What is it?
A stress fracture is a fracture that is caused by too much stress being put on a bone. It is not typically caused by trauma and it develops gradually over time. It most commonly affects bones of the lower extremity, such as the tibia in the lower leg, the metatarsal bones of the foot, and the femoral neck at the hip joint. However, it can occur in any bone. Upper extremity stress fractures can occur in overhead athletes and gymnasts.

Causes and Risk Factors
- Repetitive high-impact exercise
- Increase in training volume or intensity
- Poor fitting athletic equipment
- Low bone density
- Female athlete triad
- Poor nutrition

Symptoms
Stress fractures develop over time. Generally, there is a gradual onset of pain with activity only that progresses to affect daily activities as well. The pain will develop at the site of the fracture.

Diagnosis
The sports medicine physician will ask about the athlete’s training schedule. He/she will be particularly interested in finding out if there have been any recent changes in the type, intensity, duration, or frequency of activity in the month prior to the pain starting. X-rays of the area where the pain is will be obtained to look for any evidence of a healing fracture. Sometimes it can be difficult to see a stress fracture on x-rays, especially if the pain only started within the past 2-3 weeks, or if there has not been any period of rest to allow for healing. If the history and examination are highly suggestive of this diagnosis, but the x-rays do not show the stress fracture, magnetic resonance imaging (MRI), computed tomography (CT) scan, or a bone scan may be ordered to evaluate the painful area further.

Treatment
If a stress fracture is identified, a period of immobilization with a cast or walking boot may be necessary, with or without crutches, to help the athlete become pain-free. This period, which may last 4-6 weeks, is generally followed by a very slow return to activity directed by a sports medicine physician. Some stress fractures are considered high-risk, and in those cases, surgery may be recommended.
AMSSM SPORTS MEDICINE TOPICS

STRESS FRACTURE

Injury Prevention

- Training schedules should be monitored with a log
- Impact activities should be limited
- Physical activity should be gradually increased by no more than 10%-15% per week
- Equipment should fit properly for training demands
- Training surfaces should be optimized to reduce impact
- Calcium and vitamin D intake should be optimized with a well-balanced diet
- “Energy (calories) in” should be balanced with “energy (calories) out;” the maintenance of menses in females is correlated with optimal nutrition

Return to Play

Most sports medicine physicians recommend a period of complete rest from all physical activity that stresses that area for a period of 4-6 weeks. If after that time, the athlete is pain-free, the sports medicine physician is likely to prescribe a gradual return to activity over 4-6 weeks, depending on the previous training schedule, level of physical fitness, and whether the fracture is high or low-risk.

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References
