International Journal of Physical Education, Sports and Health 2017; 4(2): 332-335

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 5.38
IJPESH 2017; 4(2): 332-335

www.kheljournal.com
Received: 20-01-2017
Accepted: 21-02-2017

Dr. Nivedita Pingale
Sancheti Institute College of Physiotherapy, Sancheti Healthcare Academy, 11/12 Thube Park, 16 Shivajinagar, Pune 411005, Maharashtra, India

Dr. James Ghagare
Sancheti Institute College of Physiotherapy, Sancheti Healthcare Academy, 11/12 Thube Park, 16 Shivajinagar, Pune 411005, Maharashtra, India

Correspondence
Dr. James Ghagare
Sancheti Institute College of Physiotherapy, Sancheti Healthcare Academy, 11/12 Thube Park, 16 Shivajinagar, Pune 411005, Maharashtra, India

Prevalence of musculoskeletal injuries in young taekwondo athletes

Dr. Nivedita Pingale and Dr. James Ghagare

Abstract
Purpose: Over last five decades, taekwondo (TKD) has become one of the most commonly practiced martial art in the world; which ultimately led TKD to be included as an Olympic game in 2000. Popular double point scoring techniques such as circular, roundhouse kicks expose the athletes to permanent risk of injuries during both training and competitions. The purpose of this study is to record the prevalence of injuries, type and location of injuries during training and competition.
Method: Self structured questionnaire had distributed amongst elite young TKD athletes with age criteria of 14-20 years.
Results and conclusion: The prevalence of injuries was found to be 48%; mainly located in knee (54.16%) followed by foot and ankle (50%) and shoulder (39.58%). Most of the injuries occurred in training session than competition.

Keywords: Martial art, Injury rate, roundhouse kicks, Knee injuries

Introduction
Taekwondo (TKD) is well-known traditional form of martial art orientated in Korea. It is a very energetic, quick sport involving both men and women. TKD is a full contact sport where athletes are called to strike their opponents using kicks with full force within the sport's rules [1]. A typical combat for adults consists of three rounds intercepted with one minute of recovery in-between [1]. Ever since it was established as an Olympic game in 2000, its reputation and popularity has increased rapidly and participation of athletes from all age groups has developed rapidly. In taekwondo peculiar double point scoring techniques such as strong circular, heading kicksexposes the athletes to permanent risk of injuries during both, training and competitions [3]. In most studies of injuries occurred at single tournaments [2]. Zemper and Pieter [4] found injury rate for American elite male Taekwondo athletes to be 127.4/1,000 athlete-exposures and for females, 90.1/1,000 athlete-exposures. One athlete exposure refers to one athlete being exposed to the possibility of being injured. A study by Pieter, Ryssegem, Lufting, & Heijmans [2] reported injury rates of 139.5/1,000 and 96.5/1,000 athlete-exposures for European men and women, respectively. In these studies statistical differences between men and women were not reported.
This directs many researchers to examine the occurring TKD injuries during training and competitions. It was suggested that the TKD injury rate is lower than that in some sports (e.g., mixed martial arts, snowboard cross) [5,6], and higher than in other ones(e.g., karate, aikido, kung fu, tai chi, soccer, ice hockey, basketball [7,8,9]. It therefore forms the need of the study, from a preventive point of view, to identify injury characteristics i.e., types, body location, and mechanism of injury.

Aim: To determine the prevalence of musculoskeletal injury rate in taekwondo athletes.

Objective
1. To record the rate of injury, type and location of injuries.
2. To find out whether they occurred during training sessions or competition.
3. To determine if there is any gender differences musculoskeletal injuries.

Method and Methodology

Selection of subjects

In present cross sectional study, 100 young taekwondo athletes who were practicing for at least 2years and participated in at least district level competition were selected. Age criteria were 14-20 years. Urban study setup was selected from Maharashtra state. Athletes who underwent musculoskeletal injury other than training or competition and with any medical illness were excluded from the study.

Method

Self-structured questionnaire was performed. Face validity was done. Pilot study was done. After the approval from the ethical committee and after taking a written informed consent from the subject and parent the title and need of the study and the procedure of data collection was explained. Confidentially was assured to all the subjects to get their cooperation. Data collection was done using a structured questionnaire. Data was analysed using descriptive analysis and results were concluded.

Results and Discussion

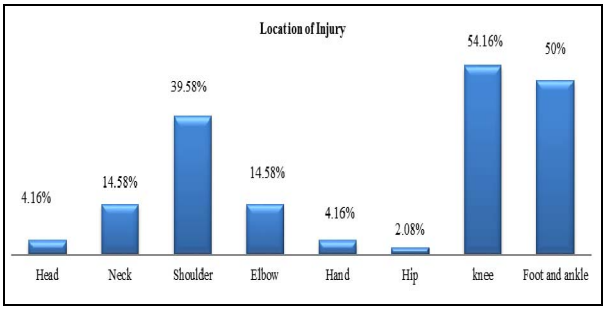
In this study, the athletes had average training for 3-5 years, training time per week of 3-4 times and average training hours per day of 4 hours.

Tables and figures

Table 1: Injury Rates

Injury Rates	Male	Female	Total
Number of athletes	48	52	100
Number of reported injuries	21	27	48
Percentile form	43.75%	51.92%	48%

It is clear from table 1 that Injury rates in males was 43.75% in females was 51.92% overall 48%



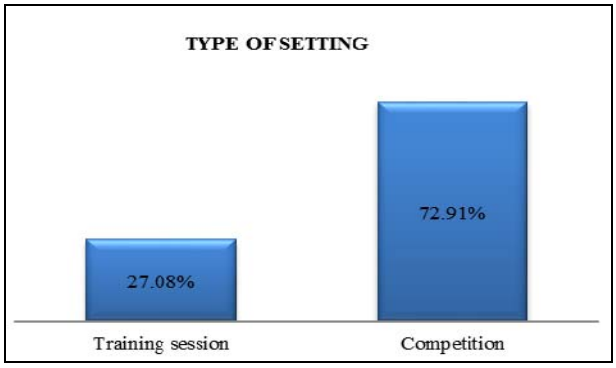
Graph 1: Location of Injury

It is clear from graph 1 that knee (54.16%) is commonest part to get injured followed by foot and ankle (50%), shoulder (39.58%), neck and elbow (14.58%), head and hand (4.16%), hip (2.08%)

Table 2

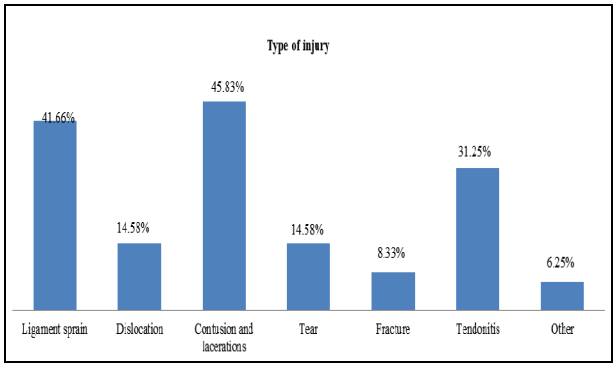
Question	Yes	No
Cool down exercises	51%	49%
Consultation of doctor	91.66%	8.34%
Recurrent pain	37.50%	62.50%
Performance affection	91.66%	8.34%
Post injury rehab	56.25%	43.75%

It is clear from table 2 that 51% of athletes perform cool down exercises. 91.66% of athletes got performance affection after injury; all of them had taken consultation of doctor. 56.25% of athletes underwent post injury rehabilitation. 37.50% of athletes suffered from recurrent pain.



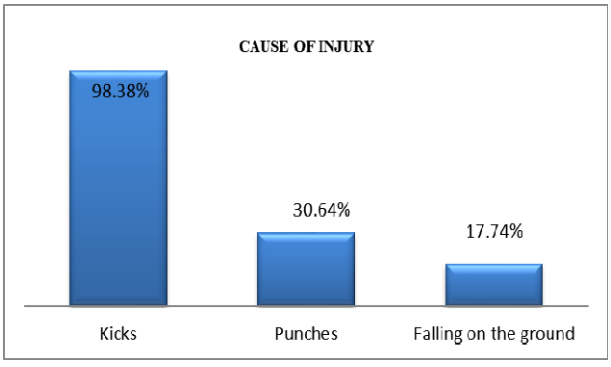
Graph 2: Type of Setting

It is clear from Graph 2 in training session 72.91% injuries were noted while in competition 27.08% injuries were noted.



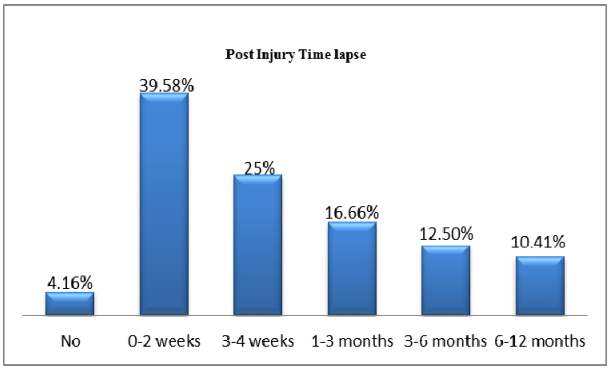
Graph 3: Type of injury

It is clear from Graph 3 contusion and lacerations (45.83%) were most common injuries followed by ligament sprain (41.66%), tendonitis (31.25%), dislocation and tear (14.58%), fracture (8.33%), other (6.25%)



Graph 4: cause of injury

It is clear from above graph kicks(98.38%) were most common cause of injury followed by punches(30.64%), falling on the ground (17.74%)



Graph 5: Post injury lapse

It is clear from above graph that most common post injury time lapse was 0-2 weeks (39.58%) followed by 3-4 weeks (25%), 1-3 months (16.66%), 3-6 months (12.50%), 6-12 months (10.41%). Whereas 4.16% athletes didn't underwent post injury time lapse.

Discussion

Taekwondo (TKD) being an upcoming sport has been relatively unexplored by the Indian population. A relatively high prevalence of musculoskeletal (MSK) injuries in TKD of found.

Total injury rates

Based on the results of this study the injury rate per 100 athletes in males was 43.75 and in females was 56.25.There is slight difference between genders in injury rates. In the journal of Ovidius University Annals, Series Physical Education and Sport injury rates of Egyptian TKD athletes have mentioned. There is collapse in injury rate in male was 85.42 and in female were 76.32.In 24 months, almost half of the athletes injured twice, less than half of athletes injured once and few athletes injured three, four or more than four times. Most of the injuries occurred in training session than competition. It is predictable that athletes does significant heavy hours of practice in training session than in competition hence it is reasonable that the injury rate is higher in training.

Location of injury

Based on the results of this study most of the injuries occurred in the lower extremity (83.33%) followed by upper extremity (62.50%) which concurs with injuries recorded at Canadian national championship in the journal of BMC musculoskeletal disorders.

The most common injury occurs at knee followed by foot and ankle, shoulder, neck, elbow, head, hand and hip. As the nature of TKD needs the frequent use of the legs, it is predictable that the main injury mechanism was found to be delivering or receiving kicks with hyperextend knee.

Type of injury

According to this study most common type of injuries occurred were contusion and lacerations followed by ligament sprains. Legs are more susceptible to knocks, and because of the nature of the sport, to contusion and laceration from several parts of the body every time the athlete receives a hit. Ligament sprains could be due to excessive stress while using overhead multidirectional kicks. These similes with study done on Greek TKD athletes. Low rate of head and chest injuries in this study implies the significance of protective gears and equipments for reduction of injuries. Other body parts such as arms, shoulders are exposed which itself rationalize for upper limb dislocations and fractures.

Years of training

Most of our players have been playing for 3 to 5 years, which suggested that they are relatively new to the game hence they may have faulty techniques. Whereas the players who have been playing for more than 7 years show least number of injuries which suggests they being more experienced and aware of precautions and correct methods to tackle.

Training time per week

Majority of the players have been playing for 3-4 times or more than 4 times per week where they practice for at least 3 hours per day. This finding indicates that overuse may play a role in musculoskeletal injuries among them.

Warm up and cool down exercises

All athletes have been performing warm up exercises. TKD is a full contact sport with considerable physical stress. Warm up prepares the body for exercise. Warm up also prevents or decrease the susceptibility of MSK injury [11].

Almost half of the athletes perform cool down exercises. Cool down plays a significant role in prevention of injuries. It prevents the pooling of the blood in the extremities by continuing to use the muscles to maintain the venous return [11].

Time lapse and recurrent injuries

Time lapse varies with severity of injury. Almost half of the athletes lost time up to 0-2 weeks from their training or competition.

More than half had attended post injury rehabilitation. Whereas athletes who hadn't attended post injury rehabilitation have suffered from recurrent injuries and pain.

Conclusion

- Based on the results of this study, prevalence of musculoskeletal injuries in young TKD athletes was 48%.
- According to current study commonest injured part was knee, where most of the injuries occurred during training session rather than competition.
- Very few gender differences in injury rate have been found in this study.
- This study shows that almost half of the athletes do not perform cool down exercises in their practice session.
- To prevent or reduce injuries at extremities safety is an important issue to be looked upon.

Acknowledgments

- The authors thank Mr. Pravin Borse (Technical director at Taekwondo association of Maharashtra) for his valuable co-operation.
- The authors thank Mr. Subhash Patil (International referee and International instructor) for his guidance and support.
- The authors thank the athletes for their participation.

References

1. Ramazanoglu N. Effectiveness of protective foot and forearm guards in Taekwondo. Arch Budo. 2012; 8:207-211
2. Pieter W, Van Ryssegem G, Lufting R, Heijmans J. Injury situation and injury mechanism at the 1993

European Taekwondo Cup. J. Hum Mov Stud. 1995; 28:1-24.
3. Kazemi M, Shearer H, Choung YS. Pre-competition habits and injuries in Taekwondo athletes. BMC Musculoskelet Disord; 2005; 6:26.
4. Zemper ED, Pieter W. Injury rates during the 1988 US Olympic Team Trials for Taekwondo. Br. J Sport Med. 1989; 23:161-64.
5. Lystad RP, Gregory K, Wilson J. The Epidemiology of Injuries in Mixed Martial Arts: A Systematic Review and Meta-analysis. Orthopaedic Journal of Sports Medicine. 2014; 2(1):2325967113518492:10.1177 / 2325967113518492. ecollection 2014
6. Steffen K, Soligard T, Engebretsen L. Health protection of the Olympic athlete. Br J Sports Med 2012; 46:466-470.
7. Lystad RP, Pollard H, Graham PL. Epidemiology of injuries in competition taekwondo: A meta-analysis of observational studies. J Sci Med Sport 2009; 12:614-621.
8. Zetaruk MN, Violán MA, Zurakowski D, Micheli LJ. Injuries in martial arts: a comparison of five styles. Br J Sports Med. 2005; 39:29-33.
9. Pieter W. Martial arts injuries. Med Sport Sci 2005; 48:59-73.
10. Pieter w, fife gp, o'sullivan dm. Competition injuries in taekwondo: A literature review and suggestions for prevention and surveillance. Br J Sports Med. 2012; 46(7):485-91. Doi: 10.1136/bjsports-2012-091011.
11. Kisner c, Colby LA. Therapeutic exercise: Foundations and techniques. Edition 5th. Philadelphia: F.A. Davis; 2007, 240-241.