SODIUM AND HEAT CRAMPING

Major heat cramping involving widespread painful spasms of muscles can take athletes out of the game. In the past, some have recommended increasing potassium intake as the key to preventing heat cramps. But forget the bananas and oranges. New research has shown sodium, not potassium, is critical in preventing major heat cramping in sports.

Research with the University of Oklahoma football team shows that sodium loss in sweat is a key culprit in heat cramping in athletes. Through on-field studies of Sooner football players in action, researchers measured sweat rates and sweat electrolyte losses in two-a-day practices in August. In hot and humid conditions, they compared cramp-prone players with teammates who had no history of heat cramping.

Results showed both groups lost small and similar amounts of potassium in sweat, but their sweat sodium losses were starkly different.

- Crampers were “salty sweaters,” losing twice the sodium in sweat as noncrampers.
- In one day of two-a-day practice sessions, the crampers lost an average of five teaspoons of salt (sodium chloride). In an extreme example, one athlete lost nine teaspoons.
- Football crampers also had higher sweat rates and dehydrated more than noncrampers.

THE WATER HAZARD

If an athlete does “lock up” with major heat cramping, athletic trainers and other sport professionals should think twice before instructing the athlete to drink plenty of plain water. Over-ingestion of plain water can worsen the problem by diluting sport professionals should think twice before instructing the athlete to drink plenty of plain water. Over-ingestion of plain water can worsen the problem by diluting

Proper treatment protocol involves administration of sodium chloride through fluid, either orally or intravenously. Fluids taken orally are the first line of defense. If drinking is impaired or it is an emergency situation, fluids can be administered intravenously.

- Athletic trainers and other sport professionals should never treat heat cramping with only plain water.
- To prevent heat cramping, encourage athletes to salt their food and consume sodium-rich foods like tomato juice, canned soup, and pretzels. Further prevention should include weighing athlete pre and post practice to determine fluid weight loss.
- During on-field situations, the use of sports drinks containing sodium, like Gatorade, will continue to help athletes meet their electrolyte needs.

ELECTROLYTES ARE VITAL FOR SAFETY AND PERFORMANCE: PRACTICAL RESEARCH YIELDS IMPORTANT LESSONS FOR ATHLETES

SODIUM NEEDS OF ATHLETES

Intensity and duration of workouts can add up to substantial sodium loss.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Sodium Loss (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soccer Player</td>
<td>1</td>
</tr>
<tr>
<td>Cyclist</td>
<td>1</td>
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<tr>
<td>Runner</td>
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<tr>
<td>Football Player</td>
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Data from laboratory and field research on typical amateur and professional athletes to gauge sweat sodium loss during typical workouts for each sport. Sweat sodium loss in football is represented for noncrampers, cramp-prone players lose twice this much sodium.

FLUID TURNOVER AND HOMEOSTASIS

Research shows that Sooner football players turn over huge amounts of fluid during two-a-day practices. Basically, they lose and need to replace an average of 10 quarts of fluid a day. Up to 70% of this daily fluid loss is sweat; the rest is mostly urine.

- Sweat comprises more than just water. It also contains electrolytes, mainly sodium and chloride, but also potassium, magnesium, and calcium.
- Replacing the fluid and electrolytes lost in sweat is vital to maintain proper hydration and cardiovascular control, help regulate body temperature, and ensure top athletic performance.

ELECTROLYTES BEAT PLAIN WATER IN THE ATHLETIC ARENA

- Sodium is vital to prevent major heat cramping in athletes.
- Beverages with sodium stay in the body better than sodium-free fluids.
- Electrolytes are imperative to maintain a healthy fluid balance and keep athletes performing at their peak.

For more information, please visit www.gssiweb.org.

REFERENCES

6. GSSI in house research on Olympic marathon runners.