International Journal of Yoga, Physiotherapy and Physical Education
www.sportsjournal.in
ISSN: 2456-5067
Received: 07-04-2023, Accepted: 22-04-2023, Published: 08-05-2023
Volume 8, Issue 3, 2023, Page No. 9-4

Incidence of shin splints in basketball players

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Abstract
Shin splints are a common overuse injury among athletes, particularly those participating in sports involving repetitive impact loading. Basketball players are at an increased risk of developing shin splints due to the high-impact nature of the sport. This study aimed to investigate the incidence of shin splints in basketball players using a shin palpation test and investigate lower extremity impairments utilizing Lower Extremity Functional Index. The study consisted of 45 district-leveled young basketball players (male: n = 40, age =21; female: n =05, age =20.4). Lower Extremity Functional Scale and Shin Palpation test was recorded from the study participants. The findings of the study demonstrated that there is 20% incidence of shin splints in basketball players along with mild impairment in the lower extremity function.

Keywords: athletes, overuse injury, basketball players, impairment

Introduction

Basketball is a physically demanding activity that can be played both inside and outside. Basketball is one of the most watched and played games in the world due to its constant action and frequent scoring. High schools, colleges, other organizations, as well as national teams in the Olympic Games, play the sport on an amateur basis since 1936 [1]. Basketball is an activity that calls for fundamental abilities like dribbling, shooting, passing, rebound defense, etc. For defensive activities, it is a multidirectional activity that necessitates frequent changes in forward and backward movement [2].

Shin splint syndrome was described as "pain and discomfort in the limb from repetitive exercise on hard surface or due to forceful excessive use of foot flexures" by the American Medical Association in 1966. Shin splints are typically brought on by repetitive trauma to the adjacent connective tissue of the tibia. Athletes who participate in running sports or other physical activities, such as jogging and jumping, are more likely to develop shin splints. The middle to lower two thirds of the lateral portion of the tibia, the larger of the two bones in the lower leg, are precisely where shin splint injuries occur [3].

Shin splints are commonly seen in sports like runners, football players, sprinters, etc. Shin splint is a form of overuse injury. Pain from a shin splint is felt along the inner shin bone border. Shin splint pain is primarily located in the lower limb, between the knee and the ankle. Shin splints are a condition called as cumulative stress that develops over time as the bones, muscles, and joints in the lower leg are repeatedly strained [4].

35% of all injuries suffered by runners are shin splints, also known as medial tibial stress syndrome (MTSS) in medicine. Compartment syndrome and tibia stress fractures are the diagnoses believed for the onset of shin splints, but the most common causes in professional athletes are irritation and deterioration of the soft tissue surrounding the bone [5]. Shin soreness splints are terms used by athletes to describe a painful condition of the shin which can seriously interfere with training and performance in the various forms of running. The athlete initially experiences a vague, gnawing pain in one or both shins near the conclusion of the run as the first subtle sign of the condition. The pain starts out minor but progressively gets worse over the course of a few days until it eventually prevents you from continuing to run or sprint. The pain initially subsides with rest, but returns with continued exercise. Over the days, shorter and shorter distances cause the pain, which lasts for a few hours after physical activity has stopped. Last but not least, the pain persists through the night without interfering with sleep, and any effort to run immediately results in excruciating pain, necessitating the suspension of training [6].

Material and methods

Using a convenient sampling strategy, 50 players were approached, out of which 45 were selected depending on the inclusion criteria of district-leveled basketball players aged 18 to 25; both males and females were included. Five players were excluded according to exclusion criteria of individuals with recent surgery, lower limb fractures, musculoskeletal injuries, and players unwilling to participate. Obtaining the written and informed consent of participants, the study's purpose and objectives were clearly conveyed to them. The selected participants filled out the Lower Extremity Functional Index, and Shin Palpation Test was performed on the participants. The lower extremity functional index is a self-report questionnaire in which the participant has to answer questions regarding twenty different activities of daily living and score accordingly. The maximum possible score is 80, and the minimum score is 0. In the shin palpation test, the patient's lower leg is grasped by the examiner at mid-calf, and the tibia and fibula are palpated together. The same palpation technique is applied at more distal locations moving towards the ankle. The pain in the lower leg along the posteromedial border of the tibia

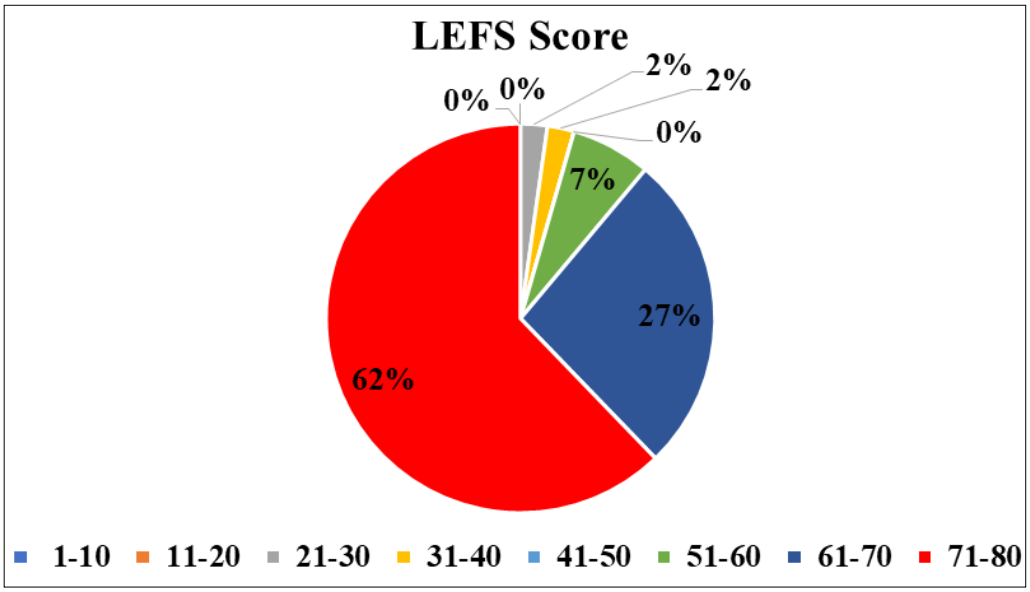
may indicate a shin splint or medial tibial stress syndrome. The collected data was analyzed using the mean, standard deviation, and percentages.

Result

The present study was executed to study the incidence of shin splints in basketball players. The study composed of 45 participants. Majority of participants were males (89%) and others were females (11%) with average age (20.93 ± 1.57). The average age of males (21 ± 1.63) and that of females (20.4 ± 0.89).

Table 1: indicates distribution of participants by Lower Extremity Functional Index score.

LEFS score	Participants	Percentage
1-10	0	0%
11-20	0	0%
21-30	1	2%
31-40	1	2%
41-50	0	0%
51-60	3	7%
61-70	12	27%
71-80	28	62%



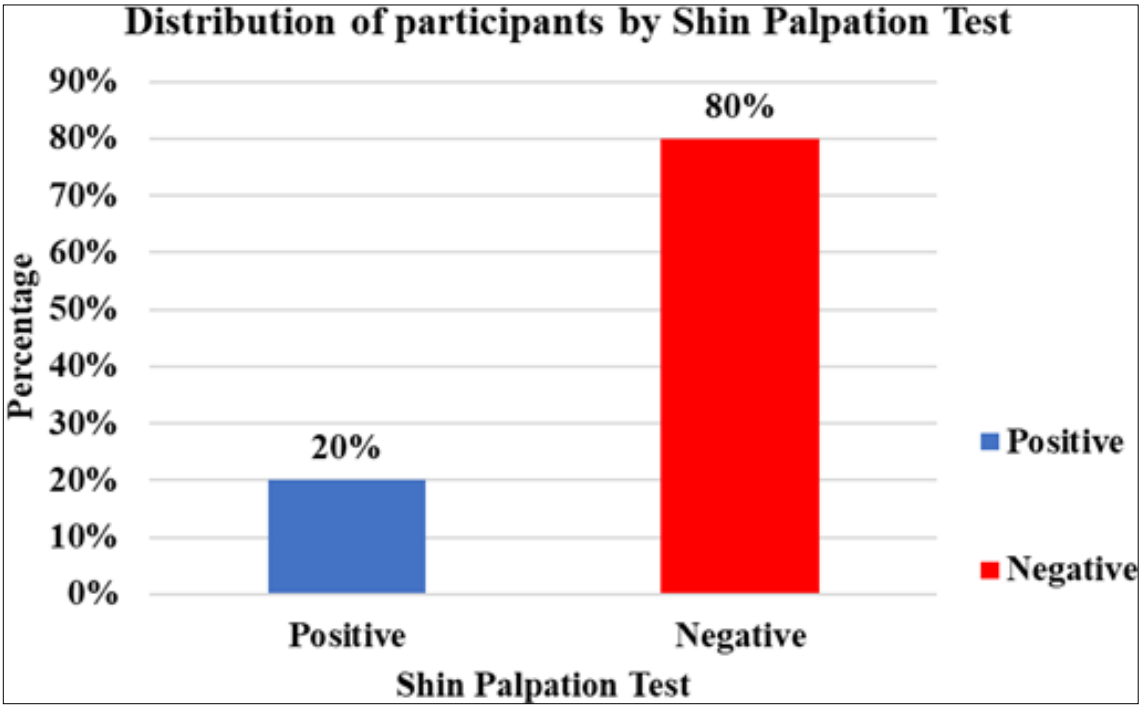
Graph 1: Distribution of participants by Lower Extremity Functional Index.

Interpretation

The above pie chart depicts the LEFS scores achieved by the participants. The maximum score gained was of 71-80 (62%), followed by 61-70 (27%), 51-60 (7%) and the minimum score was of 21-30 (2%) and 31-40 (2%).

Table 2: indicates distribution of participants by Shin Palpation Test.

Shin Palpation Test	No. of Participants	Percentage
Positive	9	20%
Negative	36	80%



Graph 2: Distribution of participants by Shin Palpation Test.

Interpretation

The above graph depicts percentage of positive and negative shin palpation tests in all the participants. The shin palpation test was positive in 20% participants and negative in 80% participants.

Discussion

The present study was conducted to find out the incidence of shin splints in basketball players. The study was conducted with 45 participants of which 89% were males and 11% were females, with average age (20.93 ± 1.57). The average age of males was (21 ± 1.63) and that of females was (20.4 ± 0.89).

During the analysis it was found that the population involved in this study had a maximum LEFS score between 71 and 80, making up 62% of the overall sample. 7% of the participants scored between 51 and 60, while 27% who scored between 61 and 70. The two groups with the lowest result, totaling up to 2% of the participants, were 21-30 and 31-40.

Similar scores were noted in a study conducted by Krutali Saiprasad Ghogale titled, Study of lower extremity dysfunctions in adolescent footballers. In the study 100 footballers were recruited from football associations at the club, district and state levels. The lower extremity functional scale and demographic information were recorded. The LEFS scores of 78% of the participants were in the 70-80 range, 12% were in the 60-70 range and 3% were in the 50-60 range. As per the study, running on uneven terrain (18%), making abrupt turns while running (17%) and hopping (8%) are the exercises that have the most impact on teenage football players. According to the study's findings, adolescent football players' lower limb function exhibits a mild impairment [7].

This research's rationale may be used to support our findings in a similar way. As most of the participant's LEFS scores was 50 or higher, it can be concluded that the participants in our study revealed mild impairment in lower extremities function.

20% of the study's participants scored positively on the shin palpation test, whereas 80% of them did not. The reason being most participants tested negative can be adequate training and safety aid. Appropriate warm up and cool down techniques were followed by the players. Pre and post training stretches were carried out thoroughly by the players. Rest periods were evenly distributed across the player's training and game sessions. The participants with positive result for the shin palpation test trained alone, without any formal coaching or direction. For these participants, inappropriate footwear and uneven surfaces were sufficient causes of shin splints.

The study's future potential includes the possibility of using a bigger sample size. Basketball players competing at different levels (clubs, states, nationals, and international) may be compared.

Clinical implications

Early recognition of the basketball players' most often impacted activities will enable us to develop rehabilitation programs to improve their performance and functionality.

Conclusion

The present study concludes that there is 20% incidence of shin splints in basketball players. The minimum lower extremity functional index score was 25 and the highest lower extremity functional index score was 80.

Thus, it can be concluded that there was mild impairment in the lower extremity function in basketball players.

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