
EFFECTS OF MINDFULNESS MEDITATION TRAINING ON ANXIETY, SELF-CONFIDENCE, AND MINDFULNESS AMONG INDONESIAN ATHLETES

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ABSTRACT

This study examines the effect of mindfulness meditation training for sport on anxiety, self-confidence and mindfulness of Indonesian track and field's athletes. A quantitative approach with a pre and post experimental design was employed in this study. The participants consisted of 18 Eastern Indonesian national team athletes, who were divided into a control group and a treatment group. The research instruments used were the Mindfulness Meditation Training for Sport 2.0 (MMTS 2.0) module, the Competitive State Anxiety Scale Revised (CSAI-2R), and the Mindful Attention Awareness Scale (MAAS). Data were analyzed using mean, standard deviation, percentages and, the Two-Way Mixed ANOVA test. The findings of the study indicate that the MMTS 2.0 module intervention can control somatic anxiety $F(1, 16) = 9.63, p < .05$, cognitive anxiety $F(1, 16) = 7.67, p < .05$, increase self-confidence $F(1, 16) = 23.86, p < .05$, and enhance mindfulness levels $F(1, 16) = 40.60, p < .05$ among Indonesian Track and Field athletes. The experimental group was found to have lower levels of anxiety, higher self-confidence, and greater mindfulness awareness compared to the control group after the intervention. In conclusion, this study aligns with previous research showing that mindfulness awareness training can reduce anxiety, boost self-confidence, and promote tranquility. The implementation of MMTS 2.0 can positively impact sports development in Indonesia and can be introduced nationwide to enhance athletes' psychological preparedness for competition.

Keywords: Mindfulness Meditation Training for Sport 2.0 (MMTS 2.0), somatic anxiety, cognitive anxiety, self-confidence, mindfulness

INTRODUCTION

Self-confidence, somatic anxiety, and cognitive anxiety are critical psychological factors that significantly impact the performance and well-being of Indonesian track and field athletes. Self-confidence, defined as the belief in one's ability to succeed in challenging situations, plays a pivotal role in shaping athletes' mindsets and approach to competitions (Jeane Betty Kurnia Jusuf, 2016; Najib, 2020). High levels of self-confidence are associated with improved performance outcomes and mental resilience, essential for athletes competing at the national level (Kumbara, Metra & Ilham, 2018; Irianto & Lumintuarso, 2020). In Indonesian track and field sports, cultivating self-confidence is essential for athletes to navigate the pressures of competition and achieve their full potential.

Somatic anxiety is characterized by physical symptoms of anxiety such as increased heart rate and muscle tension, and is a common experience for athletes, particularly in high-pressure situations (Cox, Martens & Russell, 2003). Research on the impact of somatic anxiety on athletic performance highlights the importance of managing these physical manifestations to optimize performance levels and maintain peak physical readiness during competitions. Indonesian track and field athletes can benefit from strategies that target somatic anxiety, enabling them to stay composed and focused during crucial moments in their events (Grobbelaar, Duthie & Fanton, 2018; Walter, Nikoleizig & Alfermann, 2019; Soleh & Hakim, 2019).

Cognitive anxiety, which encompasses the mental aspects of anxiety, such as worry, negative thoughts, and fear of failure, can significantly impact athletes' performance and mental focus. Addressing cognitive anxiety is crucial for Indonesian track and field athletes to enhance their psychological resilience and maintain a positive mindset during competitions (Martens, Vealey, & Burton, 1990; Cox, 2012). Strategies that focus on cognitive anxiety, such as mindfulness-based interventions, can help athletes develop mental clarity, emotional regulation, and cognitive flexibility to navigate the challenges of competitive sports (Refanthira & Hasanah, 2020).

Mindfulness Meditation Training for Sport 2.0 (MMTS 2.0) is a specialized training module designed to enhance the athletes' psychological well-being and performance, including those in the Indonesian track and field community. The MMTS 2.0 module incorporates mindfulness-based practices to help athletes manage stress, improve focus, and cultivate a positive mindset for optimal performance. Research on the efficacy of MMTS interventions has shown promising results in reducing anxiety levels, enhancing self-confidence, and promoting mindfulness among athletes (Baltzell & Summers, 2018).

By integrating the principles of mindfulness and self-awareness into their training regimen, Indonesian track and field athletes can develop a holistic approach to mental preparation and performance optimization. The MMTS 2.0 module offers athletes practical tools and techniques to enhance their self-confidence, manage somatic and cognitive anxiety, and foster a state of mindfulness that supports peak performance (Baltzell & Summers, 2018). Through targeted interventions and mindfulness practices, athletes can build resilience, enhance their mental skills, and elevate their performance levels in the competitive arena of track and field sports (Grobbelaar, Duthie, & Fanton, 2018; Walter, Nikoleizig & Alfermann, 2019; Soleh, & Hakim, 2019). Therefore, the focus of this study was to examine the effectiveness of MMTS 2.0 on self-confidence, somatic anxiety, cognitive anxiety, and mindfulness of Indonesian track and field athletes.

METHODOLOGY

Research Design

The study employs a pretest-posttest control group design, as delineated by Creswell and Creswell (2017). Participants are randomly allocated to either a control or an experimental group. The control group will not be subjected to any form of psychology intervention, whereas the experimental group will take part in the Mindfulness Meditation Training for Sport 2.0 (MMTS 2.0) program in addition to normal training program.

Population and Sample

A total of 18 elite athletes from the Indonesian National Athletics Team participated in this study. Nine athletes were randomly assigned to the control group and nine to the treatment group.

In this study, the saturation sampling technique was used where the entire population was selected as the study sample. This technique was chosen because the total population of the study was small, and all athletes in the population would become the subjects (Creswell & Creswell, 2017; Sugiyono, 2018). The athletes have no prior experience with mindfulness based interventions.

Data Collection Procedure

The data collection procedure was carried out using instruments such as the Competitive State Anxiety Inventory-2 Revised and Mindful Attention Awareness Scale questionnaires. These questionnaires were completed by the athletes before they participated in the intervention. The post-test implementation schedule began immediately after the final session of the Mindfulness Meditation Training for Sport 2.0 intervention. The researcher ensured that the period between the pre-test and post-test was between three to six weeks to minimize the threat of event effects (Campbell & Stanley, 1963; Brown, Irving, & Keegan, 2008; Ary et al., 2010). Table 2 below will explain the data collection procedure for pre-test, intervention and post-test.

Table 2 Data collection procedure for pre-test, intervention and post-test

Pre-test	All participants will complete the CSAI-2R and the MAAS to assess their baseline levels of competitive anxiety, self-confidence, and mindfulness.
Intervention	The treatment group will undergo the MMTS 2.0 program, which consists of 14 sessions over 6 weeks. Each session will last for 30 minutes and will be conducted twice a week. The control group will not receive any intervention during this period.
Post-test	After the 6-week intervention period, all participants will complete the CSAI-2R and MAAS again to assess any changes in their levels of competitive anxiety, self-confidence, and mindfulness.

Intervention Schedule

The MMTS 2.0 intervention protocol is meticulously structured, commencing with an introductory session where participants are acquainted with the program, consent is secured, and a pre-test is administered. Subsequent sessions, numbering 2 to 13, are dedicated to concentrated MMTS 2.0 training, occurring bi-weekly with each session lasting 30 minutes. The final session, session 14, serves as a debriefing period where participants undergo a post-test and partake in an evaluation of the program's entirety. Additionally, participants in the treatment group are encouraged to engage in daily independent mindfulness meditation practice for a duration of 5 to 10 minutes, supplementing the structured sessions.

Instruments

In this study, athlete anxiety and self-confidence levels are quantified using the Competitive State Anxiety Inventory-2 Revised (CSAI-2R) developed by Putra and Guntoro (2022). The Mindfulness Attention Scale (MAAS) crafted by González-Blanch et al. (2021) is employed to assess athletes' mindfulness. These instruments are utilized both pre- and post-intervention to gauge shifts in the measured variables.

Data Analysis

The analysis for this study involved both descriptive and inferential statistics. Descriptive statistics, such as mean, standard deviation, and frequency distributions, utilized to summarize the demographic characteristics of the participants. In terms of inferential statistics, a two-way mixed Analysis of Variance (ANOVA) will be employed to evaluate the effectiveness of the MMTS 2.0 intervention on somatic anxiety, cognitive anxiety, self-confidence, and mindfulness variables within both the control and experimental groups at the beginning and end of the study. Additionally, post-hoc analyses, using the Bonferroni correction used to identify specific differences between the groups and time.

RESULTS

The mean values and standard deviation for somatic anxiety are presented in Table 5. Descriptive analysis showed that the mean value and standard deviation at the pre-test stage was (M=18, SD=4.51), indicating the average level of somatic anxiety before the intervention. Following the MMTS 2.0 intervention, the mean somatic anxiety score decreased to 14.38 with a standard deviation of 3.50 at the post-test assessment. This reduction in the mean somatic anxiety score suggests a potential positive impact of the intervention on lowering somatic anxiety levels among the track and field's athletes. The lower mean score post-intervention indicates a trend towards decreased somatic anxiety, highlighting the potential effectiveness of the MMTS 2.0 program in addressing this aspect of psychological well-being.

Based on the Two Way Mixed ANOVA analysis, there was a significant difference in somatic anxiety between the pre-test and post-test assessments with $F(1,16) = 12.52, p < .05$. The results also indicate that there was no significant difference in somatic anxiety between the control and treatment groups with $F(1,16) = 4.31, p > .05$. Furthermore, the intervention of MMTS 2.0 on somatic anxiety between the control and treatment groups in the pre-test and post-test assessments found that $F(1,16) = 9.63, p < .05$, indicating a significant difference in somatic anxiety between the control and treatment groups in the pre-test and post-test assessments.

Table 5 Mean, standard deviation, F-value and significant for somatic anxiety

<i>Dependent Variables</i>	<i>Level of independent variables</i>	<i>Mean</i>	<i>SD</i>	<i>Within Subject</i>		<i>Between Subject</i>		<i>Interaction Effect</i>	
				F	Sig	F	Sig	F	Sig
Somatic Anxiety	Pre-test	18.00	4.51	12.52	.003	4.31	.054	9.63	.007
	Post-test	14.38	3.50						

The mean value for cognitive anxiety at the pre-test stage was 12.22 with a standard deviation of 3.84, representing the average level of cognitive anxiety reported by the participants before the intervention. Following the implementation of the MMTS 2.0 program, the mean cognitive anxiety score slightly decreased to 11.50 with a standard deviation of 3.80 at the post-test evaluation. This reduction in the mean cognitive anxiety score suggests a potential positive impact of the intervention on reducing cognitive anxiety levels among the participants. Although the decrease in mean score was not as pronounced as with somatic anxiety, it still indicates a trend towards lower cognitive anxiety post-intervention, implying some beneficial effects of the MMTS 2.0 intervention on this aspect of psychological well-being.

Based on the Two-Way Mixed ANOVA analysis, there was a significant difference in cognitive anxiety between the pre-test and post-test assessments with $F(1,16) = 13.46, p < .05$. Table 4.11 also indicates that there was no significant difference in cognitive anxiety between the control and treatment groups with $F(1,16) = .46, p > .05$. Furthermore, the intervention of MMTS 2.0 on cognitive anxiety between the control and treatment groups in the pre-test and post-test assessments found that $F(1,16) = 7.67, p < .05$, indicating a significant difference in cognitive anxiety between the control and treatment groups in the pre-test and post-test assessments.

Table 6 Mean, standard deviation, F-value and significant for cognitive anxiety

<i>Dependent Variables</i>	<i>Level of independent variables</i>	<i>Mean</i>	<i>SD</i>	<i>Within Subject</i>		<i>Between Subject</i>		<i>Interaction Effect</i>	
				F	Sig	F	Sig	F	Sig
Cognitive Anxiety	Pre-test	12.22	3.84	.46	.507	13.46	.002	7.67	.014
	Post-test	11.50	3.80						

The mean value for self-confidence at the pre-test stage was 20.00, with a standard deviation of 2.64, indicating the average level of self-confidence reported by the participants before the intervention. After completing of the MMTS 2.0 intervention, the mean self-confidence score increased to 23.22 with a standard deviation of 1.09 at the post-test assessment. This increase in the mean self-confidence score suggests a significant positive impact of the intervention on enhancing self-confidence levels among the study participants. The higher mean score post-intervention indicates a notable improvement in self-confidence, highlighting the effectiveness of the MMTS 2.0 program in bolstering this aspect of psychological well-being. The substantial increase in mean self-confidence score post-intervention showed a positive outcome of the intervention on participants' self-beliefs and perceptions.

The results of the Two-Way Mixed ANOVA analysis indicated no significant difference in self-confidence levels between the control and treatment groups in the pre-test and post-test assessments. The significance level used in this study was 0.05. Based on the Two Way Mixed ANOVA analysis, there was no significant difference in self-confidence between the pre-test and post-test assessments with $F(1,16) = .90, p > .05$. Table 4.12 also shows that there was a significant difference in self-confidence between the control and treatment groups with $F(1,16) = 28.19, p < .05$. Furthermore, the intervention effect of MMTS 2.0 on self-confidence between the control and treatment groups in the pre-test and post-test assessments found that $F(1,16) = 23.86, p < .05$, indicating a significant difference in self-confidence between the control and treatment groups in the pre-test and post-test assessments.

Table 7 Mean, standard deviation, F-value and significant for self-confidence

<i>Dependent Variables</i>	<i>Level of independent variables</i>	<i>Mean</i>	<i>SD</i>	<i>Within Subject</i>		<i>Between Subject</i>		<i>Interaction Effect</i>	
				F	Sig	F	Sig	F	Sig
Self-Confidence	Pre-test	20.00	2.64	.90	.356	28.19	.000	23.86	.000
	Post-test	23.22	1.09						

The mean value for mindfulness at the pre-test stage was 45.44, with a standard deviation of 5.64, representing the average level of mindfulness reported by the participants before the intervention. Following the completion of the MMTS 2.0 program, the mean mindfulness score significantly increased to 57.77, with a standard deviation of 10.05 at the post-test evaluation. This substantial increase in the mean mindfulness score indicates a significant positive impact of the intervention on enhancing mindfulness levels among the study participants. The higher mean score post-intervention suggests a notable improvement in mindfulness, highlighting the effectiveness of the MMTS 2.0 intervention in cultivating this aspect of psychological well-being. The considerable increase in mean

mindfulness score post-intervention signifies a successful outcome of the program in promoting greater awareness, attention, and presence among the participants.

The results of the Two-Way Mixed ANOVA analysis indicate a significant difference in mindfulness levels between the control and treatment groups in the pre-test and post-test assessments. The significance level used in this study was 0.05. Based on the Two-Way Mixed ANOVA analysis, there was a significant difference in Mindfulness between the pre-test and post-test assessments with $F(1,16) = 42.99, p < .05$. Table 4.13 also shows that there was no significant difference in Mindfulness between the control and treatment groups with $F(1,16) = 46.31, p < .05$. Furthermore, the intervention effect of MMTS 2.0 on Mindfulness between the control and treatment groups in the pre-test and post-test assessments found that $F(1,16) = 40.60, p < .05$, indicating a significant difference in Mindfulness between the control and treatment groups in the pre-test and post-test assessments.

Table 8 Mean, standard deviation, F-value and significant for mindfulness

<i>Dependent Variables</i>	<i>Level of independent variables</i>	<i>Mean</i>	<i>SD</i>	<i>Within Subject</i>		<i>Between Subject</i>		<i>Interaction Effect</i>	
				F	Sig	F	Sig	F	Sig
<i>Mindfulness</i>	Pre-test	45.44	5.64	42.99	.00	46.31	.00	40.60	.00
	Post-test	57.77	10.05						

DISCUSSIONS

The study found several important aspects that need to be discussed regarding somatic anxiety, cognitive anxiety, self-confidence, and Mindfulness scores (MAAS) between the treatment and control groups at pre-test and post-test.

Somatic Anxiety

The study revealed a significant difference in somatic anxiety levels between the control and treatment groups, both before and after the intervention. The treatment group showed a remarkable reduction in somatic anxiety compared to the control group. Multiple studies support the potential effectiveness of the MMTS 2.0 intervention in reducing somatic anxiety symptoms among athletes. For example, a study conducted with NCAA Division I Tennis players found significant decreases in somatic anxiety symptoms after the implementation of the MMTS 2.0 intervention. This highlights the intervention's effectiveness in addressing anxiety that directly affects athletic performance (Minkler, 2023).

In a study that used a combination of methods, it was found that sport-related anxiety, including physical anxiety, decreased after an intervention. The study also found that both athletes and coaches perceived benefits such as increased awareness, focus, and stress management (Dibernardo, 2018). In addition, a review article highlights the consistent results observed in multiple studies of MMTS 2.0. Participants consistently reported decreases in somatic anxiety, worry, and disruptions in concentration. This highlights the potential of the program to address various anxiety-related obstacles that may impede athletic performance (Baltzell & Summers, 2017).

The MMTS 2.0 programs combines mindfulness and self-compassion techniques, which are widely acknowledged as essential for effectively treating the physical symptoms of anxiety. By increasing their consciousness and ability to control their own emotions, athletes can cultivate more efficient strategies for managing physical anxiety, resulting in enhanced performance and well-being. The importance of mindfulness-based interventions in sports psychology is highlighted, as they provide

players with practical techniques to manage and reduce symptoms of anxiety, eventually improving their athletic performance (Baltzell & Summers, 2017).

Cognitive Anxiety

The study found there is a significant difference in cognitive anxiety levels between the control and treatment groups. Mindfulness meditation has been extensively studied and is known for its effectiveness in reducing anxiety by promoting a present-focused awareness and reducing rumination and worry, which are key components of cognitive anxiety (Kabat-Zinn, 2013). The incorporation of technology in MMTS 2.0 ensures that users have consistent access to guided meditations, progress tracking, and personalized feedback, enhancing the overall effectiveness of the mindfulness practice (Hölzel et al., 2011).

Another significant advantage of MMTS 2.0 is its accessibility and ease of use. Unlike Cognitive Behavioral Therapy (CBT), which often requires in-person sessions with a trained therapist, MMTS 2.0 can be accessed remotely via smartphones or computers, making it more convenient for users with busy schedules or those living in areas with limited access to mental health services. This flexibility allows for more frequent and consistent engagement with the intervention, which is crucial for its effectiveness in reducing anxiety (Zeidan et al., 2010). Moreover, the use of technological support in MMTS 2.0 can help tailor the mindfulness practices to the individual's specific needs and progress, thereby providing a more personalized and potentially more effective intervention.

Lastly, the self-guided nature of MMTS 2.0 empowers individuals to take an active role in managing their anxiety. This empowerment can lead to increased self-efficacy and a greater sense of control over one's mental health, which are important factors in reducing cognitive anxiety (Baer, 2003). By fostering a sense of agency and providing users with tools to manage their anxiety independently, MMTS 2.0 can lead to long-term improvements in mental health outcomes. Additionally, research has shown that mindfulness-based interventions can lead to changes in brain structure and function associated with reduced anxiety and improved emotional regulation (Tang, Hölzel, & Posner, 2015), further supporting the effectiveness of MMTS 2.0 in reducing cognitive anxiety.

Self-Confidence

The study uncovered a substantial discrepancy in self-assurance levels between the control and treatment groups, both before to and during the intervention. Notably, the treatment group exhibited a notable improvement in self-confidence, which can be attributed to the efficacy of mindfulness meditation in enhancing self-efficacy and emotional regulation. MMTS 2.0, a mindfulness-based intervention, focuses on increasing mindfulness and self-compassion skills, which are essential for developing adaptive coping mechanisms and improving overall mental well-being. By cultivating mindfulness and self-compassion, athletes in the treatment group were better equipped to manage stress and anxiety, leading to increased self-confidence and improved performance (Cote, Baltzell, Diehl, 2019; Costalupes, 2023).

The MMTS 2.0 program's emphasis on mindfulness and self-compassion also contributed to the significant increase in self-confidence levels by promoting a greater awareness of emotions and thoughts. This increased awareness allowed athletes to better recognize and manage their emotional responses, leading to improved emotional regulation and reduced anxiety. Furthermore, the program's focus on self-compassion helped athletes develop a more positive and supportive relationship with themselves, fostering increased self-confidence and self-esteem. These findings are consistent with a recent systematic review that highlighted the effectiveness of mindfulness and acceptance-based interventions in enhancing performance and well-being by increasing mindfulness and decreasing competitive anxiety (Costalupes, 2023).

The advantages of using MMTS 2.0 in increasing self-confidence levels are multifaceted. By promoting mindfulness and self-compassion, the program helps athletes develop a greater awareness of their emotions and thoughts, leading to improved emotional regulation and reduced anxiety. Additionally, the program's focus on self-compassion fosters a more positive and supportive

relationship with oneself, leading to increased self-confidence and self-esteem. These benefits are particularly relevant in competitive sports, where high levels of self-confidence are critical for optimal performance. Overall, the MMTS 2.0 program offers a valuable tool for athletes seeking to enhance their self-confidence and improve their overall mental well-being (Cote, Baltzell & Diehl, 2019).

Mindfulness

The study revealed a substantial discrepancy in mindfulness levels between the control and treatment groups, with the treatment group showing a rise in mindfulness scores after the intervention. This indicates that the intervention has a good effect on athletes' mindfulness awareness, which has the potential to improve their ability to control emotions and enhance performance.

Mindfulness, defined as purposeful focus on the current moment without evaluation, has been linked to several benefits for athletes, such as decreased stress, enhanced emotional control, increased self-awareness, concentration, and enjoyment of performance. Mindfulness training empowers athletes to develop a heightened sense of being in the present moment, attain optimal mental states like confidence and self-belief, and reach a state of "flow," marked by effortless performance and mental clarity (Wang & Fan, 2023; Rogowska & Tataruch 2024).

Nevertheless, the search findings suggest that the demanding nature of high-level competition might provide difficulties in preserving mindfulness abilities among athletes. Elite athletes, who encounter challenges such as competitive anxiety, perfectionism, and uncertainty stress, may have reduced levels of mindfulness in comparison to their peers. This indicates the necessity of customized mindfulness training programs that are specifically created to tackle the distinct difficulties encountered by elite athletes in maintaining mindfulness in the middle of the severe pressures of high-level competition. Exploring and implementing mindfulness interventions tailored for elite athletes may represent a crucial avenue for future research and practical application within the realm of sport psychology. (Rogowska & Tataruch 2024).

CONCLUSION

In conclusion, the collective evidence from the reviewed studies underscores the value of incorporating mindfulness meditation training, specifically MMTS 2.0, into sports psychology and athlete training programs. The positive impacts on anxiety reduction, self-confidence enhancement, and mindfulness improvement offer a compelling case for the broader adoption of such interventions. Future research should continue to explore the long-term effects of mindfulness training on athletic performance, with a focus on understanding the mechanisms underlying its benefits. Additionally, expanding the application of MMTS 2.0 to a wider range of sports and athlete populations could further elucidate its potential to revolutionize mental training in sports.

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