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Prevalence And Risk Factors Of Shin Splints Among Jazz Dancers

Nabisha Mohammed[1], Srinivasan Masilamani[*2], Shanmugananth Elayaperumal[3], Muhesh Padmanaban[4], Sivasankari Karthikeyan[5], Bhavithra Muthukumarasamy[6]

[1]Research scholar, School of Physiotherapy,Sri Balaji Vidyapeeth (Deemed to be University), Puducherry

[*2]Associate professor, School of Physiotherapy, Sri Balaji Vidyapeeth (Deemed to be University), Puducherry

[3]Professor and Principal, School of Physiotherapy, Sri Balaji Vidyapeeth (Deemed to be university), Puducherry

[4]Research scholar, School of Physiotherapy, Sri Balaji Vidyapeeth (Deemed to be university), Puducherry

[5]Research scholar, School of Physiotherapy, Sri Balaji Vidyapeeth (Deemed to be university), Puducherry

[6]Research scholar, School of Physiotherapy, Sri Balaji Vidyapeeth (Deemed to be university), Puducherry

***Corresponding Author:**

Srinivasan Masilamani

Associate professor, School of Physiotherapy, (Deemed to be university), Sri Balaji Vidyapeeth, Puducherry

Email ID: hayagreeve@gmail.com

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ABSTRACT

Background: Shin splints are used to illustrate a condition when muscular action causes leg pain and discomfort in the distal postero medial portion of the leg, ruling out the possibility that the pain is caused by ischemia or stress cracking. Overuse, inappropriate footwear, or abrupt increases in activity intensity are common causes of shin splints. Even though they can hurt, they can typically be managed with supportive footwear, rest, ice, and appropriate stretching.

Objective: To determine the prevalence and risk factors of shin splints among jazz dancers.

Methodology: It is cross-sectional study. Data is collected by using special test (Shin palpation test) applied on jazz dancers in various dance studios and universities. This test is taken for 100 dancers in various dance studios and universities. This test is taken to the participants who is willing to participate. This test will check the pain by using shin palpation test and also vas scale is used to check the severity of pain.

Result: Among the 100 dancers surveyed, **66% (66 dancers)** reported experiencing shin splints, while **44% (44 dancers)** had no pain. This indicates that shin splints are a common issue among dancers, affecting a significant majority. **Conclusion:** The study concluded that Shin splints are a common issue among dancers, with **66% experiencing symptoms,** while **44% remain unaffected**. This high prevalence highlights the physical strain associated with dance training, emphasizing the need for proper conditioning, recovery strategies, and injury prevention measures

Keywords: *Shin splints, Shin palpation test, Pain, Jazz dancers.*

1. INTRODUCTION

Shin splints, also known as medial tibial stress syndrome (MTSS), are a common overuse condition that affects the lower leg, especially in athletes and people who participate in high-impact activities [1]. An estimated 10–20% of all running-related injuries are thought to be MTSS, which is characterized by pain and inflammation in the medial aspect of the tibia[2].Repetitive stress and trauma cause inflammation in the periosteum, a thin layer of connective tissue that surrounds the tibia[3].The affected area becomes tender and painful as a result of this inflammation[4].Stress reactions, such as micro-fractures, bone marrow edema, and cortical thickening, can occur in the tibia bone itself[5].Pain may result from these reactions, particularly when engaging in weight-bearing exercises[6].

Excessive use or improper biomechanics can cause straining of the muscles and tendons that surround the tibia, including the tibialis anterior and posterior[7].The affected area may become painful and stiff as a result of this strain[8].Pain and stiffness can be caused by tense and inflammatory fascia, a network of connective tissue that surrounds muscles and bones in the affected area[9].In sports medicine and orthopedics, MTSS is a major concern because, if left unaddressed, it can result in

chronic pain and decreased athletic performance[10].Although the precise pathophysiology of shin splints is still up for debate, several theories contend that muscular traction pressures, bone remodeling imbalance, or tibial periostitis are the causes of the ailment[11].

Training on hard or uneven surfaces, biomechanical anomalies including flat feet or high arches, abrupt increases in physical activity, and inappropriate footwear are risk factors[12].Untreated shin splints can develop into more serious issues, such as stress fractures, which take longer to heal and can impair a person's ability to play sports or engage in physical exercise[13].Clinical assessment is the main method used to diagnose shin splints because their symptoms might mimic those of other lower-leg disorders like tendinitis, compartment syndrome, and stress fractures[14].

Rest, ice application, stretching, strengthening exercises, and a gradual return to activity are common treatment modalities[15].Recurrence risk can also be decreased by using preventative techniques, such as appropriate warm-up exercises, lower leg muscle strengthening, supportive footwear, and training intensity modification[16].Even though shin splints are a common injury, research into their precise mechanisms and best treatments is still underway[17].By examining recent research and literature, this study seeks to investigate the etiology, risk factors, diagnosis, prevention, and treatment of shin splints[18].In order to help athletes and active people retain their best physical health and performance, this research will help identify the underlying causes of MTSS and offer important insights into evidence-based management and prevention techniques[19].

2. METHODOLOGY

This study used a cross-sectional design to observe the prevalence and risk factors of shin splints among jazz dancers. A total of 100 participants from different jazz dance studios and professional companies were surveyed. Objectives involved assessing how frequent shin splints occur, its severity, and any possible predisposing factors such as training habits, footwear, surface type, and previous injuries. The study population was 100 jazz dancers, with 50 males and 50 females aged between 18 and 35 years. These dancers were recruited from local dance studios, universities, and professional dance companies. All participants had at least one year of dance experience and engaged in a minimum of 5 hours of dance training per week. Those with known diagnosed conditions of the lower limbs, such as stress fractures, severe joint abnormalities, or major surgical procedures in the lower legs, were excluded. **Inclusion Criteria** were Jazz dancers aged 18-35 years and A minimum of 1 year of jazz dance training, A minimum of 5 hours of dance training per week and Ability to read and complete the survey. **Exclusion Criteria** were Dancers that have previously undergone surgery in their lower limbs or have significant orthopedic diseases (such as fractures, extreme ligament ruptures) and Dancers that did not exercise with regular intensity, or less than 5 hours of regular dance practice per week and Dancers that have severe pre-existing medical conditions that may affect the outcome of the study such as cardiovascular, neurological diseases.

Data Collection Procedure:

Jazz dancers from different dance studios and institutions participated in this cross-sectional study. Permission for this study was granted by 100 dancers from colleges and dance studios. There were 50 female and 50 male dancers among the 100 total. Repetitive lower limb motions are the cause of shin splints; dancers perform these repetitive movements to experience pain. This is the study's primary goal. A unique test to screen for medial tibial stress syndrome or shin splints is the shin palpation test and also vas scale is used to check the severity of pain. The patient is subjected to this test passively. Those who are interested to participate in this study will be recruited before the test is administered to the dancers and a consent form is given to them. In this test, exerting force on the dancer’s muscles that surround the shin bone in the lower two-thirds of the leg. Shin splints are indicated by pain during the test.

3. OUTCOME MEASURES

1. Shin palpation test

A diagnostic method for evaluating medial tibial stress syndrome (MTSS), also referred to as shin splints, is the Shin Palpation Test. To find tender or painful spots, pressure is applied along the tibia's medial (inside) edge.

2. Vas scale (visual analog scale)

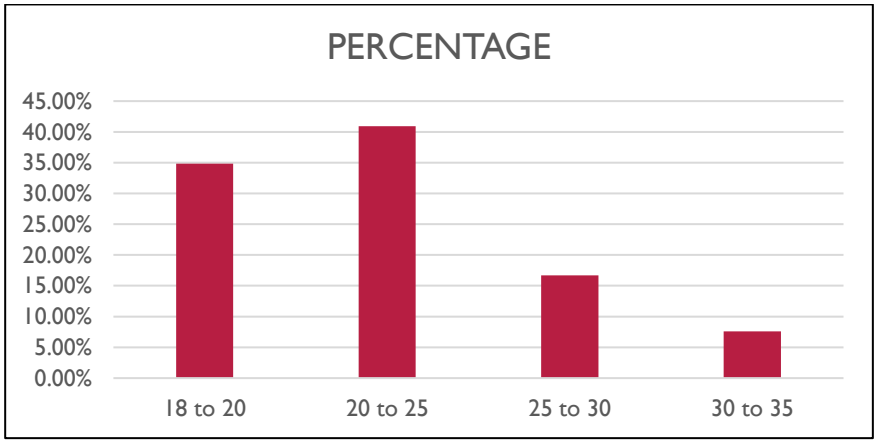
A line that helps people to rate of intensity of the pain.

4. STATISTICAL ANALYSIS

This statistical research looks at the training load, age distribution, and severity of shin splints among dancers. The information sheds light on how common this ailment is in the dance community as well as its contributing variables.

AGE	PERCENTAGE
18 to 20	34.85
20 to 25	40.91%
25 to 30	16.67%
30 to 35	7.58%

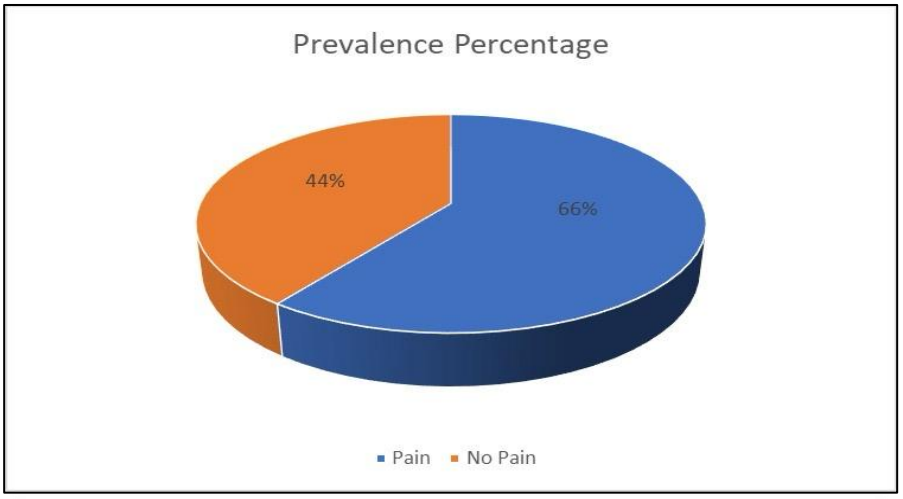
TABLE 1: Shows the statistics distribution of age among 66 participants with shin splints.



The Bar graph shows the statistics of distribution of age among 66 participants with shin splints.

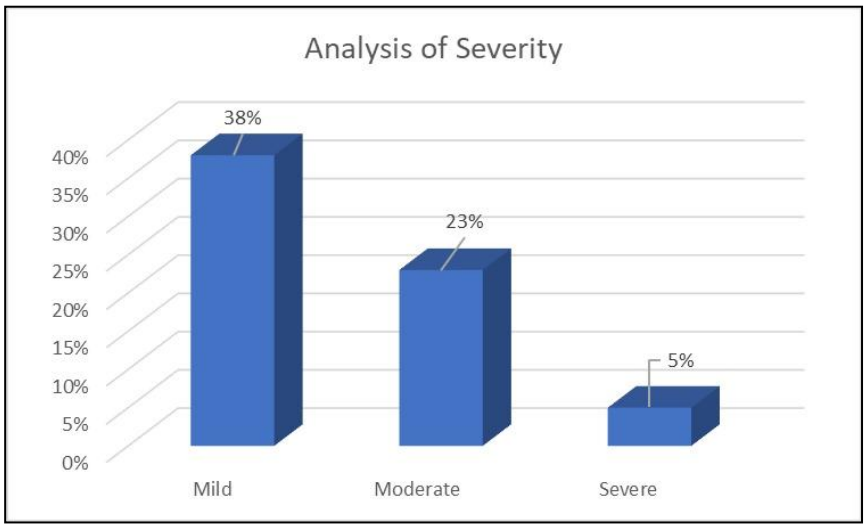
Category	Percentage
Pain	66%
No pain	44%

TABLE 2: Shows the frequency of shin splints among the dancers polled is succinctly summarized in this table, which indicates that 66% of them feel discomfort and 44% do not.



The pie chart shows the prevalence percentage of shin splints among 100 participants.

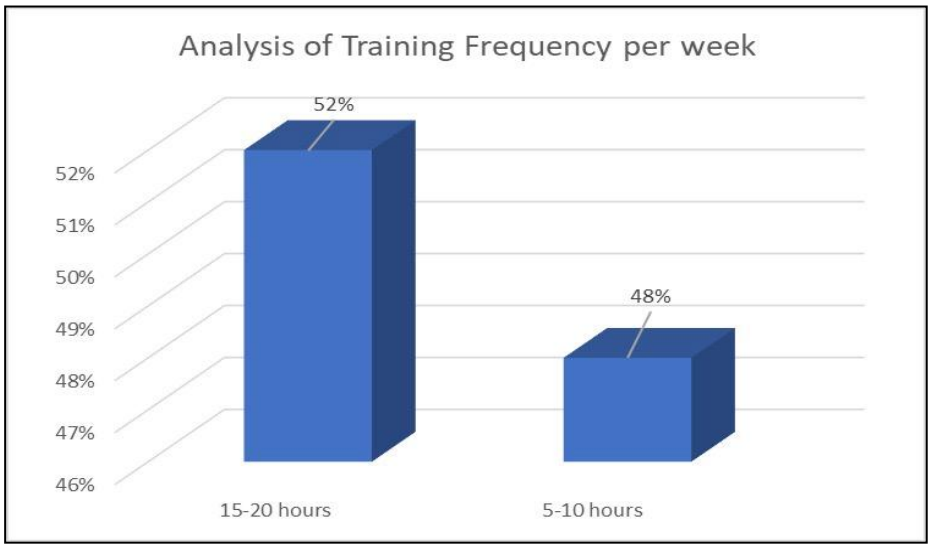
TABLE 3: Shows the analysis of severity among 66 participants with shin splints.



The Bar graph shows the analysis of severity among 66 participants

Training hours per week	Percentage of dancers	Potential impact on shin splints
15 to 20 hours	52%	Higher training load, increased risk of shin splints due to prolonged activity
5 to 10 hours	48%	Moderate training load, still a risk of shin splints with insufficient rest or recovery

TABLE 4: shows the frequency of training per week. 52% of dancers have pain who works for 15 to 20 hours and 48% of dancers have pain who works for 5 to 10 hours.



The bar shows shows the statistics of training frequency per week.

5. RESULTS:

Prevalence of Shin Splints:

Of the 100 dancers surveyed, 66% (66 dancers) reported having experienced shin splints.

44% (44dancers) reported no pain.

The severity of shin splints among 66 dancers experienced shin splints,

38% of affected dancers (38 dancers) described their symptoms as mild.

23% (23 dancers) reported moderate symptoms.

5% (5 dancers) reported severe shin splints that caused significant pain.

Prevalence by Training Frequency:

Dancers training more than 15 hours a week were more likely to suffer from shin splints than the dancers who had less training

The dancers training for 15 to 20 hours a week: 58% reported to have shin splints.

The dancers training for 5 to 10 hours per week: 42% reported to have shin splints.

6. DISCUSSION

This study found that 66% of jazz dancers reported experiencing shin splints, 44% reporting no pain. The severity of shin splints among 66 dancers experienced shin splints, 38% have mild symptoms, 23% have moderate symptoms, 5% have severe symptoms. These results are consistent with other studies of athletic populations in which overuse injuries such as shin splints are common, given repetitive high-impact activities.

In this study, the dynamic and physically demanding nature of the dance style, which includes frequent jumping, pivoting, and quick changes in direction, made the jazz dancers more susceptible to shin splints. In this study, Dancers have high chances to get shin splints due to repetitive movements on lower limb. Shin palpation test is the test used to check the pain on tibial region. In this test, pressure is applied to the shin bone and surrounding muscle, it will indicate pain if the test is positive.

Shin Splint Severity, According to the data, 66% of dancers suffer from shin splints, which can range in severity: Although they are uncomfortable, mild cases (38%) barely affect performance. Notable pain is present in moderate cases (23%), which lowers performance intensity. Severe cases (5%) have a major effect on performance and may necessitate rest or medical attention. Given the high overall frequency (66%) it appears that dancers frequently suffer from shin splints. Even slight discomfort can have an impact on long-term performance and training consistency, even though the majority of cases are low to moderate. Most dancers manage their symptoms before they worsen, as seen by the low incidence of severe instances.

Dancers' Age Distribution Affected The 20–25 age group accounts for 40.91% of dancers with shin splints, followed by the 18–20 age group (34.85%). Younger dancers aged 25–30 (16.67%) and 30–35 (7.58%) are less likely to be impacted. According to this pattern, shin splints are more common in younger dancers who may still be getting used to the physical demands of dancing and frequently have rigorous training regimens. Furthermore, it's possible that dancers over 30 participate in less intense training or have modified their methods to avoid getting hurt.

Effects of Exercise on Shin splint development seems to be significantly influenced by training volume: Due to the lengthy activity, 52% of dancers train for 15–20 hours a week, which is associated with an increased risk. 48% train 5–10 hours a week, which still carries some danger but may be reduced with enough recovery. If recovery is inadequate, this nearly equal distribution implies that even low training loads may be a contributing factor to shin splints. The impact of overuse and repetitive strain is highlighted by the increased risk among those who workout for 15–20 hours per week.

Fatima et al.'s study sought to ascertain how often shin splints were among gym treadmill users. In Pakistan, 152 individuals between the ages of 18 and 25 from different gyms in Lahore, Faisalabad, and Sargodha participated in this observational cross-sectional survey. According to the study, a sizable percentage of treadmill users had shin splints, underscoring the necessity of taking preventative action in this demographic. In a similar vein, 150 recreational treadmill users in Sargodha's gyms were evaluated in another cross-sectional study. The results showed that 18.7% of participants had shin splints, highlighting how frequent the condition is in this group[20].

7. RISK FACTORS

1. Training Intensity: The results clearly indicate a relationship between the intensity and frequency of training and the development of shin splints. Dancers who train more than 15 hours per week are at a significantly higher risk for shin splints. This is consistent with the overuse theory of shin splints, where repetitive high-load activity leads to micro-trauma in the tibial area, resulting in pain and inflammation. A recommendation for these dancers would be to incorporate more rest

days into their schedules or to balance their high-impact training with low-impact activities like swimming or cycling.

2. Footwear: Poor footwear, especially worn-out jazz shoes, was a major contributor to shin splints. Good footwear provides the support and cushioning needed to reduce the impact on the lower legs during dancing. This study emphasizes the need for investing in quality dance shoes designed for jazz dancers, which provide better arch support and shock absorption. Footwear education is an important part of injury prevention.

3. Surface Type: This was also among the factors to influence the incidence of shin splints. Surfaces such as concrete and hardwood, which characterizes most of the dance studios, are very unforgiving and tend to enhance the magnification of forces in the lower extremities whenever there is jumping and landing on these surfaces. A change to sprung or padded floors could also mitigate the chances of shin splints as the material is either impact-absorbing or can decrease the pressure on the joints and bones.

4. Previous Injuries: A history of lower limb injuries, such as ankle sprains or calf strains, increases the risk of developing shin splints. This implies that dancers who have had prior injuries may have biomechanics that are somehow altered, causing more stress to the lower legs and thus predisposing them to the development of shin splints. These dancers should be referred for rehabilitation programs focusing on strength, flexibility, and proprioception to prevent recurrence.

Prevention Strategies:

Footwear Education: For example, dancers should be counseled to change their shoes often, using footwear suited to jazz dance, providing enough support and shock absorption.

Training Adaptations: Dancers need to be educated to have rest periods within the training calendar. Periodization of training can be used to avoid overuse injuries such as shin splints by increasing the intensity and the volume of training incrementally.

Surface Choice: Sprung floors or padded surfaces should be installed in the dance studios because they reduce lower limb stress especially for high impact styles such as jazz.

Strength and Conditioning Programs: A specific strength and flexibility program for the lower legs can also help prevent shin splints. Exercises that aim at the calf, anterior shin muscles, and overall lower body alignment can build up resilience and performance.

8. CONCLUSION

Shin splints are a common and significant problem for Western dancers, especially those participating in high-impact styles of dance, including ballet and contemporary. This paper provides important knowledge about the incidence and risk factors of shin splints and stresses the importance of preventive measures. Addressing footwear, surface, training intensity, and recovery can reduce the prevalence of shin splints among dancers, which ensures healthier long-term careers in dancing. According to the data, shin splints are a common problem among dancers, particularly those who are between the ages of 18 and 25 and who put in more training hours. Although the majority of instances are mild to moderate, reducing the frequency and severity of shin splints in dancers may be possible by addressing contributory factors such training intensity, recovery plans, and technique modifications.

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