Original Article

Prevalence Of Wrist Tendonitis In Sub Elite Badminton Players

Alvin Anto[1], Dr. G. Varadharajulu[2]

[1]Final year student, Krishna College of Physiotherapy, KIMSDU, Karad, Maharashtra, India
[2]Dean and professor, Department of Neurosciences, Krishna college of physiotherapy, KIMSDU, Karad, Maharashtra, India
Corresponding author: Alvin Anto
DOI: 10.47750/pnr.2022.13.S09.1245

Abstract

Background: Badminton is the one of the world famous game it gives our body a rigorous workout and improve our hand, eye coordination. Wrist tendonitis is an overuse injury mainly caused by respective energy storage and release with excessive compression. The assessment of severity of tendonitis will help to decide the treatment protocol for the players and also make awareness for coach to develop a better plan for training.

Method: A cross-sectional study was conducted to determine the prevalence of wrist tendonitis in sub elite badminton players. The study group consisted 80 sub elite badminton players, 45 males and 35 females both are aged between 18-26 years. The primary outcome measure used was Development and initial validation of the upper extremity functional index. Each subject was given the questionnaire and according to that the score were further evaluated. The Finkelstein test is also assessed to conform the wrist tendonitis.

Result: The statistical analysis showed extremely significant relation between wrist tendonitis and sub elite badminton players with p value<0.0001

Conclusion: As a result of this study the players suffered from mild to moderate intensity of wrist pain during the game

Keyword: Badminton, pain, sub elite players, wrist tendonities

Introduction

Badminton is a popular sport in India and it makes heavy demand on the players. It is a racket sport which require rapid arm movement and quick change in direction in various awkward body positions.[2] Playing badminton gives our body a rigorous workout and improves our hand, eye coordination. Based on few existing studies on injuries of badminton, compared to other sports it is of relatively low risk and dominated by overuse injuries.[4]

Wrist tendonitis is a common condition related to the wrist joint, it involves irritation and inflammation of tendon at the wrist joint. This joint has many tendons around it. A tendon is a fibrous connective tissue that attaches muscle to bone that allow the movement of joint.[5] The wrist tendon connect forearm muscle to the hand and finger bones .They are divided into extensors and flexors .Extensors is the tendon across the back of the wrist that bend the wrist backward, flexor is the tendon across the front of wrist that bend the wrist forward .[5]Wrist tendonitis is mainly due to overuse or repetitive movement. The same movements and the use of wrist repetitively causes Pain, swelling and redness can be a positive sign for wrist tendonitis.[7] In this condition the pain is worse with grasping or pinching, it produce cracking noise and thumb catches. It is a common overuse injury caused by respective energy storage and release with excessive compression.[3] It is necessary to understand the injury prevalence, so as to predict risk factors

and to setup preventive measures to prevent injury. An injury is mostly defined as an episode of pain, swelling, stiffness or numbness during playing badminton or after the game. Most of the players has chosen badminton as their career the assessment of severity of tendonitis will help to decide the treatment protocol for the players and also make awareness for coaches to develop a better plan for training.[2,3]

Thereby reduce the risk of injury and improve training quality so that it will help to improve the game.

Finkelstein test it will help to assess the wrist tendonitis it is also used to determine the presence of de quatrain. The patient makes a fist with the thumb inside the fingers the examiner stabilizes the forearm and deviates the wrist towards the ulnar side.[6] The positive test is indicated by pain over the abductor pollicis longus and is indicative of Para tendonitis of two tendons this test can cause some discomfort in normal individuals, the examiner should compare the pain caused on the affected side with that of normal side.[6] Only if the patient's symptoms are produced is the test considered positive. Imaging typically is not needed to diagnose tendonitis. But the provider may want an X ray to check for fracture or arthritis an X ray doesn't show tendonitis. Ultrasound and magnetic resonance imaging can be useful, though. They can show whether there's fluid around the aggravated tendon.

The treatment of tendonitis is based on several factors in which they include the location, type and severity of tendonitis. The primary goal of treatment is to control the pain and inflammation. Anti-inflammatory drugs (NSAIDs) help to lower inflammation and pain. Immobilization a splint or cast prevent further irritation and allow for rest. Icing a few times, a day lowers inflammation and reduces swelling and pain the placing of icing should be proper otherwise no use.[8] The specialized physical therapy may include stretching and strengthening exercises, electrical stimulation, ultra sound therapy and possibly splints or supports.[8]physical therapist are important part of health care team who play an essential role in reducing the hospital stay is providing quicker recovery and provide a better quality of life.[9] Cortisone injection a power anti-inflammatory is injected right into the inflamed area. when this treatment fail surgery is the best solution it may involve removing inflamed tissues or releasing pressure from tight tendon sheaths and the physiotherapist play an important role with measures such as minimizing post-operative pain and discomfort . There are number of steps to prevent wrist tendonitis. The most important one is to modify activities that aggravate it and that causes pain. Patients should take a rest and also if the pain is aggravating then wearing a splint, brace is necessary. Prepare the tendon for activity with gentle stretching.[8]

Materials and methodology

Data collection was started after obtaining the ethical clearance by the institutional ethics committee of Krishna institute of medical sciences, Deemed To Be University, Karad to proceed with the study

The study was a cross sectional study conducted among both male and female participants were held at the Krishna collage of physiotherapy, karad and Shivaji stadium, karad where the subjects were assessed and data collection was done. All the participants were selected by convenient sampling method. Each of them assessed for any injury or pain at shoulder, elbow and wrist joint. The players were all sub-elite between 18-26 years who had suffered tendonitis for greater than 3 months and players playing every day for 2-4 hours for 5 or more than 5 years were only eligible for the study. Player who had any recent (past 3 months) injury to wrist, any other trauma to upper limb (except wrist tendonitis) or playing any other sports, except badminton did not fit into the eligibility criteria. Primary outcome measure used was Development and initial validation of upper extremity functional index questionnaire.it is an easily self-administered questionnaire that evaluates symptoms and their effect on physical activity. The questionnaire contains ten question, covering three necessary domains pain, functional status and activity. The questionnaire was prepared in English language. The maximum score that can be achieved questionnaire is 40. Each question carries 4 marks at last the therapist will calculate the total score. A lower score indicates more symptoms and greater limitation of physical activity. The Finkelstein test is also assessed to conform the wrist tendonitis. The patient makes the fist with the thumb inside the fingers. The therapist stabilizes the forearm and deviates the wrist towards the ulnar side. The positive test will indicate by pain over the abductor pollicis longus. Total 93 players were assessed and 13 were excluded, 8 had different kind of upper limb injury and 5 are not willing to participate.80

participants were selected for the study. The procedure was explained and written informed consent were taken from the authorities.

The primary outcome measure used was Development and initial validation of the upper extremity functional index. The questionnaire contains ten questions covering the important necessary domains such as pain, functional status and activity of daily living. The maximum score that achieved on the question is 40 and would be the score of the person who is completely asymptomatic. A lower score indicates more symptoms and greater limitation of physical activity. The questionnaire is valid and reliable to measure the condition of wrist tendonitis. The individuals were explained about the purpose of the study. All participants were educated and knew English and each participant was given questionnaire which they had to fill and the scores were calculated and the data recorded for the individual player.

Statistical analysis

For sample size following formula was used

$$n=4pq/1^2$$

The unpaired t-test was used. Statistical analysis of recorded data was done by using software Instat. Arithmetic mean and standard deviation was calculated for each outcome measure and arithmetic mean was derived from adding all the values together and dividing the total number of value. MS Excel was used for drawing various graphs with given frequencies and the various percentages that were calculated with the software. The P value is less than 0.0001 which is extremely significant.

Result

Age distribution

Table No.1; Association Between Age and Pain

Age group	Mean	Standard deviation	Unpaired t -test	p- value
18-21 years (49%)	96.82	3.6	1.423	0.1583
22- 26 years (51%)	97.98	3.2	1.423	0.1583

Interpretation- The above table revealed that there was no significant association between age and the pain among the players.

Table No.2; Effect Of Functional Activity Of Upper Limb According To Functional Scale Index

Sample size(N)	Standard Deviation (SD)	Std. error of Mean (SEM)	Mean	P-test value
80	1.845	0.2063	31.1625	<0.0001

Gender Distribution

Table No.3; Association Between Gender and Pain

Gender N=80(100%0	Mean	Standard Deviation	Unpaired t-TEST	P-value
45 male players (56.25%)	96.80	3.5	1.619	0.1075
35 Female players(43.75%)	97.95	3.3	1.619	0.1075

Interpretation; The above table revealed that there was no significant association between gender and pain

Table No.4 Percentage of wrist tendonitis pain

Pain in wrist	Number of players	Percentage of players with wrist pain
No pain asymptomatic	41	51.25%
Mild pain after game	35	43.75%
Moderate pain after game	4	5%
Severe pain after game	0	0%

Interpretation; The above table shows that 51.25% of players had no pain after the game,43.75% of players had mild pain after the game ,5% of players had moderate pain after the game and 0% of players had severe pain after the game

Table No.5 Prevalence of wrist tendonitis according to Finkelstein test

Sample size	Standard Deviation (SD)	Mean	P- value
80	0.4282	0.7625	<0.0001

Interpretation; The above table revealed that there was significant relation between players and wrist tendonitis.

In this study after analyzing the data, it was found that there is prevalence of wrist tendonitis in sub elite badminton players there are 42 players with no pain,35 players with mild pain and 4 players with moderate pain.

Discussion

The purpose of the study was to find the prevalence of wrist tendonitis in sub elite badminton players. The objectives are to assess the severity of the pain and the symptoms of wrist tendonitis after game in sub elite badminton players. Many studies concluded on the badminton players such as tennis elbow symptom and shoulder injury in professional

badminton players, but a very few studies are conducted on the clinical severity of wrist tendonitis in sub elite badminton players.

Our study showed 44% with mild pain after the game and 55% of players with moderate pain and the result observed were statistically significant. A study was done by Afshar Jafari proved that highest prevalence of injury among badminton players is 65.6%. Most injury in the lower extremity. In the most affected area of upper extremity including wrist 90.6%, waist and back is 84.4% and arms 37.5%. According to the result of this research the incidence of injury in upper extremity relatively high.

According to the study of senadheera v.v on 25 elite players showed that 40% prevalence of pain in elbow and 4% prevalence of pain in the wrist the probable reason is the elite players are trained on a very advanced level for competition and the their tendon get adapted for such high intensity training than sub elite players[7]. The study done by p Sathya and labdhi on musculoskeletal problems in badminton players 100 players were investigated out of this 46 players have wrist pain and the wrist pain was more common in females it mainly because of age difference even some male players try to do some extra training in order to achieve there goal so they try some other intense physical training like gym etc[2]. A study by muttalib, on recreational badminton players, 80%injuries were seen due to inadequate warm up and 20% due to overuse [10]. probable reason for this difference could be a long duration or rest or inactivity in recreational players, whereas the sub elite players in our study continuously under training [3].

Our study included 80 players (45 males and 35 females) that is 56.25% of males and 43.75% of females. The playing time and training intensities were equal for both. When association between gender and tendinopathy was observed the results were not statistically significant (p=0.175).In this study 18 -21 year age group is 49% and 22-26 years is 51% when the association between age and tendinopathy was observed with unpaired t test the outcome was not statistically significant .A study by K Hoy MD used abbreviated injury scale (AIS) according to this all the severe injury found in older age group greater than 25 years(p=0.0001)[11]the probable reason for the difference could be that our study only focused on younger age group.

Most of the players with pain or stiffness related to injuries to rotational movement, sideline smashes, retrieving drop shots and making sudden change in direction. Our study also found that injuries in our study were intrinsic in nature, such as that sustained during action in retrieving, smashing or stroking.no injuries was caused by extrinsic factors. Most players resumed badminton within one year, but some finished sports career mainly due to fear of new injury. In our study we used Finkelstein special test to check the severity of wrist tendonitis the result of this test not statistically not significant p-<0.0001 (table.5). According to table no. 2 the daily living activity of badminton players is not that much affected with wrist tendonitis.

Almost all of the badminton players with injuries sought treatment and the most common mode of treatment were the use of topical analgesics, oral analgesics and wearing protective guards and none of the players were offered surgical interventions for their injuries. Badminton is a sport of relatively low risk and its related injuries are generally dominated by chronic overuse injuries [10].

This study is beneficial for the players who play for long time and have a high intensity of training. limitation of this study was, small sample size and the age group was very specific and so the result cannot be extrapolated to other age group.

Conclusion

In this study after analyzing the data it was found that there is prevalence of moderate pain in wrist tendonitis in sub elite badminton players. There is no player with sever pain and 35 players with mild pain and nearly 50% of players with asymptomatic.

When the association between pain and other factors like age, gender was observed then there is no significance.

ACKNOWLEDGEMENT

The authors wish to thank the subject who participated in this study. We would also like to acknowledge , Dr. G. Varadharajulu who supported throughout the study. Authors would like to thank ethical committee of KIMSDU, Karad for cooperation and funding regarding the project, also to Biostatics department for statistical help regarding sample size and result values.

References

1, Jafari A, Mabani M, Golami M. The prevalence and causes of sport injuries in well-trained badminton players of Iran. International Journal of Basic Sciences and Applied Research. 2014;3(1):40-4.

2, Sathya P, Doshi L. Musculoskeletal problems in badminton players under 17.

3, Churi AB, Varadharajullu G, Chotai KT. Prevalence of Achilles Tendinopathy Pain in Sub-Elite Badminton Players. EXECUTIVE EDITOR. 2020 May;11(05):58.

4,Injuries in badminton uffe Jorgensen, soren winge sports medicine

5,B.D chaurasia;human anatomy volume1upper limb CBS publishers 7thedition 2016

6,Orthopedic physical assessment 6th edition David j magee

7, Senadheera VV, Mayooran S, Dissanayake JK. Elbow, Wrist and Hand Tendinopathies in Badminton Players. American Journal of Sports Science and Medicine. 2019 Feb 5;7(1):16-9.

8,overcoming tendonitis a systemic approach to evidence based treatment of tendinopathy Steven law DPT& Frank skretch DPT

9, Shemjaz AM, Anuj T, Saddam MH. Awareness and knowledge of physical therapy among medical interns-a pilot study. International Journal of Physiotherapy. 2016 Jan 1;3(2):170-6.

10, Muttalib A, Zaidi M, Khoo C. A survey on common injuries in recreational badminton players. Malaysian Orthopaedic Journal. 2009;3(2):8-11.

11, Høy K, Lindblad BE, Terkelsen CJ, Helleland HE. Badminton injuries--a prospective epidemiological and socioeconomic study. British Journal of Sports Medicine. 1994 Dec 1;28(4):276-9.