

# Tailor Rehydration to Athletic Activity Intensity

BY HEIDI SPLETE  
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HERSHEY, PA. — Anyone who exercises even moderately in hot weather should be advised to drink more than water—something with salt and sugar—to replenish the carbohydrates and electrolytes that the body sweats out in order to avoid potentially life-threatening complications from a heat-related illness.

Remember that all-cause mortality from cardiac disease increases in hot weather, said Dr. Eric E. Coris at the annual meeting of the American Orthopaedic Society for Sports Medicine.

As the body heats up and dehydrates, less oxygen reaches the muscles, which causes

muscle cramping. Dehydration also decreases blood volume, impairs gastric emptying, and hinders the flow of blood to the kidneys and other organs, said Dr. Coris, director of the Sports Medicine Institute at the University of South Florida, Tampa.

The presence of sodium in water or another beverage, such as lemonade or a sports drink, improves the body's ability to absorb fluids.

Although water alone is sufficient to rehydrate most athletes during events that last less than an hour, drinking something with carbohydrates prior to the event can help prevent dehydration in hot weather, Dr. Coris said. For events lasting an hour or longer, he recommends plain water before the event, followed by a solution with

both sugar and salt during the event to maintain the carbohydrate and electrolyte balance and prevent hyponatremia.

The ideal sports drink for most activities contains 400-800 mg/L of sodium, with some sugar, in the form of 30-80 g/L of carbohydrates, and most commercial sports drinks meet these criteria, said Dr. Coris, who has no financial interest in any sports drink manufacturers.

"Athletes drink more of any beverage when there is sugar in it," he said. But avoid denser drinks, such as orange juice, because too much sugar could cause stomach cramps, he emphasized. Standard sports drinks provide enough sodium for mild to moderate activities, but athletes who do long or intense workouts in hot

weather may need even more sodium than sports drinks provide.

Even highly conditioned athletes can overheat in extreme conditions and find themselves dehydrated. Runners, for example, may sweat about 1.5 L/hr on a hot day, and most people can easily replace only 0.75 L/hr, Dr. Coris said.

"Football is one of the monsters of fluid loss," he added. College football players have been known to lose 3-4 L of fluid during twice-daily practice regimens in August. For these athletes, a standard sports drink probably does not provide enough sodium. Adding one teaspoon of salt to a 32-ounce bottle of sports drink and drinking it slowly after the event is an effective way to rehydrate, he noted. ■

## Low-Grade Ankle Sprains Heal Rapidly With Brace and Wrap

BY MIRIAM E. TUCKER  
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Use of the Air-Stirrup brace combined with an elastic wrap promotes a more rapid return to function following first-time grade I and II ankle sprains than do either one alone or other modes of treatment, reported Bruce D. Beynon, Ph.D., of McClure Musculoskeletal Research Center, Burlington, Vt., and his associates.

For grade III sprains, however, treatment with either the Air-Stirrup brace or casting for 10 days followed by the use of an elastic wrap appears to produce comparable outcomes, according to the investigators (*Am. J. Sports Med.* 2006; 34:1401-12).

In a study supported by Aircast Inc., 212 skeletally-mature patients with first-time ankle sprains were randomized depending on their sprain severity. The 64 with grade I injuries received either an elastic wrap (Ace), an Air-Stirrup ankle brace, or the wrap combined with the brace. The 116 patients with grade II ankle sprains received either an elastic wrap, Air-Stirrup ankle brace, the wrap combined with the brace, or a fiberglass walking cast worn for 10 days followed by the use of an elastic wrap. The 32 patients with grade III sprains were randomized to either Air-Stirrup ankle brace or a fiberglass walking cast worn for 10 days, and then followed by the use of an elastic wrap.

A total of 172 patients (52 grade I, 93 grade II, 27 grade III) completed all the analyses, including keeping a daily log at home. Among those with grade I sprains, it took less than half the time to return to normal walking with the combined treatment than with the individual modalities (4.62 days, compared with 11.16 with the elastic wrap alone and 10.33 with the Air-Stirrup brace alone). Return to normal stair climbing also showed a significant dif-

ference—more than twice as rapidly with the wrap plus brace as with the two solo treatments (5.46 vs. 12.05 and 11.43 days, respectively).

The patients with grade II ankle sprains who received the combined Air-Stirrup/elastic wrap required 10.1 days to return to normal walking and 11.72 days for normal stair climbing, compared with 11.67 and 13.38 days for the elastic wrap alone and 13.38/16.38 for the Air-Stirrup ankle brace alone. These differences were significant.

Also significant, function after casting—24.12 and 27.94 days for walking and stair climbing, respectively—was 40% longer than with the combined Air-Stirrup/elastic wrap treatment, Dr. Beynon and his associates reported.

For grade III ankle sprains, there was no difference between treatment with the Air-Stirrup brace and cast immobilization for 10 days followed by the use of elastic wrap until the return of normal walking or stair climbing (18.56 days for the Air-Stirrup versus 19 for casting for walking, 18.31 versus 21.08 for stair-climbing). It's possible that the combined treatment would have benefitted these patients—it wasn't studied because the numbers with grade III sprains were anticipated to be too small for meaningful comparison, the investigators explained.

Secondary outcome measures were less impressive. There was no difference between treatments among those with grade I sprains in time to return to walking with full weight bearing. The time required to regain full capability of normal activities of daily living did not differ among the treatments. Similar trends were seen with grade II sprains, although secondary outcomes were significantly better with the elastic wrap than with casting. No significant differences among the treatments were seen with grade III sprains. ■



**There was no difference between treatments in time to return to walking with full weight bearing.**

DR. BEYNON

## Hyperthermia Bests Ultrasound, Exercise in Rotator Tendinopathy

BY MIRIAM E. TUCKER  
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Hyperthermia appears safe and effective in the short term for the management of supraspinatus tendinopathy, Dr. Arrigo Giombini of the Italian National Olympic Committee, Rome, and associates reported.

There is currently no consensus about the treatment of choice for rotator cuff tendinopathy, a condition that affects about half of all athletes who impose repeated stress on their shoulders, such as swimmers and volleyball players. A variety of physical therapy modalities have been used to treat the condition, but few well-designed studies have evaluated their effectiveness, the investigators said (*Am. J. Sports Med.* 2006;34:1247-53).

Hyperthermia is becoming widely used in physical medicine and rehabilitation in central and southern Europe. This approach utilizes a machine that combines a superficial cooling system and a deep-heating source with a microwave power generator at 434 MHz. This frequency raises tissue to therapeutic temperatures to a depth of several centimeters into the skin with no risk of overheating the superficial tissues, Dr. Giombini and associates explained.

This study population, 29 male and 8 female athletes with a mean age of 27 years, all reported a gradual onset of shoulder pain that impaired their sports activities for 3-6 months despite nonoperative management, including nonsteroidal anti-inflammatory drugs and complete or modified rest from their sport.

The participants were randomized to receive treatment with either hyperthermia (14 subjects), ultrasound at 1 MHz (12 subjects), or exercise (11 subjects) for 4 weeks. The hyperthermia was delivered in 30-minute sessions three times a week, whereas the ultrasound treatments lasted 15 minutes each, also three times weekly. The exercise group performed passive shoulder exercises for 5 minutes, twice daily.

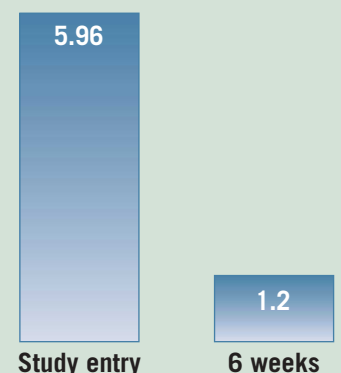
At the 6-week follow-up, only the hyperthermia group had significant reductions in pain scores on the visual analog scale, which ranges from 0 (no pain) to 10 (incredibly severe pain). Their mean VAS score dropped from 5.96 at study entry to 1.2 at 6 weeks, compared with insignificant reductions of 6.3 to 5.15 in the ultrasound group and 6.1 to 4.9 with passive exercise.

The hyperthermia group also showed significantly greater improvements on measures of resisted movement, painful arc, and Constant Morley functional assessment, an overall clinical assessment of the power of the subject's shoulder and his or her ability to perform normal tasks of daily living.

By the end of the study, 12 of the hyperthermia patients had returned to their chosen sports, compared with just 4 each of the ultrasound and exercise patients, Dr. Giombini and associates reported.

Four athletes in the study reported transient discomfort from the high temperature reached with hyperthermia, but treatment was not interrupted for that reason. There were no other adverse effects. ■

### Hyperthermia Treatment Reduces Athletes' Mean Pain Scores



Note: Based on a study of 14 patients.  
Source: Dr. Giombini