

Common Injury Incidences Occur in Malaysian Taekwondo Athletes

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Abstract

This study was conducted to find out the injury incident among Taekwondo athletes during tournament and determined athlete's performance after the injury. The method used was questionnaire given immediately after athletes finish their last game. Respondents were chosen randomly from three different tournaments with the total of 253 respondents. The result showed that most and least frequent injury was contusion and fracture. In addition, there was no significant different between gender towards pain scale level with male and female were not significant with, $t (-0.74) = 3.38$, $p = 0.46$ (two-tailed). Moreover, there was no association between pain scale level and athlete performance after injury. The association showed that $X(1) = 0.353$, $p = 0.341$, means there was no statistical association between pain level and athlete performance. As a conclusion, Taekwondo was one of the combat sports that did not have much incident of severe injury and the change of rule did not give impact to the pattern of potential injury during tournament.

Keywords: *injury, performance, Taekwondo, Taekwondo rules*

Introduction

Taekwondo was self-cautious military martial arts. It requires an eruptive, quick, and solid kicks (Iliana & Savvas, 2011). This martial art has been recognized in Olympic Sport and managed by World Taekwondo Federation (WTF). As in many other combat sports, there was high possibility for injury linked with athletic performance in Taekwondo. In addition, the specificity of Taekwondo which were point doubling with strong, circular and heading kicks allowed the athletes to get permanent risk of injuries both during training specially in sparring drills and competitions (Hssin, Ouergui, Haddad, Paunescu, Paunescu & Chamari

(2014). In that regard, Zetaruk, Violan, Zurakowski, and Micheli (2005) reported Taekwondo was seen as the greatest numbers of athletes with major injuries through the rates of 28% respectively.

The main injury mechanism in Taekwondo was through direct contact, especially defensive kick. An analysis showed defensive kick was frequently occurred injury followed by delivering a blow as the second most common cause of injury and the roundhouse kick was one of the techniques that implicated to the injury causes (Haddad, 2014). The vast majority of all injuries were localized to the lower extremities as most Taekwondo athletes using their instep foot for attacking and defending (Lystad, Pollard, Graham, 2009). As a result, hematoma and sprains were the highest soft tissue injury happened in Taekwondo. Whereas, concussion, cuts, and dislocations the next least likely to receive taekwondo competition injuries. (Feehan & Waller, 1995).

The data analysis of Taekwondo injury rates had concerned on injuries between genders. Feehan and Waller (1995) described that there was no significant different found in the proportion of these injuries by gender. However, the patterns of gameplays and power kicks to the opponents were different by gender. Men injuries were likely to happen at lower extremities and injuries included mostly on facial laceration, bone fractures, dental injuries and mandibular dislocation (Shirani et al., 2010). For women's tournament, 15.2% of injuries happened at the head, neck, and 53.1% were commonly occurred at lower limb (Pieter et al., 2012).

In Taekwondo, an athlete who managed to get point only if he did a powerful feet or hand movements to the trunk or feet to the head of opponent (Viscogliosi, 2013). However, the rules had changed with an implementation of an electronic scoring system which calculated on the trunk hits and valid head scoring with light feet taps without power only. This implication had recently emerged as a means for fair judgment within a match and to improve the quality of overall tournament operations (Ko, Cattani, Chang & Hur, 2011). The new trend of scoring has impacted on a few elements in Taekwondo which were the distribution of injuries, the minimizing of head injuries and the increasing of the lower limb injuries (Macan, Bundalo-Vrbanac et al. 2006). It appears that this new technique of scoring may affect the Taekwondo gameplay and injury as well.

Despite all measures concerned, injuries still happen and there was an inherent risk of injury to practitioners of combative Taekwondo. The incidence of sport injury usually depending on a few factors, such as level of taekwondo tournament, types of sport, and standard of surveillance systems (Elsawy, 2011). Based on this, it seems that findings in the matter of pattern and rate of injuries in different studies vary according to the interests and popularity of martial arts among the people of the country where the study was performed and the type of data authors used in their studies. The impact of new technique of scoring may also change the pattern of injury. The present study was studied to find out the pattern and incidence of taekwondo-related injuries in Malaysian athletes.

Methods

This study was a cross-sectional design study to investigate the injury incident among the Taekwondo athletes during tournament. A total of 253 athletes aged between 18 years and above were randomly recruited to participate in this study. They were chosen from three different tournaments which were Intec Taekwondo Open 2016, CK Classic Open 2016, and Karisma Kelantan 2016. The questionnaire used was 'The Epidemiology of Taekwondo Injuries' written by Lystad & Pollard, 2009 and it was divided into four sections that required the participant to answer about demographic background, the types of injuries from upper body to lower body parts, mechanisms of injuries during the games, and athletes' performances after

the injuries. It was given right after the participant has finished the tournament. The descriptive analysis, cross tab, and independent T-test were used to analysis the result in this study.

Results

Table 1: Demographic Analysis (n =253)

		Percentage (%)
Gender	Male	51.4
	Female	48.6
Age	18	19.8
	19	25.7
	20	15
	21	18.6
	22	10.7
	23	8.7
Competition	24	1.6
	Intec Open	30.8
	CK Classic	26.9
	Karisma Kelantan	42.3

As presented at Table 1 the highest percentage of respondent for this study was male with 51.4% and for the age, the highest was 19 years old with 25.7%. Event as Karisma Kelantan was the most selected respondent for this study per se with the rates 42.3%.

Table 2: Most and Least Frequent Injury (n = 253)

	Frequency	Percent
Abrasion	16	6.3
Blister	17	6.7
concussion	11	4.3
contusion	26	10.3
dislocation	11	4.3
fracture	7	2.8
hemorrhage	16	6.3
inflammation	15	5.9
internal injury	19	7.5
laceration	12	4.7
nerve injury	13	5.1
Sprain	16	6.3
Strain	19	7.5
rupture	12	4.7
stress fracture	12	4.7
hematoma	20	7.9
Total	253	100.0

Table 2 (p. 38) showed that result of type of injury. From 16 type of injuries listed, the most injury occurred is contusion, 26 respondents with the percentage 10.3%. The least injury occurred is fracture, 7 respondents

and the percentage was 2.8%. As table 2 showed result of injury occurred during tournament, 16 type occurred for the current studies. From 253 respondents the percentage of primary injuries was different.

Table 3: Pain scale level between genders.

	mean	standard deviation	standard error	sig (2-tailed)	95% CI of different
male	3.38	1.516	0.133	0.46	-0.525 to 0.238
female	3.52	2.52	0.141		

Table 3 showed that the independent t- test analysis, it was concluded that pain scale level between male and female were not significant with, $t(-0.74) = 3.38$, $p = 0.46$ (two-tailed).

Table 4: Association between Pain Scales Level, Athlete Performances Using Chi-Square Test.

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.634 ^a	15	0.341
Likelihood Ratio	16.441	15	0.353
Linear-by-Linear Association	1.739	1	0.187
N of Valid Cases	253		

Table 4 showed the Chi Square analysis for pain level and athlete performance. The result showed statistics $\chi^2(15) = 16.634^d$, $p = 0.341$ means there is no statistically association between pain level and athlete performance. Since the p-value is greater than significance level ($\alpha = 0.05$), it failed to reject H_0 . Rather, concluded that there is not enough evidence to suggest an association between pain scales and athletes' performance.

Discussions

The result found out that the most injury occurred during the tournament was contusion, this type of injury occurred when the athletes in contact with opponent and at the same timing either attacking or blocking. Interestingly, before the rule had changed, athlete need to kick their opponent with the full power to get points and most athlete got contusion at the leg. The region of the injury in current study showed significantly differently which was occurred at the shoulder and lower part that were not cover by

Taekwondo equipment. Furthermore, these injuries happened as well to the athletes in this study were blister, internal injury, strain, sprain, inflammation, hematoma, and hemorrhage. These findings are

in concordance with those reported by Lystad and Pollard (2009), Beis, Tsaklis, Pieter, and Abatzides (2001), Altarriba-Bartes, Drobnic, Til, Malliaropoulos, Montoro (2014) which highlighted that contusion was the common prevalence injury occurred to the Taekwondo athletes. These injuries happened as a result of offensive and defensive action due to obtain high score. This finding also explained that even the new rule of scoring had changed, the pattern of injury still remain the same with the most frequent injury was contusion.

Apart from that, the present study reported that the least injury happened among Taekwondo athletes were fractured. The current result was consistent with previous study conducted by Halabchi, Ziaee, and Lotfian, (2007) affirmed that fractured was the least likely injury to occur on Taekwondo athletes. This result explained that by wearing a safety protective gear could contribute to the least likely to get fractured due to padding on their body.

Besides that, the finding on different injuries' pain between males and females during tournaments showed there was no significant different injury pain level on gender. Pain level between male and female were experience botheration with same level against opponents during tournament and kicking power lead to the injury are equal on gender and weight category. As it was mentioned by Feehan and Waller (1995), the findings also found that no significant different between male and female on pain level in Taekwondo.

Moreover, concerning on association between pain level and performance of Taekwondo athletes, it was noticed that there was no association between these two variables. Typically, when any type of injury suffered the athlete during tournament it could lead to the decreasing of their performance, some might lose the game due to injury that limits their skill.

However, the current study indicated that pain level does not contribute to the performance of taekwondo athletes. Hickman and Metz (2015) explained that the main cause that affected athlete's performance was their psychological pressure to win the game. It was also supported by Ayu Mohd Kassim, Kardin Suwarganda, and Nor Asmieza Mohd Nor (2016) who claimed some of athlete managed to win the game with high motivation and a good strategy even they were injured.

Conclusion

It concluded that the most injury occurred was contusion and the least injury was fracture. Every Taekwondo athletes had at least more than one injuries such as contusion, abrasion, and blister. Apart from that, there was no association pain scale level and athlete performance during the tournament. Pain level did not influence the performance of athlete.

Recommendation

Researcher should look up about athlete experience in Taekwondo. For example, it should not only focusing on professional athletes but also include amateur athlete to get accurate data and the outcome of study will be more valuable to society. Besides that, a systematic sampling should be applied hence a better comparison can be made.

References

- Altarriba-Bartes A, Drobnic F, Til L, Malliaropoulos N, Montoro JB, et al. (2014) Epidemiology of injuries in elite taekwondo athletes: two Olympic periods cross-sectional retrospective study. *BMJ Open* 4: 004605.
- Ayu Mohd Kassim, S. F., Kardin Suwarganda, E., & Nor Asmieza Mohd Nor, E. (2016). Successful tactics in taekwondo during Sukan Malaysia 2012. *Journal of Human Sport and Exercise*, 10(2Proc).
- Beis, K., Pieter, W., & Abatzides, G. (2007). Taekwondo techniques and competition characteristics involved in time-loss injuries. *J Sports Sci Med*, 6(CSSI-2), 45-51.
- Beis K, Tsaklis P, Pieter W, Abatzides G (2001) Taekwondo competition injuries in Greek young and adult athletes. *Eur J Sports Traumatol Relat Res* 23: 130-136.
- Bledsoe, G. H., Hsu, E. B., Grabowski, J. G., Brill, J. D., & Li, G. (2006). Incidence of injury in professional mixed martial arts competitions. *Journal of Sports Science and Medicine*, 5(CSSI), 136-142.
- Dankner, R., Kaplan, G., & Barell, V. (2001). A survey of sports injuries among a convenience sample of Israeli athletes. *The Israel Medical Association journal: IMAJ*, 3(7), 508-510.
- Elsawy, G.Y. (2011) Assess the incidence rate and severity of injuries in 4th alexandria's international open taekwondo championships. *Journal of Physical Education and Sport / Science, Movement And Health* 11 (2), 190 - 195.
- Feehan, M., & Waller, A. E. (1995). *Precompetition injury and subsequent tournament performance in full-contact taekwondo*. (29). (4)
- Haddad, M. (2014). Performance Optimization in Taekwondo: From Laboratory to Field.
- Halabchi, F., Ziaee, V., & Lotfian, S. (2007). Injury Profile in Women Shotokan Karate Championships in Iran (2004-2005). *Journal of Sports Science & Medicine*, 6(CSSI-2), 52-57.
- Hatami, K., Azizbeigi, K., Shokrollahi, B., & Haidari, N. (2011). The survey of prevalence of sport injuries in student athletes of Islamic Azad University. *Middle East J Sci Res*, 9(1), 123-128.
- Hickman, D., & Metz, N. (2015). The impact of pressure on performance: Evidence from the PGA TOUR. *Journal of Economic Behavior & Organization*, 116, 319-330.

- Hssin, N., Ouergui, I., Haddad, M., Paunescu, C., Paunescu, M., & Chamari, K. (2014) Injuries in taekwondo. Retrieved from <https://www.esciencecentral.org/ebooks/taekwondo/pdf/injuries-in-taekwondo.pdf>
- Iliana, C., & Savvas, S. (2011). Epidemiological study of injuries in greek taekwondo athletes. *British journal of sports medicine*, 45(2), e1-e1. doi: 10.1136/bjsm.2010.081554.50
- Kazemi M, Chudolinski A, Turgeon M, Simon A, Ho E, et al. (2009) Nine year longitudinal retrospective study of Taekwondo injuries. *J Can Chiropr Assoc* 53: 272-281.
- Ko, Y. J., Cattani, K., Chang, Y., & Hur, Y. (2011). Do spectators and competitors accept the use of scoring technology in Taekwondo competitions? *International Journal of Sport Management and Marketing*, 9(3-4), 238-253.
- Leveaux, R. (2012). 2012 Olympic Games Decision Making Technologies for Taekwondo Competition. *Communications of the IBIMA*, 2012, 1.
- Lystad, R. P., & Pollard, H. (2009). Epidemiology of injuries in competition taekwondo: A meta-analysis of observational studies. *Journal of Science and Medicine in Sport*, 12(6), 614-621.
- Macan, J., Bundalo-Vrbanac, D., & Romić, G. (2006). Effects of the new karate rules on the incidence and distribution of injuries. *British journal of sports medicine*, 40(4), 326-330.
- Paunescu, C., Pitigoi, G., Elisabeta, N., & Paunescu, M. (2012). Findings regarding the injury recovery in Taekwondo during Kyorugi. *Medicina Sportiva: Journal of Romanian Sports Medicine Society*, 8(3), 1903.
- Păunescu, C., Pițigoi, G., & Păunescu, M. (2014). Head Injuries in Junior Taekwondo Competitions. *Procedia-Social and Behavioral Sciences*, 117, 295-299.
- Pieter, W. (2005). Martial arts injuries *Epidemiology of Pediatric Sports Injuries* (Vol. 48, pp. 59-73): Karger Publishers.
- Pieter, W (1996) Martial arts. In: Caine D, Caine C, Lindner K (Eds) *Epidemiology of Sports Injuries*, Champaign, Illinois.
- Pieter W, Bercades LT, Heijmans J (1998) Injuries in young and adult Taekwondo athletes. *Kines* 30: 22-30.

- Pieter W, Zemper ED (1997) Injury rates in children participating in taekwondo competition. *J Trauma* 43: 89-95.
- Shirani G, Kalantar Motamedi MH, Ashuri A, Eshkevari PS (2010) Prevalence and patterns of combat sport related maxillofacial injuries. *J Emerg Trauma Shock* 3: 314-317.
- Viscogliosi, P. (2013). How the new taekwondo rules have decreased the injuries and concussions since 2008. *British journal of sports medicine*, 47(5), e1-e1.
- Zetaruk, M., Violan, M., Zurakowski, D., & Micheli, L. (2005). Injuries in martial arts: a comparison of five styles. *British journal of sports medicine*, 39(1), 29-33.
- Ziaee, V., Rahmani, S.-H., & Rostami, M. (2010). Injury rates in Iranian taekwondo athletes; a prospective study. *Asian journal of sports medicine*, 1(1), 23-28.