

تأثير برنامج الحد من الإجهاد القائم على التأمل الواعي والمناهج القائمة

على التأمل في الإصابات الرياضية: دراسة تحليلية

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تاريخ تسليم المقالة ٢٠٢١/٨/٢١ تاريخ قبول النشر ٢٠٢١/١٠/١٢

DOI:

الملخص

ان الهدف من هذه الدراسة التحليلية هو التعرف على تأثير التأمل الواعي على المتطلبات النفسية للرياضيين المصابين بعد ممارسة التأمل الواعي عن طريق الممارسة الرسمية وغير الرسمية عبر سبع دراسات رئيسية تم تصنيفها وتلخيصها. نتيجة لذلك ، ستوفر هذه الدراسة تحليلاً شاملاً للتطبيق النظري والعملية لبرنامج MBSR في عملية إعادة التأهيل الرياضي.

تم إجراء البحث العلمي عبر Web of Science و PubMed و Scopus و CINAHL ، للعثور على الأبحاث التي تم نشرها بين (٢٠١١-٢٠٢٠)، وذلك باستخدام مجموعة من مفاتيح الكلمات الرئيسية بالإضافة الى استخدام البحث اليدوي. قام الباحث الأول والثاني باستخراج البيانات ذات الصلة من الدراسات. تم استخلاص المعلومات حول تصميم الدراسة ، ومجتمع الدراسة ، قياس تقليل الإجهاد ، مدة تطبيق البرنامج والنتائج في شكل موحد.

واسفر البحث الاولي عن الدراسات عن ٢٤٠ دراسة علمية. مجموع تسع دراسات كانت قابلة للتطبيق بعد تطبيق معايير الاشتمال والاستبعاد. استخدمت معظم الدراسات في هذه المراجعة طرقاً كمية واستخدمت دراستان مناهج مختلطة. استخدمت إحدى الدراسات كلا من الأساليب الكمية والنوعية ، بينما استخدمت دراسة أخرى كلا من الأساليب التجريبية والكمية و قامت بتقييم كل من تحمل الألم وإدراك الألم لدى الرياضيين المصابين أثناء اختبار Cold Pressor Test. و كانت بقية الدراسات الاخرى وصفية وطبقت معظم الدراسات تقنيات MBSR أو غيرها من الأساليب القائمة على التأمل الواعي مع الرياضيين المصابين. استخدمت إحدى الدراسات تصميم دراسة مقطعية (cross-sectional study design). جدير بالذكر كان هناك مزيج من التصميمات المنهجية التي استخدمها الباحثون.

أوضحت هذه الدراسة التحليلية نتيجة واحدة لتكييف وفعالية برنامج MBSR في إعادة تأهيل الإصابات الرياضية. وذلك من خلال ممارسة التأمل الواعي بطريقتيها الرسمية وغير الرسمية من قبل الممارسين. لا يتم استخدام MBSR

فقط مع المجموعات السريرية ، ولكن أيضًا مع المجموعات غير السريرية. وبالتالي ، فإن دمج MBSR و MBA في العلاج الرياضي من شأنه أن يساعد في معرفة القيمة العملية والمعرفية فيما يتعلق بممارسة التأمل الواعي في الرياضة.

الكلمات المفتاحية: (التأمل الواعي، الإصابات الرياضية ، العلاج الرياضي، الرياضيين المصابين).

Addressing the Effect of Mindfulness Based Stress Reduction and Mindfulness Based Approaches in Sport Injury: A Systematic Review

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ABSTRACT

The aim of this review was to determine the effect of mindfulness on the psychological demands of injured athletes following formal and informal mindfulness practice across seven major studies that were graded and summarized. As a result, this review will provide a comprehensive examination of MBSR's theoretical and practical application in the sport rehabilitation process.

The scientific search was conducted via the Web of Science, PubMed, Scopus, and CINAHL, to find research that had been published between (2011-2020). Using a combination of these groups of keywords, a manual search has also been supplemented. The first and second researcher extracted relevant data from the studies. As for the information on study design, study population, stress reduction measurement, duration of intervention, and results were extracted in a standardized form.

The initial search yielded 240 articles. A total of nine studies were deemed applicable following application of the inclusion and exclusion criteria. Most studies in this review used quantitative methods and two studies used mixed approaches. One study used both quantitative and qualitative methods, whilst another study used both experimental and quantitative methods. They assessed both pain tolerance and the perception of pain in injured athletes during a Cold Pressor Test. The rest of the studies were descriptive and most of the studies applied MBSR techniques or other mindfulness-based approaches with injured athletes. One study used a cross-sectional study design. There was a mix of methodology designs that had been used by the researchers.

This systematic review clarified a promising outcome to adapt MBSR into sport injury rehabilitation. This is through formal and informal mindfulness practice by practitioners. MBSR is not only used with clinical populations, but also with non-clinical populations. Thus, the integration of MBSR and MBA into sport therapy would create a valuable understanding regarding mindfulness practice in sport, in both theoretical and practical knowledge.

Keywords: (Mindfulness, Sport Injury, Sport Therapy, Injured Athletes).

Introduction

Gradual advances in the realm of health have been documented since Kabat-Zinn created Mindfulness Based Stress Reduction (MBSR) in 1979. As a result, mindfulness-based approaches (MBA) are finding their way into a variety of scientific domains. Sport is one of the sectors where mindfulness has been implemented. Many studies have effectively demonstrated how mindfulness can improve athletes' performance [1].

In this review, the focus is on MBSR and MBA in the rehabilitation of sport injury. The gap in the literature is a considerable area which has not received sufficient attention to integrate mindfulness practice as a part of sport injury rehabilitation. Therefore, through this review it can be clarified that, there are potential benefits to MBSR and other mindfulness approaches during sport rehabilitation. Another point for consideration, is that mindfulness practice can be a valuable system for athletes to accept their new situation after being injured. The aim of this review was to determine the effect of mindfulness on the psychological demands of injured athletes following formal and informal mindfulness practice across seven graded studies. As a result, this review will provide a comprehensive examination of MBSR's theoretical and practical applicability in the sport rehabilitation process. Another objective is to address the future direction that researchers can take by practicing MBSR and MBA in sport injury rehabilitation.

It's crucial to note that sports injuries can have psychological and physiological consequences on players [2]. Similarly, Nicholl, Coleman, and Williams [3] observed that sports-related injuries are relatively common. It's worth noting that there are 29.7 million injuries among athletes in the United Kingdom alone every year. Leppanen et al., [4] pointed out that there are some drawbacks to this, as well as increased dangers associated with engaging in sports. This is especially true when players become injured and miss their sports for a period, or when a player's career is cut short due to recurrent serious injuries. Even with all of the aforementioned, physical activity has a many of health advantages.

Despite improvements in sports equipment quality, Grosman [5] argues that the mechanisms for avoiding severe injuries are still underestimated, because injury is still a feature of physical exercise. Furthermore, the number of injured athletes has increased. The reasons for this are high-intensity training and an increase in the number of people participating in sports activities. Reese, Pittsinger & Yang [6] and Heaney [7] mentioned that anxiety, depression, decreased self-esteem, loss of identity, anger, isolation, fear, and tension are among the psychological disorders that occur when athletes are injured. Thus, sports injuries have a negative impact on athletes' health. Furthermore, sport injury causes an imbalance and discomfort in athletes' lives after injury, and this physical inability prevents them from optimal sport performance.

From this perspective, and according to recent evidence [8; 9; 7; 11; 6; 2; 10; 12; 13], psychological interventions are important in order to play an effective role in the rehabilitation process with injured athletes; the same can be said for traditional treatments. More specifically, psychological interventions reduce negative thoughts and psychological disorders that occur as a result of sport injuries. Heaney [7] stated that, many studies have been conducted on psychological interventions to improve athletes' attitudes and reduce negative thoughts as a strategy for injury rehabilitation [14 - 21]. These studies discovered significant differences by using Sport Injury Rehabilitation Personal, with positive outcomes regarding the psychological aspects of injured athletes.

However, the use of psychological interventions appears to be limited in the case of sports injuries. According to Grosman [5] and Dawes & Roach [22], negative thoughts and experiences are common for athletes during and after injury. Understanding the psychological response is thus the first step in planning rehabilitation for injured athletes. This is due to the fact that emotions cause tensions and worries. More specifically, both tensions and concerns impede athletes' ability to perform as well as the injury rehabilitation process. Psychological interventions are dependent on new tendencies in

the areas of sport injury rehabilitation and health care. The mind and body interact as one system and play an important role in the etiology and reduction of pain [22].

Venkatesh et al. [23] found that long-term meditation practice leads to significant changes in consciousness. Further, they also found a significant change in self-awareness, arousal, and perceptual experience. Stahl & Goldstein [24] emphasized that a body scan is one mindfulness technique that requires the individual to direct their attention to a particular part of the body during mindfulness practice. This can be through mindful breathing or being aware of what the current sensations are. Furthermore, by living in the present moment besides paying attention to and being aware of your physical sensations, the body scan can become a very convenient way of making contact with your body. Thus, a body scan can be a useful technique for reducing physical pain, anxiety, and stress.

Technique of MBSR and MBA Work in the Literature Review

Validity of MBSR

MBSR is a common mindfulness practice that developed by Kabat-Zinn in 1979 at the University of Massachusetts Medical Center in Worcester. Substantially, this program was designed to alleviate chronic pain for patients. Besides, MBSR is used to adapt to medical conditions that can deliver regular mindfulness practice through self-regulatory attitudes, as well as to manage both emotions and stress [25]. .

Krasner [26] revealed that until recent times, mindfulness had not been clearly known as a method for health care strategies; however, current empirical studies have shown that MBSR is becoming more common and rapidly growing. Notably that, is the Centre for Mindfulness in Medicine, Healthcare, and Society at the University of Massachusetts Medical School, which has determined that the number of clinics, hospitals, and other facilities related to MBSR and training now totals approximately 240 worldwide.

Kabat-Zinn [27] referred to a large amount of research in the area of MBSR and its clinical application, which have become important in recent times. The importance of

MBSR may stem from the fact that mindfulness treatment has numerous benefits for both the mind and the body. Morone et al. [28] discovered that MBSR was a convenient alternative medicine for chronic pain and psychological disorders, such as anxiety. In terms of MBSR's validity, it should be noted that it has been used in a variety of domains e.g. pain reduction, such as back pain or cancer treatment, and stress management, among others.

Reliability of MBSR and MBA

MBSR "is a structured group program that employs mindfulness to alleviate suffering associated with physical, psychosomatic and psychiatric disorders. The program, which is nonreligious and nonesoteric, is based upon a systematic procedure to develop an enhanced awareness of moment-to-moment experience of perceptible mental processes" [29:p.35]. Hempel et al., [30] compared different meta-analyses of MBSR to demonstrate its health benefits, in particular reviews on depression, chronic illness, mental illness, distress, and substance use. Notably, they reviewed 109 mindfulness randomised controlled trials, and these reviews proposed differential effects of MBSR, mindfulness based cognitive therapy and other mindfulness-based interventions. The greatest benefits of MBSR were indicated in chronic illness and psychological outcomes compared to the control group. Other mindfulness interventions showed the most beneficial effects for depression. With regard to mindfulness based cognitive therapy, reviews suggested the consistent benefits for mental illness. In addition, most of the research with regard to mindfulness is openly available to those who wish to read it.

Methodology

Inclusion and Exclusion Criteria

In this review, the inclusion criteria for incorporating studies were: (a) mindfulness based stress reduction programs on injured athletes; (b) mindfulness based interventions focused on mindfulness as a tool to use with athletes as a part of the psychological rehabilitation process. This could be on clinical or non-clinical populations; (c) clinical

trial studies followed mindfulness approaches with injured athletes. One exclusion criterion was studies that were not written in English.

Search Strategy

The scientific search was conducted in Web of Science, PubMed, Scopus, and CINAHL to find research that had been published between 2011-2020. Keyword combinations involved 'Mindfulness Based Stress Reduction' OR 'Mindfulness Based Approaches' OR 'Mindfulness Intervention', OR 'Mindfulness Practice' AND 'Sport Injury' OR 'Sport Therapy', OR 'Sport Rehabilitation', AND 'Injured Athletes' OR 'Injury'.

Review Process

The research titles and abstracts were downloaded into RefWorks, and duplicates were removed. The second reviewer used the same search terms and filters as the first reviewer to confirm the same number of papers. The review's inclusion and exclusion criteria were assessed independently.

Data Extraction

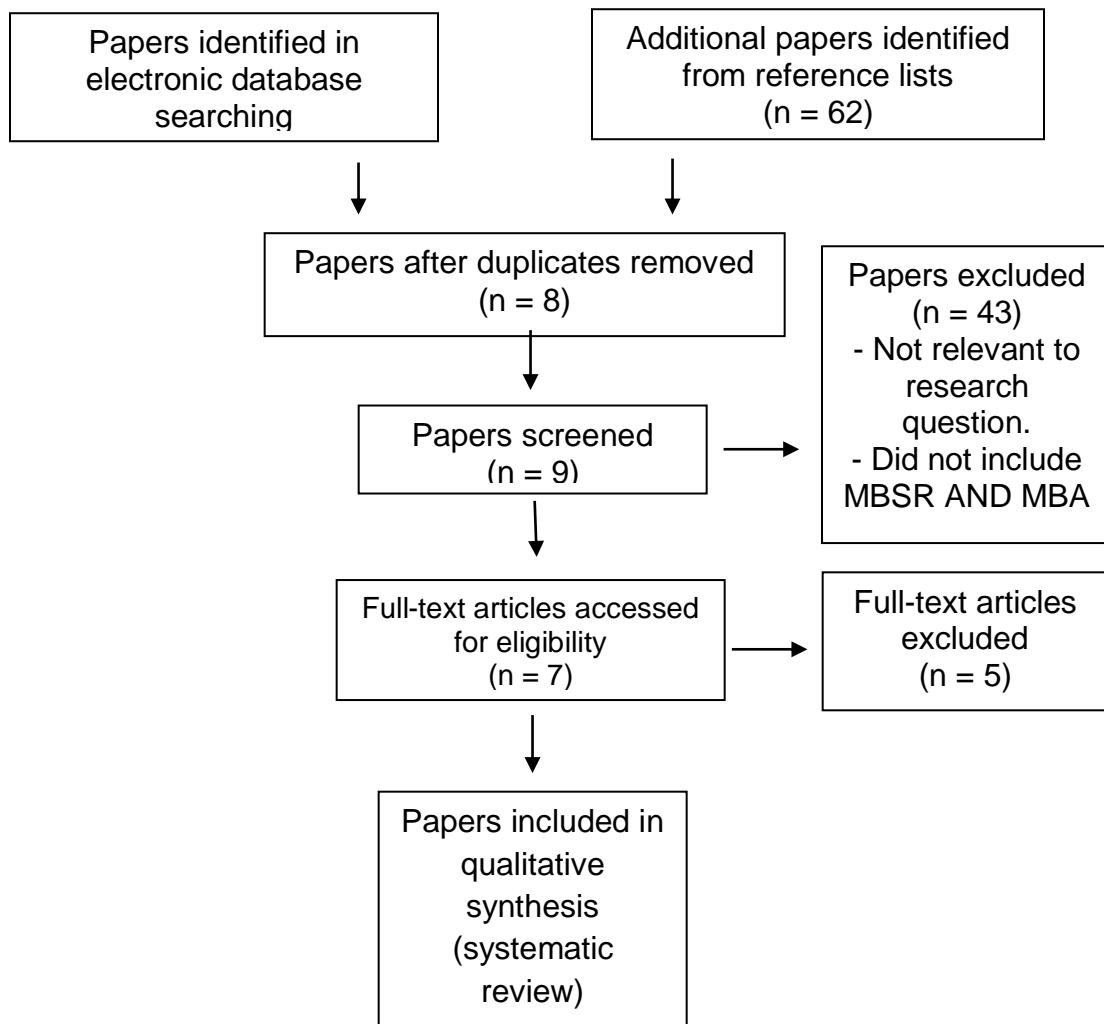
The first researcher gathered pertinent data from the studies. The information on study design (author, year of publication, location, and type of study), study population (inclusion and exclusion criteria, number of participants, gender, age, weight, and height), stress reduction measurement, duration of intervention, and results were extracted in a standardized form and rechecked by a second researcher.

Results

The initial search yielded 240 articles and 5 articles remained after duplicates were removed. A total of nine studies were deemed applicable following application of the inclusion and exclusion criteria. Table 1 shows the studies that were included in the current review that applied MBSR or MBA to injured athletes. It is of note that nine studies were selected for the final review. Most studies in this review used quantitative methods and two studies used mixed approaches. Cooper [31] has used both quantitative and qualitative. Mohammed, Pappous and Sharma [13] used both experimental and quantitative methods. They assessed both pain tolerance and the perception of pain in

injured athletes during a Cold Pressor Test. The rest of the studies were descriptive and most of the studies applied MBSR techniques or other mindfulness-based approaches with injured athletes. One study used a cross-sectional study design Lee et al., [32]. It was found that across nine studies, there was a mix of methodology designs that had been used by the researchers.

Prisma Flowchart



Quality Assessment

One strong quality Naderi et al., [33], two moderate quality [34; 35] and one weak quality [32], assessments were drawn for non-randomized studies. These ratings were due to a range of factors including study design, selection bias, confounders, blinding, methods,

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and withdrawals. None of these studies mentioned withdrawals and drop-outs (Table 2). Risk of bias across the three randomized studies [36; 13; 37] ranged from high to low and neither were considered to be completely high quality (Table 1). Random sequence generation and allocation concealment were presented as low and unclear for the three studies. Only one study blinded participants and outcome assessments to the interventions, thereby posing a low risk of bias [37].

Table 1: Cochrane Risk of Bias Assessment for Randomised Trials included in review

	Random sequence generation	Allocation concealment	Selective reporting	Other sources of bias	Blinding (participants and personnel)	Blinding (outcome assessment)	Incomplete outcome data
Ivarsson et al. (2015)	Low	Low	Low	High	Unclear	Unclear	Low
Mohammed et al. (2018)	Unclear	Unclear	Low	Unclear	Low	Low	Low
Zadeh et al. (2019)	Low	Unclear	High	High	High	High	Low

Table 2 EPHPP Quality assessment for non-randomised studies included in review

	Selection bias	Study design	Confounders	Blinding	Data collection methods	Withdrawals and drop-outs	Global rating
Mahoney and Hanrahan (2011)	Moderate	Moderate	Moderate	Weak	Strong	N/A	Moderate
Lee et al. (2015)	Moderate	Moderate	Weak	Weak	Moderate	N/A	Weak
Moreno et al. (2017)	Strong	Strong	Moderate	Weak	Strong	N/A	Moderate
Naderi et al. (2020)	Strong	Moderate	Strong	Strong	Strong	N/A	Strong

Discussion

As previously stated, mindfulness has been used in a variety of scientific fields, whether in a clinical or non-clinical population. Sport, without a doubt, is one of the areas where mindfulness has been integrated. Many researchers who have used mindfulness in sports have provided evidence for its role [38; 39]. According to a recent study by Kabat-Zinn [40], mindfulness has been integrated into mainstream health for over a decade, particularly medicine and health care. It has also increased in other scientific domains such as sport, law, education, government, and criminal justice. However, to our knowledge, this is the first attempt in the literature to investigate the role of MBSR and

other MBA on injured athletes. Furthermore, mindfulness has been the subject of experimentation and clarification through various methods used by researchers, specifically, experimental methods [41; 42; 13], quantitative methods [43; 44], and qualitative methods [45]. In seven significant studies that were assessed and summarised, the primary purpose of this review was to determine the influence of mindfulness on the psychological demands of injured athletes following mindfulness practice. Thus, this review will provide a broad consideration of the theoretical and practical familiarity of MBSR in the sport rehabilitation process.

The findings of seven pieces of research in this systematic review, which considered the MBSR and MBA interventions with injured athletes during the sport rehabilitation process, have been summarised. The foundation of most of these studies was based on descriptive design. Only one study used an experimental test with injured athletes in the pre and post-MBSR intervention. Other quantitative studies had common psychological models during the integration of mindfulness practice into sport injury. Mindfulness practice in this systematic review was based on MBSR or other MBA during their treatment with injured athletes. These studies provide a considerable understanding of the role of MBSR in injured athletes. Thus, studies can be rated as good quality in terms of sample size, the strength and quality of assessments and the duration of the program.

Previous research has shown that mindfulness is an effective method for managing and reducing the intensity of chronic pain [47], as well as for reducing nociceptive pain conditions, lowering pain perception [48], and increasing pain tolerance [49; 13]. When it comes to coping with pain, mindfulness not only provides the ability to manage pain, but it also allows the pain to be experienced deeply. Furthermore, accepting pain is another way to deal with it. In this context, de Boer et al. [42] concluded that patients with higher rates of pain acceptance reported fewer pain complaints. Another encouraging aspect is that meditation practice can improve mindfulness and well-being in both clinical [51] and non-clinical [52] populations.

Through Kabat-Zinn's [53] observations and through applying a training course, which consisted of 10 weeks of mindfulness, it was clearly shown that there had been an improvement in patients' psychological states. Fundamentally, MBSR includes some techniques such as breathing meditation, body scans, sitting meditation, compassion and loving kindness meditation, which can provide a relaxed state and calmer mind. As a consequence, practitioners, whether patients or health practitioners, could reconnect with their mind and body and listen to themselves deeply. Moreover, MBSR techniques can teach practitioners how they can go through different situations in life. Additionally, Kabat-Zinn indicated that the program reduced the proportion of pain by controlling all levels of chronic pain during the practice of mindfulness between a period of 2.5 to 7 months.

Morone and colleagues [54] emphasized the importance of mindfulness in the treatment of chronic pain patients. The reason for this is that patients could learn to use mindfulness approaches to separate the cognitive emotional aspects of pain from the physical sensations of pain, thereby reducing the proportion of pain. Furthermore, they discovered that people who participated in an MBSR program for eight weeks had an increase in pain reduction when compared to a control group who followed a health education protocol. Cassidy et al., [55] discovered that research has shown that MBSR has a direct benefit for patients with long-term chronic pain; additionally, mindfulness practice reduces somatic pain and psychological conditions. The researchers also discovered that after three months of an MBSR program with patients suffering from lower back pain, patients experienced less depression, lower levels of disability, and no more pain.

Another study by Mohammed, Pappous and Sharama, [13] finding revealed the utility of MBSR during sport rehabilitation treatment with injured athletes, particularly in terms of increasing pain tolerance and awareness. Baer [56] referred to research on the impact of MBSR on patients with pain disorders [57 - 59]. This study gathered information about

chronic pain from patients who had used MBSR. Furthermore, the findings of these studies revealed a significant improvement in the patient's perception of pain.

Research has shown that there is a significant relationship between MBSR and psychological health outcomes such as life satisfaction, adaptive emotion regulation, less negative thoughts, psychopathological symptoms, and positive self-influence [60]. According to Gilbert and Waltz [61], mindfulness assists in the control of passive feelings and the development of thoughts. Brown and Ryan [62] revealed that, mindfulness is a state that involves paying attention to what is happening in the present moment. Mindfulness, to be accurate, plays an important role in reducing negative thoughts. As a result, it is clear that MBSR has become more popular among people because it has a positive impact and is simple to implement.

In this regard, mindfulness is widely accepted as a method of patient care. Mindfulness is based on stress reduction, and positive results for depression, psoriasis, pain, and biochemical evidence of making the immune system more active have been found [63]. Evidence indicated that MBSR and other MBA can be a suitable toolkit, that can be used during sport rehabilitation with injured athletes alongside physiotherapy treatment. It is notable that, there is a lack of research in MBSR and MBA concerning sport injury, however there were promising results in terms of integrating mindfulness practice into sport therapy [36; 64; 32; 65; 66; 13; 31; 37].

Implications

Based on studies that are summarized in this review, the mindfulness practice that has been delivered to injured athletes found that MBSR techniques were an effective influence and served as an additional tool that can be used during sport rehabilitation. It is notable that, there was a promising implication of mindfulness practice in injured athletes. Based on the findings of these studies, incorporating MBSR techniques and MBA into sport rehabilitation helped injured athletes to increase their pain tolerance,

their pain management and decrease their psychological distress, as well as increase mindfulness.

In other words, these techniques enabled athletes to cope with physical pain in a more effective manner, without being burdened by negative thoughts of injury. As a result, and based on the findings of this review, it is clear that MBSR can be a suitable technique for injured athletes to manage their negative emotions and reactions after being injured, allowing them to achieve better results in the recovery process. The findings of these studies also show that mindfulness, in addition to sport therapy, can play an important role in the recovery period.

To back up the current finding, Mahoney and Hanrahan [34] discovered that practicing mindfulness with injured athletes with anterior cruciate ligament injuries helped them improve their rehabilitation protocol and their overall well-being. As a result, mindfulness has the potential to become an essential component of sport therapy's therapeutic toolkit. Another study found that an injured athlete's ability to tolerate pain is related to how quickly they recover from injury [66]. These studies provided useful information about mindfulness practice and MBSR techniques. Furthermore, there were additional interpretations of how mindfulness had worked for injured athletes and what aspects should be improved in the future.

Limitation of the Study

The main limitation of the current review is that there were few studies that addressed the MBSR program and other mindfulness based interventions for injured athletes. These studies, which implemented mindfulness practice, had been provided to injured athletes as part of a sport psychology rehabilitation, as well as for injury prevention. The reason for providing mindfulness in terms of mental health is specifically related to the nature of the participants' professions. The study's clinical population consisted of injured athletes who had sustained severe injuries. As a result, they had been away from their sports for an extended period of time. The efficacy of mindfulness practice should be highlighted in relation to a better understanding of mental health in injured athletes [13; 36].

Sport injury, alongside physical activity, always presents the possibility that all athletes, regardless of the severity of their injuries, will be exposed to it during their careers. As a result, it has a negative impact on an athlete's life and career. Furthermore, the consequences of sports injuries not only jeopardize athletes' careers, but also have a negative impact on physical and psychological health, occupational aspects, and economic factors [67]. According to Santi and Pietrantion [68], some sports injuries have little or no impact on athletes' careers; however, other sports injuries can cause athletes to withdraw from their sports. Similarly, other consequences of sport injury include rehabilitation costs and lost time, which have an impact on both injured athletes and sport organizations.

Despite the overwhelming concerns about athletic achievement, Markser [69] stated that professional athletes experience mental stress, social consequences, and emotional strains. It should also be noted that there has been little research into the emotional strains that athletes face. Mental health has always been an important factor in athletes' progress and performance [70]. Mindfulness interventions have grown in popularity as a health-care intervention. It has been used with patients as a natural pain reliever, a way to improve psychological disorders, and a way to improve quality of life and wellness [64]. Importantly, this prevalence began with the first approach of MBSR, developed by Kabat-Zinn (1979), for patients suffering from chronic pain and providing education in managing the effects of anxiety and stress [64]. The MBSR program can be thought of as "complementary medicine" that medical staff, particularly therapists, can provide to patients suffering from chronic pain. Furthermore, the positive effects of MBSR on the effectiveness of regular mindfulness practice in dealing with both physical and mental health disorders have been documented in the literature [71]. Additionally, previous research in the field of mindfulness practice and mental health has revealed an improvement in mental health indicators in both clinical and non-clinical populations [32; 72; 73; 65; 13].

Recommendations

This systematic review clarified a promising outcome to adapt MBSR into sport injury rehabilitation. This is through formal and informal practice by practitioners. Notably, this research has provided significant guides for researchers to take into consideration for future research. As mentioned earlier in this review, MBSR is not only used with clinical populations but also with non-clinical populations. Thus, the integration of MBSR into sport therapy would create a valuable understanding regarding mindfulness practice in sport, in both theoretical and practical knowledge. This would be through conducting further research into MBSR with injured athletes.

It can be concluded from the studies that have been summarised in this systematic review, that there are several recommendations concerning the practice of MBSR in the sport rehabilitation process.

- 1- It is preferable to start with the short term practicing of MBSR or any other mindfulness based practice to avoid any kind of side effects such as boredom, tiredness, and sleepiness.
- 2- In addition, the nature of the population is another point that researchers must pay attention to, because in some cases, researchers need to modify MBSR or another type of MBA.
- 3- Another significant point is that, practicing MBSR or MBA in a group might have better consequences for the cultivation of mindfulness on a daily basis if it does not interfere with the belief systems that people hold.
- 4- Furthermore, assessing informal meditation practice is important in understanding daily mindfulness practice. With regard to research methodology, and consistent with Mohammed (2018), paying more attention to qualitative methods with injured athletes after mindfulness practice can provide a better understanding in regard to the integration of MBSR into sport therapy.

Conclusion

There is a significant increase in the use of mindfulness in various types of sports. The role of mindfulness in particular, and how it affects athlete performance by improving it. The integration of MBSR and MBA with sport injury rehabilitation is one of this review's key strengths.

To the best of our knowledge, this is the first study to look into the effects of MBSR and MBA on injured athletes. There have been few studies on the impact of MBSR, particularly on injured athletes. Furthermore, each study in this review was designed with a specific methodology to investigate the role of MBSR and MBA based on the characteristics of the participants.

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