



## Analysis of health and wellness programs and their relationship to injuries in football and futsal players: a systematic review

*Análisis de los programas de salud y bienestar y su relación con las lesiones en jugadores de fútbol y futsal: una revisión sistemática*

### Authors

Cristiana Mercê<sup>1,2,3,4</sup>  
Bárbara Tavares<sup>1</sup>  
Rafael Oliveira<sup>1,3,5</sup>

1 Sport Sciences School of Rio Maior Santarém Polytechnic University, School of Sport (Portugal)

2 Sport Physical activity and health Research & INnovation cenTer (SPRINT), Santarém Polytechnic University (Portugal)

3 Life Quality Research Center (CIEQV), Santarém Polytechnic University (Portugal)

4 Interdisciplinary Center for the Study of Human Performance (CIPER), Faculty of Human Kinetics, University of Lisbon (Portugal)

5 Research Center in Sports Sciences, Health Sciences and Human Development (CIDESD), Santarém Polytechnic University (Portugal)

Corresponding author:  
Rafael Oliveira  
[rafaeloliveira@esdrm.ipsantarem.pt](mailto:rafaeloliveira@esdrm.ipsantarem.pt)

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### Abstract

**Introduction:** Football and futsal are associated with a high risk of injuries and consequently, the development of mental health problems. Health and wellness programs aimed at reducing the incidence of injuries, but these areas remain insufficiently explored in the literature, therefore, their effectiveness is still uncertain.

**Objective:** This study aimed to present a systematic review that analyzes the effects of health and well-being programs on the incidence of injuries in football and futsal athletes.

**Methodology:** A search was conducted in PubMed, EBSCO, and Web of Science databases to select relevant literature on the topic. The selected literature was based on health and wellness programs applied to football players, and after implementation, the difference in the incidence of injuries examined. Studies that used experimental study design to compare athletes before and after the intervention were selected.

**Results:** Based on the physiotherapy evidence database scale, criteria were applied to assess the interventions' evidence. Seven studies were classified as having good methodological quality, while four were classified as moderate and one as poor. From a total of 329, 12 studies were selected based on the eligibility criteria.

**Conclusions:** The different studies selected addressed various types of programs (e.g., Mindfulness, Stress Inoculation Therapy and Biofeedback, Psychological and physiotherapy, Yoga). The programs reduced the incidence of sports injuries in football athletes and improved individual and team performance and reduced muscle tension. However, research is scarce, while studies are needed.

### Keywords

Injury; mental health; soccer; futsal; youth.

### Resumen

**Introducción:** El fútbol y el futsal están asociados con un alto riesgo de lesiones luego, con el desarrollo de problemas de salud mental. Aunque existen programas de salud y bienestar para reducir lesiones, la literatura aún los explora poco, por lo que su efectividad sigue siendo incierta.

**Objetivo:** Este estudio tuvo como objetivo presentar una revisión sistemática sobre los efectos de los programas de salud y bienestar sobre la incidencia de lesiones en atletas de fútbol y futsal.

**Metodología:** Se buscaron estudios en PubMed, EBSCO y Web of Science. La literatura seleccionada se basó en programas de salud y bienestar aplicados a jugadores de fútbol y, después de su implementación, se examinó la diferencia en la incidencia de lesiones. Se seleccionaron estudios que utilizaron un diseño experimental para comparar a los atletas antes y después de la intervención.

**Resultados:** Siete estudios se clasificaron como de buena calidad metodológica, mientras que cuatro se clasificaron como de calidad moderada y uno como de calidad pobre. De un total de 329, 12 estudios fueron seleccionados según los criterios de elegibilidad.

**Conclusiones:** Los diferentes estudios abordaron varios tipos de programas (e.g., Mindfulness, Terapia de inoculación del estrés y biorretroalimentación, Psicología y fisioterapia, Yoga). Los programas redujeron la incidencia de lesiones deportivas en fútbol, mejoraron el rendimiento individual y de equipo y redujeron la tensión muscular. Sin embargo, la investigación es escasa y se necesitan más estudios.

### Palabras clave

Lesiones; salud mental; fútbol; futsal; jóvenes.

## Introduction

Football is one of the most popular sports worldwide, with approximately 260 million people enrolled in football clubs, ranging from amateur to professional levels (Hulteen et al., 2017). Futsal is an indoor sport that shares several similarities with football, and it is also played globally by males and females, across professional and amateur leagues. It is one of the sports experiencing a significant growth in its participant base and garnering widespread social recognition worldwide (Méndez-Dominguez et al., 2022). However, despite its widespread popularity, these sports are also accompanied by a high risk of injuries. Football and futsal are characterized by high physical contact and the performance of specific motor skills (e.g., running, sprints, shots, jumps, direction changes, and falls) with different demands on motor abilities (Faude et al., 2013; Krstrup et al., 2010; Pontes & Rodrigues, 2016).

According to a scientific study by Ekstrand et al. (2011) conducted by the Union of European Football Associations, which aimed to analyze the injury incidence among 23 teams selected, a total of 4,483 injuries were reported, resulting in an incidence of 8 injuries per 1,000 hours. On average, a player suffers 2 injuries per season, and a team with approximately 25 players can expect around 50 injuries per sports season. In Europe, the costs associated with injuries amount to around 2.4 billion euros annually, with approximately 20% of non-fatal injuries originating from sports (Kisser & Bauer, 2012). This is a major concern for clubs due to the lower player availability and club financial costs as well as the higher risk of subsequent injury (Fanchini et al., 2020).

Due to the high incidence of injuries per season, the potential relevance of mental health problems (emotional or psychological) becomes increasingly prominent (Jansen et al., 2019; Ozan & Secer, 2022). Due to the current lack of attention given to the psychological dimension in sports, athletes may face various complications that can have serious and irreparable consequences (Habibi et al., 2017; Pastrana et al., 2024). On the other hand, it is undeniable that regular football and futsal practice can bring health benefits (Eberl et al., 2019). A recent study has shown that recreational futsal is less stressful than professional competition, as the demands are lower and the mental health of athletes is better preserved (Maliqi et al., 2022). Therefore, it can be said that this health issue has two aspects: on the one hand, sports can prevent mental health disorders, and on the other hand, the pressure imposed on players can contribute to the development of disorders such as depression or anxiety (Chekroud et al., 2018; Friedrich & Mason, 2017).

There are several factors that can lead an athlete to exhibit symptoms of stress and/or anxiety. These symptoms can be triggered by physical or environmental needs, but primarily by high expectations and pressure caused by external or internal reasons (Laux et al., 2015). Among football players who are still active and suffer from prolonged injuries, 3% start to develop smoking behaviors, 37% develop anxiety or depression, and 58% have disordered eating (Gouttebarga et al., 2016). Players who have suffered three or more severe injuries throughout their careers are two to four times more likely to develop mental health problems (Sanders & Stevinson, 2017). On the other hand, a study conducted on five teams participating in the National Futsal League in 2020 showed that teams with higher mental toughness also had a higher number of goals scored, fouls committed, shots on target, tackles made, assists, and victories (Aizava et al., 2023). Thus, while injuries can predispose athletes to negative psychological outcomes, such as anxiety, depression, and disordered eating, the ability to develop and maintain high mental toughness can not only mitigate these effects but also enhance performance.

Therefore, the aim of this study was to systematically review and synthesize the relationship between any measure related to injuries, health, and well-being in football and futsal players and the implementation of health and well-being programs.

## Method

The guidelines of PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) were followed for this systematic review (Page et al., 2021). Moreover, the systematic review was registered in the OSF platform with the project number [osf.io/dxpe9](https://osf.io/dxpe9).



## Eligibility Criteria

For the current systematic review, the inclusion and exclusion criteria were based on the PICOS acronym (Methley et al., 2014), as presented in Table 1.

Table 1. Eligibility criteria

PICOS	Inclusion Criteria	Exclusion Criteria
Population	Healthy football or futsal players currently active, of any age, gender, or competitive level.	Any athlete from another sport and/or currently inactive.
Intervention	Football or futsal players who are exposed to a mental health program.	Another type of combined programs, whether combined with mental health programs.
Comparison	Compare pre-versus post-program.	Comparison between different programs that do not include pre-versus post.
Outcomes	Any measure related to injuries, health, and well-being.	Acute effects of single-session programs. Technical/tactical or other factors.
Study Design	Experimental studies, which can be randomized or non-randomized.	Cross-sectional studies and review studies.

## Information Sources

The following databases were used to search for the studies analyzed in this systematic review: PubMed, EBSCO, and Web of Science. The last search was conducted on May 30, 2025 and the studies published from the inception of each respective database until May 30, 2025 were considered for inclusion. Original articles published in peer-reviewed scientific journals or "ahead of print" were eligible for consideration. There was no language restrictions for the articles gathered.

## Search Strategy

The following keywords and synonyms were included in the title of the searches: (soccer OR football OR futsal) AND (mental health) OR (mental toughness) OR burnout OR (psychological symptoms) OR (physiological well-being) OR (sport psychology) OR (psychological stress) OR (psychological diagnosis)) AND (injury OR (risk of injury) OR (injury incidence)) AND (program OR intervention). The full search can be found in table 2.

Table 2. Search strategy

Database	Specifics of the database	Search strategy	Number of articles found
PUBMED	None.	((soccer OR football OR futsal) AND (mental health) OR (mental toughness) OR burnout OR (psychological symptoms) OR (physiological well-being) OR (sport psychology) OR (psychological stress) OR (psychological diagnosis)) AND (injury OR (risk of injury) OR (injury incidence)) AND (program OR intervention) [Title/Abstract]	46
WEB OF SCIENCE	The search for the title and abstract includes keywords and the assigned "topic" as well.	((soccer OR football OR futsal) AND (mental health OR mental toughness OR burnout OR psychological symptoms OR physiological well-being OR sport psychology OR psychological stress OR psychological diagnosis) AND (injury OR risk of injury OR injury incidence) AND (program OR intervention)) [Title/Abstract]	130
EBSCO	None.	TI (soccer OR football OR futsal) AND (mental health) OR (mental toughness) OR burnout OR (psychological symptoms) OR (physiological well-being) OR (sport psychology) OR (psychological stress) OR (psychological diagnosis)) AND (injury OR (risk of injury) OR (injury incidence)) AND (program OR intervention)	153

## Selection and Data Collection Processes

All articles were evaluated by two authors through titles and their abstracts in order to exclude duplicates and articles that did not meet the inclusion criteria. In addition, the abstracts that did not provide enough information were selected for a complete evaluation of the full article. After that process, the same two authors evaluated all the articles in full to carry out a second selection according to the inclusion criteria. The lack of consensus between the two investigators was resolved in a meeting with the



third investigator (e.g., González Castro et al., 2025; Mercê et al., 2021). Then, BT and CM extracted the data while RO reviewed the process.

### **Data Items**

The following data were extracted from the selected articles: population characteristics such as sample size, sex, age, aim, instruments, intervention (which included sessions number and duration) and the main results.

### **Study Risk-of-Bias Assessment**

The Physiotherapy Evidence Database (PEDro) rating scale was used to assess the quality and risk of each study to ascertain the internal and statistical validity of each study. The scale facilitates the evaluation of eleven specific study criteria, of which ten are used to determine the overall score of the article, ranging from 0 (lowest quality) to 10 (highest quality). Typically, score thresholds provide a qualitative rating of "poor" (less than 4 points), "fair" (4-5 points), "good" (6-8 points), and "excellent" (9-10 points). The scale assesses the following items: C1, indicating that eligibility criteria were specified; C2, indicating that participants were randomly allocated to groups; C3, indicating that allocation was concealed; C4, indicating that groups were similar at the start of the study regarding the most important prognostic indicators; C5, indicating that blinding was applied to all participants; C6, indicating that all therapists administering the therapy were blinded; C7, indicating that all assessors measuring at least one key outcome were blinded; C8, indicating that measures of at least one key outcome were obtained from over 85% of participants initially allocated to groups; C9, indicating that all participants for whom outcome measures were available received the allocated treatment or control condition, or when this was not the case, data for at least one key outcome were analyzed using "intention to treat"; C10, indicating that the results of statistical comparisons between groups are reported for at least one key outcome; C11, indicating that the study provides point estimates and variability measures for at least one key outcome (Maher et al., 2003).

### **Certainty Assessment**

Based on the physiotherapy evidence database scale, Tulder et al. (2003) criteria were applied to assess the interventions' evidence. Thus, a study with a physiotherapy evidence database score of  $\geq 6$  is considered level 1 (high methodological quality, 6–8: good, 9–10: excellent) and a score of 5 or less is considered level 2 (low methodological quality, 4–5: moderate;  $<4$ : poor). Moreover, a qualitative review was also performed to conduct a best-evidence synthesis (Kollen et al., 2009; Vaughan-Graham et al., 2015). This classification indicates that if the number of studies displaying the same level of evidence for the same outcome measure or equivalent is lower than 50% of the total number of studies, no evidence can be concluded regarding any of the methods involved in the study.

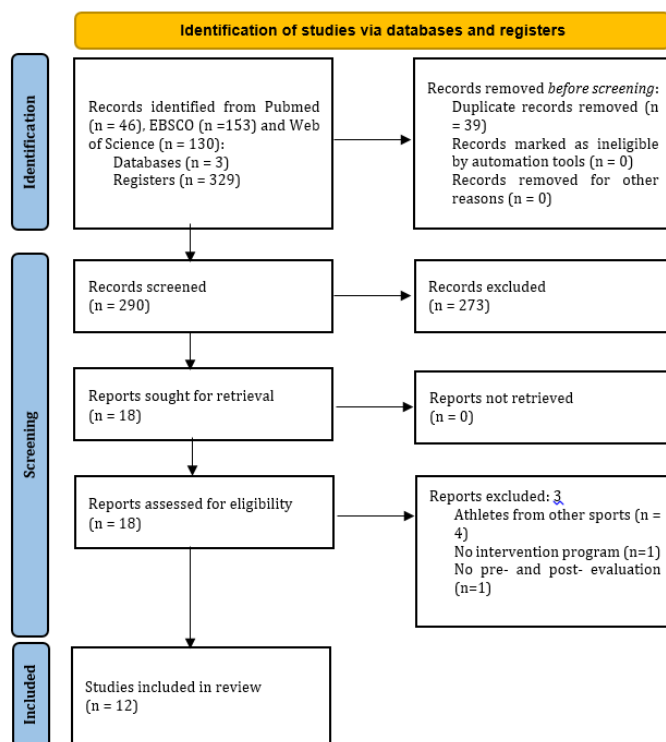
## **Results**

### **Study Selection**

Initially, 329 results were found using the search strategy in the PubMed, Web of Science, and EBSCO databases. After removing duplicate results, titles unrelated to the topic were eliminated. The abstracts were reviewed, and an additional 2 articles were excluded because the samples did not exclusively consist of football or futsal players, there were acute effects of single-session programs and technical/tactical factors, or primarily because they did not include interventions with health and well-being programs. After a full-text review, 12 scientific papers were selected for this systematic review (Figure 1). Thus, this review is based on 12 studies that focus on the implementation of health and well-being programs in football players, aiming to determine whether this reduces the incidence/risk of injuries. No articles related to futsal were found. It is relevant to mention that the authors presented 100% agreement in the study selection.



Figure 1. Flowchart of the Systematic Review



### Risk of bias assessment (PEDro scale)

The quality of the methodology used in this study was assessed using the PEDro scale (Maher et al., 2003), which includes 11 categories (Table 3), of which only 10 are scorable. Considering the criteria of the PEDro scale, it is known that the first criterion is not considered when scoring the quality of the articles. Seven studies were classified as having good methodological quality according to the criteria of Tulder et al. (2003), while four were classified as moderate and one as poor. Moreover, authors presented 100% agreement in the risk bias of assessment.

Table 3. "PEDro Scale" Quality Assessment

Article	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	Score	Certainty Assessment (Tulder et al., 2003)
Zadeh et al., 2019	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	8	Good
Olmedilla et al., 2017	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	8	Good
Ivarsson et al., 2015	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	7	Good
Edvardsson et al., 2012	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	7	Good
Catalá et al., 2021	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	7	Good
Olmedilla et al., 2019	Yes	No	No	No	No	No	No	Yes	Yes	No	Yes	3	Poor
Naderi et al., 2020	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	8	Good
Arbo et al., 2020	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Yes	4	Moderate
Holguín-Ramírez et al., 2020	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes	Yes	5	Moderate
Alavizadeh et al., 2019	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	7	Good
Akin et al., 2024	Yes	No	No	No	No	No	No	Yes	Yes	Yes	Yes	4	Moderate
Lee et al., 2024	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	4	Moderate

C1: eligibility criteria were specified; C2: participants were randomly allocated to groups; C3: allocation was concealed; C4: the groups were similar at baseline regarding the most important prognostic indicators; C5: there was blinding of all participants; C6: there was blinding of all therapists who administered the therapy; C7: there was blinding of all assessors who measured at least one key outcome; C8: measures of at least one key outcome were obtained from more than 85% of the participants initially allocated to groups; C9: all participants for whom outcome measures were available received the treatment or control condition as allocated, or, where this was not the case, data for at least one key outcome were analyzed according to "intention to treat"; C10: the results of between-group statistical comparisons are reported for at least one key outcome; C11: the study provides both point measures and measures of variability for at least one key outcome. Note: C1 values do not count for the total score.



## Study Characteristics

Of the included studies, one was conducted in the Pacific Northwest (Arbo et al., 2020), one in Mexico (Holguín-Ramírez et al., 2020), one in Turkey (Akin et al., 2024), one in Korea (Lee et al., 2024), three in Spain (Catalá et al., 2021; Olmedilla et al., 2017, 2019), two in Sweden (Edvardsson et al., 2012; Ivarsson et al., 2015), and three in Iran (Alavizadeh et al., 2020; Naderi et al., 2020; Zadeh et al., 2019). Only studies in the sport of football were found, with no recorded well-being program interventions for futsal. Eight of the selected studies had a sample composed of adolescent athletes (Alavizadeh et al., 2020; Akin et al., 2024; Edvardsson et al., 2012; Ivarsson et al., 2015; Lee et al., 2024; Naderi et al., 2020; Olmedilla et al., 2019; Olmedilla et al., 2017), while the remaining four included a sample of adult athletes (Arbo et al., 2020; Catalá et al., 2021; Holguín-Ramírez et al., 2020; Zadeh et al., 2019). Regarding the duration of the programs, they ranged from one to three months, with most programs consisting of seven to twelve sessions. The main analysis of all articles aims to verify whether the incidence/risk of injuries decreases after the implementation of the program. Overall, all studies found a significant decrease in the incidence of injuries among the athletes. The detailed characteristics of the current review can be found in Table 4.

Table 4. Characteristics and main results of the included studies

Article	Size	Sex	Age (years)	Aim	Instruments	Intervention	Sessions	Duration	Results
Zadeh et al., 2019	45	M	CG= 23.77 ± 1.95 IG= 24.86 ± 4.68	Analyze whether higher scores in mindfulness are associated with reduced injury rates	- Mindful Sport Performance Questionnaire	Mindfulness-Acceptance-Commitment Approach	7	1 month and half	Significant decrease in the number of injuries in the intervention group ( $p=0.043$ ).
Olmedilla et al., 2017	63	M	17.5	Analyze whether there is a reduction in the incidence of sports injuries through the implementation of a pilot program for stress management and muscle relaxation	- Injury log	Stress Inoculation Therapy	12	3 months	Significant decrease in the number of injuries in the intervention group ( $p=0.005$ , $r^2= 0.077$ ).
Ivarsson et al., 2015	41	M (n=31) F (n=10)	16.97 ± 0.79	Analyze whether there is a reduction in the incidence of sports injuries through the implementation of a mindfulness program	- Injury log	Mindfulness-Acceptance-Commitment Approach	7	1 month and half	The experimental group experienced fewer injuries than the control group ( $p=0.077$ ). Medium effect size ( $d = - 0.59$ ).
Edvardsson et al., 2012	29	M (n=21) F (n=6)	CG= 17.2 ± 1.1 (M=13; F=1) IG= 17 ± 0.7 (M=5; F=8)	Analyze to what extent a cognitive-behavioral biofeedback intervention could reduce the number of sports injuries	- LESCA - SAS - ACSI-28 - GSR - Heart rate variability	Biofeedback	7	2 months	The experimental group experienced fewer injuries than the control group ( $p=0.054$ , $r= 0.409$ ).
Catalá et al., 2021	22	M	23.31 ± 4.24	Analyze the effects of a psychological intervention, focused on motivation and anxiety, in combination with a physical therapy program, on the occurrence of injuries	- F-MARC - CSAI-2 - BRSQ	Psychological and physiotherapy	12	3 months	Significant decrease in the number of injuries ( $p=0.04$ )
Olmedilla et al., 2019	19	M	16.3 ± 0.99	Determine the effects of a psychological intervention for stress management in football athletes	- CPRD	Cognitive Behavioral Therapy	8	2 months	Significant differences in some variables. Evaluation of the influence of performance ( $p=0.030$ ) and mental skills ( $p=0.030$ )
Naderi et al., 2020	16	M	17.1 ± 1.1	Analyse the effects of a mindfulness program for injury reduction	- Injury log - CHIME - Toronto Mindfulness scale - Sport Anxiety Scale 2 - Kessler Psychological Distress Scale - D2 Attention Endurance Test	Mindfulness-Acceptance-Commitment Approach	7	1 month and half	Significant decrease in the number of injuries ( $p=0.02$ )



Arbo et al., 2020	31	M	19.58 ± 1.12	Determine if a 10-week yoga intervention could be successfully implemented and helped prevent sports injury risk factors	- RESTQ-Sport	Yoga Classes	10	2 months and half	Significant decrease in the number of injuries (p=0.01)
Holguín-Ramírez et al., 2020	42	M	CG= 22 (17.4 ± 1.3) IC= 20 (16.9 ± 1.3)	Examine the effect of a six-week psychological intervention on the stress-recovery balance in football players during a competitive season	- Heart rate variability - RESTQ-Sport	Mindful Sports Performance Enhancement	30	1 month and half	Significant stress reduction, and increased recovery (p=<0.05)
Alavizadeh et al., 2020	51	M	MCT= 17 (18.25 ± 0.75) MAC= 17 (18.15 ± 0.74) WL= 17 (17.85 ± 0.81)	Compare the effect of metacognitive therapy-based group intervention and group acceptance-based behavioral therapy on psychophysiological signs	- EEG - EMG - Heart rate variability - GSR - Temperature - Respiratory rate	Mindfulness-Acceptance-Commitment Approach Metacognitive Therapy	7	1 month	Significant improvements in respiratory rate (p=<0.04)
Akin et al., 2024	40	M	15.5 ± 0.5	Analyze the effect of the athlete mindset program on sports injury anxiety and athletic coping skills among young football players	- The Sports Injury Anxiety Scale - The Athletic Coping Skills Inventory	Athlete Mindset Program	10	2 months and half	Sports injury anxiety significantly decreased, and athletic coping skills significantly increased (p < 0.05).
Lee et al., 2024	10	M	16.2 ± 0.92	Analyze the effects of a yoga program combined with psychological skills training on mental health coping in injured young athletes	- Learned Resourcefulness Scale - Psychological Skills in Sport Questionnaire - Post-Sport Injury Stress Scale	Yoga-psychological skills training	10	2 months and half	Significant improvements in mental health coping skills, including problem-focused coping (+14%), goal setting (+19%), hyperarousal reduction (-40%), and re-experience reduction (-35%), all p < 0.05.

M: male; F: female; S: soccer; IG: Intervention Group; CG: Control Group; LESCA: Life Event Scale for Collegiate Athletes; SAS: Sport Anxiety Scale; ACSI-28: Athletic Coping Skills Inventory 28; GSR: Galvanic Skin Response; F-MARC: FIFA Medical Assessment and Research Centre; CSAI-2: Competitive State Anxiety Inventory 2; BRSQ: Behavioural Regulation in Sport Questionnaire; CPRD: Psychological Characteristics Related to Sport Performance Questionnaire; CHIME: Comprehensive Inventory of Mindfulness Experiences; RESTQ-Sport: Recovery-Stress Questionnaire-Sport; EEG: Electroencephalography; EMG: Electromyography.

## Discussion

The aim of this systematic review was to analyze the reduction in the incidence/risk of football and futsal injuries after the implementation of health and well-being programs. All studies considered in this systematic review exclusively pertain to the football category. As a result, the entire discussion focused on football. Considering the 12 studies included in the systematic review, all of them reported differences in terms of the incidence/risk of injuries and/or levels of various parameters, such as performance, mental skills, recovery, among others. In addition, only one study showed poor methodological quality (Olmedilla et al., 2019) while the remaining revealed moderate to good quality which reinforces the strength of the present systematic review. From the 12 studies included, different interventions were applied, namely, Biofeedback, Mindfulness Acceptance Commitment (MAC), Stress Inoculation Therapy (SIT), Psychological and physiotherapy, Cognitive Behavioral Therapy, Yoga Classes and Yoga-psychological skills training, Mindful Sports Performance Enhancement (MSPE) and Athlete Mindset Program. Biofeedback is a method that makes the physiological signals of the body visible (such as body temperature, heart rate variability) with the aim of teaching athletes how to manage these physiological responses (Edvardsson et al., 2012). The MAC approach is a therapeutic approach that combines mindfulness concepts and techniques with acceptance and commitment to help athletes deal with mental and emotional health issues (Gardner & Moore, 2007). SIT assumes that athletes who have unconscious habits of dealing poorly with stress can worsen stressful situations. The aim of SIT is to learn to distinguish aspects of the stressful situation that can be changed from those that cannot, as well as to promote skills that allow the athlete to effectively cope with stress (Olmedilla et al., 2017). Cognitive behavioral therapy is a psycho-social intervention that aims to reduce symptoms of various mental health conditions, primarily depression and anxiety disorders (Brown & Fletcher, 2017). Yoga, characterized as a form of



embodied movement, encompasses a comprehensive range of practices including ethics, discipline, movement, breath, and meditation. Through these integrated practices, individuals can develop adept control over viscerosomatic information both during yoga sessions and in daily life. The ultimate result is an enhanced sense of well-being, measured through increased flexibility and adaptability in overall functionality (Ross & Thomas, 2010; Sullivan et al., 2018). The study of Lee et al., in addition to Yoga, added psychological skills training which consisted in breathing exercises, relaxation, imagery, concentration, and team building. These skills had the goal to enhance athletes' mental health coping abilities (Lee et al., 2024). The MSPE is a thoroughly standardized psychological intervention designed to alleviate stress and anxiety while enhancing athletes' alertness. In order to mitigate cognitive disorders and negative emotions, MSPE encourages athletes to engage in three essential life aspects: intention, attention, and attitude. This approach fosters the acceptance of thoughts and feelings without bias, enabling athletes to concentrate on their recovery (Kaufman et al., 2018). Lastly, the athlete mindset program consisted on cognitive behavioral therapy to improve emotion, thought, and behavior (Akin et al., 2024).

After analyzing all the studies, the standout finding is that, at the conclusion of all interventions, athletes in the intervention group experienced fewer injuries than the control group. However, out of the 12 studies, only two did not reveal significant statistics (Edvardsson et al., 2012; Ivarsson et al., 2015). The intervention program using biofeedback training did not yield statistically significant results in reducing injury occurrence in the intervention group (Edvardsson et al., 2012). The absence of statistical significance may be due to the small sample size (29 participants divided by two groups and sexes), since the control group still experienced more injuries ( $n=14$ ) than the intervention group ( $n=5$ ). The same applies to the study by Ivarsson et al. (2015) where the results did not show statistically significant differences in injury occurrence with the MAC Approach between the intervention group and the control group. Nevertheless, participants in the intervention group also suffered fewer injuries ( $n=8$ ) than participants in the control group ( $n=15$ ). The possible explanation for this inconsistency may lie in the heterogeneity and small size of the samples used. It's important to note that the studies that showed significant results were conducted only with male participants (Alavizadeh et al., 2020; Aki et al., 2024; Lee et al., 2024; Naderi et al., 2020; Zadeh et al., 2019), while the other study that did not demonstrate significant results included both men and women (Ivarsson et al., 2015). It is possible that differences in physiological and psychological characteristics between men and women could affect the effectiveness of the MAC program (Goodman et al., 2014; Mohebi et al., 2022).

Concerning the SIT intervention, it can be stated that a muscle relaxation program significantly contributes to the reduction of sports injuries (Olmedilla et al., 2017). Additionally, coaches noted post-intervention improvements in athlete performance, heightened concentration, and reduced anxiety. These intervention outcomes align with the model proposed by Williams & Andersen (1998) emphasizing the essential role of muscle tension and attention deficits in the stress-injury relationship. In particular, the intervention program used in Catala et al. (2021) study focuses on motivation and anxiety variables associated with injury prevention, based on a model by the same authors as the SIT intervention study, called the Stress and Injury Model by Williams & Andersen (1998). The results indicate that physiotherapy treatment has positive effects in reducing injuries in the short term, while combined physiotherapy and psychological treatment show positive effects in both the short and long term.

In the Cognitive Behavior Therapy intervention, it is possible to consolidate the hypothesis that gender differences may influence the analysis of results (Olmedilla et al., 2019). This is because, when we look only at the anxiety variable, we observe a significant difference between men and women. Non-injured women, besides having more anxiety symptoms than injured female athletes, also exhibit a substantial difference compared to non-injured men. This analysis is in line with other studies that make the same assertion (Correia & Rosado, 2019; Ponseti Verdaguer et al., 2017). Despite the numerous limitations of both yoga class intervention programs, such as limited statistical power due to the sample size and participant attrition between the post-test, restrictive training schedules, and the training time having to be condensed (from 90 to 45 minutes), a significant difference in the number of injuries was observed (Arbo et al., 2020; Lee et al., 2024). These findings align with other studies that have asserted that yoga, owing to its extensive mobility work, exploration of new ranges of motion, and core activation, is crucial not only in injury prevention but also in reducing antioxidant and anti-inflammatory levels. Furthermore, the study of Lee et al. (2024) improved mental health coping with injured young athletes, fostering positive responses. Thus, they both seem to be appropriate to avoid injuries (Arbo et al., 2020; Lee et al., 2024).





Through the MSPE intervention, it was concluded that an intervention focused on enhancing the athlete's intention, attention, and attitude clearly results in an increased balance between stress and recovery and a decrease in overall stress. It is worth mentioning that the MSPE intervention not only decreases anxiety levels, the pursuit of perfection, and disruptive thoughts but also enhances the athlete's enjoyment of the practiced sport (Petrillo et al., 2009). Positive findings were also found in young athletes. Specifically, sports injury anxiety significantly decreased, and athletic coping skills significantly increased which suggests potential of coping with injury anxiety by improving athletes' coping skills (Akin et al., 2024).

In the study by Alavizadeh et al. (2020), when two programs were tested to determine their impact on athletes, namely the MAC and Metacognitive Therapy, it was concluded that there were no statistically significant differences between the programs. It was observed that Metacognitive Therapy affects the respiratory rate, which was correlated with anxiety. Additionally, it was confirmed that the MAC affects the electroencephalography rate for aggression.

The most applied program was the MAC intervention (n=4) in which significant differences were revealed, resulting in a lower incidence of injuries (Alavizadeh et al., 2020; Naderi et al., 2020; Zadeh et al., 2019). When comparing the intervention time and the number of sessions, it was observed that all studies had the same number of sessions and program duration. However, the only disparity among the studies that implemented the MAC program is that the study that included a sample of both genders did not demonstrate statistically significant results (Ivarsson et al., 2015). Given these circumstances, we can discard the hypothesis that the lack of significant differences in the two studies could be related to the number of sessions and program duration. Considering that the study using the MAC program had a total of seven sessions over a period of one and a half months (Ivarsson et al., 2015), and the biofeedback program had a total of seven sessions over two months (Edvardsson et al., 2012). Despite the lack of statistically significant results through biofeedback training (Edvardsson et al., 2012), it is important to reflect on the practical value of this study. Adapting the intervention to the sociocultural context of the athletes can be a critical factor for its success. Finally, after analyzing all the programs, it can be asserted that intervention programs are necessary for football and other sports. For instance, the present systematic review could not include any futsal studies. Mindfulness programs tend to have a greater impact on reducing the incidence of injuries. After analyzing all the included studies, it becomes evident that the psychological aspect has a significant impact on athletes' performance, thereby reducing the rate of sports injuries. Combining cognitive aspects with the practice of mindfulness exercises and body awareness activities (e.g., Yoga) can be a strong predictor for improved performance in sports clubs and at the individual level for athletes.

Other studies provided valuable insights that complement the findings of the present systematic review (Gledhill et al., 2018; Li et al., 2020). Li et al. (2020) highlighted the significant impact of interventions such as biofeedback, mindfulness, and other psychological techniques in reducing the risk of sports injuries. These findings align with the results of this review, which demonstrate the effectiveness of health and wellness programs, including Mindfulness Acceptance Commitment (MAC) and Cognitive Behavioral Therapy (CBT), in lowering injury rates among football players. Both reviews emphasize the importance of these psychological interventions in managing stress and enhancing recovery.

In contrast, Gledhill et al. (2018) focused on the real-world application of psychological interventions, stressing the need for studies that address practical challenges in implementation. This perspective is particularly relevant to the current review, as limitations such as small sample sizes and the lack of futsal-specific interventions indicate the need for broader and more contextually relevant research. Furthermore, while Gledhill et al. (2018) examined interventions across various sports, the absence of studies on futsal in this review underscores a critical gap that warrants future investigation in this rapidly growing sport.

Programs that combined mindfulness approaches (such as the MAC Approach), psychological interventions (including CBT, SIT, or stress management techniques), and physiological and psychological methods (like biofeedback and yoga- psychological skills training) have proven to be particularly effective. The duration of the interventions also appears to influence the outcomes, with programs lasting between one and three months demonstrating consistently positive results. Among these, yoga (Arbo et al., 2020) and SIT (Olmedilla et al., 2017) stand out, as they achieved the lowest p-values. These findings

suggest that multifactorial interventions, which combine physical and psychological elements and focus on stress management, are the most effective strategies for reducing injuries in athletes.

### **Limitations**

One of the limitations to be considered in this systematic review is the relatively short intervention periods, which may have compromised the attainment of statistically significant results. Another limitation to be considered is the restriction of the included studies in futsal (n=0) and even in football, different programs were considered which did not allow the production of a meta-analysis. This limitation may also have contributed to the inconsistency in the significant findings. One possible explanation for this limitation is the relative scarcity of studies and in-depth discussions on the topic, which may have hindered the inclusion of a larger number of eligible studies in this systematic review. Although no language restrictions were applied, it was only used keywords in English. This methodological option might have led to the exclusion of articles with no title or abstract in English (Stern & Kleijnen, 2020). Additionally, a broader range of studies could be decisive in determining the most effective intervention program for reducing the incidence of injuries.

### **Future Lines of Research**

For future studies, a follow-up of the program is recommended. It would be interesting to evaluate the participants over a year, where several assessments would be carried out at different times regarding their health and wellness and the consequent impact on injuries. In the same line, longer longitudinal interventions are warranted.

### **Conclusions**

The main evidence from this review was: a) health and well-being programs do indeed decrease the incidence/risk of injuries, b) there are improvements in individual and group sports performance, c) stress management and reduction of muscular tension reduce the incidence of sports injuries.

This systematic review clearly highlights the need for the implementation of programs aimed at promoting mental health in the sports context, more specifically in football and futsal. In fact, the high occurrence of injuries in these sports calls for effective preventive actions. In this regard, health and well-being programs have shown promise in reducing injuries. Since injuries have a negative impact on players' sports careers, the implementation of such programs should be considered a priority by football and futsal teams.

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### Authors' and translators' details:

Cristiana Mercê  
Bárbara Tavares  
Rafael Oliveira  
Full name

cristianamerce@esdrm.ipsantarem.pt  
tavaresbarbara250@gmail.com  
rafaeloliveira@esdrm.ipsantarem.pt  
correo@electronico.com

Author  
Author  
Author  
Translator

