

Running Away From Stress Fractures

Now that fall is here a multitude of athletes are tying up their laces in preparation for the cross country running and football seasons. While a great workout, long-distance running may be taxing on the shins, and it may lead to stress fractures.



A stress fracture is an injury to a bone resulting from excessive repetitive stress. Bone is very active and remodels according to the stress it sees. However, when exposure to stress is too high or too long this puts too much stress on the bone and the bone eventually breaks under the force. The tibia, the larger bone in the lower leg, is a common location for stress fractures to occur.

Stress fractures may present with some of the following signs/symptoms:

- Pain with weight-bearing (loading) and tenderness to pressure over a bone.
- Pain progresses with the loading activity. The greater the duration of loading, the more the pain increases. Conversely, the pain tends to improve with rest and avoidance of loading.
- Usually occurs following a significant increase in intensity, duration or frequency of weight-bearing activity.

Shin splints are different from stress fractures and can be easily be confused. That's why it is important to notify your physician if you have any of the above symptoms. Last summer, Chicago Bears wide receiver Kevin White was originally diagnosed with shin splints that turned out to be stress fractures. Unfortunately, White had to sit out the entire 2015 season.

Shin splints present with pain and tenderness along the inside of the lower leg—a very distinct site where lower leg muscles originate and cause pain from chronically pulling on the bone surface. Unlike a stress fracture, pain from shin splints can improve as you warm up and continue to participate in a weight-bearing activity, while pain from stress fractures tends to increase with continued activity and improves only when the activity stops and with rest.

There are some risk factors to stress fractures. These include, but are not limited to:

- A previous stress fracture, especially at that same area.
- Bone problems such as osteoporosis, osteopenia, or tumors. These weaken bone strength and make them more susceptible to injury, especially fractures.
- Systemic disorders such as hormonal or metabolic issues.
- Poor nutrition. Insufficient calories to support the bone and other bone regulating hormones like estrogen. Amenorrhea (lack of menses) is a sign of insufficient energy (calorie intake versus calorie expenditure).
- Poor or improper footwear.
- Improper training with rapid increases in intensity, duration and frequency of activity.

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Patellar Dislocations: Gruesome looking but treatable

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Early surgical intervention may be necessary to remove or repair a large loose cartilage and/or bony fragment, or to repair other injured ligaments or tendons. For patients with recurrent dislocations, surgery may be required to reconstruct the medial patellofemoral ligament (MPFL) to prevent further dislocations and injury to the knee joint. Variations in anatomy also may increase the risk for re-dislocation including a shallow trochlea (groove), an underdeveloped patella, generalized laxity in the tissues, patella alta (high-riding kneecap), valgus knee alignment (knocked knees), lateralization of the tibial tubercle, and increased femoral anteversion (rotational deformity in the thigh bone), to name but a few. These factors are taken into consideration if surgical intervention is contemplated.

Nevertheless, simple patellar dislocations are not uncommon and the majority can achieve good outcomes with conservative treatment and aggressive rehabilitation. Surgical management, when necessary, reliably restores patellar stability and can allow a full return to athletics and other recreational activities.

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Stress fractures are preventable because bone has the ability to get stronger and adapt to the stresses it experiences as long as the intensity, duration and frequency of activity is increased gradually with sufficient rest and recovery time between workouts. Some ways to prevent stress fractures include:

- Having a consistent and proper warm-up prior to any activity or exercise. This helps prepare muscles and bones for upcoming activities.
- Train properly by progressing exercise intensity, duration and frequency gradually so as not to overstress bone past its threshold.
- Allow adequate time for rest and recovery to allow bones to remodel and adapt (get stronger) following a workout.
- Proper footwear is helpful as this will give distribute and dissipate forces to the bones.
- Maintain good nutrition with plenty of calories, calcium and vitamin D.
- Maintain a healthy balanced diet where calorie intake matches calorie expenditure.
- For women, make sure you menstruate regularly by eating enough calories to support your exercise level.
- Supplement endurance exercise with resistance (weightlifting) training to encourage good bone strength.



Arrow above points to a stress fracture that appears as a pale white line on this X-ray