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## REVIEW

# Evaluation of the effects of psychological prevention interventions on sport injuries: A meta-analysis



*L'évaluation des effets d'une intervention psychologique sur la prévention des blessures sportives: une méta analyse*

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### Summary

**Objectives.** – The purpose was to conduct a systematic review of published articles aiming to prevent sports injuries based on psychological interventions and to perform a meta-analysis of the effects in such interventions.

**News.** – Different kinds of sport injury prevention strategies have been accomplished such as neuromuscular and warm-up programs. More recently, psychological intervention studies have been completed with the purpose of preventing sports injuries. The most evident predictor is stress. Consequently, most psychological injury prevention interventions incorporate stress management and other psychological skills training.

**Prospect and projects.** – The electronic databases and suitable sport psychology journals were searched for published studies. Out of 560 screened articles, 15 were potentially eligible articles. Seven of these articles, with substantial information in the papers or the authors were able to provide us with data after request, were finally included.

**Conclusion.** – The result, using a random effect model, showed a total Hedges' *g* effect size of 0.82 ( $P < .001$ ), 95% CI (0.55–1.11). The result indicates that psychological injury prevention interventions have a large effect on reducing the number of injuries in sport population.

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**MOTS CLÉS**

Blessures sportives ;  
Comportement ;  
Formation ;  
Études  
d'interventions

**Résumé**

*Objectif.* – Le but de notre recherche est de mener une revue systématique d'articles publiés ayant pour thématique la prévention des blessures sportives avec des interventions psychologiques et de conduire une méta-analyse des effets de ces interventions.

*Informations.* – Différentes stratégies de prévention des blessures sportives ont été développées telles que des programmes neuromusculaires et des programmes d'échauffement. Plus récemment des études sur les interventions psychologiques ont été menées dans le but de prévenir les blessures sportives. Le prédicteur le plus évident est le stress. En conséquence, la plupart des interventions intègrent les stratégies de management du stress et l'entraînement d'autres habiletés psychologiques.

*Perspectives et projets.* – Des bases de données électroniques et des revues spécialisées en psychologie du sport ont été consultées afin de recenser les études publiées. Parmi les 560 articles consultés, 15 études ont été potentiellement éligibles et 7 articles contenant suffisamment d'informations ou complétés par des données fournies par les auteurs ont été inclus.

*Conclusion.* – Les résultats, en utilisant un modèle à effets aléatoires, montrent l'importance de l'effet Hedges de 0,82 ( $p < 0,001$ ), IC à 95 % (0,55–1,11). Les résultats montrent que la prévention des blessures au niveau psychologique a un effet important dans la réduction des blessures sportives dans la population.

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**1. Introduction**

The incidence of athletic injuries is common in most sports and at all levels. Several studies have been conducted aiming to explore risk factors for injuries. It has been suggested that injuries in sports are influenced by extrinsic and intrinsic factors [1]. Psychosocial factors are included in those intrinsic factors. Over recent decades, a number of psychological intervention studies have been completed with the purpose of preventing sports injuries. It is therefore of interest to perform a systematic review and a meta-analysis critically investigating the effectiveness of such interventions.

In a comprehensive study, Klügl et al., [2] searched for sports injury prevention studies and found 12,000 articles. The majority of the studies described magnitude, aetiology and mechanisms in relation to sports injuries; a minority of studies reported the implementation of interventions in real-world context. Klügl et al. [2] made a distinction between implementations in ideal conditions and the real-world according to the framework of Translating Research into Injury Prevention Practice, called the TRIPP model [3] and divided the studies into three categories: equipment, training and regulation. The training category included warm-up programs, neuromuscular training and psychological programs. They found 551 intervention articles in the training category, of which few investigated implementation and effectiveness ( $n=16$  and  $n=3$ , respectively). The number of articles in each of the different kinds of programs (e.g. neuromuscular training, psycho-educational) within the training category was not reported. The database PsycINFO was not included in this review although it is where most psychology-related articles are to be found, and this omission might have influenced the result. A more recently published systematic review and meta-analysis of RCT studies aiming to prevent sports related injuries found 5580 studies and included 68 studies in their systematic review. Sixty of those were finally included into the meta-analysis

[4]. The study divided the interventions in seven groups (external joint support, insoles, modified shoes, specific training programs, stretching, protective head equipment and preventive videos). Noteworthy is that the systematic review did not include the database PsycINFO in their literature search and did not include any psychological based injury prevention interventions [4].

Among the theoretical frameworks in psychological prevention contexts, the model of stress and athletic injury suggested by Andersen and Williams [5] and later revised [6] is probably the most frequently used. This model works on the supposition that personality, history of stressors, and coping resources might influence an athlete's stress response when experiencing a stressful situation. The stressful situation can, through the athletes' appraisal of the situation, generate a stress response causing cognitive or somatic reactions, which influence the risk of injury occurrence. It is suggested that injury preventive interventions should be directed to reduce the cognitive and/or somatic stress response, according to the model.

An article by Cupal [7] aimed in particular to review and critique psychological prevention and rehabilitation interventions. This review included four prevention articles published at that time which included five psychological or psychosocial components: goal setting, psychological skills training, positive self-talk, knowledge/education and social support.

In 2007, Cupal's [7] review of conducted intervention studies was updated by Williams and Andersen [8] but without any evaluation or statistical analysis. They discussed an additional five studies with the common aim of preventing sports injury outcome. In the five years following, additional articles on psychological preventive intervention have been published [9,10] and none of the reviews has evaluated the effectiveness of psychological interventions in a meta-analysis.

Psychological factors [1] (such as e.g. stress, ineffective coping strategies) have been shown to predict sports injuries

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