

Leg Cramps: The Cause & Cure

After chasing Shane Mosley around the MGM Grand Garden ring to win a lopsided 12-round decision, Manny Pacquiao declared his performance was less than stellar due to a left calf muscle cramp. The persistent spasm began during round four, and, despite trainer Freddie Roach's massage between rounds, the ailment would not dissipate.

Although muscle cramps are common in athletes, we rarely hear of a boxer proclaiming severe limitations because of one during a bout. So, THE RING thought we would take this opportunity to explore the causes, treatment, and prevention of muscle cramps.

People alternately control and relax muscles as they move. A muscle that involuntarily (without consciously willing it) contracts is termed a "spasm." If the spasm is sustained, it becomes a cramp, and you may see a visible hardening of the involved muscle. It can last anywhere from seconds to hours, or it can reoccur multiple times until it ultimately resolves.

Cramps can be caused by multiple circumstances and occur in many locations. In this article, we will be dealing with skeletal muscles, but a cramp can involve any muscle, even those belonging to various organs such as the lung or bladder.

If a fighter were to suffer a broken bone, the associated muscles around that bone will cramp as a protective mechanism. Excessive exercise and muscle fatigue can produce cramps during the time of the activity or later. Rest cramps that occur at night can be painful and disrupt sleep. Boxing and other forms of vigorous activity produce excessive perspiration, fluid loss, and dehydration, which increase the likelihood of cramps.

It is not simply the fluid loss, rather the loss of important electrolytes, vitamins, and minerals producing the cramp. Low potassium can cause muscle cramps, although it typically first presents itself as muscle weakness. Calcium and magnesium fluctuations or depletion, as well as deficiencies of vitamin B1, B6 and D, directly or indirectly produce cramps. Lastly, medications such as diuretics can lead to cramps through the rapid depletion of bodily fluids or sodium (salts).

Strength and conditioning specialist, Dave "Scooter" Honig, recommends repeated electrolyte replacement, especially during sparring, to prevent cramping.

"I believe electrolytes are extremely important, especially when fighters are dropping their water. When a boxer replaces their water, they are often not replacing the correct proportion of electrolytes, said Honig. "Throughout camp, I have my guys take electrolyte stamina tablets before and after training. But, the fighter needs to remember to drink significant fluids with their supplementation."

Honig is also a big proponent of mineral and branched chain amino acid replacement to ward off cramps.

Former BALCO chief and nutrition expert Victor Conte agrees on supplementation to deter cramps. He has been studying muscle tightness and cramping of elite athletes for more than 25 years. He notes, "The training of explosive strength and speed athletes, such as boxers, causes retention of sodium and calcium. Both of these minerals are competitive with the absorption and utilization of magnesium." As a result, Conte contends that a fighter can develop a depletion of his magnesium stores.

"It's my opinion that many elite boxers are depleted in magnesium and that this can promote muscle tightness and cramping. In the late 1990s, I tested both the serum and red blood cell magnesium levels of over 250 NFL players. More than 70 percent of the players were found to be depleted in magnesium."

In an effort to combat magnesium depletion, Conte developed and introduced a product called ZMA (zinc magnesium aspartate) through his nutrition company SNAC (Scientific Nutrition for Advanced Conditioning) in 1988. Countless world-class athletes, including several boxers, such as Nonito Donaire, currently use ZMA to reduce muscle tightness and cramps.

Stretching before and after exercise in addition to adequate warm-up and cool-down can prevent cramps, but little can replace good hydration.

Hydration replacement guidelines must be individualized. Any athlete, especially a boxer, should weigh themselves before and after sparring to determine how much weight they lose (in fluids). One liter of water weighs 2¼ pounds. Depending on the amount of exertion, body temperature, humidity, and body weight, a fighter could lose between 0.4 to 1.8 liters of water per hour. Before exercise, the athlete should pre-hydrate and perhaps even consume electrolyte beverages, sodium-containing snacks, or supplements to help stimulate thirst, and retain fluids. During training or a fight, the athlete should consume 0.4 to 0.8 liters of fluid per hour. Post-exercise or competition, the boxer should drink 0.5 liters of water for every pound lost.

Many theorists propose that an isolated muscle cramp, such as Pacquiao's, was not solely due to dehydration or metabolic imbalance. They believe that exercise-related cramps stem from a malfunction in control of the muscle by the nerves or an abnormality of neuromuscular control due to fatigue, which results in disruption of muscle coordination. This makes sense, as when someone cramps, it is typically a specific muscle or muscle group involved. Overworking a muscle causes a pull in it, which stimulates the nerves to fire impulses producing a tighter and tighter spasm.

As tried by Roach, treatment is massage and stretching. Often, walking or stretching the affected muscle will work. For a calf cramp, leaning 2 to 2½ feet into a wall against your forearms, your knees and back straight with your feet flat on the floor, will sufficiently stretch the calves. If sitting, flexing the ankles by pulling the toes up toward the head can help. Gentle muscle massage can relax the muscle with the application of a heating pad or hot soak. Obviously, each of these maneuvers is difficult to perform during the one-minute rest period!

In the end, preventing cramps comes down to proper preparation and discussion with a conditioning expert and/or a physician to determine if supplementation is warranted. This might include baseline blood testing to eliminate the possibility of electrolyte, vitamin, or mineral deficiencies.

The last thing a boxer wants is to have to deal with an excruciating muscle cramp during a fight. It appears that Pacquiao was fortunate to have not faced Mosley during Sugar Shane's prime, when a serious leg cramp could have very well meant the difference between winning or losing. ■

WORKING HARD
Maybe Pacquiao
needs a dose of ZMA

