An evaluation of the effects of mindfulness training from the perspectives of wheelchair basketball players

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\begin{abstract}
Objectives: Previous research has highlighted that mindfulness training (MT) is associated with an attenuation in physiological stress in wheelchair basketball players during competition. However, players’ perceptions of how MT affected their sporting and everyday life were yet to be determined. Therefore, the present study evaluated the perceived impact of an 8-wk MT intervention on wheelchair basketball players by gathering and analysing the perspectives of the participants in the study.

Methods: Eight wheelchair basketball players completed an 8-wk MT intervention (meditations and mindfulness exercises; five times each week) during a competition period. Participants completed an evaluation survey which explored the impact of the MT intervention.

Results: 8 wk of MT was beneficial in various aspects of the participants’ everyday lives, games and training in the form of improved concentration, improved sleep, better stress management, awareness, as well as improved foul shooting accuracy and regulation of heart rate.

Conclusions: MT may be efficacious in improving both athletic performance and everyday life in para-athletes.
\end{abstract}

1. Introduction

In the field of sport psychology there is a need to better understand various factors that may impact athletes and their performance (Abdullah, Musa, Maliki, Kosni, & Suppiah, 2016; Sarkar & Fletcher, 2014). Athletes have been considered ‘vital stakeholders’ and ‘key informants’ in the development of international sport policies (De Bosscher, Shibil, Westerbeek, & Van Bottenburg, 2015). In addition, Kean, Gray, Verdonck, Burkett, and Oprescu (2017) highlighted that elite para-athletes’ perspectives are vital information sources for gaining a better understanding of the barriers and facilitators in both the physical and social environment and how they impact athletic performance. Therefore, when considering interventional research, it seems important to consider athletes’ personal perspectives on how an intervention may have impacted them to obtain a more informed understanding of the potential effects of an intervention.

Para-athletes are exposed to several competition and non-competition related sources of stress including performance pressure and coaching issues (Campbell & Jones, 2002a; Crawford & Stodolska, 2008), vocation and job demands (Campbell & Jones, 2002b; Hutzler, 2008), as well as lack of accessible training facilities (Jaarsma, Geertzen, Jong, Dijkstra, & Dekker, 2014; Kean et al., 2017). If these stressors are not monitored or managed effectively, sports performance may deteriorate and/or para-athletes may become more susceptible to illness and/or injury (Williams & Andersen, 1998). Therefore, a psychological intervention that has the potential to assist para-athletes with managing stress could be useful in helping to maintain well-being.

The use of mindfulness training (MT) for managing stress is well established in both clinical and health populations (Grossman, Niemann, Schmidt, & Walach, 2004); it is a form of meditation and practice of ‘non-judgmental observation of the ongoing stream of internal and external stimuli’ (Baer, 2003, p. 125). Neuroscientific research suggests that MT provides the individual with a self-regulatory process; an ability to objectively reappraise stressors and thereby down-regulate one’s own psychophysiological stress response (Rosenzweig, Reibel, Greeson, & Edman, 2007; Tang, Hölzel, & Posner, 2015). In addition stress management, MT has been associated with various other health benefits including improved cognition (Jha, Krompinger, &...
Gri was conducted at the state training facility and was approved by the study requirements and provided written informed consent. The study the same level of competition during the study. All participants had no sporting and work commitments, following completion of the MT intervention, participants were required to play between three and six games each week as well as continue with regular training. During the familiarisation session, participants were familiarised with all study procedures and given a presentation explaining the origins of mindfulness and what they were to experience during meditations and exercises. The duration of the intervention (i.e., 8 wk) was chosen to match previous clinical MT interventions (Baer, 2003). The intervention was a graded approach to MT; the first 2 wk consisted of the Mindful group completing an 8-min meditation session, followed by 10-min of mindfulness exercises, 5 times each week. The following 6 wk consisted of the Mindful group completed a 45-min meditation session, followed by 5 min of exercises, 5 times each week. The mindfulness meditations and teachings were provided to the Mindful group in a smart-phone application, Smiling Mind (Smiling Mind, South Yarra, VIC, Australia), that was downloaded from Apple’s App Store (Apple Inc., Cupertino, CA, USA). Smiling Mind contains mindfulness programs that include meditations and exercises that outline the key aspects of traditional mindfulness practices. Meditations, exercises and the order of completion were pre-determined by the Chief Investigator. During the first 2 wk, participants completed five adult programs from the Smiling Mind application twice (i.e., one program each day, five programs each week), in consecutive order. Each adult program contained a guided 8-min meditation and approximately 10 min of brief, instructed exercises of varying length (i.e., 1–7 min). During the following 6 wk, participants completed a guided 45-min meditation and approximately 5 min of brief exercises selected from the Bite Size program, five times each week. During the meditations, participants were seated comfortably, in an upright posture, with their eyes closed. They were instructed to use the sensation of their breath as a focal point, while noticing other sensations in their body, sounds and feelings they may have been experiencing in a non-judgmental manner (Kabat-Zinn, 1994). Participants were given constant instruction during the 8-min meditations to aid them in maintaining present-moment awareness while the 45-min meditation was more independent as it contained longer periods of silence and less guidance. This allowed for the participants to utilize their skills gained from the introductory period training to maintain mindfulness during the meditation. Exercises included traditional mindfulness practices such as the Body Scan, which has previously been implemented in neuropsychological research (Ditto, Eclave, & Goldman, 2006; Hölzel, Carmody, et al., 2011) and incorporated into well-established clinical interventions (Carmody & Baer, 2008; Herbert & Forman, 2011; Kabat-Zinn, 1994). In the Body Scan, participants were either seated or lying down, and were instructed to focus their attention sequentially to different parts of their body while noticing sensations that may be present (Kabat-Zinn, 1994). The exercises completed from the adult program were similar to those completed in the Bite Size program but the adult program was longer in duration. The meditation duration during the final 6 wk of the intervention (i.e., 45 min) was chosen to match previous clinical research that has implemented MT interventions (Baer, 2003).

Before commencing a mindfulness meditation or exercise, participants set their smart phone to flight mode to avoid interruptions. All meditations and exercises were completed with headphones, to avoid audible distractions, and in the participant’s own time at home. Participants completed a mindfulness-training diary to log meditations and exercises completed and to keep them motivated to complete the training period. In addition, the smart phone application logged and recorded all completed meditations and exercises. To ensure compliance, each participant’s training diary and smart application was reviewed during each testing session.

At the conclusion of the MT intervention, participants were provided with the evaluation survey that was sent via email. Participants were provided 30 days to complete and return the evaluation survey to the Chief Investigator. This was to ensure the respondents completed the survey within a reasonable time frame, while also considering sporting and work commitments, following completion of the MT intervention.

2.3. Mindfulness training intervention

The mindfulness meditations and teachings used in the MT intervention were provided in a smart phone application, Smiling Mind (Smiling Mind, South Yarra, VIC, Australia), that was downloaded from Apple’s App Store (Apple Inc., Cupertino, CA, USA). Smiling Mind contains mindfulness programs that include meditations and exercises that outline the key aspects of traditional mindfulness practices. Meditations, exercises and the order of completion were pre-determined by the Chief Investigator. During the first 2 wk, participants completed five adult programs from the Smiling Mind application twice (i.e., one program each day, five programs each week), in consecutive order. Each adult program contained a guided 8-min meditation and approximately 10 min of brief, instructed exercises of varying length (i.e., 1–7 min). During the following 6 wk, participants completed a guided 45-min meditation and approximately 5 min of brief exercises selected from the Bite Size program, five times each week. During the meditations, participants were seated comfortably, in an upright posture, with their eyes closed. They were instructed to use the sensation of their breath as a focal point, while noticing other sensations in their body, sounds and feelings they may have been experiencing in a non-judgmental manner (Kabat-Zinn, 1994). Participants were given constant instruction during the 8-min meditations to aid them in maintaining present-moment awareness while the 45-min meditation was more independent as it contained longer periods of silence and less guidance. This allowed for the participants to utilize their skills gained from the introductory period training to maintain mindfulness during the meditation. Exercises included traditional mindfulness practices such as the Body Scan, which has previously been implemented in neuropsychological research (Ditto, Eclave, & Goldman, 2006; Hölzel, Carmody, et al., 2011) and incorporated into well-established clinical interventions (Carmody & Baer, 2008; Herbert & Forman, 2011; Kabat-Zinn, 1994). In the Body Scan, participants were either seated or lying down, and were instructed to focus their attention sequentially to different parts of their body while noticing sensations that may be present (Kabat-Zinn, 1994). The exercises completed from the adult program were similar to those completed in the Bite Size program but the adult program was longer in duration. The meditation duration during the final 6 wk of the intervention (i.e., 45 min) was chosen to match previous clinical research that has implemented MT interventions (Baer, 2003).
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