

ICSPEK 2013

Head Injuries in Junior Taekwondo Competitions

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Abstract

This paper relies on a systematic analysis of the studies about the injuries occurred during Taekwondo competitions, published in several electronic databases such as: Pubmed, Google Scholar, Proquest, but also a constative and interpretative study based on video analysis. Within this research, we analyzed 732 matches, among which 413 (56%) represented men's events and 319 (44%) women's events performed during the 2012 World Junior Championship held in Egypt. Results revealed that out of the total number of matches, only 7 ended with a KO (2 in women's contests and 5 in men's contests). We consider that the reduced number of KOs (head injuries) is due to the refereeing system, powerful kicks not being necessary in order to win points.

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Selection and peer-review under responsibility of ICPEK 2013.

Keywords: taekwondo, juniors, injuries, Knockout (KO);

1. Introduction

Nowadays, we are witnessing an impetuous enhancement of sports performances due to the accumulation of knowledge in different scientific domains, which has also been implemented in the athletes' training, so that their entire preparation process takes place at an increasingly higher level (Păunescu, 2011). Taekwondo presupposes repeated-effort, high intensity physical demands. In addition to this, Taekwondo competitions are structured in a similar fashion to boxing and rowing in that athletes are required to meet weight requirements in order to compete (Mohsen et al., 2005). Taekwondo is a contact combat sport in which competitors are always prone to injuries, and the most frequent injuries affect the toes, instep, knee, hips and arms (Chung & Lee, 1994).

Zemper and Pieter (1998) found injury rates for American elite male Taekwondo athletes to be 127.4/1,000 athlete-exposures and for females, 90.1/1,000 athlete-exposures. The most common injury location and type were

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found to be the lower limb and bruises, respectively, and they were invariably associated with contact. Although taekwondo players are exposed to a substantial risk of sustaining injuries, most injuries appear to be of minimal severity (Lystad et al., 2009).

According to Beis, Pieter and Abatzides (2007), Taekwondo competition injuries have been studied using a case study approach, and most studies on Taekwondo injuries occurred at single tournaments (Zetou et al., 2006).

A prospective study on elite Taekwondo athletes demonstrated that out of a total number of 1,338 A-Es, 93 injuries were recorded during competitions and the most frequent injuries were mild (68.8%) and critical injuries (24.7%), followed by moderate and severe injuries; 4.3% and 2.1%, respectively (Ziaee et al., 2011).

The relation between the top athletes' injuries and success in competitions revealed the fact that the injury rate was associated with performance after variables were held constant (Odds Ratio (OR) = 0.124, $p = 0.039$), and, with each additional injury per match, competitors were 88% (1-0.124) less likely to win a medal (Kazemi, 2012). Mean recovery time is longer in males (33%) than in females (21%), and the weight classes with the highest risk of injuries are: - 68 kg, - 80 kg, and - 87 kg respectively (Păunescu et al., 2012).

2. Material and method

All the matches were captured and processed by means of DARTFISH - Video Software Solution and they were visualized with SilverLight_x64.exe.

2.1. Systematic review

This paper relies on a systematic analysis of the studies related to the injuries sustained during Taekwondo competitions, published in numerous databases: Pubmed (indexed for Medline), Google Scholar, Proquest. This review aims at identifying the most relevant studies concerned with injury prevalence during Taekwondo competitions. An important part of the systematic review process is to perform a qualitative and quantitative evaluation regarding the types of injuries in TKD competitions. By means of the key-words: "competition", "injuries" and "taekwondo", we identified all the studies among which we present those that are the most relevant for this paper (see Table 1).

Table 1. Systematic review of injuries in taekwondo. Study characteristics and results

Study	Number of subjects	Age	Design of study	Outcomes
Lystad RP, Graham PL, Poulos RG. (2013)	-	10-14	Prospective study	The study reveals that children under 10 years had significantly lower IIR(AE) compared with older age groups and black belts had significantly higher IIR(AE) compared with yellow belts
Pieter W, Fife GP, O'Sullivan DM. (2012)	-	Elite athletes	A literature review and suggestions for prevention	The turning kick was most often involved in causing injury: 56.9% of all injuries in the men and 49.8% in the women.
Kazemi M, Chudolinski A, Turgeon M, Simon A, Ho E, Coombe L. (2009)	904 injury reports	Elite athletes	Longitudinal study	The three most common locations of presenting injury were the head (19%), foot (16%), and thigh (9%). The most common mechanism of presenting injury was found to be a defensive kick (44%), followed by an offensive kick (35%). The most commonly injuries were contusions (36%), sprains (19%), and strains (15%).
Kazemi M.	75	Elite	A retrospective	With each additional injury per match, competitors

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