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REVIEW

Combat sport injuries profile: A review

Profil des blessures en sports de combat : revue de la littérature

N. Hammami^{a,*}, S. Hattabi^a, A. Salhi^a, T. Rezgui^b, M. Oueslati^a,
A. Bouassida^a

^a Research unit, Sportive Performance & Physical Rehabilitation (S2PR), High Institute of Sports and Physical Education, University of Jendouba, 7100 Kef, Tunisia

^b Applied Mechanics and Systems Research Laboratory (LASMAP), Tunisia Polytechnic School, University of Carthage, Tunisia

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Injury location;
Risk factors;
Injury prevention

Summary

Objectives. – The purpose of this review is to provide an overview of the injury location, injury diagnosis, injury risk factors and injury prevention among practitioners of different combat sports.

News. – This review was conducted using databases of MEDLINE (via Pubmed), Science Direct, Scopus and Google Scholar. The studies concerned were classified according to the nature of the combat sports and the type of the injury by three authors using the titles, abstracts and full texts if available. Data from different observational studies suggest that there is a significant injury problem in combat sport in general because the main goal of the practitioners is to strike and/or to project opponent with maximal power and speed in order to win. This exposes them to permanent risk of injuries, which limit usually training effects, provoke disability conditions with competitiveness loss and often ruin their careers. However, it varies considerably across different styles. Researchers used retrospective and prospective method to explore specificity of injury but little is known about the actual severity of injuries in combat sports.

Prospects and projects. – Future studies are highly encouraged to adopt stronger methodologies. The long-term consequences of injuries, a detailed balance sheet by nature of injury and specific preventive strategies are needed to support the findings presented in this review.

Conclusion. – In this review, a preliminary injury profiles in combat sports was established containing location and types of injuries. Compared to other sports, combat sports are no more dangerous especially for beginner practitioners.

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* Corresponding author.

E-mail address: nedhirhamami@gmail.com (N. Hammami).

MOTS CLÉS

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Résumé

Objectifs. – L'objectif de cette revue est de fournir un aperçu sur la localisation, le diagnostic, les facteurs de risques et la prévention des blessures chez les praticiens de différents sports de combat.

Actualités. – Cette revue a été réalisée à partir des bases de données de Medline (via Pubmed), ScienceDirect, Scopus et Google Scholar. Les études retenues ont été classées par trois auteurs, en fonction de la nature des sports de combat et du type de blessure utilisant les titres, les résumés et les textes intégraux si disponibles. Les données provenant de différentes études observées suggèrent qu'il existe en général un sérieux problème de blessures en sport de combat car l'objectif principal des pratiquants est de mener des coups et/ou projeter un adversaire avec puissance et vitesse maximales afin de gagner. Cela les expose plus au risque permanent de blessures qui limitent généralement les effets de l'entraînement, provoquant des conditions d'invalidité avec perte de compétitivité et ruinent souvent leur carrière. Cependant, cela varie considérablement selon les différents styles. Les chercheurs ont utilisé la méthode rétrospective et prospective pour explorer la spécificité des blessures, mais la gravité réelle de ces blessures en sports de combat reste peu connue.

Perspectives et projets. – Les futures études sont fortement encouragées à adopter des méthodologies plus solides. Les conséquences à long terme des blessures, un bilan détaillé par nature de blessure et des stratégies préventives spécifiques sont nécessaires pour étayer les résultats présentés dans cette revue.

Conclusion. – Dans cette revue, des profils préliminaires de blessures dans les sports de combat ont été établis, contenant l'emplacement et les types de blessures. Par rapport aux autres sports, les sports de combat ne sont pas plus dangereux, en particulier pour les praticiens novices.

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1. Introduction

Combat sports and martial arts are sports of fighting; there are popular at competitive and recreational level in most countries of the world [1]. Combat sports typically involve two individual combatants fighting each other using specific techniques (striking, kicking, grappling, and weapons) and respecting prearranged rules [2]. It may be classified in function of fighting techniques: striking/kicking styles (e.g. Taekwondo, Boxing, Kickboxing, Karate and Kung-fu), grappling/throwing styles (e.g. Wrestling, Judo, Brazilian jiu-jitsu and Aikido) or hybrid styles combining striking and grappling (e.g. Mixed Martial Arts [MMA]). Combat sports and martial arts are usually unarmed activities. Nevertheless, weapons can be used in Fencing, Kendo, Jousting... etc.

By the past, martial arts were considered as professional sports. But, the popularity of these sports is flourishing among different ages, for a variety of reasons such as maintaining fitness skills, improving balance, flexibility and strength, and gaining health benefits [3–5]. Martial arts can be also considered as an excellent therapeutic tool developing concentration, socialization, self-esteem, enhancing discipline, and self-defence in the youngest population [6]. Nowadays, children and adolescent are more and more concerned. The population, involved in martial arts in the US, is approximately 1.5 million, where 20% are female participants and 25% are children [7]. Even small countries like Netherlands and Belgium showed about 20,000 children practicing karate and taekwondo [8].

However, combat sports still a source of intense debates all around the world, if it can be considered as healthy and safe activities or violent ones given to the important physical forces involved. With the increase of participants in

various age ranges since the 1980s, the number of acute and overuse injuries related to martial arts is expected to rise during training and competition and consequently 8% of youth discontinue sporting activities annually due to injuries [9,10]. Since most combat sports involved mature motor skills, young population present a special risk for injuries, which consequently classified sport injury as a major public health problem [11,12].

Because combat sports frequently involve striking, throwing, or immobilizing an opponent, injuries are frequently caused by punches, kicks, blocks, and falling on the ground. The evolution of sport injuries is strongly related to the regulations of each area, the techniques used and the physical condition of the athletes [13]. Sport injuries usually limit training effects, provoke disability conditions and lost competitiveness and often ruin athletes' careers. Death has been reported in rare cases [14].

It is important then to identify the injury characteristics in combat sport (i.e. types, body location, injury pattern and severity) and their related risk factors (age, gender, and level of experience).

2. Injury location

A sport injury is defined as "damage in part of the body causing a time off practices or competition. More precisely, it includes any circumstance (musculoskeletal complaint or concussion) for which the athlete required the medical assistance, and led to absence from competition or training". Severe injuries were then defined as "injuries entailing an estimated absence from training or competition of more than 7 days". Multiple injuries occurred when the same

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