SHIN PAIN (SHIN SPLINTS)

What is shin pain?

Shin pain is pain on the front of your lower leg below the knee and above the ankle. It can hurt directly over your shinbone (tibia) or over the muscles that are on the inner or outer side of the tibia. Shin pain has often been called shin splints.

How does it occur?

Shin pain generally occurs from overuse. This problem can come from irritation of the muscles or other tissues in the lower leg or from a stress fracture. This injury is most common in runners who increase their mileage or the intensity of their running, or who change the surface on which they are running.

When you walk or run your foot normally flattens out a small amount when it strikes the ground. If your foot flattens out more than normal it is called over-pronation. Over-pronation can contribute to shin pain.

Some specific conditions that cause shin pain include:

- Stress fracture: This is a hairline crack in one of the lower leg bones, the tibia or fibula.
- Medial stress syndrome: This is when the muscles that attach to the inner side of your tibia are inflamed.
- Compartment syndrome: Your anterior compartment is an area in your leg that contains the muscles that point your foot and toes toward your body. Your lateral compartment contains muscles that move your foot and ankle away from your body. Your posterior compartment contains the calf muscles which point your foot downwards. When a compartment is overused the muscles will become painful.

What are the symptoms?

You have pain over the front part of your lower leg. You may have pain during exercise, at rest, or both. Stress fractures of the tibia will give you pain directly over your shinbone. It will hurt to touch the part of the bone that is fractured. Stress fractures of the fibula will cause pain on the outer side of your lower leg. With medial tibial stress syndrome, you will have pain and tenderness along the edge of the shinbone, especially along the muscles. With compartment syndrome the muscles in that area will be painful. Blood vessels and nerves are also in the anterior compartment. If the muscles in this compartment become swollen during exercise they may irritate these nerves or blood vessels and your foot may become weak, numb, or cold.

How is it diagnosed?

Your healthcare provider will examine your lower leg. He or she will decide which part of your shin is the source of the pain. Your provider may watch you walk or run to see if you have problems with over-pronation. You may need an X-ray or a bone scan to check for stress fractures. If your provider thinks you have compartment syndrome you may need a test that measures the pressure in your lower leg compartments. This is done using a needle attached to a measuring device. They will do this at rest and then again after exercise.

How is it treated?

Treatment may include the following:

- Ice: Apply ice packs to your shin for 20 to 30 minutes every 3 to 4 hours for 2 or 3 days or until the pain goes away.
- Ice massage: Freeze water in a Styrofoam cup. Peel the top of the cup away to expose the ice and hold

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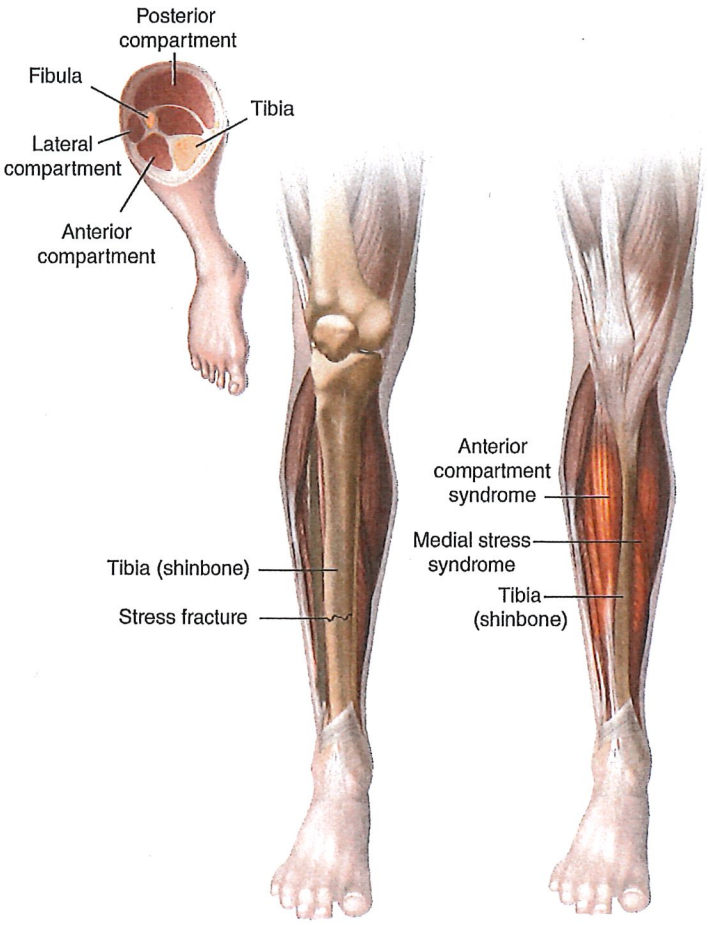

onto the bottom of the cup while you rub ice over your leg for 5 to 10 minutes.

- Medicine: Take anti-inflammatory medicine as prescribed by your healthcare provider (adults aged 65 years and older should not take non-steroidal anti-inflammatory medicine for more than 7 days without their healthcare provider's approval)
- Shoe supports: Arch supports (orthotics) help correct over-pronation. They can be prescribed and custom-made or you can buy pre-made arch supports at your local pharmacy, shoe store, or sporting goods store.
- Rehabilitation exercises.
- Surgery: Sometimes with compartment syndrome surgery is needed. The tissues which form the covering of the compartments are opened up to reduce the pressure in the compartments. Some tibial stress fractures also need surgery.

While you are recovering from your injury, you will need to change your sport or activity to one that does not make your condition worse. For example, you may need to bicycle or swim instead of run. When you begin to run again, you should wear good shoes and run on soft surfaces.

When can I return to my sport or activity?

The goal of rehabilitation is to return you to your sport or activity as soon as is safely possible. If you return too soon you may worsen your injury, which could lead to permanent damage. Everyone recovers from injury at a different rate. Return to your sport or activity will be determined by how soon your leg recovers, not by how many days or weeks it has been since your injury occurred. In general, the longer you have symptoms before you start treatment, the longer it will take to get better.

You may safely return to your sport or activity when, starting from the top of the list and progressing to the end, each of the following is true:

- You have full range of motion in the injured leg compared to the uninjured leg.
- You have full strength of the injured leg compared to the uninjured leg.
- You can jog straight ahead without pain or limping.
- You can sprint straight ahead without pain or limping.
- You can do 45-degree cuts, first at half-speed, then at full-speed.
- You can do 20-yard figures-of-eight, first at half-speed, then at full-speed.
- You can do 90-degree cuts, first at half-speed, then at full-speed.
- You can do 10-yard figures-of-eight, first at half-speed, then at full-speed.
- You can jump on both legs without pain and you can jump on the injured leg without pain.

How can I prevent shin pain?

Since shin pain usually occurs from overuse, be sure to begin your activities gradually.

- Wear shoes with proper padding and support.
- Run on softer surfaces.
- Warm up properly and stretch the muscles in the front of your leg and in your calf.
- Do not keep running while you have shin pain or it will take longer for the pain to go away.

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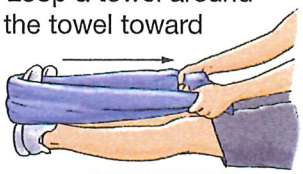
SHIN PAIN (SHIN SPLINTS) REHABILITATION EXERCISES

Start these exercises when your pain has decreased by about 25% from the time when your injury was most painful.

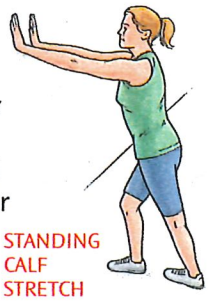
1. TOWEL STRETCH: Sit on a hard surface with one leg stretched out in front of you. Loop a towel around the ball of your foot and pull the towel toward your body keeping your knee straight. Hold this position for 15 to 30 seconds then relax. Repeat 3 times.



TOWEL STRETCH

When you don't feel much of a stretch using the towel, start using the standing calf stretch.

2. STANDING CALF STRETCH: Facing a wall, put your hands against the wall at about eye level. Keep one leg back with the heel on the floor, and the other leg forward. Turn your back foot slightly inward (as if you were pigeon-toed) as you slowly lean into the wall until you feel a stretch in the back of your calf. Hold for 15 to 30 seconds. Repeat 3 times. Do this exercise several times each day.

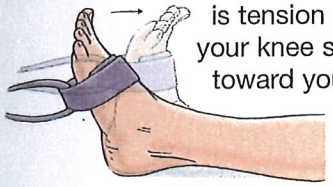


STANDING CALF STRETCH

3. ANTERIOR COMPARTMENT STRETCH: Stand with one hand against a wall or chair for balance. Bend your knee and grab the front of your foot on your leg which is away from the wall. Bend the front of the foot toward your heel. You should feel a stretch in the front of your shin. Hold for 15 to 30 seconds. Repeat 3 times.

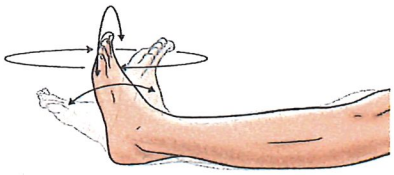
ANTERIOR COMPARTMENT STRETCH

4. RESISTED ANKLE DORSIFLEXION: Sit with one leg out straight and your foot facing a doorway. Tie a loop in one end of elastic tubing. Put your foot through the loop so that the tubing goes around the arch of your foot. Tie a knot in the other end of the tubing and shut the knot in the door. Move backward until there is tension in the tubing. Keeping your knee straight, pull your foot toward your body, stretching the tubing. Slowly return to the starting position. Do 3 sets of 10.



RESISTED ANKLE DORSIFLEXION

5. ANKLE RANGE OF MOTION: Sitting or lying down with your legs straight and your knee toward the ceiling, move your ankle up and down by pointing your toes toward your nose, then away from your body; in toward your other foot and out away from your other foot; and in circles. Only move your foot and ankle. Don't move your leg. Repeat 10 times in each direction. Push hard in all directions.

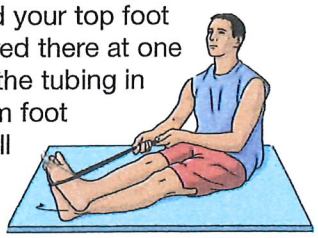


ANKLE RANGE OF MOTION

6. HEEL RAISE: Balance yourself while standing behind a chair or counter. Raise your body up onto your toes and hold for 5 seconds. Then slowly lower yourself down. Hold onto the chair or counter if you need to. When this exercise becomes less painful, try lowering on one leg only. Repeat 10 times. Do 3 sets of 10.

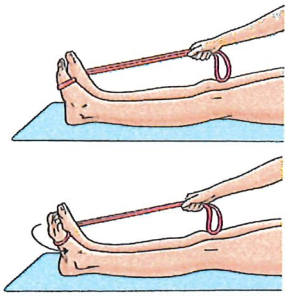
HEEL RAISE

7. RESISTED ANKLE INVERSION: Sit with your legs out straight and cross one leg over your other ankle. Wrap elastic tubing around the ball of your bottom foot and then loop it around your top foot so that the tubing is anchored there at one end. Hold the other end of the tubing in your hand. Turn your bottom foot inward and upward. This will stretch the tubing. Return to the starting position. Do 3 sets of 10



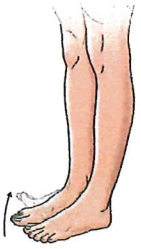
RESISTED ANKLE INVERSION

8. RESISTED ANKLE EVERSION: Sit with both legs stretched out in front of you, with your feet about a shoulder's width apart. Tie a loop in one end of elastic tubing. Put one foot through the loop so that the tubing goes around the arch of that foot and wraps around the outside of the other foot. Hold onto the other end of the tubing with your hand to provide tension. Turn the foot with the tubing up and out. Make sure you keep your other foot still so that it will allow the tubing to stretch as you move your foot with the tubing. Return to the starting position. Do 3 sets of 10.



RESISTED ANKLE EVERSION

9. STANDING TOE RAISE: Stand with your feet flat on the floor, rock back onto your heels and lift your toes off the floor. Hold this for 5 seconds. Do 3 sets of 10.

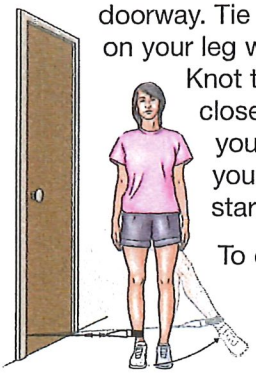


STANDING TOE RAISE

10. RESISTED HIP ABDUCTION: Stand sideways near a doorway. Tie elastic tubing around the ankle on your leg which is away from the door. Knot the other end of the tubing and close the knot in the door. Extend your leg out to the side, keeping your knee straight. Return to the starting position. Do 3 sets of 10.

To challenge yourself, move farther away from the door.

Do this exercise on both legs.



RESISTED HIP ADDUCTION

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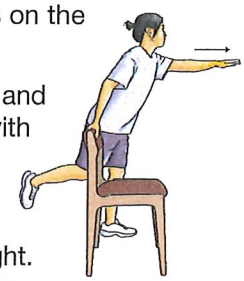
11. BALANCE AND REACH EXERCISES

Stand upright next to a chair. This will provide you with balance if needed. Stand on the foot farthest from the chair. Try to raise the arch of your foot while keeping your toes on the floor.



A. Keep your foot in this position and reach forward in front of you with your hand farthest away from the chair, allowing your knee to bend. Repeat this 10 times while maintaining the arch height. This exercise can be made more difficult by reaching farther in front of you. Do 2 sets.

B. Stand in the same position as above. While maintaining your arch height, reach the hand farthest away from the chair across your body toward the chair. The farther you reach, the more challenging the exercise. Do 2 sets of 10.

BALANCE AND REACH EXERCISES

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