

Health & Wellness *news*

MaineGeneral Sports Medicine Newsletter

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Edited by
Rich Garini, ATC

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MaineGeneral's Peter Alford
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Rich Garini, ATC
mgsms.aycc@mainegeneral.org

**Athletic Training
Program Coordinator @
AYCC**

**MaineGeneral
Sports Medicine**

*Serving area athletes for
more than 30 years*

Why do I Get Muscle Cramps?

Last night's sleep was anything but relaxing. At 2:10 a.m., I had a sudden spasm of extreme pain and tightness in my right leg. More than a few choice words were said as I fought to straighten my knee. I suffered a hamstring cramp. Regardless of your age, gender, sport or activity, at some point almost everyone has experienced the sudden sharp pain of a muscle cramp. Sometimes these occur during an activity and stop you in your tracks; other times, they attack out of nowhere when you are resting on the couch or even during a good night's sleep.

What causes a muscle to uncontrollably contract to the point of causing severe pain?

What can you do to help once the pain starts, and how can you help prevent them from happening in the first place?

This month, I'm speaking with Dr. James Dunlap, a primary care sports medicine physician with MaineGeneral Orthopaedics, to get some answers and find out what we can do to help avoid these painful episodes.



I think most of us have felt a muscle cramp at some point in our lives, but what exactly is a muscle cramp and why are they so painful?

A muscle cramp is a sudden, involuntary and often uncontrollable contraction of a muscle. Muscle cramps are painful because a severe muscle contraction sends pain signals from local sensory receptors called Golgi tendon organs and muscle spindles through peripheral nerve fibers to the spinal cord and brain before returning to the affected muscle.

Can these cramps cause an injury or be a sign of a more serious medical condition?

Cramps typically are harmless. Once the cramp is stretched out, there may be lingering muscle soreness for a few hours. A muscle cramp may indicate something more serious if it is accompanied by unusual fatigue or weight loss, numbness or weakness, dizziness, change in urine color, etc. If you experience any of those symptoms, it is advisable to check in with your local health care provider.

Is there a difference between muscle cramps that occur during activity and those that seem to attack when we are at rest? And what can cause them to occur?

There are two theories for muscle cramps. In one, it was thought that dehydration/electrolyte loss was the cause of the exertional cramps. If that was true, then replacing the fluid and electrolytes lost should eliminate the cramps. Unfortunately, that doesn't happen. Similarly, cramps occur while exercising in moderate climates where heat and dehydration play no role.

The current leading theory is the neuromuscular hypothesis which suggests an imbalance between the excitation from the muscle spindles and the reduced

"Your health account, your bank account, they're the same thing. The more you put in, the more you can take out. Exercise is king and nutrition is queen. Together you have a kingdom."

~ Jack LaLanne, bodybuilder, known as the "Godfather of Fitness"

inhibitory input from the Golgi tendon organs that affect the length and tension of the muscle fiber. This imbalance triggers the motor neurons to release chemicals that cause the muscle to contract severely. If this hypothesis is correct, there probably is no difference between exertional muscle cramps and the cramps we experience at rest.

Are some people more susceptible to muscle cramps?

The risk of muscle cramps increases in folks with chronic health conditions such as diabetes, heart disease, congenital and neuromuscular diseases, and in folks on certain medications.

Athletes who suddenly increase their training load, e.g. high school athletes during the first weeks of conditioning, and athletes who exercise for long periods of time at higher intensity, e.g. marathon runners and triathletes, are at increased risk for muscle cramps as well.

Speaking of hydration, I've heard of people drinking everything from sports drinks to pickle juice to help prevent muscle cramps. What would you recommend an active person drink to help stay hydrated and avoid cramps?

Because we now feel that it is fatigue rather than dehydration or electrolyte losses that causes exertional muscle cramps, the keys for prevention are good nutrition before, during and after workouts. Having enough energy on board delays muscle fatigue and will decrease the likelihood of a muscle cramp. It won't hurt to be well hydrated, but there is no evidence that one type of beverage is superior to another in cramp prevention.

One study that looked at pickle juice found that simply placing a small amount in the mouth shortened cramp duration. The likely explanation for this is the activation of pH receptors in the back of the throat (rather than electrolyte concentration) that signals the muscle motor neuron via the spinal cord to stop the muscle from contracting. I have not seen a study, however, that looked at preventing rather than treating muscle cramps with pickle juice.

Once a muscle cramp sets in, what is the best think I can do to help the muscle to relax and ease the pain?

It's a two-fold process. Think contract-relax-stretch. If you have a cramp, you want to first contract the opposing muscles and then stretch the cramped muscle. For a calf cramp, tighten the muscles in the front of the ankle (dorsiflexion) for 10-15 seconds and then actively stretch the calf with a towel or against a wall. If it is a hamstring cramp, tighten or contract the quadriceps by straightening the leg, relaxing it and then stretching the hamstring. This method is less painful and more effective at preventing repeat cramps.

If I have a significant cramp during or after an activity, are there any precautions I should take when returning to activity?

Usually cramps go away and do not return. If you experience any persistent soreness, it is wise to back off on the intensity and duration of the physical activity until the area feels normal again. Make sure to consume enough calories before exercise and warm up for 5-10 minutes beforehand.

Is there anything else I can do to help minimize my chances of suffering a significant muscle cramp?

I would love to say that eating a lot of potassium and magnesium, along with staying well hydrated, help in cramp prevention, but there just isn't the evidence to support that recommendation, with one possible exception.

If you are a salty or very heavy sweater, meaning that you are covered in salt when you exercise, and have a cramp history, make sure you consume enough salty snacks/ fluid before your workout. Weighing yourself before and after exercise will provide guidance for post-exercise fluid replenishment.

When recovering from an injury, take the time to perform dynamic stretching before and after the workout to reduce the risk of a cramp or further injury.

We don't know whether regular stretching reduces the risk of cramping, but athletes who play explosive sports like football, gymnastics, wrestling and track, and recreational athletes who sit at a desk most of the day, may benefit from more regular, dynamic stretching.

"The best evidence for treating persistent pain points toward improving general health, as opposed to fixing specific 'issues in the tissues.'"

*~ Todd Hargrove, *Playing With Movement**