

UW Medicine

SPORTS, SPINE &
ORTHOPEDIC HEALTH

What you need to know about muscle cramps

Muscle cramping, defined as involuntary, painful and spasmodic contractions of skeletal muscle, is one of the most common medical conditions encountered by runners. Calf muscles are the most frequently affected but cramping can occur in any of the muscles that are contracting rapidly in runners, including the hamstrings and quadriceps.

WHAT CAUSES CRAMPING?

Cramping can be associated with a variety of medical conditions, but when it occurs during or immediately after exercise it is considered “exercise associated muscle cramping” or EAMC for short. Many people believe that running in warm weather predisposes them to EAMC, but cramps can occur in cold and moderate temperatures. A popular belief is that electrolyte losses and severe dehydration during exercise cause EAMC but research hasn’t necessarily supported this. There is now a growing body of scientific evidence suggesting that cramping may be due to a temporary alteration in nerve/muscle control related to fatigued and over-worked muscles. One can think of the nerve/muscle interface as an electrical circuit where the nerve is the electricity that supplies the muscle causing a muscle contraction. Muscle fatigue can occur because of increased running intensity and duration (ie: running faster during a race compared to your normal training pace), and poor conditioning. Thus, in a setting of muscle fatigue (such as at the end of a long race or even a short race where you aren’t in great shape) the electrical supply (nerve) to the muscle may be altered, resulting in the cramping sensation. There is also some association between cramping and a prior history of tendon or ligament injury. There may also be a familial or genetic component to cramping.

TREATMENT FOR CRAMPING

The best management of cramping is passive stretching of the affected muscle. A helpful technique while stretching is to actively contract the antagonist muscle. For example in hamstring cramping, trying to contract the quadriceps (antagonists to hamstrings) by actively extending your knee may aid the stretch. Massage may also provide acute relief from cramping. Unfortunately, there are no great medications to halt EAMC. Prevention of cramping involves maintaining proper muscle conditioning, adequate rest between training sessions and regular stretching. Decreasing one’s stride length (the distance between successive points of contact of the same foot) can also be helpful.

When running a long distance event, such as a marathon or half-marathon, changing your stride rate, foot strike pattern, or running form periodically may be helpful to avoid muscle fatigue by activating your leg muscles differently (and thus giving a little rest — or at least change — to your working leg muscles). This can be even more useful in a flat race course, where you don't have hills to break up the monotony of using the same muscles groups in the same fashion for the whole race.

In conclusion, EAMC can be a painful, if not annoying, interference to your run. Adequate hydration and electrolyte balance are important for a runner's general health but do not necessarily prevent EAMC. Stretching remains the optimal treatment.

*Authored by UW Medicine Sports Medicine Physicians
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