

## WELLNESS UPDATE 2003, #3

### EXERCISE-ASSOCIATED MUSCLE CRAMPS

Exercise-associated muscle cramps (EAMC) are painful muscle contractions that occur during, or immediately after, exercise. They may cause an athlete to temporarily stop activity, but they generally have no serious long-term consequences. EAMC occur most often after the athlete has been exercising for an hour or more in the heat. Athletes may be more prone to heat cramps after several days of exercising in extreme heat.

#### CAUSES OF EXERCISE-ASSOCIATED MUSCLE CRAMPS

While no one knows exactly what causes EAMC, there are several factors that predispose athletes to them.

- **Large losses of fluids and electrolytes, especially sodium**
- **Poor conditioning** which causes early fatigue
- **Poor stretching habits**
- **Muscle injury**

**Loss of fluids and electrolytes are thought to be major factors in EAMC.** Electrolytes are minerals, such as sodium, chloride, potassium magnesium & calcium, which carry an electrical charge which assist in contracting and relaxing the muscles. Muscles tend to cramp more easily when the body is dehydrated and/or depleted of electrolytes. Muscles cannot return to normal function until the fluid and electrolyte levels are restored. Athlete who eat a healthy, balanced diet and drink plenty of fluids should have adequate supplies of electrolytes. **Athletes who exercise in hot, humid weather conditions, are very weight conscious, have been ill with the stomach flu or diarrhea, or use diuretics or laxatives are prone to fluid and electrolyte imbalances.**

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#### PREVENTION OF EXERCISE-ASSOCIATED MUSCLE CRAMPS

- **Drink plenty of fluids.** Urine color is the key to determining an athlete's hydration level. Clear urine indicates adequate hydration, yellow urine indicates dehydration, and pale urine indicates that the athlete is somewhere between well hydrated and dehydrated. Drinking only enough to quench the thirst only replaces about one-third to one-half of the fluids an athlete needs.

- **Get enough electrolytes.** While it's most important to replace the fluids lost from sweating, one can't forget about electrolytes. Replacement of sodium & potassium are a must to prevent muscle cramps. Athletes who are prone to EAMC may want to add a little salt to their food to ward off cramps. **Do not use salt tablets** as they can actually cause cramping and irritate the stomach. Potassium levels can be maintained by eating bananas and oranges, or drinking orange juice.
- **Get in shape and stay in shape.** Fatigue and poor conditioning can make muscles more prone to muscle cramps. Likewise, training too hard, or sudden increases in intensity or duration of training sessions can fatigue the muscles and cause cramping.
- **Establish a stretching routine.** Stretching is often thought of only as a treatment for muscle cramps. Stretching before and after exercise will actually reduce the muscles susceptibility to cramps. If tired muscles tend to cramp at night stretching before going to bed may help.

**Prevention of exercise-associated muscle cramps involves being properly conditioned, drinking plenty of fluids, getting enough electrolytes, and establishing an effective stretching routine.**

### TREATMENT OF MUSCLE CRAMPS

**The most effective treatment for muscle cramps is to gently stretch and massage the cramped muscle.** Stretching & massaging relieves the pain and helps prevent further cramping. The use of ice, along with stretching, will numb the area and cause an increase in circulation once the ice is removed.

When treating a muscle cramp, **replacing lost fluids should begin immediately.** The use of lightly salted water or a commercial sports drink will assist your body in recovering more quickly from EAMC.

**An unusual method of treating EAMC is to pinch the upper lip for about 30-seconds.** There are several theories available on why this may help. Whether it alters nerve transmission or draws the athlete's attention away from the cramp, it does work for some athletes.

### PICKLE JUICE

Pickle juice is being used by many athletic trainers as a last resort in preventing and treating EAMC. As with pinching the upper lip, **there is no research on why pickle juice works, but it does seem to work in some athletes.** The most important aspects of using an unconventional method such as this are to use it properly and to only use it along with conventional methods of prevention and treatment.

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Biff Williams, ATC, and Assistant Professor at the University of Northern Iowa has been using pickle juice with much success for about 8 years. Here is the regimen he believes to be the most effective and safe.

- Use pickle juice only as a last resort when other preventive techniques, such as proper conditioning, nutrition, hydration and stretching have failed to help.
- Have the athlete drink about 2-ounces of pickle juice 10 minutes before exercise.
- If cramps occur during exercise, have the athlete drink about 2-ounces of pickle juice while also using other conventional methods of treating the cramp.
- Be sure the athlete continues to drink fluids throughout and after the exercise period

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**Questions and comments regarding exercise-associated muscle cramps or any other area of student-athlete wellness are welcomed and encouraged. They should be directed to Alan Beste, ATC, Administrative Assistant for the Iowa High School Athletic Association, PO Box 10, Boone, IA 50036. (515)432-2011, <[abeste@iahsaa.org](mailto:abeste@iahsaa.org)>**

**Sources:** Athletic Training and Sports Medicine, American Academy of Orthopaedic Surgeons, Chicago, IL, 1984; Arnheim, Daniel, D. Modern Principles of Athletic Training, St. Louis:Times Mirror/Mosby College Publishing, 1989; Booher, James, M. and Thibodeau, Gary, A. Athletic Injury Assessment, St. Louis:Times Mirror/Mosby College Publishing, 1989; Horswill, Craig, PhD. "Muscle Cramps: Experts List Causes and Cures," NATA News, May 2000; Levin, Suzanna. "Investigating the Cause of Muscle Cramps", The Physician and Sportsmedicine, Volume 21, Number 7, July, 1993; Schweltnus, Martin, P. MD. "Skeletal Muscle Cramps During Exercise," The Physician and Sports Medicine, Volume 27, Number 12, November 1999; Stamford, Byrant, PhD. "Muscle Cramps: Untying the Knots", The Physician and Sportsmedicine, Volume 21, Number 7, July, 1993; Williams, Richard, ATC. "Those Devilish Cramps," Training and Conditioning, December 2000.