

Measuring Psycho-Physiological Indicators to Explore the Use of Music for Enhancing Mindfulness Imagery Experiences

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The Mindfulness-Acceptance-Commitment (MAC) approach in sport psychology suggests that mindfulness is a key step in managing thoughts and feelings. Mindfulness imagery with music involves attaining a relaxing state of mind, which relaxes the physical body, creating experiences such as enjoyment, positive thoughts, and “being in the zone”. This study explored psycho-physiological changes related to mindfulness imagery with music and shooting performance among elite air-pistol shooters. Participants were 12 male elite air-pistol shooters, who were randomly assigned to two groups: relaxing music with imagery or arousing music with imagery of shooting performance. Psycho-physiological measures monitored included galvanic skin response (GSR), peripheral temperature (PT), electromyogram (EMG), and heart rate variability (HRV). A pre-test-intervention-post-test design was used in two simulated competitions, shooting 60 shots on a 10-meter air-pistol shooting range before and after the imagery with music intervention. The imagery intervention lasted for 7 minutes, with 12 sessions over 4 weeks between the pre- and post-test. MANOVA showed significant differences across type of music used with imagery for performance gain-scores $F(1,11) = 8.85$, $p < .05$, $\eta^2 = .36$, with a larger increase in performance for relaxing music than arousing music. Psycho-physiological profiles indicated that relaxing music enhanced the positive effect of imagery more than arousing music because lower GSR, higher PT, linear EMG and lower HRV were detected when the shooters were performing mindfulness imagery with relaxing music. Further, in-depth interviews provided insight that mindfulness imagery is important for maintaining a high state of positive thoughts about performance, relaxing the mind, and “being in the optimal zone”. Results of the study throw light on the role of mindfulness in the MAC approach to relaxation and performance enhancement related to sport imagery. (1,974 characters including spaces)