

# Patient Information: Stress Fractures



## What are stress fractures? How are they caused?

- A stress fracture is when tiny cracks form in a bone due to excess stress and overuse
  - Overuse occurs when bone is not given adequate time to recover from activity, and fatigued muscles are unable to absorb forces on the bone
  - Excess stress can be caused by increases in duration or intensity of exercise, new activities, or new exercise surfaces
- A lack of micronutrients vital to bone health (calcium, vitamin D) can increase the likelihood of a stress fracture
  - Nutritional deficiencies and stress injuries are both part of the Female Athlete Triad
- Most stress fractures occur in the lower leg and foot, but can occasionally occur in the upper leg and spine

## What are the symptoms of a stress fracture?

- Pain and possibly swelling that is markedly worse with activity and improves with rest
- Tenderness to touch over the affected bone



## How is a stress fracture diagnosed?

- A physical exam can lead to the diagnosis of a probable stress fracture
- X-rays are typically normal, but may be done to rule out a full fracture or other bone problems
- Musculoskeletal ultrasound can be done to look for inflammation in or around the bone
- MRI or CT scans may be done for stress fractures in complicated areas, or those that are slow to heal



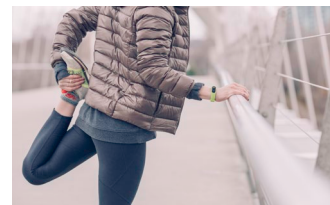
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## How is a stress fracture treated?

- Reducing bone stress using boots, casts, or crutches
- Anti-inflammatory medications for pain
- Return to activity is slow and gradual and begins after a set healing period, if pain has subsided
- Activity Progression
  - No weightbearing, no impact (swimming, biking)
  - Weightbearing, no impact (elliptical, weights)
  - Weightbearing, impact (running, jumping)
- Intensity progression:
  - Always begins with low intensity, short duration exercise, and eventually progresses to longer duration, high intensity activities

## How can I prevent stress fractures?

- Slowly increase duration and intensity of activities, particularly with new activities or new surfaces
- Use activity-appropriate, supportive footwear
- Always warm up and stretch, and do a cool down
- Integrate cross-training into your exercise routine (for example, low body weightlifting for runners)
- Include variety in your activities and sports
- Schedule rest days, and low impact days (yoga, etc)
- Have adequate intake of calcium, vitamin D, protein, and healthy fats for bone and muscle recovery



## Where can I learn more about stress fractures?

- Education- OrthoInfo:  
<https://orthoinfo.aaos.org/en/diseases--conditions/stress-fractures/>
- Female athlete triad- AC Sports Medicine:  
<https://www.acsm.org/docs/brochures/the-female-athlete-triad.pdf>
- Nutrition for athletes- Colorado State University:  
<http://extension.colostate.edu/topic-areas/nutrition-food-safety-health/nutrition-for-the-athlete-9-362/>

To schedule an appointment, visit the Steward St. Elizabeth's Sports Medicine website at: [semc.org/services-directory/orthopedics/sportsmedicine](http://semc.org/services-directory/orthopedics/sportsmedicine)  
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