



Muscle Cramps: Possible Causes and Prevention

Muscle cramping is not an uncommon problem among athletes. Although it is not entirely clear what causes muscle cramps, they are often instigated by loss of fluids and minerals during a hard workout or game. Sometimes muscle cramps can be serious enough to take a player out of a competition. According to U.S. Men's National Team Strength and Conditioning coach Pierre Barrieu, even though the causes of muscle cramps are not entirely known, that does not mean measures cannot be taken to prevent them.

Potential Causes of Muscle Cramps

"Actually, science hasn't figured it out completely," Barrieu said about the causes of muscle cramps. "Probably one of the reasons is dehydration, another one is lack of minerals that is affecting the regular muscle contracting mechanism. It also has something to do with the central nervous system."

Dehydration is certainly one of the most common factors that contribute to muscle cramps, which are often coupled with large losses of minerals such as sodium, calcium and potassium through sweat. Fluid, mostly water, makes up more than 70 percent of the human body. Along with the loss of sodium—a mineral that initiates signals from nerves, which in turn leads to muscle movement—and other minerals, the loss of fluid in the human body may cause muscles to become irritable. When the muscles are irritated in such a way, any slight stress, such as movement, may cause the muscles to contract and twitch uncontrollably.

Another factor in muscle cramping may be flexibility. Most people tend to relate lack of flexibility and stretching to pulled muscles, however, according to Barrieu, if the muscle is tight, it tends to cramp a lot easier than other muscles.

Preventing Muscle Cramps

Since the majority of muscle cramps are associated with loss of fluids and minerals as well as tight muscles, the most obvious preventative measures are to keep well hydrated, replace the sodium and other minerals lost through excessive sweating and stretch adequately.

"You definitely want to make sure that your players don't get dehydrated," said Barrieu. "Same thing with minerals."

When it comes to the Men's National Team, Barrieu makes sure players are hydrated and get plenty of salt. Salt not only replenishes sodium lost through sweat, it also retains water, which helps players stay better hydrated.

Barrieu also makes sure that players get enough minerals such as potassium and calcium and works on flexibility daily, making sure that players' muscles are not overly tight, especially since some players are more prone to cramps than others. Stretching properly on game day is particularly important because of the intensity of the workout.

Another way to prevent muscle cramps is not only to pay attention to hydration, but also to make sure to avoid dehydration by staying away from alcohol, said Barrieu.

"When you drink alcohol you definitely expose yourself to cramps," Barrieu said. "The reason is that alcohol is sucking a lot of water out of your cells. You definitely have to stay away from alcohol if you're an athlete and you don't want to cramp."

Relieving Muscle Cramps

Sometimes muscle cramps occur despite an athlete's efforts to prevent them. When muscles cramp during a workout, they can be relieved by:

1. Stretching. A muscle cramp is the contraction of a muscle, so what the athlete needs to do is try to relax that particular muscle, which often brings to mind the typical image of a person stretching, Barrieu said.

2. Drinking fluids. If the muscle cramping is extreme (whole body cramping), fluid should be given through an IV, said Barrieu. However, players should try to rehydrate with a fluid containing electrolytes, such as Gatorade, so that the muscle may receive the minerals it requires to function properly. According to research from U. Connecticut, oral rehydration (drinking) offers psychological and physiological recovery benefits not obtained from IV treatments.

3. Adequate recovery. This actually means resting and trying to make sure that the muscle is not active until the central nervous system recovers and no longer sends signals to that muscle to contract.

So while the exact causes of muscle cramps may be unknown, cramping can often affect a player's productivity on the field, which makes preventing muscle cramps very important. Adequate hydration, stretching and staying flexible and making sure that the proper mineral levels are maintained are all key factors in avoiding muscle cramps. Also important is avoiding alcohol and other such drinks that dehydrate the body, and making sure that if a player's muscles do cramp, that player allows the affected muscles to relax and recover completely.

Information obtained from Men's National Team Strength and Conditioning coach Pierre Barrieu and the Gatorade Sports Science Institute, www.gssiweb.com.