

Frequency and Reoccurrence of Ankle Sprain in Young Male Athletes of University of Lahore

Zaib-un-nisa^{1*}, Anna Zaheer¹, Munam Raza Jafri¹ and Muhammad Waqas¹

Physiotherapist, University Institute of Physical Therapy, University of Lahore

*Zaibunnisa716@gmail.com

Highlights

- Current study is a cross sectional survey to find the frequency and reoccurrence of ankle sprain in young male athletes of University of Lahore.
- Self-made questionnaire verified by pilot study was used and data was collected from athletes of University of Lahore.
- It was concluded that the frequency of ankle sprain in athletes of University of Lahore was moderate and reoccurrence of ankle sprain was high among them.

Abstract

Background:

Nowadays, ankle sprain is a common injury among athlete which may cause disabilities, functional limitations and limited participation in sports related events.

Objective:

To find out the frequency and reoccurrence of ankle sprain among young male athletes of the University of Lahore.

Methodology:

Study design: A cross sectional survey was conducted by using self-made questionnaire validated by pilot study to check the frequency and reoccurrence of ankle sprain in 80 young male athletes of University of Lahore. Collected data was statistically calculated by SPSS version 21.0.

Results:

The study showed that among 80 participants only 38 (47.5%) suffered ankle sprain and 42 (52.5%) never experienced ankle sprain. Among 38 athletes who had the injury, 20(52.6%) suffered injury in 2016. The one-time reoccurrence of ankle sprain among participants was 36.8%, twice reoccurrences was present

among 36.8%, three times among 21.1%, four times among 2.6% and five times in 2.6% in population.

Conclusions:

This study concluded that frequency of ankle sprain in athletes of university of Lahore was moderate and reoccurrence rate of ankle sprain was high among athletes. Ankle sprain was associated with uneven surface and type of footwear. It is recommended to conduct this study by considering these factors. Another recommendation is to conduct study in other institution as well

Keywords:

Ankle Injuries, Recurrence, Ankle Sprains

Introduction :

Ankle sprain injury is common musculoskeletal injury among young male athletes which results in high rate of emergency department visits, yet a very least number of sports related studies are conducted in Pakistan. In studies disability from ankle sprains has been reported in 30-70% of patients, lasting around 6-7 months after injury. It is associated with disabilities reflected by lack of participation in school, work or sports related activities, even tasks of active daily livings are also affected resulting in multiple hospital visits.

^{1,2,3} Incidence of ankle sprain is also high in general population estimated between 5 to 7 injuries in 1000 people annually, more than 40% of injured people does not recover soon due to recurrent injury, constant pain and instability. Symptoms related to ankle sprain causes reduction in time spend on physical activity and if it last long it can be a key mediator for post-traumatic osteoarthritis. ⁴ Symptoms can be divided in two types, one can be mechanical weakness and other is functional weakness, both

can lead to ankle instability. If these ankle joint instabilities become chronic as lasting for more than one month after initial ankle sprain it is said to be chronic ankle instability. Around half of patients suffering chronic ankle pain were unable to go to work or school for more than half a week after initial injury. Acute ankle sprain can result in sign and symptoms such as edema, pain, bruises, reduction in mobility and lack of participation.⁵ After a year post initial ankle sprain injury, the chance of recurrence of ankle sprain increases two-folds. Repetitive ankle sprain injury may cause chronic ankle instability, peroneal tendon impairments, impingement at anterior ankle and osteoarthritis. This requires long periods of medical treatment.^{6,7}

There is a high risk of having another episode of lateral ankle sprain in the future.⁸ The frequency of ankle sprain is highest in certain sports that includes cutting, running, and jumping, like soccer, volleyball, basketball, and football.⁹ A review of evidence and a consensus statement on prevalence and long-term effects of lateral ankle sprain was issued by international ankle consortium in 2016.^{10,11} Among athletic population ankle sprain is common, so preventing ankle sprain is of prime importance for athletic trainers and sports related health care professionals.¹² For such purpose two different taping therapies have been introduced. One is KT taping (Kinesio taping) and the other is fibular-repositioning taping (FRT).^{13,14,15}

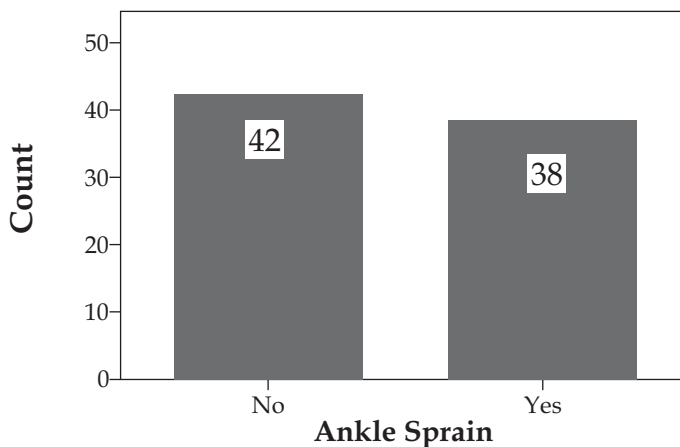
Some of the health professionals said that mechanical effectiveness might be lost by using taping and bracing while doing athletic activity, but restraining effect of these techniques on end range ankle movement is not completely eliminated while doing long athletic activities.^{16,17} However, bracing and taping seems to improve control over body posture.^{18,19} As acute ankle sprain is an injury causing activity limitation moreover, if reoccur it can lead to long term disabilities. Thus, frequency of ankle sprain in university athletes is an important measure to direct further researches towards preventing and treating this injury.

Methodology:

Observational (cross-sectional) study was conducted on the frequency and reoccurrence of ankle sprain among young male athletes of University of Lahore after approval from ethical committee. All athletes of University of Lahore were accessible to 80 athletes were included in this study. They were university level amateur athletes who participate in university events like football, athletics and cricket throughout the year. Convenient sampling technique was used. Data was collected from athletes of University of Lahore and was compiled in University institute of physical therapy. Study was conducted from January 2015 to January 2016 in university of Lahore. Male athletes, age 18-30 years. Infection/Tumor, fracture, systemic illness. A Self-made questionnaire was used after validating by pilot study. Data collected from this study was analyzed by SPSS version 21.0. Quantitative data was calculated in form of mean (\pm S.D) and qualitative data was represented in form frequency tables & graphs.

Results:

This study was conducted in 1-year time period. The mean \pm S.D of age of total athletes was 22.01 ± 1.769 . Out of 80 athletes, 52% (42) of participants experienced no ankle sprain and 47.5% (38) responded "Yes they experienced ankle sprain" (Figure 1). Frequency of body weight of 38 Athletes who experienced ankle sprain is 5.3% (50kg), 7.9% (60kg), 13.2% (65kg), 10.5% (69kg), 2.6% (80kg). Out of 38 athletes, nineteen (50%) followed R.I.C.E protocol as a treatment, fourteen (36.8%) let it heal by itself and five athletes visited a doctor for treatment. Out of 38 athletes who suffered ankle sprain, 33 (86.8%) used ankle brace or ankle taping to prevent reoccurrence and further injury. According to frequency, 14 (36.8%) participants had ankle sprain once, 14 (36.8%) had twice, 8 (21.1%) had thrice, 1 (2.6%) had 4 times, 1 (2.6%) had 5 times (Table 1). This study shows that almost half of the athletes suffered ankle sprain and in 71.1% of them had disturbed ADLs (Table 2).

Figure 1: Total number of athletes who suffered ankle Sprain injury**Table 1:** Frequencies of reoccurrence of Ankle Sprain

Occurrence of Ankle Sprain	Frequency (%)	Cumulative %
1 Time	14 (36.8)	36.8
2 Times	14 (36.8)	73.7
3 Times	8 (21.1)	94.7
4 Times	1 (2.6)	97.4
5 Times	1 (2.6)	100
Total	38	

Table 2: Activities of daily living () disturbance in athletes who suffered ankle Sprain

Disturbed ADL	Frequency (%)	Cumulative %
Yes	27 (71.1)	71.1
No	11 (28.9)	100
Total	38 (100)	

Discussion:

The reoccurrence of ankle sprain is high and sliding tackle is the most common cause of ankle sprain (42.1%). A research was conducted to evaluate the incidence of ankle and foot injuries among athletes that who participated in 37 sports at single National Collegiate Athletics Association. Foot and ankle injuries account for 27% of total 3861 reported sports related. After these foot and ankle injuries, participants were absent from their athletic events at least for one day. Heaviest incidence rate for these injuries was seen in woman gymnastics cross country and soccer.²⁰ Jan Ekstrand et.al studied the

association between exposure time and ankle sprain in soccer. Among injuries 17- 20% were ankle sprain and incidence calculated was 1.7-2.0 ankle injuries per 1000 hours Exposure time. They also reported that participants with first ankle injury have a greater risk of re-injury.²¹ In a meta-analysis aiming to calculate frequency (incidence and prevalence) of ankle injury it was found that woman athlete had higher incidence of ankle sprain than male athletes, children had higher incidence than adolescents and adolescent had more incidence as compare to adults. Moreover, more incidence was seen in indoor sports. Lateral ankle sprain was common type of ankle sprain.²⁰ In this study total 80 respondents experienced ankle injury during their life span and it only includes amateur university level male athletes. The study showed that the most common causes of ankle sprain is sliding tackle followed by twisting of foot and there are obvious chances of reoccurrence of ankle sprain .Most of the athletes followed P.R.I.C.E (preserve, rest, icing, compression & elevation) protocol as treatment of ankle sprain. In a study performed by Kaminski TW et al the most common mechanisms of ankle sprain injury were slide tackle, landing on twisted and direct blow. Participants having initial ankle sprain had high incidence of recurrence, declined quality of life, lessen level of physical activity which may eventually lead to long term ankle instability. Incidence of ankle injury was highest in hockey followed by other sports like basketball, ice hockey, cheerleading, volleyball, softball, soccer, gymnastics and rugby. According to severity there are three grades of ankle sprain injuries; grade mild (1), moderate (2) and severe (3).¹² This study is limited to only one university and eighty athletes and it should be performed at larger level. It also doesn't show the grades and type of ankle sprain suffered by athletes. Female athletes, relation of ankle sprain with female triad factors and sports specific injuries related to ankle sprain should also be discussed.

Conclusions:

This study concluded that frequency of ankle sprain in athletes of university of Lahore was moderate and reoccurrence rate of ankle sprain was high among athletes. Moreover, half of the participants followed P.R.I.C.E protocol for treatment of ankle sprain. Ankle sprain was associated with uneven surface and type of footwear. It is recommended to conduct this study by considering these factors. Another recommendation is to conduct study in other institution as well.

References:

- 01- Brison RJ, Day AG, Pelland L, Pickett W, Johnson AP, Aiken A, et al. Effect of early supervised physiotherapy on recovery from acute ankle sprain: randomised controlled trial. *bmj*. 2016;355:i5650.
- 02- Roos KG, Kerr ZY, Mauntel TC, Djoko A, Dompier TP, Wikstrom EA. The epidemiology of lateral ligament complex ankle sprains in National Collegiate Athletic Association sports. *The American journal of sports medicine*. 2017 Jan;45(1):201-9.
- 03- Waterman BR, Belmont PJ, Cameron KL, DeBerardino TM, Owens BD. Epidemiology of ankle sprain at the United States Military Academy. *The American journal of sports medicine*. 2010 Apr;38(4):797-803
- 04- Bleakley C. Supervised physiotherapy for mild or moderate ankle sprain. *British Medical Journal Publishing Group*; 2016.
- 05- Doherty C, Delahunt E, Caulfield B, Hertel J, Ryan J, Bleakley C. The incidence and prevalence of ankle sprain injury: a systematic review and meta-analysis of prospective epidemiological studies. *Sports medicine*. 2014;44(1):123-40.
- 06- Janssen KW, van Mechelen W, Verhagen EA. Bracing superior to neuromuscular training for the prevention of self-reported recurrent ankle sprains: a three-arm randomised controlled trial. *British journal of sports medicine*. 2014;48(16):1235-9. doi: 10.1136/bjsports-2013-092947. PubMed PMID: 24398222; PubMed Central PMCID: PMC4145426.
- 07- Attenborough AS, Hiller CE, Smith RM, Stuelcken M, Greene A, Sinclair PJ. Chronic ankle instability in sporting populations. *Sports medicine*. 2014 Nov 1;44(11):1545-56.
- 08- Clifton DR, Koldenhoven RM, Hertel J, Onate JA, Dompier TP, Kerr ZY. Epidemiological patterns of ankle sprains in youth, high school, and college football. *The American Journal of Sports Medicine*. 2017 Feb;45(2):417-25.
- 09- Hootman JM, Dick R, Agel J. Epidemiology of collegiate injuries for 15 sports: summary and recommendations for injury prevention initiatives. *Journal of athletic training*. 2007 Apr;42(2):311
- 10- Gribble PA, Bleakley CM, Caulfield BM, Docherty CL, Fourchet F, Fong DT, Hertel J, Hiller CE, Kaminski TW, McKeon PO, Refshauge KM. Evidence review for the 2016 International Ankle Consortium consensus statement on the prevalence, impact and long-term consequences of lateral ankle sprains. *British journal of sports medicine*. 2016 Dec 1;50(24):1496-505.
- 11- Gribble PA, Bleakley CM, Caulfield BM, Docherty CL, Fourchet F, Fong DT, Hertel J, Hiller CE, Kaminski TW, McKeon PO, Refshauge KM. 2016 consensus statement of the International Ankle Consortium: prevalence, impact and long-term consequences of lateral ankle sprains. *British journal of sports medicine*. 2016 Dec 1;50(24):1493-5.

- 12- Kaminski TW, Hertel J, Amendola N, Docherty CL, Dolan MG, Hopkins JT, Nussbaum E, Poppy W, Richie D. National Athletic Trainers' Association position statement: conservative management and prevention of ankle sprains in athletes. *Journal of athletic training*. 2013;48(4):528-45.
- 13- Kase K. Clinical therapeutic applications of the Kinesio (! R) taping method. Albuquerque.2003.
- 14- Halseth T, McChesney JW, DeBeliso M, Vaughn R, Lien J. The effects of kinesio™ taping on proprioception at the ankle. *Journal of sports science & medicine*. 2004 Mar;3(1):1.
- 15- Shields CA, Needle AR, Rose WC, Swanik CB, Kaminski TW. Effect of elastic taping on postural control deficits in subjects with healthy ankles, copers, and individuals with functional ankle instability. *Foot & ankle international*. 2013 Oct;34(10):1427-35.
- 16- Miller H, Needle AR, Swanik CB, Gustavsen GA, Kaminski TW. Role of external prophylactic support in restricting accessory ankle motion after exercise. *Foot & ankle international*. 2012 Oct;33(10):862-9.
- 17- Wilkerson GB. Biomechanical and neuromuscular effects of ankle taping and bracing. *Journal of Athletic training*. 2002 Oct;37(4):436.
- 18- Zwiers R, Vuurberg G, Blankevoort L, Kerkhoffs GM. Taping and bracing in the prevention of ankle sprains: current concepts. *Journal of ISAKOS: Joint Disorders & Orthopaedic Sports Medicine*. 2016 Nov 1;1(6):304-10.
- 19- Pollock AS, Durward BR, Rowe PJ, Paul JP. What is balance?. *Clinical rehabilitation*. 2000 Aug;14(4):402-6.
- 20- Hunt KJ, Hurwit D, Robell K, Gatewood C, Botser IB, Matheson G. Incidence and epidemiology of foot and ankle injuries in elite collegiate athletes. *The American journal of sports medicine*. 2017;45(2):426-33.
- 21- Ekstrand J, Tropp H. The incidence of ankle sprains in soccer. *Foot & ankle*. 1990;11(1):41-4.