NIM)</b>	4.14	1.06	4.00	1.11	4.23	0.99
<b>Mind-Body Integration (MBI)</b>	3.90	1.24	3.53	1.45	4.04	1.08
<b>Coping and Stress Management (COP)</b>	3.77	1.23	3.29	1.46	3.95	1.07
<b>Ill-Health Avoidance (IHA)</b>	2.99	1.35	2.87	1.38	3.07	1.31
<b>Spirituality (SPI)</b>	2.80	1.72	2.71	1.84	2.83	1.66
<b>Challenge (CHA)</b>	2.77	1.36	2.69	1.49	2.82	1.27
<b>Weight Management and Appearance (WMA)</b>	2.41	1.78	2.40	1.50	2.41	1.46
<b>Supplementary Activity (SUP)</b>	2.39	1.48	2.74	1.72	2.31	1.78
<b>Affiliation (AFF)</b>	1.76	1.44	1.83	1.56	1.76	1.40
<b>Competition (COM)</b>	0.98	1.07	1.16	1.27	0.93	0.97
<sup>1</sup> <i>doctor/physiotherapist advised me</i>	0.50	1.23	0.63	1.39	0.45	1.16
<sup>2</sup> <i>help recover from an illness/injury</i>	2.01	1.96	2.44	1.99	1.86	1.92

<sup>1,2</sup>These 2 items were specifically mentioned by men in previous studies as reasons for practicing yoga

**Figure 1.** Plots of means of participation motives by gender



### 6.4.2 Analysis 1: Gender differences in yoga participation motives

Results from MANCOVA indicated significant main effects of Gender, Pillai's Trace = .134,  $F(12, 514) = 6.635$ ,  $p < .001$ ,  $\eta_p^2 = .134$ . The three covariates were also significant: Age, Pillai's Trace = .146,  $F(12, 514) = 7.309$ ,  $p < .001$ ,  $\eta_p^2 = .146$ ; Years of Practice, Pillai's Trace = .081,  $F(12, 514) = 3.757$ ,  $p < .001$ ,  $\eta_p^2 = .081$ ; and Teacher Status, Pillai's Trace = .107,  $F(12, 514) = 5.147$ ,  $p < .001$ ,  $\eta_p^2 = .107$ . The same significant result was obtained when the analysis was repeated without the covariates (i.e., MANOVA), Pillai's Trace = .133,  $F(12, 517) = 6.625$ ,  $p < .001$ ,  $\eta_p^2 = .133$ .

A discriminant function analysis (DFA) with prior probabilities computed from the actual group sizes was conducted as a follow-up on the main effects of gender. DFA revealed a significant canonical function, Wilk's  $\lambda = .87$ ,  $\chi^2(12) = 74.66$ ,  $p < .001$ , indicating that male and female yoga participants could be discriminated effectively by the motives, and correctly classifying cases into gender by 75.6%.

**Table 3.** Structure coefficients for gender canonical function

Motives	Canonical structure coefficients
	Gender Function
Coping and stress management (COP)	-.629
Positive affect (PAF)	-.587
Mind-body integration (MBI)	-.485
Health and fitness (HFI)	-.484
Supplementary activity (SUP)	.272
Nimbleness (NIM)	-.251
Competition and social recognition (COM)	.241
Ill-health avoidance (IHA)	-.167
Challenge (CHA)	-.116
Spirituality (SPI)	-.075
Affiliation (AFF)	.059
Weight management and appearance (WMA)	-.011

*Note: \*Largest absolute correlation between each variable and any discriminant function; Canonical structure coefficient of .30 was considered.*

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Examining the structure coefficients (Table 3) show that COP (-.635), PAF (-.580), MBI (-.500), and HFI (-.487) contributed most to gender differences, based on a minimum discriminant function loading of .30 (Tabachnick & Fidell, 2014).

Loading of .40 or more may be considered a substantive factor (Hair et al., 2013).

SUP (.272), NIM (-.251), and COM (.241) also provided small contributions to the group differences. When considering the dependent variables separately, COP,  $F(1, 528) = 32.10, p < .001, \eta_p^2 = .057$ , PAF,  $F(1, 528) = 28.00, p < .001, \eta_p^2 = .05$ , MBI,  $F(1, 528) = 19.13, p < .001, \eta_p^2 = .035$ , HFI,  $F(1, 528) = 19.01, p < .001, \eta_p^2 = .035$ , SUP,  $F(1, 528) = 5.99, p = .015, \eta_p^2 = .01$ , COM,  $F(1, 528) = 4.73, p = .03, \eta_p^2 = .009$ , and NIM,  $F(1, 528) = 5.13, p = .02, \eta_p^2 = .01$ , were found to be significant.

Inspecting the mean scores (Table 2) indicate that females endorsed MBI, HFI, PAF, NIM and COP more than males whereas males rated SUP and COM more than females.

Additional analyses using separate independent sample *t*-tests were performed to examine gender differences on items pertaining to (1) advice from a doctor or physiotherapist and (2) recovery from injury/illness. Significant difference was found only on the second item,  $F(1, 528) = 9.138, p = .003, \eta^2 = .017$ .

Examining the mean scores indicated that males ( $M = 2.44, SD = 1.99$ ) scored higher than females ( $M = 1.86, SD = 1.92$ ) on this item.

### 6.4.3 Analysis 2: Gender differences in motives by participant type

Follow-up analyses using multiple independent sample *t*-tests with Bonferroni corrections were carried out to examine gender differences in motives within participant subgroup (Table 4). Within the Exerciser subgroup, gender differences were shown in PAF, MBI, COP, and CHA. Male Exercisers rated these motives lower than female Exercisers. Within the Yogis subgroup, gender



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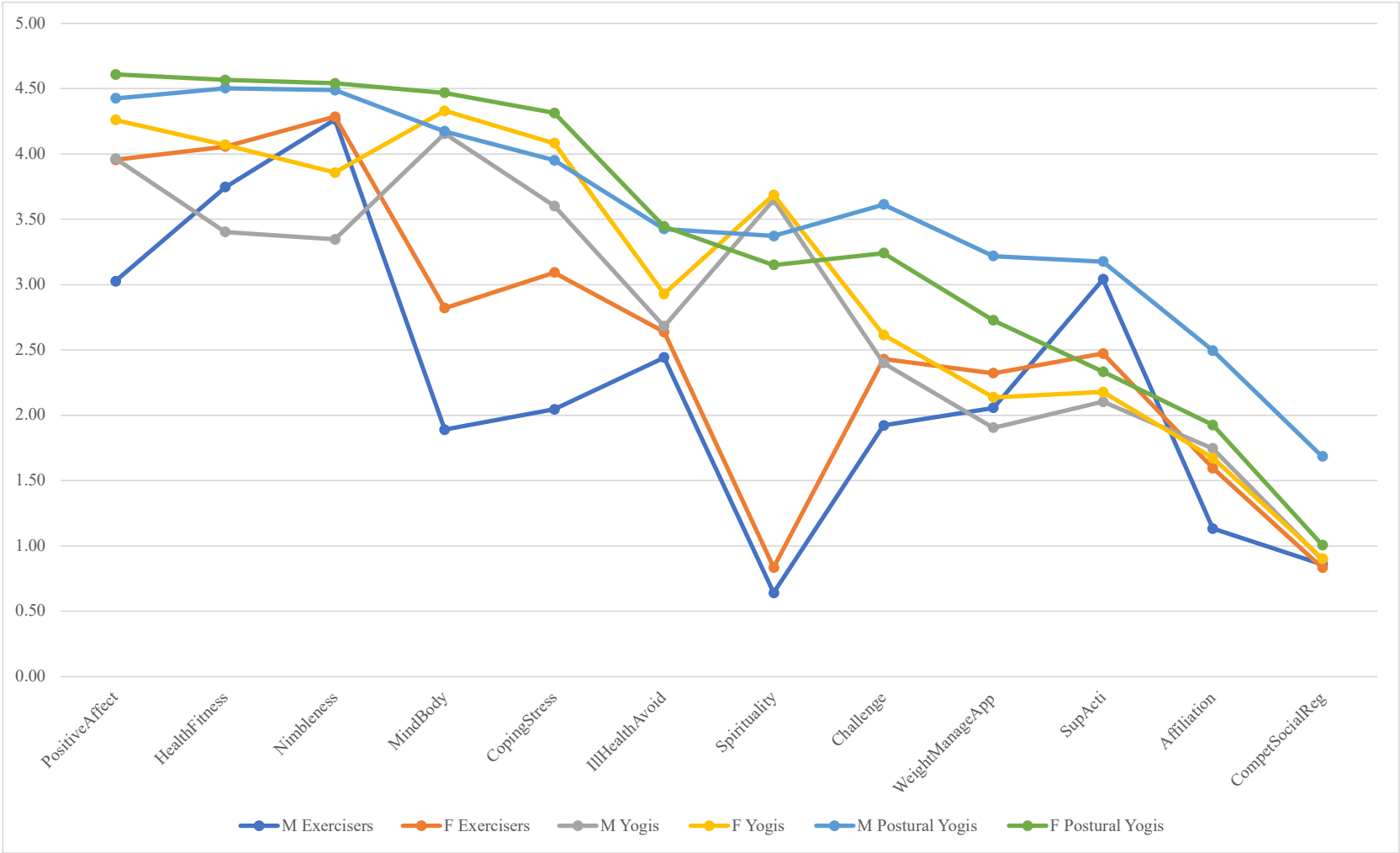
differences were observed in PAF, HFI, NIM, and COP. Male Yogis rated these motives lower than their female counterpart. Within the Postural Yogis, gender differences were identified in MBI, COP, WMA, SUP, AFF, and COM. Female Postural Yogis rated MBI and COP higher than male Postural Yogis, whereas male Postural Yogis scored WMA, SUP, AFF, and COM higher than their female counterparts. Figure 2 illustrates the mean group differences.

**Table 4.** Descriptive statistics of participation motives by gender and participant types

Motives	Gender	Exercisers ( <i>n</i> = 127)		Yogis ( <i>n</i> = 198)		Postural Yogis ( <i>n</i> = 205)	
		M	SD	M	SD	M	SD
Positive Affect (PAF)	Male	3.03	1.38	3.96	1.01	4.43	0.70
	Female	3.96	0.89	4.26	0.76	4.61	0.58
	Overall	3.68	1.34	4.18	0.84	4.57	0.61
Health and Fitness (HFI)	Male	3.75	0.81	3.40	1.18	4.50	0.62
	Female	4.06	0.93	4.07	0.91	4.57	0.61
	Overall	3.96	0.90	3.90	1.02	4.55	0.61
Nimbleness (NIM)	Male	4.26	0.85	3.35	1.29	4.49	0.67
	Female	4.28	0.86	3.86	1.19	4.54	0.70
	Overall	4.28	0.86	3.73	1.23	4.53	0.69
Mind-Body Integration (MBI)	Male	1.89	1.37	4.16	0.86	4.17	0.87
	Female	2.82	1.23	4.33	0.74	4.47	0.68
	Overall	2.54	1.33	4.28	0.78	4.40	0.73
Coping and Stress Management (COP)	Male	2.05	1.52	3.60	1.09	3.95	1.11
	Female	3.09	1.14	4.08	0.94	4.31	0.86
	Overall	2.78	1.35	3.96	1.00	4.23	0.93
Ill-Health Avoidance (IHA)	Male	2.44	1.31	2.68	1.29	3.43	1.36
	Female	2.64	1.25	2.93	1.31	3.44	1.26
	Overall	2.58	1.27	2.86	1.31	3.44	1.28
Spirituality (SPI)	Male	0.64	1.03	3.65	1.22	3.37	1.59
	Female	0.84	0.85	3.69	1.24	3.15	1.43
	Overall	0.78	0.91	3.68	1.23	3.20	1.47

<b>Motives</b>	<b>Gender</b>	<b>Exercisers (<i>n</i> = 127)</b>		<b>Yogis (<i>n</i> = 198)</b>		<b>Postural Yogis (<i>n</i> = 205)</b>	
		<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>
<b>Challenge (CHA)</b>	Male	1.92	1.36	2.40	1.45	3.61	1.11
	Female	2.43	1.16	2.62	1.28	3.24	1.22
	Overall	2.28	1.24	2.56	1.32	3.33	1.45
<b>Weight Management and Appearance (WMA)</b>	Male	2.06	1.51	1.90	1.29	3.22	1.39
	Female	2.32	1.45	2.14	1.43	2.73	1.45
	Overall	2.24	1.46	2.08	1.39	2.84	1.45
<b>Supplementary Activity (SUP)</b>	Male	3.04	1.51	2.10	1.60	3.18	1.84
	Female	2.47	1.71	2.18	1.74	2.33	1.85
	Overall	2.64	1.67	2.16	1.70	2.5	1.88
<b>Affiliation (AFF)</b>	Male	1.13	1.35	1.75	1.48	2.49	1.57
	Female	1.60	1.39	1.67	1.39	1.93	1.39
	Overall	1.46	1.39	1.69	1.41	2.06	1.45
<b>Competition (COM)</b>	Male	0.86	1.06	0.89	1.06	1.68	1.48
	Female	0.83	0.91	0.90	1.01	1.01	0.98
	Overall	0.84	0.95	0.90	1.02	1.16	1.14

Figure 2. Plot of means



#### **6.4.4 Analysis 3: Differences in motives across male yoga participant**

##### **subgroups**

We conducted a MANOVA to examine participation motives across types of male yoga participants ( $n = 136$ : 38 Exercisers, 51 Yogis, 47 Postural Yogis). Results indicated significant differences across the three male subgroups, Pillai's Trace = .900,  $F(24, 246) = 8.378$ ,  $p < .001$ ,  $\eta_p^2 = .450$ .

As a follow-up on the significant effects of participant type, we performed a discriminant function analysis (DFA) with prior probabilities computed from the actual group sizes. Two significant canonical functions were found to discriminate the three groups effectively. Function 1 had an eigenvalue equal to 1.76 which accounted for 83.3% of the total model variance, Wilk's  $\lambda = .267$ ,  $\chi^2(24) = 168.22$ ,  $p < .001$ . The canonical correlation associated with the first eigenvalue was .80, which implies that 64.0% of the variance in the discriminant function derived scores was accounted for by participant type. Function 2 had an eigenvalue of .35, accounting for 16.7% of the model variance, and a corresponding canonical correlation of .51, Wilk's  $\lambda = .74$ ,  $\chi^2(11) = 38.6$ ,  $p < .001$ . The functions correctly classified cases into three types of yoga participants by 74.3%.

**Table 5.** Structure coefficients for types of male yoga participants canonical functions

Motives	Function	
	1	2
<b>Spirituality (SPI)</b>	.732*	0.354
<b>Mind-Body Integration (MBI)</b>	.718*	0.515
<b>Health and Fitness (HFI)</b>	-0.05	.872*
<b>Challenge (CHA)</b>	0.174	.816*
<b>Weight Management and Appearance (WMA)</b>	0.021	.728*
<b>Nimbleness (NIM)</b>	-0.232	.707*
<b>Positive Affect (PAF)</b>	0.32	.557*
<b>Competition and Social Recognition (COM)</b>	0.048	.521*
<b>Coping and Stress Management (COP)</b>	0.43	.514*
<b>Affiliation (AFF)</b>	0.166	.499*
<b>Ill-Health Avoidance (IHA)</b>	0.093	.490*
<b>Supplementary Activity (SUP)</b>	-0.145	.386*

*Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions*

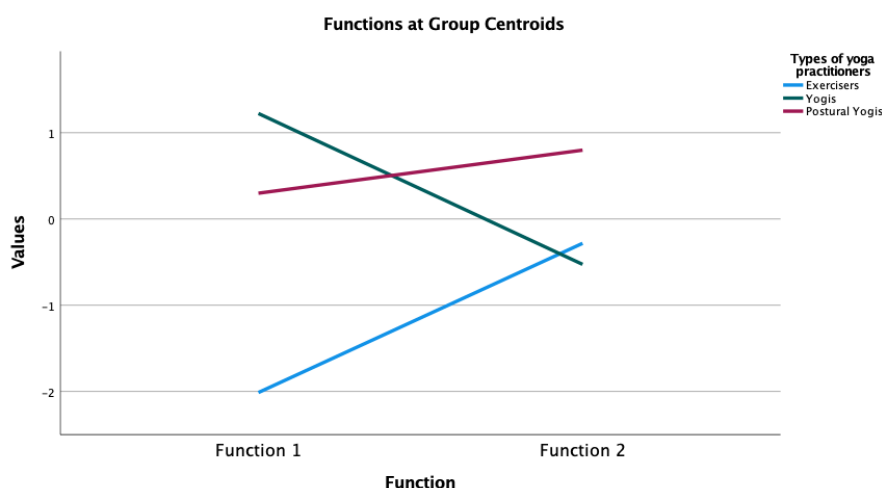
*Variables ordered by absolute size of correlation within function.*

*\* Largest absolute correlation between each variable and any discriminant function*

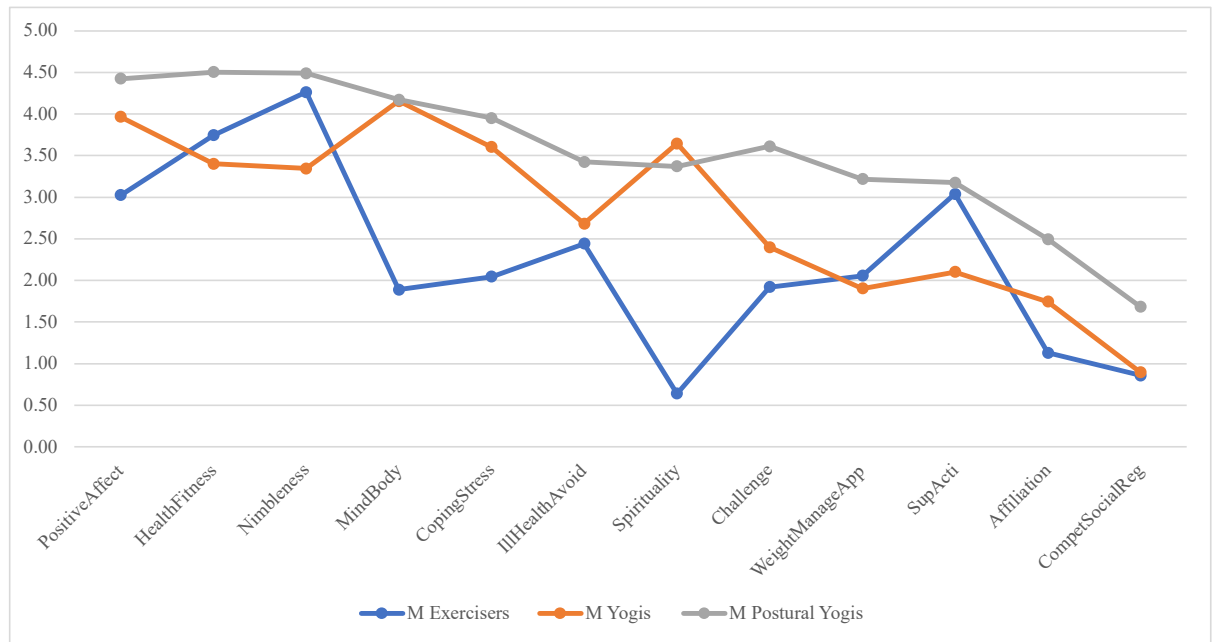
Examining the structure matrix (Table 5) showed that SPI (.73) and MBI (.72) contribute most to group differences. HFI (.87), CHA (.82), WMA (.73), NIM (.71), PAF (.56), COM (.52), COP (.51), AFF (.50), IHA (.49), and SUP (.39) provided additional contributions in the group differences. Comparing the discriminant scores across Types of Participants showed significant differences for Function 1,  $F(2, 133) = 117.22, p < .001, \eta^2 = .64$ , and Function 2, Welch's  $F(2, 82.25) = 99.58, p < .001, \eta^2 = .37$ . *Post hoc* analyses showed statistically significant differences across all three groups in Function 1 discriminant scores. In Function 2, the discriminant score of Postural Yogis was significantly different from Yogis and Exercisers; Function 2 discriminant scores of Yogis and Exercisers were not significantly different. The results indicated that SPI and MBI differentiated the three participant subgroups. Additionally, all other motives contributed to separation of the Postural Yogis from the two other subgroups. Examining the graph of the functions

at group centroids (Figure 3) shows that Yogis rated SPI and MBI higher than Postural Yogis and Exercisers. Postural Yogis also rated these motives higher than Exercisers. Postural yogis rated all the other motives higher than Yogis and Exercisers.

**Figure 3.** Graph of functions at group centroids (males)



When considering the motives separately (Table 4), results indicated that Postural Yogis and Yogis reported higher scores in MBI compared to Exercisers. Yogis reported higher SPI scores than Postural Yogis and Exercisers; Postural Yogis scored higher SPI than Exercisers. Postural Yogis scored higher in COP and PAF than Yogis and Exercisers; Yogis scored higher in COP and PAF than Exercisers. Postural yogis scored higher in NIM than Exercisers and Yogis; Exercisers scored higher in NIM than Yogis. Postural Yogis reported higher WMA, COM, HFI, AFF, IHA, and CHA than Yogis and Exercisers; Yogis and Exercisers did not differ in these motives. Postural Yogis and Exercisers scored higher in SUP than Yogis; Postural Yogis and Exercisers did not differ in their scores (See Figure 4).

**Figure 4.** Graph of means of motives across male participant subgroups

Additional analyses were performed to examine differences across male yoga participant subgroups on two motives: advice from doctor/physiotherapist and to recover from injury/illness. Separate one-way ANOVAs were conducted. Significant group differences were found in both items (doctor's or physiotherapist's advice, Welch's  $F(2, 84.00) = 3.95, p < .05, \eta^2 = .075$ ; injury/illness recovery,  $F(2, 133) = 6.632, p < .01, \eta^2 = .091$ ). Examining the mean scores indicated that Postural Yogis rated these two items higher than Yogis and Exercisers.

#### 6.4.5 Analysis 4: Differences in motives across female yoga participant subgroups

We conducted a MANOVA to examine participation motives across types of female yoga participants ( $n = 394$ : 89 Exercisers, 147 Yogis, 158 Postural Yogis). Results indicated significant differences across the three female subgroups, Pillai's Trace = .636,  $F(24, 762) = 14.801, p < .001, \eta_p^2 = .318$ .

As a follow-up, we performed a discriminant function analysis (DFA) with prior probabilities computed from the actual group sizes. Results indicated two



significant canonical functions contribute to effectively discriminating the three groups. Function 1 had an eigenvalue equal to .992 which accounted for 86.1% of the total model variance, Wilk's  $\lambda = .433$ ,  $\chi^2(24) = 322.89$ ,  $p < .001$ . The canonical correlation associated with the first eigenvalue was .71, implying that 50.4% of the variance in the discriminant function derived scores was accounted for by participant type. Function 2 had an eigenvalue of .16, accounting for 13.9% of the model variance, and a corresponding canonical correlation of .37, Wilk's  $\lambda = .862$ ,  $\chi^2(11) = 57.2$ ,  $p < .001$ . The functions correctly classified cases into three types of yoga participants by 65.0%.

**Table 6.** Structure coefficients for types of female yoga participants canonical functions

<b>Motives</b>	<b>Function</b>	
	<b>1</b>	<b>2</b>
<b>Spirituality (SPI)</b>	.887*	-.114
<b>Mind-Body Integration (MBI)</b>	.758*	.494
<b>Coping and Stress Management (COP)</b>	.465*	.463
<b>Nimbleness (NIM)</b>	-.085	.775*
<b>Health and Fitness (HFI)</b>	.095	.729*
<b>Positive Affect (PAF)</b>	.243	.635*
<b>Challenge (CHA)</b>	.136	.625*
<b>Ill-Health Avoidance (IHA)</b>	.153	.515*
<b>Weight Management and Appearance (WMA)</b>	.005	.459*
<b>Affiliation (AFF)</b>	.049	.223*
<b>Competition and Social Recognition (COM)</b>	.045	.138*
<b>Supplementary Activity (SUP)</b>	-.056	.074*

*Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions*

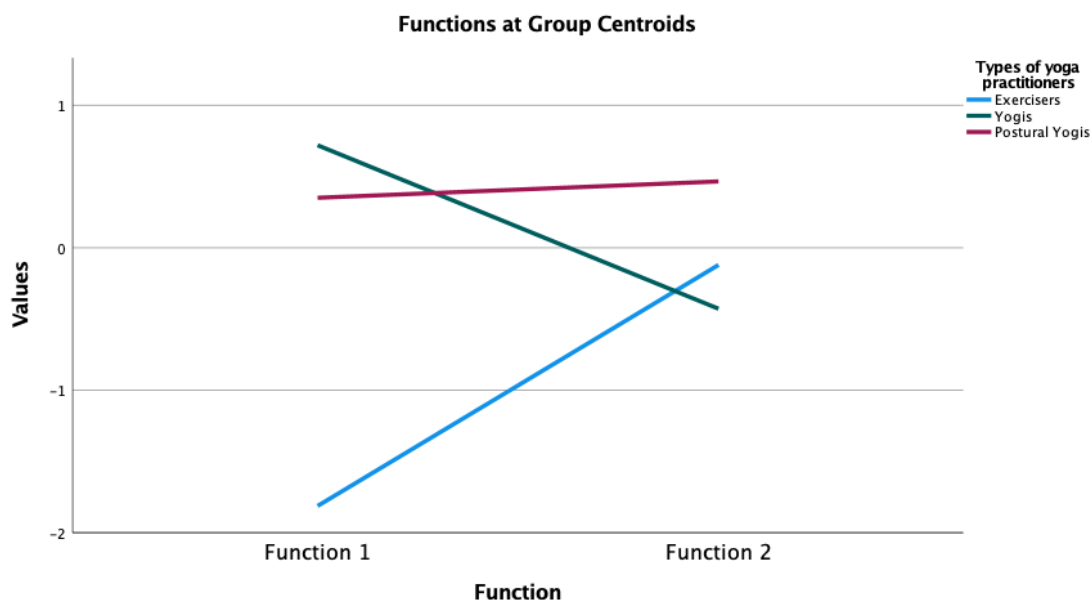
*Variables ordered by absolute size of correlation within function.*

*\* Largest absolute correlation between each variable and any discriminant function*

Examining the structure matrix (Table 6) showed that SPI (.887), MBI (.758), and COP (.465) contribute most to group differences. The remaining motives provided additional contributions in the group differences. Comparing the discriminant scores across female yoga participant types showed significant

differences for Function 1,  $F(2, 391) = 194.00, p < .001, \eta^2 = .50$ , and Function 2, Welch's  $F(2, 211.080) = 34.06, p < .001, \eta^2 = .14$ . *Post hoc* analyses showed statistically significant differences across all three groups in Function 1 discriminant scores. In Function 2, the discriminant score of Postural Yogis was significantly different from Yogis and Exercisers; Function 2 discriminant scores of Yogis and Exercisers were not significantly different. The results indicated that SPI, MBI and COP differentiated the three participant subgroups. Additionally, all other motives contributed to separation of the Postural Yogis from the two other subgroups. Examining the graph of the functions at group centroids (Figure 5) shows that Yogis rated SPI, MBI and COP higher than Postural Yogis and Exercisers. Postural Yogis also rated these motives higher than Exercisers. Postural yogis rated all the other motives higher than Yogis and Exercisers.

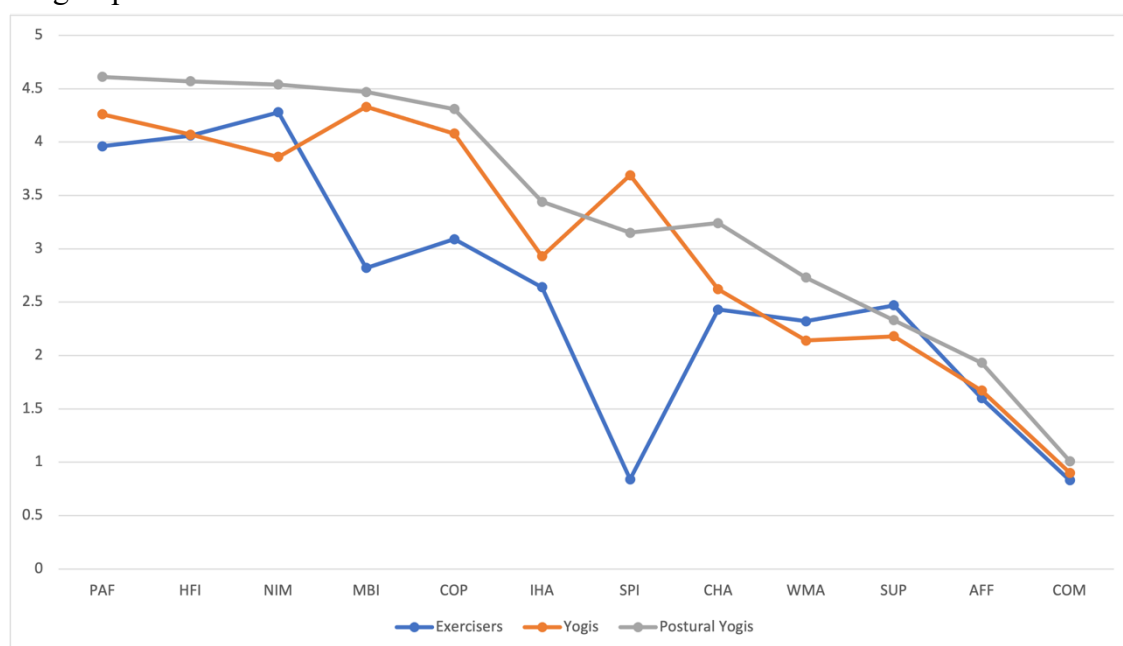
**Figure 5.** Graph of functions at group centroids (females)



When considering the motives separately, results indicated that Postural Yogis and Yogis reported higher scores in MBI and COP compared to Exercisers. Yogis reported higher SPI scores than Postural Yogis and Exercisers; Postural Yogis

scored higher SPI than Exercisers. Postural Yogis scored higher in PAF than Yogis and Exercisers; Yogis scored higher in PAF than Exercisers. Postural yogis scored higher in NIM than Exercisers and Yogis; Exercisers scored higher in NIM than Yogis. Postural Yogis reported higher WMA, HFI, AFF, IHA, and CHA than Yogis and Exercisers (See Figure 6).

**Figure 6.** Graph of means of motives across female participant subgroups



Additional analyses were performed to examine differences across female yoga participant subgroups on two motives: advice from doctor/physiotherapist and to recover from injury/illness. Separate one-way ANOVAs showed significant group differences were found only in the second items (injury/illness recovery,  $F(2, 391) = 8.022, p < .001, \eta^2 = .039$ ). Examining the mean scores indicated that Postural Yogis rated this item higher than Exercisers.

#### **6.4.6 Analysis 5: Differences in Conformity to Masculine Norms**

##### **across gender and types of participants**

We carried out a MANCOVA to examine mean scores in three Conformity to Masculine Norms subscales across gender and types of yoga participants, with age, years of practice, and teacher status as covariates (Table 7). The analysis was repeated without the covariates and showed equivalent results, indicating significant gender differences, Pillai's Trace = .024,  $F(3, 522) = 4.227$ ,  $p = .006$ ,  $\eta_p^2 = .024$ . Participant types, however, was not significant,  $p = .887$ .

Pairwise comparisons of means between genders showed significant differences in Emotional Control,  $p = .008$ , and Heterosexual Self-Presentation,  $p = .027$ . No significant gender difference was found in Self-Reliance,  $p = .604$ . Male yoga participants rated Emotional Control and Heterosexual Self-Presentation higher compared to female yoga participants.

When participant types were examined separately, significant gender differences were found in Emotional Control within Yogis,  $t(196) = 2.532$ ,  $p = .012$ , and Heterosexual Self-Presentation within Postural Yogis,  $t(203) = 2.381$ ,  $p = .018$ . Specifically, male yogis reported higher Emotional Control than female yogis, and male postural yogis reported higher Heterosexual Self-Presentation than female postural yogis.

When examining gender separately, no significant differences were found across male yoga participants, nor across female yoga participants.

**Table 7.** Descriptive statistics of conformity to masculine norms subscales by gender and participant types

<b>Masculine Norm</b>	<b>Gender</b>	<b>Total</b>		<b>Exercisers</b>		<b>Yogis</b>		<b>Postural Yogis</b>	
		<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>
<b>Emotional Control</b>	<b>Male</b>	2.36*	.56	2.39	.70	2.40	.49	2.30	.50
	<b>Female</b>	2.19	.58	2.32	.63	2.18	.54	2.13	.58
<b>Self-Reliance</b>	<b>Male</b>	2.17	.53	2.14	.46	2.22	.55	2.14	.56
	<b>Female</b>	2.13	.60	2.19	.59	2.15	.58	2.07	.61
<b>Heterosexual Self-Presentation</b>	<b>Male</b>	1.80	.61	1.78	.68	1.79	.53	1.83	.65
	<b>Female</b>	1.66	.57	1.71	.68	1.69	.54	1.61	.52

## **6.6 Discussion**

The purpose of this paper was to examine whether participation motives in yoga vary between male and female participants and whether such differences can still be observed when the yoga participant subgroups are taken into account. Participation motives within each gender were also examined. Overall, the results indicated that participation motivation in yoga varied between male and female participants. These differences in participation motives point to the importance of highlighting messages that appeal better to men for increased participation.

### **6.6.1 Differences between males and female participants**

Past studies have consistently shown differentiation in motives underlie men and women's participation in physical activity, including yoga (e.g., Molanorouzi et al., 2015; Park et al., 2019; Wertman et al., 2016). Consistent with these previous findings, our results also showed differences in yoga participation motives between male and female participants. The findings suggest that compared to women, men are more likely to do yoga as a supplementary activity and for competitive and social recognition reasons, and less likely to cite motives related to mind-body integration, health and fitness, positive affect, nimbleness, and coping and stress management. Although men's motivation to practice yoga seems inconsistent with the non-competitive and non-performance principles of yoga, yoga still falls within the domain of physical activity, wherein men can demonstrate their masculinity by comparing their abilities with others and displaying their physical strength (Andreasson & Johansson, 2014; Messner, 2007). Not all men are necessarily attracted to conventional sports and exercise (Ashton et al., 2017; Plummer, 2006). For example, the few male participants in Atkinson's (2010) study on Ashtanga Yoga and fell-running shared that they never identified with traditional sports and

fitness training, prompting them to seek alternative forms of physical activities.

Perhaps for male participants, yoga provides not only with health benefits but also opportunities where they can demonstrate their physical achievements and worth to others. Future research, however, needs to investigate this further as we did not ask participants whether yoga was their primary form of physical activity.

Consistent with our previous studies (Cagas et al., 2020, 2021), findings showed that doing yoga to supplement their primary sport or physical activity was a salient motive for men. Doing yoga to recover from injuries was also important for men. These results suggest that men might be more receptive to yoga if it is promoted as a supplementary activity or rehabilitation modality. Studies in the United States have shown that yoga is one of the most commonly used complementary approaches to improve athletic performance (Evans et al., 2018), and it is also one of the most commonly recommended complementary health approaches by general practitioners (Stussman et al., 2020). Male participants have remained a minority in yoga in most Western societies (Cartwright et al., 2020; Clarke et al., 2018; Queensland Government, 2019; Vergeer et al., 2018). Therefore, encouraging more general practitioners to promote yoga as a supplementary activity to their male patients may be a useful strategy to help men be more receptive to yoga.

Highlighting how yoga could help men improve in their primary physical activity or enhance their athletic performance might encourage increased uptake. For example, yoga classes that focus on mobility, core stability, and flexibility may be more enticing for men. Although it is acknowledged that increasing awareness does not necessarily result in a change in behaviour (Walls et al., 2009), it is still a necessary first step. For example, one study reported that non-yoga practicing men found brief information sessions helpful in making them understand the principles behind yoga

and what other benefits it could offer (Cagas et al., 2021). Providing short information sessions or optional men-only introductory classes may be useful in increasing yoga uptake among men.

In contrast to previous studies suggesting that men are less likely than women to cite spirituality as a motive for yoga participation (Park et al., 2019), our results showed no significant gender difference in this motive. Yoga, by origin, is a psycho-spiritual discipline and may include spiritual practices such as chanting and rituals (Feuerstein, 2008). While these practices could act as barriers to those who hold strong religious beliefs or with aversion to spirituality, they could also facilitate participation in those who are already interested in spirituality and other esoteric practices (Cagas et al., 2020; Hasselle-Newcombe, 2005). The holistic spirituality and well-being associated with yoga also reflect traditional feminine ideals (Sointu, 2011; Sointu & Woodhead, 2008), which is a reason yoga is often stereotyped as a feminine activity. This stereotyping of yoga could pose a problem for men, especially if they hold strong traditional masculine beliefs (Courtenay, 2000).

Society expects men, and women, to behave in particular ways and engage in gender-appropriate activities. As a result, men and women avoid engaging in activities that contradict these gender expectations. Participation in activities contrary to what society expects of men could lead to gender role conflicts and adverse psychological outcomes (e.g., self-devaluation) (O'Neil, 2013). The socio-cultural contexts influencing men's decision to pursue or avoid certain types of physical activities, therefore, cannot be ignored. Studies on alternative health practices suggest men learn to navigate this potential conflict by using instrumental reasons (e.g., to recover from injuries) and downplay the 'feminine' aspects of such practices (e.g., discussing health and emotions) to justify their involvement in these socially



perceived feminine activities (Brenton & Elliott, 2014; Keshet & Simchai, 2014).

Perhaps men who practice yoga can alter the feminine-coded practice of yoga by using logic and rationality to explain their participation, similar to other men who engage in other feminine-stereotyped activities such as vegetarianism/veganism (Mycek, 2018), complementary and alternative medicine (Brenton & Elliott, 2014), or health (Verdonk et al., 2010). However, there are men who do practice yoga without subscribing to its underlying philosophy as discussed in the previous chapter.

### **6.6.2 Differences across male participant subgroups**

When participation motives were examined across different male participant subgroups, results were similar to the previous chapter (i.e., combined male and female data), except for the motives on Coping and Stress Management. Spirituality and Mind-Body Integration were motives that distinguished Yogis from Postural Yogis and Exercisers, and Postural Yogis from Exercisers. This is consistent not only with Henrichsen-Schrembs qualitative study (Henrichsen-Schrembs, 2008; Henrichsen-Schrembs & Versteeg, 2011) but also with the results described in our previous study (Cagas et al., 2021).

The result in this section indicates that, like women, some men are motivated to do yoga primarily for health and fitness reasons while others are driven by spirituality, self-exploration and personal growth. Promoting yoga to men may therefore depend what men seek. On one hand, the potential of yoga as a supplementary training program for sports can be emphasized when promoting yoga to men who are seeking alternative forms of physical exercise or physical therapy. Research has shown that yoga is one of the complementary and integrative approaches that people commonly use to improve athletic and sports performance (Evans et al., 2018). Men, in particular, would take up yoga to supplement their

existing training regimen (Cagas et al., 2021). Highlighting the spiritual and mind-body sides of yoga, on the other hand, may also be useful to capture men who are more interested in benefits beyond physical exercise and performance.

### **6.6.3 Conformity to Masculine Norms**

Masculinity is an important construct to consider when studying men's health behaviours (Griffith et al., 2016). In this study, differences in conformity to masculine norms between genders and across yoga participant subgroups were explored. As anticipated and consistent with the wider literature on masculine norms (Parent & Smiler, 2013), the results indicated that male yoga participants were more likely to adhere to masculine norms compared to female yoga participants. More specifically, male yoga participants were more concerned about expressing emotions and feeling uncomfortable when being thought of as gay, compared to female yoga participants. As reported in our previous study (Cagas et al., under review), men might feel uncomfortable participating in a female-dominated yoga environment for fear of feeling vulnerable and embarrassed. It is possible that men who have concerns about sharing emotions and being perceived as gay would feel more anxious and vulnerable in yoga.

It is important to note, however, that when gender differences were examined within participant subgroups, only male yogis reported higher conformity to emotional control and only male postural yogis reported higher conformity to heterosexual self-presentation than their female counterparts. Studies have shown that the conformity to the masculine norm of emotional control may act as a protective buffer helping men to avoid anger and stress (Levant & Wimer, 2014), and other maladaptive behaviors, such as binge drinking (Liu & Iwamoto, 2007). The practice of yoga promotes self-regulation and involves several stress management

techniques, such as relaxation, breathing, and meditation (Gard et al., 2014). It is possible that through years of yoga practice, male yogis learned to internalize and regulate their emotions and therefore did not feel the need to share their feelings with others, whereas female yogis learned to express their emotions more. Future research could explore this possible gender difference further.

Nevertheless, no significant group differences were found when mean scores of the three masculine norms were examined across yoga participant subgroups, which means that conformity to traditional masculine norms did not differentiate any of the yoga participant subgroup. Similar non-significant results were observed when male and female data were examined separately. The mean scores across female participants indicated that female exercisers reported higher scores in all three masculine norm dimensions, followed by the yogis, and then the postural yogis. Among male yoga participant subgroups, male postural yogis reported lower scores in Emotional Control compared to male exercisers and yogis, suggesting that male postural yogis were more likely to discuss or show their emotions than the other two male subgroups. In terms of Self-Reliance, male yogis reported higher scores than male exercisers and postural yogis, suggesting that male yogis were less likely to seek help. Lastly, in terms of Heterosexual Self-Presentation, male postural yogis reported higher scores, followed by the yogis, and then the exercisers. It is possible that male postural yogis felt more pressure to demonstrate masculine behaviors and avoid being perceived as gay given that they were engaging in a feminine-stereotyped activity. These differences, however, are merely speculations and could be trivial. Aside from the non-significant group differences, the effect sizes for all comparisons were close to zero, which indicates that any numerical differences are meaningless and therefore negligible.

Future studies could further elucidate the role of masculine norms in men's participation and non-participation in yoga. The present study involved regular yoga participants and included only three dimensions of the conformity to masculine norms inventory. Future research could examine the full spectrum of masculine norms and explore further how endorsement of certain masculine norms might vary across different yoga and non-yoga participant subgroups (e.g., male vs female yoga participants, yoga-practicing and non-yoga practicing men). Moreover, it is important to note that although the Conformity to Masculine Norm Inventory is a widely used instrument, it is still a self-report measure prone to socially desirable responding (Mahalik, Locke, et al., 2003). The mean scores of the three conformity to masculine norms dimensions, however, are comparable to those reported in a study involving American men (Hammer et al., 2018) but higher than those reported in studies involving Western men (Dawson & Hammer, 2020; Gattario et al., 2015; Hsu & Iwamoto, 2014) and Asian Americans (Hsu & Iwamoto, 2014). While social desirability could be discounted, future studies could still use some additional measures to control for this potential bias.

#### **6.6.4 Strengths and limitations**

While this study may be the first to demonstrate gender differences in participation motives and conformity to masculine norm in various yoga participant subgroups, some limitations need to be noted. First, the cross-sectional design does not allow for an analysis of how participation motives may change over time or how conformity to masculine norms influenced adherence. Future investigations should employ longitudinal designs to investigate mechanisms that drive changes in motivation and adherence to traditional masculinity norms, and how these changes influence yoga participation uptake and maintenance. Second, the use of self-report

data increased the likelihood of social desirability bias. Future studies could include measures to minimize this or use mixed method designs to provide more robust data. Third, self-selection bias is possible due to the online survey design. The generalizability of the findings may not be extended beyond the study sample. Future investigations would benefit by replicating the present study in different population. Fourth, this study only used three subscales of the Conformity to Masculine Norms Inventory. While researchers support the use of selected masculine norms that are salient in a particular investigation (Hammer et al., 2018; Wong et al., 2017), future studies should consider using the full spectrum of the scale to allow for a wider understanding of the role of masculinity in yoga participation, particularly among men.

### **6.7 Conclusion**

The findings presented in this paper point to the importance of differentiated messaging in yoga to capture a wider male audience. Although the top motives for yoga participation were consistent with previous studies, there were significant differences across gender. Male yoga participants were more likely to endorse taking up yoga as a supplementary activity and for competition and social recognition but less likely to cite coping and stress management, positive affect, mind-body integration, and health and fitness. When participant subgroups were taken into account, holistic motives were salient reasons even for male participants. Compared to male Exercisers, male Postural Yogis and Yogis were more driven by spirituality and mind-body integration. The results of this study add to our understanding that not all male yoga participants are merely interested in yoga for its health and fitness benefits. Some male yoga participants do consider yoga more than just physical

exercise and are interested in its psycho-spiritual teachings. These are important considerations when promoting yoga among men.

## 6.8 References

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## **CHAPTER VII**

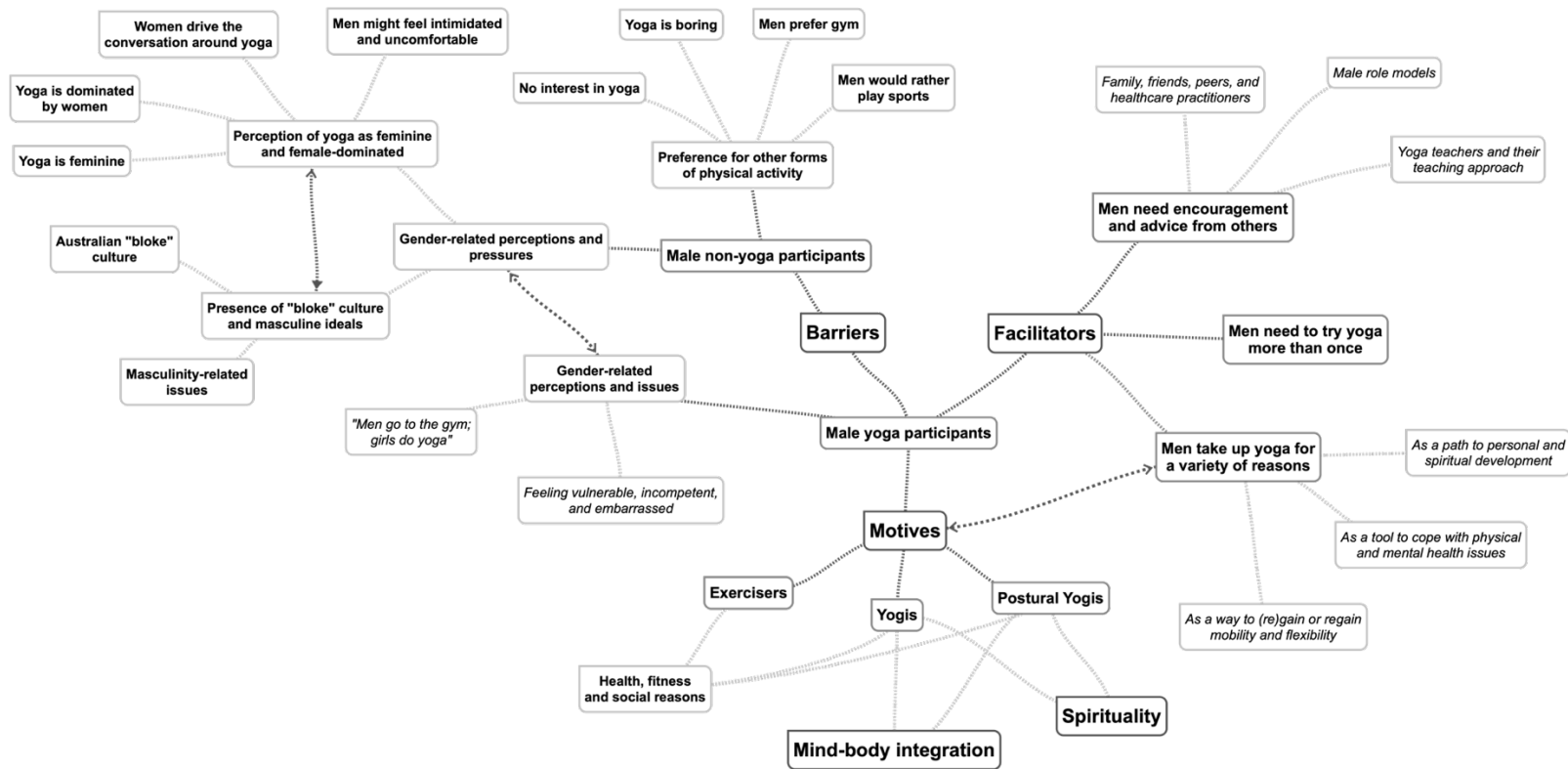
### **7.1 General Discussion, Summary, and Conclusion**

This PhD project sought to examine the barriers, facilitators, and motives for yoga participation among men. Relatively few men practice yoga, and they are often under-represented in yoga-related studies. This PhD project, consisting of four studies written up in 5 papers (2 published, 2 submitted for review, 1 in preparation), aimed to understand the psycho-social factors facilitating or discouraging men to practice yoga. In this project, yoga was defined as a form of physical activity embedded in a philosophy of holistic well-being (Vergeer et al., 2021).

### **7.2 Summary of Findings**

Figure 1 illustrates the findings from Chapters II to VI (Studies 1 to 4). The factors that influence or hinder participation in yoga, especially among men, are less well understood. Chapter II (Study 1: Cagas et al., 2020) addressed this gap within the context of exercise psychology by summarizing the different barriers and facilitators for yoga participation reported in the literature using the scoping review method. This relatively novel approach of research synthesis is particularly suitable for studying emerging research areas, summarizing research from different disciplines, and identifying research gaps (Munn et al., 2018; Pham et al., 2014; Tricco et al., 2016). Eighty-eight studies mentioning factors facilitating or hindering yoga participation were included. Using thematic analysis, results identified several facilitators and barriers not typically reported for conventional forms of physical activity (e.g., perceived mind-body-spiritual benefits, negative impressions of yoga). These may reflect additional features of yoga beyond exercise. This review also reinforced the need for future studies to focus on men.

**Figure 1.** Complexity map of barriers, facilitators, and motives for yoga participation among men



**Note:** dark dotted lines ( ..... ) indicate a direct link between concepts; light dotted lines ( ..... ) indicate link of main concept to sub-themes; dark dotted double arrow lines ( <.....> ) indicate related concepts

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Yoga offers not only physical activity but an integrated approach to health and well-being that could potentially benefit men. Chapter III (Study 2: Cagas et al., 2021) examined non-yoga practicing men's perceptions of yoga, and identified barriers and possible facilitators for uptake. Preference for other forms of physical activity, and gender-related perceptions and pressures were two major barriers identified using thematic analysis. Gender-related perceptions and pressures included the perception of yoga as feminine and the presence of "bloke" culture and masculine ideals in society, which represent the factors hindering men from taking up yoga. The interviewed men also mentioned potential facilitators for uptake. These included (1) acceptability of yoga among men, (2) providing brief information sessions, and (3) men-only classes. This study indicated that men generally consider yoga as a form of supplementary exercise or physical therapy, and they might take it up for health, fitness, and therapeutic reasons. However, yoga does not offer the characteristics that men often seek in a physical activity, and there are ideals operating in society that discourage men from taking part in this feminine-stereotyped activity.

Despite the growing popularity of yoga, available data suggest that uptake of yoga among men remains consistently low compared to women. Nevertheless, there are men who practice yoga. Study 3 (Cagas et al., under review), presented in Chapter IV, was carried out to understand the facilitators and barriers for yoga uptake and continued participation among male yoga participants. Data from this study were collected primarily via focus group discussions and supplemented by interviews. Similar to Study 2 (Cagas et al., 2021), data were analysed using reflective thematic analysis. Four themes were developed from the data to represent the facilitators and barriers for yoga participation: (1) men need encouragement and advice from trusted others, (2) men need to try yoga more than once, (3) men

encounter gender-related perceptions and issues, and (4) men take up yoga for a variety of reasons. Consistent with Study 2 (Cagas et al., 2021), the men who participated in this study discussed that men generally acknowledge the therapeutic benefits of yoga, and men would take up yoga for instrumental reasons and upon others' recommendations. This study also showed that some men practice yoga mainly as a supplementary exercise or physical therapy while others do so for more holistic reasons, suggesting heterogeneity among men. Thus, when promoting yoga among men, it is important to consider first their perceptions of yoga (i.e., as a physical exercise or a mind-body and spiritual discipline) and highlight the aspect of yoga that best matches what they value.

Yoga's holistic nature sets it apart from conventional physical activities, offering not merely physical exercise but also opportunities for mind-body integration and spiritual development. As shown in Chapter IV (Study 3: Cagas et al., under review), yoga-practicing men had different understandings of yoga (i.e., a form of physical exercise or a psycho-spiritual discipline) and consequently mentioned various motives for yoga participation. Men who considered yoga simply as a form of physical discipline cited health and fitness reasons, such as improved flexibility and strength. In contrast, men who understood yoga as a form of mind-body and spiritual discipline mentioned more holistic motives, such as spirituality and personal transformation. As previous studies have reported, people consider yoga either as a form of physical exercise or as a spiritual activity (Sivaramakrishnan et al., 2017; Spadola et al., 2017). Therefore, the reasons men do yoga may vary as a function of their understanding of yoga or what yoga brings into their lives.

Some literature has suggested the existence of subgroups of yoga participants (Genovese & Fondran, 2017; Henrichsen-Schrembs, 2008; Henrichsen-Schrembs &

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Versteeg, 2011). Study 4 (Cagas et al., under review; Cagas et al., in preparation), presented in Chapters V and VI, was conducted using an online survey approach to identify subgroups of yoga participants based on their perceptions of yoga and level of engagement in its psycho-spiritual underpinnings, and to examine differences in participation motives across the identified subgroups and between male and female yoga participants. The Yoga Immersion Scale (Gaiswinkler et al., 2015) and four perception items were used as basis for the identification of participant subgroups. An extended version of the Exercise Motivation Inventory-2 (Markland & Ingledew, 1997) was used to measure participation motives.

As reported in Chapter V (Study 4a: Cagas et al., under review), three subgroups of yoga participants were identified using a cluster analytical approach, verifying the findings from Chapter IV (Study 3: Cagas et al., under review) in a wider sample. These subgroups, to some extent, reflect the typology of yoga participants proposed by others (Henrichsen-Schrembs, 2008; Henrichsen-Schrembs & Versteeg, 2011). These participant subgroups also varied in their motives for yoga participation. The results showed that spirituality, mind-body integration, and coping/stress management contributed the most in distinguishing the three participant subgroups. The follow-up analysis in Chapter VI (Study 4b: Cagas et al., in preparation) showed comparable results when the data were examined by gender. Among male yoga participants, spirituality and mind-body integration motives contributed the most in distinguishing the three participant subgroups. Similar to the results in Chapter V (Study 4a: Cagas et al., under review), spirituality, mind-body integration, and coping/stress management motives differentiated the three female yoga participant subgroups.



Findings from Chapter VI (Study 4b: Cagas et al., in preparation) indicate that yoga participants, including men, may practice yoga for various reasons, underpinned by their understanding of yoga, interest in the psycho-spiritual dimensions of yoga, and, to some extent, beliefs about masculinity. In general, doing yoga as a supplementary activity and for competitive reasons are likely to be more salient motives among male yoga participants. However, the gender differences dissipate, and holistic motives (i.e., spirituality and mind-body integration) become more apparent when the perception and degree of psycho-spiritual engagement are taken into account. Therefore, it might be counterproductive to highlight only one aspect of yoga (e.g., its holistic nature or its physical aspect only) if the goal is to encourage more uptake, especially among men. Similar to exercise promotion programs (e.g., Ingledew & Markland, 2008; Ingledew et al., 2009), yoga promotional messages targeting men can appeal to a range of motives. The potential of yoga to supplement existing training or rehabilitation programs can be highlighted to appeal to men who understand yoga as a form of physical discipline or therapy, whereas the spiritual and mind-body sides of yoga can be emphasized to appeal to men who are more interested in benefits beyond physical exercise and performance.

### **7.2.1 The feminine perception of yoga: A barrier for men**

Men are difficult to engage in health programs, but they are more likely to respond if the programs are based on physical activity (Bottorff et al., 2015). While the practice of yoga has historically been restricted to and promoted by men (Goldberg, 2016; Strauss, 2002), it has evolved into a form of physical activity that is predominantly practiced by women, as consistently shown in the literature (Clarke et al., 2018; Park et al., 2015; Vergeer et al., 2018). This ‘feminization’ of yoga could be attributed to several factors. First, it has been suggested that this may have started

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in the early 1960s when it was promoted as an activity for women, particularly wives and mothers, in Britain (Goldberg, 2016; Newcombe, 2007), and now reinforced by yoga-related media (Markula, 2013; Vinoski et al., 2017; Webb, Vinoski, Warren-Findlow, Burrell, et al., 2017; Webb, Vinoski, Warren-Findlow, Padro, et al., 2017). Second, the practice of yoga is associated with self-care and complementary health practices, which are considered more feminine practices (Brenton & Elliott, 2014; Sointu, 2011; Sointu & Woodhead, 2008). Third, yoga as a physical activity, features characteristics that are typically considered feminine (e.g., flexibility, grace, aesthetics). Chalabaev and colleagues (2013) explained that gender-stereotyping of sports or exercise depends on the degree of masculinity or femininity an activity possesses. Activities like football and gym training involve masculine characteristics such as strength and competition and hence are considered to be more appropriate for men, while activities like dance and gymnastics involve feminine characteristics like gracefulness and aesthetics and are viewed as more appropriate for women. Lastly, yoga is marketed heavily to women (Strings et al., 2019; Webb, Vinoski, Warren-Findlow, Burrell, et al., 2017) and therefore may be seen as a female activity. Research has shown that gender typing of sports, and possibly physical activity in general, is influenced by gender role beliefs, sports participation and media consumption (Hardin & Greer, 2009; Xu et al., 2019). Activities that have predominantly female participants are also perceived as inherently feminine (Plaza et al., 2016).

As discussed in Chapters III (Study 2: Cagas et al., 2021) and IV (Study 3: Cagas et al., under review), physical activities with a preponderance of feminine qualities, such as yoga, are less appealing to men, especially those who conform strongly to hegemonic masculinity norms operating in the society (Mahalik, Locke,

et al., 2003). Men who have high conformity to masculine norms are more likely to have a strong drive for muscularity (Gattario et al., 2015), and may gravitate more towards strength/weight/gym training than non-weight training exercise such as yoga (Tod & Edwards, 2015). These men are also less likely to take up yoga as their primary form of physical practice, except as a supplementary activity or when advised by their general practitioners or physiotherapists. One study suggested this strong drive to achieve muscularity is an enactment of men's dominance over women and men of subordinate status (De Jesus et al., 2015). Future studies need to explore this further. Data from the online survey showed that even among men who practice yoga, conformity to masculine norms, specifically fear of showing emotions and being perceived as gay, was a concern. Exploring whether non-yoga practicing men with less masculinity issues would be more receptive to yoga (and more likely to engage) compared to those with higher masculinity concerns would be an interesting follow-up study.

### **7.2.2 Reinforcing traditional masculine norms**

One possible reason for the low yoga uptake among men may stem from societal norms concerning masculinity. Masculine norms are socially endorsed ideals of what it means to be a man (Mahalik, Locke, et al., 2003). These masculine standards are introduced early in men's lives, learned through social interactions, and internalized by men, influencing them to behave in a manner that meet social expectations (Mahalik, Locke, et al., 2003). The extent to which men conform to these masculine norms varies depending on several individual and contextual factors (e.g., age, race and ethnicity, socioeconomic status, sexual orientation, physical ability) (Gerdes & Levant, 2018; Griffith, 2012; Herreen et al., 2021; King et al., 2020; Mahalik, Locke, et al., 2003).

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Both men and women can demonstrate masculine behaviours but the pressure to conform to society's standards of masculinity tend to be greater for men (Parent & Smiler, 2013); this was shown in Chapter VI (Study 4b: Cagas et al., in preparation) where male yoga participants reported greater conformity to masculine norms of emotional control than female yoga participants. While research has consistently demonstrated that, in general, adherence to traditional masculine norms is associated with poor men's health behaviors, this relationship is complex as some dimensions of masculine norms have been found to have favorable outcomes (Gerdes & Levant, 2018; Wong et al., 2017). For instance, Levant and Wilmer (2014) found that conformity to the masculine norms of emotional control and winning served as protective buffers for avoiding stress, anger, and substance use in college and community-dwelling men. In another study (Gerdes & Levant, 2018), the masculine norm of winning was found to be associated with athletic involvement and exercise participation among men.

As discussed in Chapter VI (Study 4b: Cagas et al., in preparation), yoga includes stress management strategies that help men to develop self-regulation (Campbell & Moore, 2004; Gard et al., 2014). It is possible that these emotion regulation and stress management skills are demonstrated differently by male and female yoga participants. For male yoga participants, it may mean controlling and keeping their emotions to themselves whereas for female participants, it may mean expressing and sharing their emotions with others. The emotional control aspect of yoga is consistent with the masculine script of being strong and silent (Mahalik, Good, et al., 2003), which may be highlighted to draw men's attention and interest to yoga.

The general literature on men's health suggests that emphasizing traditional masculine ideals may be more effective in encouraging men to participate in health promotion programs (Budden et al., 2020; Lozano-Sufrategui et al., 2018). In promoting yoga participation, this translates to highlighting the practical aspects of the practice (e.g., strengthening, injury prevention) including its emotion regulation potential. In a qualitative study involving young men who attended a yoga and meditation program as an alternative to incarceration (Barrett, 2017), participants reported improvements in controlling emotions, anger, and frustration, which were carried over into other aspects of their lives. They also suggested that the initial negative connotation of the word "yoga" may be addressed by using alternative names, such as relaxation, mind-body connection, mindfulness, or stress reliever. Using yoga as a component of stress and anger management programs (e.g., Heilbronn, 1992) could be a useful strategy to introduce men to this holistic movement practice.

### **7.2.3 Spirituality: A barrier and a motive**

As identified in Chapter III (Study 2: Cagas et al., 2021), the perception of yoga as a spiritual practice is a possible barrier to yoga uptake among men. Yoga is associated with Vedic philosophy and practices (Jain, 2014), which could discourage people if they find the teachings too esoteric and incompatible with their personal beliefs (e.g., Atkinson & Permuth-Levine, 2009; Brems et al., 2015; Kidd & Eatough, 2017). Some authors have argued that this is one reason the spiritual dimension of yoga is often left flexible and ambiguous to make it more appealing to Western participants (Antony, 2018; Kapsali, 2012). Men who are not interested in yoga's philosophical and spiritual underpinnings may find classes or programs which incorporate these elements unappealing. Researchers and physical activity

practitioners interested in promoting increased yoga uptake among men should first consider how an individual or group of men view yoga and emphasize the aspects of yoga that match their perceptions and needs. This strategy could potentially encourage more men to participate in yoga programs or intervention studies.

Spirituality was identified as a motive for men who consider yoga more than just physical exercise. Yoga is a holistic movement practice that provides opportunities for physical activity and spiritual development (Vergeer et al., 2021). Pargament (2013) argued that in search for meaning and connection with something sacred, people might pursue spirituality through non-traditional pathways such as yoga. While modern postural yoga can be perceived mainly as a physical exercise, it offers a body-based alternative form of spirituality (Sarbacker, 2014), where the yoga postures can be used as means to achieve spiritual development and personal growth (Kapsali, 2012). It is important to note that the yoga participant subgroups identified in Chapter V (Study 4a: Cagas et al., under review) were not associated with gender (Yoga immersion, in general, was also not significantly different between male and female yoga participants), which means that endorsement of spiritual motives is not a function of gender but of the way participants view yoga. Hence, similar to women, men with a more spiritual inclination may be more receptive to yoga's psycho-spiritual teachings and hence may seek yoga primarily for this reason (Hasselle-Newcombe, 2005). Further work, which takes into account how men (and women) understand yoga or the type of yoga participant, needs to be carried out to verify this.

### **7.3 Strengths and Limitations**

This PhD project adds to the existing literature on barriers, facilitators, and motives for yoga participation in the general adult population. To the best of the author's knowledge, this is one of few yoga-related studies to focus on men,

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specifically in understanding the various psycho-social factors that influence men's participation or non-participation in yoga. The scoping review method, qualitative approach, and large-sample, quantitative design used in this project provides a multi-method approach allowing for a broad picture of what facilitates or discourages yoga participation among adult men. Collectively, the findings could be used to inform promotional strategies to capture a wider male audience.

Nevertheless, there are also several limitations to this project that need to be acknowledged. First, while the scoping review paper located a large volume of peer-reviewed and grey literature and identified a large assortment of potential facilitators and barriers for yoga participation, it did not consider the context in which these facilitators and barriers may operate. Hence, it was not possible to determine specific facilitators or barriers for different population subgroups. This is an important topic for future research synthesis. Second, Chapters III (Study 2: Cagas et al., 2021) and IV (Study 3: Cagas et al., under review) involved a relatively small number of men, with the majority residing in one suburb in Queensland, Australia, potentially limiting the transferability of the insights to other contexts. However, a maximum variation sampling technique was used to include a diverse group of men across different age groups, yoga experience, and physical activity levels. This sampling technique helped obtained broad insights (Neergaard et al., 2009; Sandelowski, 1995), increasing the likelihood that any findings shared across the diverse group of men are more likely to be widely transferrable to other men sharing similar characteristics and experiences (Robinson, 2014). Still, further work needs to be done to investigate yoga barriers and facilitators in more homogeneous, underrepresented, and at-risk groups of men, and across different socioeconomic status. Third, the quantitative approach used in Chapters V (Study 4a: Cagas et al.,

under review) and VI (Study 4b: Cagas et al., in preparation) highlights the importance of considering how participants understand yoga as this could influence their participation motives for yoga. However, the cross-sectional design does not allow for a longitudinal analysis of how motives may change over time. Longitudinal studies are, therefore, needed. Participation in physical activities outside of yoga was also not measured in the survey study. It would be useful to know whether motives of participants who do yoga as their main physical activity would differ from those who only do so as a supplementary exercise.

#### **7.4 Recommendations for Further Study**

The findings presented in this PhD project point to several important questions that future studies need to address. First, future reviews on yoga facilitators and barriers could be more specific and identify the specific facilitators and barriers operating within a particular population subgroup. Second, future studies need to examine the barriers and facilitators for yoga participation in more homogeneous, underrepresented, and at-risk groups of men, and across different socioeconomic status. Third, follow-up studies need to confirm the validity and reliability of the adapted exercise motivation scale used in Chapters V (Study 4a: Cagas et al., under review) and VI (Study 4b: Cagas et al., in preparation) using more robust statistical methods such as confirmatory factor analysis and structural equation modelling. This instrument could then be used for further studies on yoga participation motives or motives for other holistic movement practices. Finally, more studies investigating how participation motives change over the course of a practitioner's yoga practice and from the perspective of exercise psychology, understanding yoga as a form of holistic movement practice with the potential to promote regular physical activity and benefits beyond conventional exercise or sports (Vergeer et al., 2021), are



needed. More specific recommendations have been described in the individual studies.

### **7.5 Implications**

The findings presented in this PhD project could be used to inform promotional strategies and messages that would appeal to a wider population of men. Tailoring messages based on the target subpopulation of men may be essential to improve yoga uptake. As shown in Chapters III (Study 2: Cagas et al., 2021), IV (Study 3: Cagas et al., under review), and V (Study 4b: Cagas et al., in preparation), many men take up yoga either as a supplementary physical activity or as a therapeutic exercise to recover from injuries. Highlighting these aspects of yoga could appeal to men who are already physically active or those who are injured or suffering from musculo-skeletal pains. In this light, promoting yoga through general practitioners and physiotherapists could improve receptiveness among men and encourage uptake.

Recommending the style of yoga that matches what men seek from yoga may increase the likelihood of uptake. Non-yoga practicing men and men who are new to yoga may be unaware of the different styles of yoga practice. Providing brief information sessions may be useful to educate men on the many styles of yoga, including the additional physiological and psychological benefits that men might not be aware of. While men-only classes may not appeal to all men (Cagas et al., 2021), offering them occasionally may be useful for certain men, allowing them to sample different yoga styles in a less intimidating environment than one full of women and advanced male yoga practitioners. Drawing from studies involving male-only weight management programs (e.g., Budden et al., 2020; Lozano-Sufrategui et al., 2018), for example, male-only programs could act as “a starter” that provide men with

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opportunity to meet likeminded and similar men, develop camaraderie and a sense of belonging, and share experiences with other men. These studies also suggest that tailoring program content, settings, and mode of delivery that uphold masculine values are important for such programs to be successful in encouraging men to participate. Creating a space that is welcoming of men would be helpful. Strategies suggested for making healthcare settings more welcoming of men may be useful here (Garfield et al., 2008). For example, yoga studios could create an environment welcoming of men by posting images of men doing yoga, using marketing strategies that appeal to men, and providing yoga-related information relevant to men. To what extent these suggestions are effective in drawing more men to yoga needs to be examined in future studies.

Men do not constitute a single homogeneous group sharing similar values, interests, background, and identity (Smith, 2007). Health and physical activity programs and initiatives targeting men should be tailored to meet men's diverse needs and interests. In general, the findings of this PhD project indicate that men do yoga for pragmatic reasons (e.g., as a supplementary activity or physical therapy). However, when perception of yoga and interest in yoga's psycho-spiritual underpinnings were taken into account, different profiles of male yoga participants with varying yoga participation motives were identified. Highlighting the holistic aspects of yoga is therefore as important as emphasizing its pragmatic benefits for attracting a wide variety of men.

### **7.6 Contribution to the Field of Research**

In general, the empirical findings of this PhD project contribute to the understanding of the barriers, facilitators, and motives for yoga participation among men in the general population. They also offer insights into the various perceptions

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of yoga that act as barriers or facilitators depending on men's interest and background and identified potential strategies to mitigate those barriers to encourage uptake and continued participation. More specifically, this PhD project contributes to the field of physical activity research by: (1) providing a summary of all possible barriers and facilitators for yoga participation among adults, highlighting a number of research gaps, and identifying barriers and facilitators beyond those cited for contemporary forms of physical activity; (2) adding to the scarce research on men's participation and experiences in yoga, and providing additional empirical support to the various perceptions of yoga that function as barriers and facilitators for men; (3) extending an existing and widely used participation motives instrument, The Exercise Motivation Inventory-2 (Markland & Ingledew, 1997) through the development of new items that tap on yoga-relevant motives, and providing preliminary evidence of the adapted instrument's psychometric properties; (4) translating the Yoga Immersion Scale from German to English, following a rigorous translation and back-translation procedure; (5) developing items pertaining to the various perceptions of yoga, which were used in conjunction with the Yoga Immersion Scale in identifying clusters of yoga participants; (6) applying a cluster analytical procedure in identifying various types of yoga participants which provide some support to the typology of yoga participants proposed by Henrichsen-Schrembs (2008), demonstrating the importance of considering participants' perceptions of yoga and level of psycho-spiritual engagement in future research; and (7) providing preliminary evidence of the potential role of masculinity in men's participation and experiences in yoga.

### **7.7 Conclusion**

This PhD project has described facilitators, barriers, and motives for yoga participation among men. Yoga is a holistic movement practice viewed either as a form of physical activity or a movement-based psycho-spiritual undertaking; it offers opportunities for physical activity, personal development, and spiritual growth. Views from both male yoga participants and non-participants identified gender-related perceptions and barriers that discourage men from practicing yoga. The holistic aspects of yoga act as both barrier and facilitator for men. It is therefore important to consider how men view yoga and emphasize the aspects of yoga that match this understanding. Male yoga participants, in general, were more motivated to do yoga for pragmatic reasons compared to female yoga participants. However, when men's view of yoga was considered, holistic motives, such as spirituality and mind-body integration, became salient motives which differentiated male yoga participants who engaged in yoga purely as physical exercise from those who understood yoga as a holistic movement practice. Collectively, the results of this PhD project showed that many of the barriers, facilitators and motives for yoga participation were similar to conventional physical activities, but there were also factors related to its holistic nature. Exercise psychology and other allied health practitioners need to consider these facets of yoga when promoting yoga.

## **APPENDICES**

### **Appendix A Permission to Recruit Participants (Studies 2 and 3)**

## Permission to Recruit Participants

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Dear \_\_\_\_\_:

I am writing to request permission to recruit participants from your yoga studio, Brisbane Ashtanga Yoga. I am currently a PhD candidate at the University of Southern Queensland in Springfield Campus, and I am exploring the barriers and facilitators for yoga participation among men. In this research project, we define yoga as asana-based yoga practice. I am planning to recruit adult males, at least 18 years old, living in Greater Brisbane area, and who have been practising yoga at least once a week in the last 6 months.

I will be collecting data using focus group discussions involving 3-5 participants per session. The participants will be asked to discuss their yoga experience and their views on factors that help or encourage men to practice yoga as well as those factors that stop them from doing so. Each focus group session will be audio-recorded and expected to last around 1.5 to 2 hours. The venue and schedule of the focus group will be agreed upon by the participants and the researchers.

Your approval to recruit potential participants from the \_\_\_\_\_ will be greatly appreciated. Please let me know if you need more information about the research. You may contact me via email at jonathan.cagas@usq.edu.au or thru my mobile at 0411 404 298.

Thank you very much for your time, and I hope for your favourable response regarding this request.

Sincerely yours,

**Jonathan Cagas**  
*PhD Candidate*  
*Physical Activity and Health*

\_\_\_\_\_ *I grant Jonathan Cagas permission to recruit participants through the \_\_\_\_\_ studio for his research. I understand that participation to the study is voluntary and this permission simply allows Jonathan the opportunity to recruit through the studio.*

\_\_\_\_\_ *I do not grant the permission to recruit participants through the studio.*

Signed:

\_\_\_\_\_  
Name and Title

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## **Appendix B Interview Schedule (Study 2)**

## Barriers and Facilitators for Yoga Participation among Men

### Interview Schedule

Topic/Themes to be discussed	Questions	Alternative Questions and Probes
<i>Warm Up</i>		
Current Yoga Practice	Please describe your present yoga practice.	<p>How would you describe your typical yoga practice session?</p> <p>What style of yoga do you do? How often?</p> <p>How long have you been practising yoga?</p> <p>Where have you been practising?</p> <p>Do you practice alone or with a partner or friend or in class?</p>
<i>Why would men practice yoga?</i>		
Initial Reasons for Participation	How did you start practising yoga?	<p>Can you describe to us how you started practising yoga? Or why you started doing yoga?</p> <p>What were your initial reasons for practicing yoga?</p> <p>Did these reasons change over time? How?</p>
Reasons for Continued Participation	What were the reasons why you continued practising yoga?	<p>What were the reasons why you continued?</p> <p>Why do you continue practising it?</p>
<i>What factors would encourage men to practice yoga?</i>		
Facilitators to Initiation	What factors do you think would encourage men to practice yoga?	<p>What do you think would help more men to try yoga?</p> <p>What helped you start practising yoga?</p>
Facilitators to Adherence	What factors do you think would help them continue practising yoga?	<p>What helped you in maintaining a regular yoga practice?</p>



*What benefits would men gain from practising yoga?*

Benefits of Yoga Practice	What benefits, if any, do you think people expect when they practice yoga?	What immediate benefits did you experience when you started doing yoga?
	What do you think are some of the benefits to practising yoga?	What other benefits did you experience afterwards?

*Why would men not practice yoga? What barriers would men face in practising yoga?*

Barriers to Yoga Practice	Research has shown that very few men practice yoga. Can you comment on this? Why do you think this is so?	In your experience, were there points where you stopped practicing yoga?
	Why do you think other men don't practice yoga?	What were the reasons why you stopped?

*Closing*

Recommendation	Would you recommend yoga to other men? Why? What would be your message to non-yoga practising men so they would try yoga?	Do you think men should practice yoga? Why?
Questions?	Is there anything else you would like to add about yoga that I have not asked?	

---

**Thank you for taking the time to help with this research project.**

## **Appendix C Focus Group Questioning Route (Study 3)**

## Barriers and Facilitators for Yoga Participation among Men

### Focus Group Questioning Route

Section	Questions
Opening	Tell us your name, and tell us how long have you been practising yoga?
Introduction	How did you learn about yoga? How did you start?
Transition	Think back when you first became involved with yoga. What were your first impressions?
Key	What would be the reasons for men to start practising yoga?
	What would be the reasons for men to continue practising yoga?
	What benefits would men gain if they practice yoga regularly?
	What would be the reasons why men don't practice yoga? [What are the barriers that prevent men from practising yoga?]
	For those who have tried yoga, what would be the reasons why they stopped practising?
Ending	What factors would encourage men to practice yoga?
	If you had a chance to speak to other men about yoga, what would be your message to them? [so they would try it?]
	Would you recommend yoga to other men? What would be your reasons for recommending or not recommending yoga to other men?
	[Moderator gives a short overview of the purpose of the study].
	Have we missed anything?
	Is there anything that we should have talked about but didn't?
	Is there anything else you would like to add about yoga that I have not asked?

**Thank you for taking the time to help with this research project.**

## **Appendix D Online Survey Questionnaire (Study 4)**

# Why do people practise yoga?



--- Have you been practising yoga at least once a week for 3 months before the COVID-19 government restriction/lockdown was implemented?

--- Are you at least 18 years old?

--- Are you currently living in Australia or the Philippines?

---

If you answered YES to all these questions, we are inviting you to participate in a study identifying people's motives for yoga participation. In this study, we define **yoga as a form of physical activity embedded in an integrative philosophy for holistic health and well-being**, and performed either in private (e.g., at home) or in group class settings (e.g., in yoga studios, fitness gyms, health and community centres, etc).

The study aims to identify the most important motives for yoga participation among adults and to explore whether motives may be related to practice and personal characteristics.

Your participation will involve completion of an online questionnaire that will take approximately 20-30 minutes of your time.

The primary question asked in this questionnaire is "Why do you practice yoga?" You will also be asked to rate your agreement to a number of statements, like "I try to develop myself further through reading yoga literature" and "It bothers me when I have to ask for help". The majority of questions will only require you to choose from a set of pre-defined responses.

Your participation in this study is entirely voluntary.

By completing and submitting this questionnaire, you are giving your consent to participate in this study. All comments and responses will be treated confidentially unless required by law. If you decide to take part and later change your mind, you may simply exit or close the webpage.

No data will be recorded until you click the submit tab at the end of the survey.

If you have any questions, please send your queries to [jonathan.cagas@usq.edu.au](mailto:jonathan.cagas@usq.edu.au).

We appreciate your time in helping us with this research project.

---

*This research project is undertaken towards a USQ qualification and has been approved by the University of Southern Queensland's Human Research Ethics Committee (Approval No. H20REA109).*

There are 56 questions in this survey.

## Consent Statement

By agreeing to participate in this study, I also indicate that I:

- have read and understood the information document (/upload/surveys/123496/files/H20REA109%20Research%20Information%20Sheet.pdf) regarding this project.
- understand that I can contact the research team if I have any questions.
- am at least 18 years of age.
- understand that data collected may be used in future research activities.

\*

❶ Choose one of the following answers

Please choose **only one** of the following:

- ☐ I agree to participate in this study.
- ☐ I do not agree to participate in this study.

## Country of Residence

I am currently residing in: \*

Only answer this question if the following conditions are met:

Answer was 'I agree to participate in this study.' at question '1 [A00]' (By agreeing to participate in this study, I also indicate that I: have read and understood the information document regarding this project. understand that I can contact the research team if I have any questions. am at least 18 years of age. understand that data collected may be used in future research activities. )

Please choose **only one** of the following:

- ☐ Australia
- ☐ Philippines

## What does yoga mean to you?

Although yoga is generally known as a form of physical activity that involves a combination of postures, breathing, and relaxation or meditation, yoga may mean different things to different people and it can involve many other aspects.

Please use the space below if you wish to share your thoughts and ideas on *what yoga means to you*.

Otherwise, you may click "Next" to proceed to the main part of this survey.

Please write your answer here:

## About your yoga practice history

For the next 2 questions, please consider the time when you started practising yoga regularly (i.e., at least once a week for 3 months).

By yoga, we mean a form of holistic physical activity, generally a combination of postures, breathing, and relaxation or meditation, performed either in private (e.g., at home) or in group class settings (e.g., in yoga studios, fitness gyms, health and community centres, etc.).

In total, how long have you been practising yoga? \*

Please choose **only one** of the following:

- ☐ Less than one year
- ☐ More than one year

Please indicate the total number of years you have been practising yoga. \*

Only answer this question if the following conditions are met:

Answer was 'More than one year' at question '4 [A01]' (In total, how long have you been practising yoga?)

Please write your answer here:

years

How old were you when you first started practising yoga consistently?\* \*

Please write your answer here:

years old

\*Practising yoga consistently means practising at least once a week for 3 months.

## About your yoga practice

The questions in this section are about your yoga practice.

*In answering the questions, please consider your practice behaviours in the previous 12 months BEFORE the COVID-19 restrictions/lockdown were implemented.*

Which yoga style do you consider your primary form of practice? \*

Please choose **only one** of the following:

- ☐ Ashtanga Yoga
- ☐ Bikram or Hot Yoga (26x2)
- ☐ Hatha Yoga
- ☐ Iyengar Yoga
- ☐ Jivamukti Yoga
- ☐ Power Yoga
- ☐ Sivananda Yoga
- ☐ Vinyasa Yoga
- ☐ Yin/Gentle/Restorative Yoga
- ☐ Yoga (General)
- ☐ Yoga (Multiple styles)
- ☐ Other

This would be the style of yoga that you practice the most per week.

## About your yoga practice

**Did you practise other styles of yoga at least once a month? \***

Please choose **only one** of the following:

- ☐ Yes  
☐ No

**Which other styles did you practice at least once a month? \***

Only answer this question if the following conditions are met:

Answer was 'Yes' at question '8 [A04]' (Did you practise other styles of yoga at least once a month?)

Please choose **all** that apply:

- ☐ Ashtanga Yoga  
☐ Bikram or Hot Yoga (26x2)  
☐ Hatha Yoga  
☐ Jivakmukti Yoga  
☐ Iyengar Yoga  
☐ Power Yoga  
☐ Sivananda Yoga  
☐ Vinyasa Yoga  
☐ Yin, Gentle or Restorative Yoga  
☐ Yoga (General)

☐ Other:

**How would you describe the way you did your yoga practice? \***

Please choose the appropriate response for each item:

	Never	Rarely	Sometimes	Most of the time	Always
<b>Supervised (with a teacher)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Self-practice (without a teacher)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**About supervised practice**

**How would you describe the **most common** way you did supervised practice? \***

Only answer this question if the following conditions are met:

Answer was NOT 'Never' at question '10 [A06]' (How would you describe the way you did your yoga practice? (Supervised (with a teacher)))

Please choose **only one** of the following:

- ☐ Cued - following an instructor in a community or group class  
☐ Cued - following an instructor in a private one-on-one session  
☐ Uncued or self-paced community or group class  
☐ Uncued or self-paced private one-on-one session

☐ Other



On average, how many times per week did you practise yoga in a supervised setting? \*

\*

Only answer this question if the following conditions are met:

Answer was NOT 'Never' at question '10 [A06]' (How would you describe the way you did your yoga practice? (Supervised (with a teacher)))

Please choose **only one** of the following:

- ☐ less than once a week
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 or more

Each time you engaged in supervised practice, about how many minutes did you spend on average? \*

Only answer this question if the following conditions are met:

Answer was NOT 'Never' at question '10 [A06]' (How would you describe the way you did your yoga practice? (Supervised (with a teacher)))

Please write your answer here:

minutes per session

Where did you most often do supervised yoga practice? \*

Only answer this question if the following conditions are met:

Answer was NOT 'Never' at question '10 [A06]' (How would you describe the way you did your yoga practice? (Supervised (with a teacher)))

Please choose **only one** of the following:

- ☐ At a yoga studio
- ☐ At a gym or fitness centre
- ☐ At work or in a corporate setting
- ☐ At home
- ☐ Other

About self-practice

How would you describe the **most common** way you did self-practice? \*

Only answer this question if the following conditions are met:

Answer was NOT 'Never' at question '10 [A06]' (How would you describe the way you did your yoga practice? (Self-practice (without a teacher)))

Please choose **only one** of the following:

- ☐ By following an instructional audio or video (e.g., DVD)
- ☐ By following an online video (e.g., Youtube)
- ☐ By following an app (mobile application)
- ☐ By following a practice someone taught me
- ☐ By following a practice I made for myself
- ☐ Other

On average, how many times per week did you engage in self-practice? \*

Only answer this question if the following conditions are met:

Answer was NOT 'Never' at question '10 [A06]' (How would you describe the way you did your yoga practice? (Self-practice (without a teacher)))

Please choose **only one** of the following:

- ☐ less than once a week
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 or more

Each time you engaged in self-practice, about how many minutes did you spend on average?

\*

Only answer this question if the following conditions are met:

Answer was NOT 'Never' at question '10 [A06]' (How would you describe the way you did your yoga practice? (Self-practice (without a teacher)))

Please write your answer here:

minutes per session

### Where did you most often do self-practice? \*

Only answer this question if the following conditions are met:

Answer was NOT 'Never' at question '10 [A06]' (How would you describe the way you did your yoga practice? (Self-practice (without a teacher)))

Please choose **only one** of the following:

- ☐ At a yoga studio
- ☐ At a gym or fitness centre
- ☐ At work or in a corporate setting
- ☐ At home
- ☐ Other

## About pranayama and meditation

While the practice of yoga generally involves a combination of postures, breathing exercises/pranayama, and meditation or relaxation, some people set aside a separate time purely for pranayama or meditation.

The next few questions refer to the practice of pranayama or meditation that is separate from your posture-based yoga practice.

*In answering the questions, please consider your practice behaviours in the previous 12 months BEFORE the COVID-19 restrictions/lockdown were implemented.*

### Did you set aside time for pranayama (breathing exercises) and/or meditation? \*

Please choose **only one** of the following:

- ☐ Yes
- ☐ No

## About pranayama and meditation

### On average, how many times per week did you engage in pranayama and/or meditation? \*

Only answer this question if the following conditions are met:

Answer was 'Yes' at question '19 [A13]' (Did you set aside time for pranayama (breathing exercises) and/or meditation?)

Please choose **only one** of the following:

- ☐ less than once a week
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7 or more

Each time you engaged in pranayama or meditation, about how many minutes did you spend on average? \*

Only answer this question if the following conditions are met:

Answer was 'Yes' at question '19 [A13]' (Did you set aside time for pranayama (breathing exercises) and/or meditation?)

Please write your answer here:

minutes per session

Where did you most often practise pranayama or meditation? \*

Only answer this question if the following conditions are met:

Answer was 'Yes' at question '19 [A13]' (Did you set aside time for pranayama (breathing exercises) and/or meditation?)

Please choose **only one** of the following:

- ☐ at a yoga studio
- ☐ at a gym or fitness centre
- ☐ at work or in a corporate setting
- ☐ at home

☐ Other

## Other aspects of yoga practice

To what extent did you do the following as part of your yoga practice? \*

Please choose the appropriate response for each item:

	0 - Not at all	1	2	3	4	5 - To a great extent
Postures (asanas)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Breath work (pranayama)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meditation (pratyahara-dharana-dhyana)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cleansing techniques (kriyas)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energetic locks and gestures (bandhas and mudras)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Moderate eating or plant-based diet (mitahara)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attitude training and philosophy (yamas and niyamas)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chanting (mantas)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

To what extent did you consider yoga... \*

Please choose the appropriate response for each item:

	Not at all	A little	Much	Very much
a physical practice?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
a mental practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
a spiritual practice?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
a lifestyle?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Changes due to COVID-19 government restrictions

Has your yoga practice changed as a result of the COVID-19 government regulations/lockdown? \*

Please choose the appropriate response for each item:

	Not at all	Only a little	To some extent	Rather much	Very much
Frequency of practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Duration of practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Location of practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In what way did your practice change, if at all, as a result of the COVID-19 government restrictions/lockdown?

Please write your answer here:

Has yoga helped you cope with the COVID-19 government restrictions/lockdown? \*

Please choose **only one** of the following:

- ☐ Not at all  
☐ Only a little  
☐ To some extent  
☐ Rather much  
☐ Very much

In what way has yoga helped you cope with the COVID-19 pandemic, if at all?

Please write your answer here:

## What were your reasons for practising yoga?

Following are a number of statements concerning the reasons people often give when asked why they practise yoga.

Please read each statement carefully and indicate, by marking the appropriate number, whether or not each statement is true for you personally.

If you do not consider a statement to be true for you at all, mark the '0'.

If you think that the statement is partly true for you, then mark the '1', '2', '3', '4', or '5', according to how strongly you feel that it reflects why you practise yoga.

**Remember, we want to know why you personally choose to practise yoga, not whether you think the statements are good reasons for anybody to practise yoga.**

Please refer to the *primary style of yoga* that you practise in answering this section.

Some of the items may also look repetitive. However, we ask that you consider each item and answer them as honestly as you can.

*In answering this section, please consider your reasons for practising yoga in the previous 12 months BEFORE the COVID-19 restrictions/lockdown were implemented.*

Personally, I practised yoga... \*

Please choose the appropriate response for each item:

	0 - Not at all true for me	1	2	3	4	5- Very true for me
to stay slim	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to avoid ill-health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because it makes me feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to help me look younger	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to stay/become more agile	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because I like trying to be the best in yoga	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to give me goals to work towards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to show my worth to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because my doctor/physiotherapist advised me to take up yoga	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to spend time with friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## What were your reasons for practising yoga?

**Personally, I practised yoga... \***

Please choose the appropriate response for each item:

	0 - Not at all true for me	1	2	3	4	5 - Very true for me
to give me space to think	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to have a healthy body	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to build my strength	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because I find yoga satisfying in and of itself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to connect to something beyond (e.g., spirit, divine, god, higher consciousness)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to have a better mind-body connection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to feel centred	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
as a supplementary activity to my sport or other physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to deal with a difficult or demanding situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to develop a greater sense of myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Personally, I practised yoga... \***

Please choose the appropriate response for each item:

	0 - Not at all true for me	1	2	3	4	5 - Very true for me
to lose weight	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to prevent health problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because I find yoga invigorating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to have a good body	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to maintain flexibility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because I enjoy competing with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to give me personal challenges to face	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to compare my abilities with other peoples'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to help prevent an illness that runs in my family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to enjoy the social aspects of yoga	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Personally, I practised yoga... \*

Please choose the appropriate response for each item:

	0 - Not at all true for me	1	2	3	4	5 - Very true for me
because it helps to reduce tension	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because I want to maintain good health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to increase my endurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because I enjoy the feeling of exerting myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to explore spirituality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to connect my mental and physical self	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to feel grounded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
as a supplementary recovery technique to my sport or physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to cope better with life or changes in my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to develop a greater understanding of my body	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What were your reasons for practising yoga?

Personally, I practised yoga... \*

Please choose the appropriate response for each item:

	0 - Not at all true for me	1	2	3	4	5 - Very true for me
to seek spiritual experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because yoga fits with my general journey of personal growth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to help control my weight	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to improve my appearance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because I enjoy physical competition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to develop personal skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to gain recognition for my accomplishments in yoga	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to have fun being active with other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to help manage stress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to get stronger	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**Personally, I practised yoga... \***

Please choose the appropriate response for each item:

	0 - Not at all true for me	1	2	3	4	5 - Very true for me
for enjoyment of the experience of practising yoga	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to practice spirituality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to develop a more integrated sense of mind and body	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to experience being present in the moment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because it will help me in my sport or other physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to better cope with some challenging life events	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because yoga allows me to explore different parts of myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
for spiritual growth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because yoga helps me to burn calories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to avoid heart disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**What were your reasons for practising yoga?**

### Personally, I practised yoga... \*

Please choose the appropriate response for each item:

	0 - Not at all true for me	1	2	3	4	5 - Very true for me
to feel more healthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to develop my muscles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because I feel at my best when practising yoga	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to improve my spiritual health and well-being	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to experience harmony of mind and body	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to develop mindfulness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because it complements my sport and other physical activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to develop skills to help me cope better with difficult issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because I believe yoga can change or changed me as a person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### About your involvement in yoga

Following are statements related to taking yoga practice beyond the mat.

Please answer each item as honestly as you can.

Please read each item carefully and mark the cell that indicates your degree of agreement to that statement. \*

Please choose the appropriate response for each item:

	Totally disagree	Disagree	Slightly disagree	Slightly agree	Agree	Totally agree
Yoga's philosophy also affects how I perceive other aspects of everyday life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to develop myself further through reading yoga literature.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe yoga makes an important contribution to humanity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practising yoga brings me closer to a higher power (e.g., God)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
By practising yoga, I have had experiences that would not have been possible without it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Personally, I practised yoga... \***

Please choose the appropriate response for each item:

	0 - Not at all true for me	1	2	3	4	5 - Very true for me
to recharge my batteries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to look more attractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to stay/become flexible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because I find yoga fun, especially when competition is involved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to measure myself against personal standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to accomplish things that others are incapable of	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to help recover from an illness/injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to make new friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because yoga helps me to get to know myself at a deeper and more profound level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to release tension	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix E Participant Information Sheet for Study 4

Please read each item carefully and mark the cell that indicates your degree of agreement to that statement. \*

Please choose the appropriate response for each item:

	Totally disagree	Disagree	Slightly disagree	Slightly agree	Agree	Totally agree
I usually surround myself with people who also have an interest in yoga.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
By practising yoga, I perceive my environment more positively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whenever I practise yoga, it feels like a divine (spiritual) energy flows through me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Studying ancient yoga wisdom is very helpful to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practising yoga helps me to concentrate better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## How much do you agree with the following statements?

Following are a number of statements related to various norms that are widely endorsed in the society.

Some of the items may look repetitive. However, we ask that you consider each item and answer them as honestly as you can.

Please read each item carefully and mark the cell that indicates your degree of agreement to that statement. \*

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Agree	Strongly agree
I bring up my feelings when talking to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hate asking for help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being thought of as gay is not a bad thing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I never share my feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I ask for help when I need it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would be furious if someone thought I was gay.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please read each item carefully and mark the cell that indicates your degree of agreement to that statement. \*

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Agree	Strongly agree
I like to talk about my feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I never ask for help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would not bother me at all if someone thought I was gay.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to keep my feelings to myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not ashamed to ask for help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would be awful if someone thought I was gay.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please read each item carefully and mark the cell that indicates your degree of agreement to that statement. \*

Please choose the appropriate response for each item:

	Strongly disagree	Disagree	Agree	Strongly agree
I tend to share my feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It bothers me when I have to ask for help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel uncomfortable if someone thought I was gay.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hate it when people ask me to talk about my feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to avoid being perceived as gay.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## About yourself

What is your age? \*

Please write your answer here:

years old

**Which gender do you identify with? \***

Please choose **only one** of the following:

☐ Male

☐ Female

☐ Other

**Which ethnicity do you identify with? \***

Please choose **only one** of the following:

☐ Asian - Filipino

☐ Asian - General

☐ Pacific Islander

☐ Mixed Race/Multiple Ethnic Groups

☐ White

☐ Other

**What is your partnership status? \***

Please choose **only one** of the following:

☐ Single

☐ Partnered or in a relationship

☐ Married/Civil partnership/De facto

☐ Divorced/Separated

☐ Other

**About yourself**

**What is your highest educational attainment? \***

Please choose **only one** of the following:

☐ Less than Year 12 or equivalent

☐ Year 12 or High School Diploma

☐ Vocational Qualification or Associate Diploma

☐ Bachelor

☐ Postgraduate Diploma/Certificate

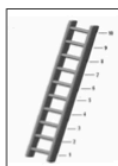
☐ Master's Degree

☐ Doctorate

### What was your employment status before the COVID-19 lockdown? \*

Please choose **only one** of the following:

- ☐ Employed Full-time  
☐ Employed Part-time  
☐ Self-Employed  
☐ Studying full-time (Student)  
☐ Retired  
☐ Stay at home parent/carer  
☐ Unemployed  
☐ Other



Think of this ladder as representing where people stand in your country. At the top of the ladder are the people who are the best off -- those who have the most money, the most education, and the most respected jobs. At the bottom are the people who are the worst off -- those who have the least money, least education, the least respected jobs, or no job.

The higher up you are on this ladder, the closer you are to the people at the very top; the lower you are, the closer you are to the people at the very bottom.

Where would you place yourself on this ladder?

\*

Please choose the appropriate response for each item:

	1	2	3	4	5	6	7	8	9	10
Please indicate the number where you think you stand at this time in your life relative to other people in your country.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## About yourself

### Are you a yoga teacher? \*

Please choose **only one** of the following:

- ☐ No, I am not a yoga teacher  
☐ Yes, with no 200-hour teacher training certificate  
☐ Yes, with (at least) a 200-hour training certificate

### To what extent do you consider yourself... \*

Please choose the appropriate response for each item:

	Not at all	A little	Much	Very much
a religious person?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
a spiritual person?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### How would you describe your general health status? \*

Please choose the appropriate response for each item:

	Poor	Fair	Good	Very good	Excellent
Before the COVID-19 government lockdown/restrictions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At present	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Which state do you live in? \*

Please choose **only one** of the following:

- ☐ Australian Capital Territory
- ☐ New South Wales
- ☐ Northern Territory
- ☐ Queensland
- ☐ South Australia
- ☐ Tasmania
- ☐ Victoria
- ☐ Western Australia

### What is your postcode? \*

Please write your answer here:



**Which region do you live in? \***

Please choose **only one** of the following:

- ☐ NCR - National Capital Region (NCR)
- ☐ Ilocos Region
- ☐ Cordillera Administrative Region (CAR)
- ☐ Cagayan Valley
- ☐ Central Luzon
- ☐ Calabarzon
- ☐ MIMAROPA - Southwestern Tagalog region
- ☐ Bicol Region
- ☐ Western Visayas
- ☐ Central Visayas
- ☐ Eastern Visayas
- ☐ Zamboanga Peninsula
- ☐ Northern Mindanao
- ☐ Davao Region
- ☐ SOCCSKSARGEN
- ☐ Caraga Region
- ☐ Bangsamoro Autonomous Region in Muslim Mindanao

**Which province or city do you live in? \***

Please write your answer here:

**Do you have additional comments? (optional)**

**This is the end of the survey.**

**Do you have any reflections or additional comments about your motivation for practising yoga that you would like to share?**

**If none, please click on the "Submit" button located at the bottom right side of this page.**

Please use the space below to write down your comments, then click "Submit" to submit your responses.

Please write your answer here:

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