



Coping Depression and Anxiety with Mindfulness: A Short Communication

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Abstract

Mindfulness is a technique that involves paying attention to the present moment, without judgment or distraction. There is growing evidence that mindfulness meditation can be an effective tool for managing symptoms of depression and anxiety. This practice can help individuals develop a greater awareness of their thoughts and emotions, and learn to observe them without getting caught up in them. The present study enables readers to understand about the subject, its applications as well as have an overview on published work related to topic. This profound yet simple tool has not been utilised to its full potential, author's sole aim is to bring it to everyone's awareness, hence enlisted the published work in mindfulness meditation.

**Keywords:** Mindfulness Meditation; Anxiety; Depression; Wellbeing; Sports

Introduction

A number of studies have found that mindfulness meditation can be helpful for reducing symptoms of depression and anxiety [1,2]. For example, a 2014 review of 47 clinical trials found that mindfulness-based interventions were effective in reducing symptoms of depression and anxiety. Another study published in 2018 found that a mindfulness-based intervention was effective in reducing symptoms of anxiety and depression in patients with chronic pain [3].

While mindfulness meditation can be a helpful tool for managing depression and anxiety in perinatal care [4], it is not a cure-all and may not work for everyone. It is important for individuals to work with a trained professional to determine if mindfulness meditation is a suitable approach for their individual needs and to learn how to practice it effectively.

There are several protocols or methods for practicing mindfulness meditation. MAC, MBSR, MiBCT are a few popular ones [5,6]. This practice involves breath awareness i.e. focusing your attention on your breath, noticing each inhale and exhale, and observing the sensations of the breath in your body [7]. Body Scan in which one focuses attention on each part of your body, from the toes to the head, noticing any sensations or tension, and relaxing each part as you move through the body [8]. Loving-kindness

Meditation, this involves generating feelings of love, kindness, and compassion towards oneself and others, through the use of specific phrases or intentions [9]. Open Monitoring wherein one's thoughts, feelings, and bodily sensations without judgment are simply observed and noticed as they arise and pass away. Walking Meditation, this involves practicing mindfulness while walking, by focusing on the sensations of the feet on the ground, the movement of the body, and the environment around you.

Mindfulness meditation has been increasingly used in the cycling population as a tool to improve performance, reduce stress, and enhance overall well-being. Few countries where mindfulness meditation gained popularity among cyclists are, United States, United Kingdom, Australia. Netherlands, Canada. Mindfulness meditation has a long history and cultural significance in India. In recent years, mindfulness meditation has become increasingly popular in India as a tool for improving overall health and well-being, and there is a growing interest in using mindfulness meditation in various contexts, including sports training and performance [10]. One example of mindfulness meditation being used in sports in India is the Indian cricket team, which has reportedly incorporated mindfulness meditation into their training and preparation [11]. Additionally, there is the Art of Living Foundation and the Vipassana Meditation Centre.

Studies have shown that meditation can have a range of effects on the brain, impacting various regions and neural networks. Brain areas that have been shown to be impacted by meditation are, Prefrontal cortex: The prefrontal cortex is responsible for cognitive functions such as decision-making, attention, and working memory. Meditation has been shown to increase the thickness of the prefrontal cortex and improve its functioning. Amygdala: The amygdala is involved in emotional processing and the stress response. Meditation has been shown to reduce activity in the amygdala, which can lead to a decrease in anxiety and stress. Hippocampus: The hippocampus is involved in learning and memory. Meditation has been shown to increase the volume of the hippocampus, which may lead to improvements in cognitive function and memory. Insula: The insula is involved in introspection, or the ability to sense internal bodily sensations. Meditation has been shown to increase activity in the insula, which can improve body awareness and emotional regulation. Default mode network: The default mode network is a network of brain regions that is active when the mind is at rest and not focused on the external world. Meditation has been shown to decrease activity in the default mode network, which can lead to improvements in attention and focus. the effects of meditation on the brain can vary depending on the type of meditation practiced, the length and frequency of practice, and individual factors such as age and experience. However, these brain regions and networks are among the most commonly studied in meditation research. The length and frequency of meditation practice that would be optimal for improving a cyclist's performance would depend on several factors, including the individual's goals, level of experience with meditation, and schedule. Some studies showed improvements with practice time of 10-15 minutes while few used 20-30 minutes practice time of mindful meditation [2,7].

Research has shown that regular practice of mindfulness meditation can lead to changes in brain activity and structure, which can have positive effects on mood and emotional regulation. When practicing mindfulness meditation, individuals learn to observe their thoughts and emotions without judgment, and to bring their attention back to the present moment. This can help to reduce feelings of worry and rumination, which are common in anxiety and depression. Mindfulness meditation can also help individuals to develop a greater sense of acceptance and self-compassion, which can promote resilience and reduce the impact of stressors. Several studies have found that mindfulness meditation can be effective in reducing symptoms of anxiety and depression in both clinical and non-clinical populations. Research has shown that mindfulness meditation can improve hand-eye coordination in athletes, such as basketball players, and enhance balance in older adults. These findings suggest that the benefits of mindfulness meditation may extend to improving coordination in cyclists as well.

Mindful meditation can positively impact eating behaviour by increasing awareness and reducing impulsive or emotional eating [12]. Mindful eating is a practice that involves paying attention to

the present moment and being aware of the thoughts, emotions, and physical sensations that arise while eating. Studies have found that practicing mindful eating can lead to reduced calorie intake, improved satisfaction with food, and increased awareness of hunger and fullness signals. This is because mindfulness can help individuals become more aware of their internal cues for hunger and fullness, which can prevent overeating or mindless snacking. Mindful meditation can also reduce emotional eating by increasing awareness of negative emotions and helping individuals develop healthier coping mechanisms. When individuals are stressed or upset, they may turn to food as a way to cope. However, by practicing mindfulness, individuals can learn to identify the emotional triggers that lead to unhealthy eating habits and develop healthier strategies for managing stress and negative emotions.

The impact of mindfulness meditation can be tested and measured using a variety of methods, including self-report measures, behavioural assessments, and neuroimaging techniques. Individuals can complete standardized questionnaires that assess their mood, stress levels, and overall well-being before and after engaging in a mindfulness meditation practice. For example, the Perceived Stress Scale and the Beck Depression Inventory are commonly used measures to assess stress and depression symptoms, respectively. Researchers can also use behavioural assessments to measure the impact of mindfulness meditation on cognitive and emotional functioning. For example, individuals can complete tasks that assess attention, working memory, and emotional regulation before and after engaging in a mindfulness practice.

Advances in neuroimaging techniques have allowed researchers to examine the impact of mindfulness meditation on brain structure and function.

Physiological measures of stress and relaxation can assess changes in physiological responses to stress, such as heart rate variability, cortisol levels, and skin conductance. They can also assess changes in relaxation responses, such as changes in breathing patterns and muscle tension. Quality of life measures can assess overall quality of life, including physical health, social relationships, and emotional well-being. Examples of quality of life measures include the World Health Organization Quality of Life Scale (WHOQOL) and the SF-36 Health Survey.

Discussion

This short communication elaborates application of mindfulness on various sports and its positive effects seen in performance of the athletes. **Luberto and Shindey et al in 2018 published in the journal mindfulness, Training for Athletes: A Meta-Analysis of Randomized Controlled Trials**" This meta-analysis examines the effects of mindfulness training on athletes, focusing on performance, mental health, and stress reduction. The study concludes that mindfulness interventions have a positive impact

S. No	Study	Primary sports targeted by intervention	No. of treatment sessions	Mindfulness intervention	Total sample size	Outcome measures
1.	Manasa R Rao., <i>et al.</i> 2020 [11]	Cricket	80 minutes per session, 5 days a week for 6 weeks	Suryanamaskar Asanas Pranayama Deep relaxation Breathing practice	82	FFMQ-five facet mindfulness questionnaire
2.	Stephanie., <i>et al.</i> 2014 [7]	Cycling	One hour session twice a week for 8 weeks or 4 weeks, as per availability	Mindfulness techniques-breathwork, visualization, body scanning, mindfulness based readings  Yoga-30 min  Cycling- 30 min	45	1) Exercise induced feeling inventory (EFI)  2) Five facet mindfulness questionnaire (FFMQ)  3) Mindful eating questionnaire (MEQ)  4) General well-being schedule (GWBS)
3.	Adiwignya Nugraha Wi-dhi Harita., <i>et al.</i> 2022 [13]	Karate athletes	Once a week for six weeks, MSPE training		28	Revised Competitive State Anxiety Inventory – 2
4.	Yiwei Tang., <i>et al.</i> 2022 [14]	Athletes	One time	Survey study	433	Questionnaire
5.	Gustafsson. H., <i>et al.</i> 2015 [15]	Elite junior athletes	One time	Survey study	233	1) Mindful Attention Awareness Scale-MAAS  2) Cognitive and Affective Mindfulness Scale-Revised CAMS-R  3) The Athlete Burnout Questionnaire ABQ  4) The Perceived Stress Scale PSS  5) The Positive and Negative Affect Scale PANAS
6.	Amir Hossien Mehrsafar., <i>et al.</i> 2019 [16]	Wushu male elite athletes	8 weeks study; weekly one-hour	workshop sessions home meditation practice  group-based mindful-Wushu sessions	26	1) Competitive State Anxiety Inventory-2  2) Saliva, from which the stress markers cortisol (sCort) and alpha-amylase (sAA) were determined  3) Mindful Attention Awareness Scale-MAAS
7.	Zadeh, M. M., <i>et al.</i> 2019 [17]	Semi professional soccer players	RCT with 3 month follow up  Weekly once for six sessions lasting 45 minutes	MAC protocol-Every session included practical exercises in both mindfulness and acceptance. In-between, athletes listened to e-mailed mindfulness exercises at least 3 days a week.	45	1) Mindful Sport Performance Questionnaire

8.	R. S. K. Wong., <i>et al.</i> 2022 [5]	Sub-elite Malaysian Squash athletes	Single case A-B design, 6 weeks of baseline testing, 7 weeks of program intervention, and a retention test 4 weeks post-intervention	psycho-education, centering and cognitive defusion among other aspects as purported in MAC programs	6	1) Mindfulness Awareness Acceptance Scale (MAAS) 2) Acceptance Action Questionnaire (AAQ-II) 3) Perceived Stress Scale (PSS) 4) sport performance through both coach- and self-rated scales.
9.	Warhel Asim Mohammed., <i>et al.</i> 2018 [18]	Injured athletes	mindfulness meditation for 8 weeks (one 90-min session/week)	1) Formal practice -90 min-10-15 min of mindful check-in and sharing ideas about mindfulness meditation practise. – 30 min formal meditation practise with researcher. The formal session included these meditation skills (sitting/laying down meditation, mindful breathing and body scan meditation). –10–15 min of mindful check-in and sharing of ideas about mindfulness meditation practise 2) Participants given the CD guide of MBSR programme to practise at home – 20 min daily meditation practise. The CD guide of MBSR programme includes (sitting/laying down meditation, mindful breathing, body scan meditation, mindful eating, mindful walking meditation, meditation for anxiety and stress, mindful lying yoga, mindful standing, yoga, and loving kindness meditation. – Participants were free to choose the skills they would apply or listen to.	20	1) A Cold Pressor Test (CPT) was used to assess pain tolerance. 2) perception of pain was measured using a Visual Analogue Scale 3) Mindful Attention Awareness Scale (MAAS) 4) Depression Anxiety and Stress Scale (DASS) 5) Profile of Mood States (POMS)
10.	SP Walker., <i>et al.</i> 2013 [19]	Adolescent tennis players	Participants completed the outcome measures listed, between matches or at the end of the day.	(i) to determine whether a relationship exists between mindfulness and burnout among competitive adolescent tennis players; and (ii) if so, to determine whether adolescent tennis players with differing levels of mindfulness report different levels of burnout.	104	1) Athlete Burnout Questionnaire (ABQ) 2) Freiburg Mindfulness Inventory (FMI)
11.	Bernier., <i>et al.</i> 2009 [20]	swimmers	Interviews lasting 45-60 mins, just before and during optimal swimming experiences were taken.	Interviews were used to collect data on Flow experience. The interview included two sections. First asked to describe an optimal experience in their swimming careers, their most satisfying. Secondly, they were asked to describe a poor swimming experience, in which they were very disappointed.	10	A deductive analysis was also used to provide a validity check on the results of the inductive analyses.

12.	Bernier., <i>et al.</i> 2009 [20]	golfers	<p>Three qualitative interviews were conducted with each golfer and with the coach</p> <p>before the introduction of the intervention, at the end of the first semester (before the competition period), and again at the end of the season, with researcher listing out the behavioural indicators for each player:</p>	<p>first part of the intervention consisted of four introductory training sessions. Each stage lasted one month, presented the principles of mindfulness and acceptance using metaphors and then</p> <p>set up specific exercises. Between sessions, the players were instructed to practice a scheduled series of recorded mindfulness and acceptance exercises twice per week</p> <p>using an MP3 player. In addition, they performed an exercise called “body scan” based on MBCT. The goal of this exercise is to scan one’s own sensations and cognitions by means of focusing on breathing for about 2 min. In second semester the goal was to integrate the mindfulness and acceptance skills in the pre-performance routines of the golfers. The last stage of the routine consisted of focusing on the target, rather than on the stroke. The choice of their external attentional focus was intended to enable them to swing “automatically,” without effortful thinking</p>	7	1) Ottawa Mental Skills Assessment Tool-3 OMSAT-3
13	R. Danilo., <i>et al.</i> 2021 [8]	Volley ball	<p>A total of 14 sessions of MBMT or MBT were performed. The sessions consisted of an audio of approximately 10 min and was performed three times a week during training week and in competition after game and before bedtime in competitive. A frequency control worksheet was used to verify the number of sessions each athlete was self-completed. The equipment used for the intervention included a smartphone and a head-phone. Athletes performed the same training routine (3–4 times per week for 2 hours each) with no competition on the calendar at the time of collection. The follow-up duration was the same as the groups receiving treatment.</p>	<p>the protocols were adapted to the team’s competitive period (2 weeks). The intervention occurred in two moments: 1) After the training session, in a comfortable environment near the training area without important visual or sound stimuli; and 2) Before bedtime, when the athletes were instructed to follow the protocol.</p>	30	1) Recovery based on total quality recovery; 2) Mental fatigue visual analog scale; and 3) Physical fatigue visual analog scale.

Table 1: Description of studies with application of mindfulness on different sports.



on athletes' well-being and performance. In 2019, Gardner et al published in the journal International Review of Sport and Exercise Psychology, **"Mindfulness and Acceptance Approach in Sport Performance"** This article explores the use of mindfulness and acceptance-based interventions in sports, discussing their potential benefits for performance enhancement, stress reduction, and injury rehabilitation. Published in the journal International Journal of Sport and Exercise Psychology in 2020, **"The Effects of a Mindfulness-Based Intervention on Sport Performance, Sleep, and Well-being in Collegiate Athletes"** Le Scanff et al. This study investigates the impact of a mindfulness-based intervention on sport performance, sleep quality, and well-being in collegiate athletes. The findings suggest that mindfulness training positively influences performance and well-being while improving sleep quality. **"Mindfulness-Based Interventions for Sport Performance Enhancement: A Systematic Review and Meta-Analysis"** by Donaldson, J& Ronan, K.R. published in the journal Frontiers in Psychology in 2020. This systematic review and meta-analysis examines the effects of mindfulness-based interventions on sport performance. The study indicates that mindfulness interventions are associated with improved performance, attentional control, and emotional regulation in athletes.

Conclusion

Mindfulness training has been used extensively in improving psychological and physiological symptoms in sports athletes. Injury rehabilitation, sleep quality, attentional control, heart rate, blood pressure, vo2 max, eating patterns, etc improve. This tool can be easily used as an adjunct with other therapies or treatments for enhancing the outcomes of wellbeing in general population as well as athletes.

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