



ISSN Print: 2394-7500  
ISSN Online: 2394-5869  
Impact Factor: 5.2  
IJAR 2017; 3(10): 404-406  
www.allresearchjournal.com  
Received: 18-08-2017  
Accepted: 24-09-2017

**Dr. Sunil Dabas**  
Associate Professor, Govt. PG  
College, Gurgaon, Haryana,  
India

## Shin splints (Medial tibial stress syndrome) in athletes

**Dr. Sunil Dabas**

### Abstract

Athletics is a branch of Sports (The queen of sports) which encompasses elementary forms of movement (Walking, running jumps, and throws) which are conducted in sequences of more or less complex types (Disciplines) and which through evolution reached today level of perfection. Athletics includes the biggest number of various disciplines of cyclic- acyclic character which are manifested from moderate to maximum intensity (Running, jumps, throws). Therefore, player injuries are very different and in some occasions they can be fatal and can permanently disable the player for further training and continuing their career. The most common injury for beginner athletes is Shin Splints-painful shins, also known as Medial Tibia Stress Syndrome (MTSS). The term "shin splints" refers to pain along the shin bone (Tibia) the large bone in the front of your lower leg. It affects approximately 35% of athletes and is considered one of the most prevalent overuse induced pain in this population. Further more up to 70% of runners may develop an overuse injury including MTSS over a 1 year period. Shin splints are common in track and field, soccer, basketball, volleyball basic military training and long distance running. During running each foot strikes the ground approximately 50-70 times per minute, or a total 800 times per mile, with a force 2-4 times body weight. The injury is related to poor training habits, a change in running surface, a new or different style of shoe, or a sudden increase in mileage or in the duration of the work out. Shin splints occurs when muscles and tendons around the shin-bone (the tibia) become inflamed and tender. If an athlete continues to exercise, trying to ignore or run through the pain injury can progress to a more severe form called Stress fracture; in which the bone itself is damaged. Though coaches, physical trainer and sports doctors have been making their best possible efforts to prevent injuries but they have not get a complete success so far. This paper highlights the shin splints (medial tibia stress syndrome) injury of lower extremities in athletes.

**Keywords:** Shin splints, Medial tibia stress syndrome, lower extremity, athlete

### Introduction

Athletics is a branch of Sports (the queen of sports) which encompasses elementary forms of movement (walking, running jumps, and throws) which are conducted in sequences of more or less complex types (disciplines) and which through evolution reached today level of perfection. Each disciplines group of discipline has its own characteristics and certain habits and values can be obtained by practicing them, in the form of mobility, psychophysical qualities and hygienic habits.

Athletics includes the biggest number of various disciplines of cyclic- acyclic character which are manifested from moderate to maximum intensity (running, jumps, throws). Therefore, player injuries are very different and in some occasions they can be fatal and can permanently disable the player for further training and continuing their career. In some athletic disciplines injury risk is especially worrying (races till 400 meter, long jump, triple jump, high jump, long distance runners). They need significant help of medical staff. Injuries of lower extremities occur often even in throwing discipline (shot put, discus, javelin and hammer throw) in which by logic hands are more subjective to injuries. Having that in minds, sports doctors very often have a chance to see a wide spectrum of athletes' problems and most often those are bone breakage caused by elbow in throwing in shot put, javelin throw, Shin Splints or MTSS injury during running, low start, take off, etc. Injury and disease represent big problem for athletes at least the successful ones) since their personal income depends on their health status and result. It is natural that every athlete has a dream of winning gold medal in Olympic Games and reaching World record and therefore, they often push themselves to the limits in a physical and psychological sense.

**Correspondence Author;**  
**Dr. Sunil Dabas**  
Associate Professor, Govt. PG  
College, Gurgaon, Haryana,  
India

Being a track and field coach working with different schemes of Sports & Youth Affairs Department Haryana run on time to time like- Speed Nurseries, Residential Nurseries, off-Season camps for state and national level athletes in different disciplines on district level and actively involved with grass root level athletes of state for last 5 years. I have always found the athletes who are beginner (new comers) in athletics are suffering with lower leg injuries, commonly the shin splints. The practical and common problem of athletes encouraged me to write this article.

### **Shin Splints or Medial Tibia Stress Syndrome**

The most common injury for beginner athletes is Shin Splints-painful shins, also known as Medial Tibia Stress Syndrome(MTSS).The term ‘‘shin splints’’ refers to pain along the shin bone (tibia) the large bone in the front of your lower leg. It affects approximately 35% of athletes and is considered one of the most prevalent overuse induced pain in this population. Further more up to 70% of runners may develop an overuse injury including MTSS over a 1 year period. Shin splints are common in track and field, soccer, basketball, volleyball basic military training and long distance running. During running each foot strikes the ground approximately 50-70 times per minute, or a total 800 times per mile, with a force 2-4 times body weight. The injury is related to poor training habits, a change in running surface, a new or different style of shoe, or a sudden increase in mileage or in the duration of the work out. It is most commonly seen in poorly conditioned athletes at the beginning of a season, but well trained athletes who increase their mileage rapidly can also be vulnerable to it. Shin splints occurs when muscles and tendons around the shin-bone (the tibia) become inflamed and tender. If an athlete continues to exercise, trying to ignore or run through the pain injury can progress to a more severe form called Stress fracture; in which the bone itself is damaged.

### **Causes of Shin Splints or MTSS**

The main cause of shin splints is too much force on the shin bone and connective tissues that attach the bone to surrounding muscle. The excessive force is usually caused by:-

Too much running, running with poor technique or poor bio-mechanic, running downhill. Running on a slanting surface or uneven terrain.

- Tight calf muscles.
- Running on concrete or other hard surface.
- Over training (rapid increase in speed/distance)
- Lack of proper stretching.
- Imbalance of muscles (Between front& back calf muscle)
- Weak muscles surrounding the hip.
- Uneven running surface.
- Faulty foot plant.
- Too much hill work
- Improper shoes
- Overuse /Repetitive stress of the shin area.
- Running on a crowned surface (side of the road)

### **Bio-mechanical Inefficiencies**

- Flat feet
- Poor running mechanics
- Running with maximum forward lean
- Running with maximum backward lean

- Running only on the balls of the feet.
- Running with the toes pointed outwards.

### **Sign and Symptoms**

- Tenderness over the inside of the shin
- Pain when pointing the toes
- Loss of normal ankle function
- Individual feel pain at rest or during exercise
- Swelling in lower legs may occur. The condition is common in people with flat feet or high arches.
- Swelling
- Redness over the inside of the shin
- Limping
- Pain when pointing the toes.

### **Treatment of Shin Splints or Medial Tibia Stress Syndrome (MTSS)**

- Decrease training.
- Non weight bearing exercises (swimming, bike).
- Running on soft surface like grassy track.
- Avoid downhill running.
- Use ice after training /activity (Ice massage for 10 min).
- Include stretching exercises pre and post exercise of the calf muscle once with the knee straight, once with the knee band, Repeat it 3 times.
- Athletic shoes that give adequate support (shock absorption is a must may need insoles).
- Slowly /gradually increase training.
- Rest is the best method of treatment. In addition complete abstinence from the motions that led to the injury is essential for at least several days.
- If the pain is severe he/she should use crutches for 2to 3 days.
- Use non-steroidal agents who will reduce pain and inflammation.
- Well-conditioned long and marathon runner who develop this syndrome may get good results by decreasing his mileage. If this symptoms go away he /she can increase his mileage gradually.

### **Prevention**

Factors which may be effective in treatment and prevention of MTSS include:

- **Shoes:** Running shoes should be a good fit with a stable heel counter and should be changed every 400-800 kilometer depending on such factors as body weight, training surface and running style. In the sport of field hockey where the incidences of MTSS is known to be high, elite players run up to 8.5 kilometer per game if they run similar distances in training, shoes should be replaced at least every season. A distance at which most shoes lose up to 40% of their shock absorbing capabilities and over all support. Appropriate footwear can reduce the increase of MTSS.

**Training factors:** Care should be taken with adjustments to training loads and methods of training. A common cause of MTSS is sudden increase in intensity or an increase in running, running on hills, hard on uneven surfaces. Cross training may be beneficial including changing running surfaces. Field hockey players, might benefit from conducting some of their fitness drills on natural grass.

**Stretching and strengthening exercise:** Daily regimen of calf stretching and eccentric calf exercises to prevent muscle fatigue. Strengthening the tibial anterior and other muscles controlling both inversion and eversion of the foot. Developing core stability with strong abdominal, gluteus and hip muscles can improve running mechanics and prevent lower extremity overuse injuries.

#### **Prevention and Rehabilitation exercises**

- Maintain cardio-respiratory fitness.
- When athlete no longer feel tenderness over the lower shin, they are ready to resume running activities. moist heat applied to the shin for 5 min. before exercising. Warm up exercises and calisthenics for 3 to 5 min. Gradual progression from walking to jogging to running.

#### **Exercises For Shin Splints**

- **Heel cord stretch** 5 times with knees straight and 5 times with knees bent 10 to 15 seconds (Hold for 10-15 sec. 5 times).
- **Walk on ball of the foot** (10 meter. 3 times).
- **Walk on the heels** (10 meter. 3 times).
- **Calf stretch** (hold for 10 sec. 3 times).
- **Heel raise** ( for10-20 counts 3 times)
- **Step ups:-** 3 sets of 8-12 Rep.
- **Soleus Squats:** stand shoulder with apart slide down the wall knees flexed to 80 degree. Lift your heel off the ground /floor. (Hold 20 to 30 sec. 3-5 Rep).
- **Bent knees Calf Raises:** Stand on right/left leg first on a wooden board knees should slightly bent lift your heel gradually -2 and control up and down. (3 sets of 8-12 Rep).
- **Hip Hikes:-**Stand on the edge of the wooden board. Leg should be straight. Raise the opp. Side of the pelvic up and slowly down. (3 sets of 12-15 Rep).
- **Side lying abduction:** Lay on left or right side. Bend your leg under the support. Keep your upper leg straight and raise straight up. (3 sets of 12-15).

#### **References**

1. Andres E, Myers S. Field Hockey – Steps to Success 2<sup>nd</sup> Human kinetics, Champaign, IL; c2008.
2. Alfayez, *et al.* A review article of Medial Tibial Stress Syndrome. Journal of Musculoskeletal Surgery and Research. 2017 July-Sep, 1(1).
3. Craig D. Medial tibia stress syndrome: evidence based prevention. Journal of Athletic Training. 2008;43(3):316-318.
4. Galbraith R, Lavallee M. Medial tibia stress syndrome; conservative treatment options. Current Reviews in musculoskeletal Medicine. 2009;2(3):127-133.
5. Higgins R, *et al.* Essential sports medicine Wiley-Black well publishing Ltd; c2006.
6. Hreljac A, Marshall RN, Hume PA. Evaluation of lower extremity overuse injury potential in runners. Med Sci. Sports Exerc. 2000;32(9):1635-41.
7. Mahipal. Athletics injuries of lower extremity paper presented in one day National seminar on Recent tech & training advancement in sports organized by D.A.V. College Lahore, ambala city on Nov.3, 2018.
8. Moen MH, Tol JL, Weir A, Steunebrink M, De winter TC. Medial Tibia stress syndrome. A critical review. Sports Med 2009;39(7):523-546.
9. Monaro Paul. Shin Splints –Medical Tibia Stress Syndrome: A Review of the literature; c2015.
10. Pavlovic R. Athletics Textbook NIS Association of writers Branko Miljkovic; c2014.
11. Phogat Wazir Singh, Jain Shilpi. The shin bone injury: A snag for athletes. IJPNPE. 2018;3(1):1912-1914.
12. Ratko Pavlovic. The symptoms Tendinopathy of Achillis Tendon in Athletes. EC Orthopedics. 2018;9(5):318-322.
13. Sygal D. Kookas to hit ground running. Sydney Morning Herald. Feb 2010;28:82.
14. Shahady, Edward J. *et al.* Sports medicines for Coaches and Trainers. Friends Publications New Delhi (India), 2008, 113-114.
15. <http://www.towsonsportsmedicine.com> accessed on 14.04.19.
16. <http://www.usd259.org>.>Shin splints. Accessed on 31.04.19.