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To Ice or to Heat—That Is the Question

By Michael J. Smith, MD

An active lifestyle or sports participation can lead to injuries. It is important to know how to treat these injuries.

Following an acute injury such as an ankle or knee sprain, swelling may occur due to damage of the small blood vessels around the joint or muscle. Applying ice to an acute injury makes the blood vessels constrict and thus minimizes the swelling and pain. The sooner ice is applied on an acute injury, the more effective it can be. Never apply heat to an acute injury since this causes the opposite effect of making the vessels swell more. The longer an injury is swollen, the longer it takes to heal.

The optimal management of an acute injury is best known as the RICE formula:

	Rest Rest until function is restored and pain is gone	Ice Apply ice in some form to injury	Compression Lightly wrap injury to minimize swelling	Elevation Elevate injury to minimize swelling
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Ice is usually applied for 15 to 20 minutes several times a day. Ice packs can be made from ice cubes in a plastic bag and even using frozen peas. The frozen peas work well in conforming to the body part, and are readily reusable. When icing for long or repeated applications, protect the skin with a cloth or towel to prevent skin damage.

Icing should be continued for at least 48 to 72 hours, as directed by a physician. This may need to be done longer in more severe injuries, and also following surgery.

Heat treatments are usually reserved for chronic conditions, as heat tends to make the blood vessels bigger and help relax and loosen tissues, as well as stimulate blood flow to the area. Never use heat after an acute injury and do not use heat after activity. Heating body parts can be accomplished with warm water or a hot, wet towel. Heating pads tend to not conform to the body part, and have been known to cause blisters. It is important when doing heat treatments to never sleep on a heating pad or use the heat treatments for a prolonged period.

Even when treating chronic injuries, it is sometimes advantageous to ice down the body part after a therapy treatment or after an exercise session to help prevent any additional swelling. If there is concern for swelling, always use ice, not heat.



Don't Get Behind the Wheel Too Soon After Surgery

By Michael J. Smith, MD



A common patient question involves when driving is safe following a surgical procedure or injury.

As a rule, the day of an outpatient surgical procedure, the patient should not drive. Most surgery centers require an escort be present to take the patient home and document that the patient is not driving. Studies have shown that a person usually has some motor deficit following general anesthesia for 24 hours after a procedure. Driving should not be undertaken until at least this time. Some narcotics can remain in the body for extended time periods and most people should not return to driving until at least 24 hours after narcotic usage has stopped.

Cast and Braces

An injury or surgery that requires a brace or cast that would interfere with the use of the hand or right foot would easily impair someone's ability to drive safely. The National Highway Transportation Safety Administration (NHTSA) advises that the use of the left foot and leg to use the accelerator and braking pedals is not a safe alternative for drivers who are unable to use their right leg due to casting. The NHTSA also notes that drivers with a right leg cast should avoid driving until after the removal of the cast and until the mobility of the joint is adequate for safe driving.

Knee Surgery

Following left knee surgery, with use of an automatic transmission, driving would be permissible after the initial 24 postoperative hours. For a right knee arthroscopy, a return to driving may take days to weeks until the patient is off narcotics and pain and swelling in the right knee has diminished.

An ACL reconstruction requires a longer recovery before the pain and swelling have decreased and safe driver reaction times have returned. Two studies examining brake reaction time showed safe reaction times resuming following ACL surgery took between four to six weeks. Return to driving recommendations should also be individualized.

Shoulder Surgery

For shoulder surgeries, the usual advice to patients is not to return to driving until two hands can be placed on the wheel. Following a rotator cuff or labral repair, the usual postoperative physical therapy regimen is for passive range of motion only for the first four to six weeks. Using the operative arm and shoulder to actively turn a vehicle, especially around a corner, could jeopardize the surgical repair.

In summary, driving after a surgical procedure should not be done for at least 24 hours. Any brace or cast that affects limb mobility could prevent safe driving, therefore patients should be advised not to drive accordingly.

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Enjoy the Obstacle Course Race—Just Be Prepared

By Christopher J. Roach, MD, and Daniel J. Solomon, MD

The organized obstacle course or “adventure” race is one of the fastest growing sporting activities with roughly 1.5 million participants in 2012 and more expected in the coming years.¹ Races like the Tough Mudder, Warrior Dash, and the Spartan Race appeal to fitness-conscious participants, offering a change of pace from road races or triathlons. Challenging obstacles and courses up to twelve miles or more of varied terrain introduce the risk of injury, sometimes serious.

While the event organizers emphasize safety, they encourage participants to overcome their fears and limitations with camaraderie and a sense of accomplishment. This perceived pressure to perform may create an unsafe combination when the athlete is underprepared or has an underlying medical condition.

Athletes participating in any endurance activity should always:

- **Hydrate appropriately** before the race begins and stop at designated rest stops and hydration stations to drink fluids and eat as necessary.
- **Be aware of temperature and weather conditions** for the day and dress appropriately.
- **Make sure your attire and shoes fit** properly and are what is recommended by race organizers.
- **Consider the altitude** and the extra fatigue that comes with racing in certain locations.

Common injuries during these type of races include scrapes, bruises, and strains. Dislocations, fractures, and significant lacerations have also been reported.



Some races design obstacles with electric shocks potentially exposing participants to dislocations and cardiac irregularities. Heights and water obstacles are often involved and represent the greatest risk of serious injury and even death. Though extremely rare, given the number participants, drowning and paralysis have occurred.²

As with all endurance activities, proper training and preparation are the first steps to injury prevention. Participants should be aware of the types of activities they will be doing while traversing the obstacles, and prepare as best as possible, including:

- Running on uneven terrain
- Practicing open water swimming
- Climbing over materials at the heights that will occur during the race, if need be
- Thinking through the race and its various components—mental

preparation is sometimes as essential as physical preparation

- Consider doing portions of the race or certain obstacles at a slower pace or not at all, taking some personal responsibility for your own safety.

Many of these races promote teamwork and helping one another through the race, which can also help prevent injuries.

While not every injury can be prevented, knowledge of activities involved, a proper training regimen, racing smartly, and knowing your own limitations can make for a safe and enjoyable event.

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About AOSSM and *In Motion*

As a world leader in sports medicine education, the American Orthopaedic Society for Sports Medicine (AOSSM), we have designed the publication to highlight relevant information for multiple age groups from exercise and rehabilitation to nutrition and psychology.

This important educational tool is published quarterly and distributed electronically.

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Growing Pains May Be Osgood-Schlatter's

By Kenneth Fine, MD

Osgood-Schlatter's is a disorder that causes pain at the tibial tuberosity, which is the bump on the front of the knee, just below the kneecap where the patellar tendon attaches. It is generally a self-limited problem and does not lead to long-term consequences. Most athletes with Osgood-Schlatter's will improve with a short period of rest. The problem is due to pulling of the tendon on the growth plate. Some theories of Osgood-Schlatter's suggest that there are microfractures of the growth plate in this area.

Who gets Osgood-Schlatter's?

Osgood-Schlatter's occurs in children with open growth plates (still growing) and particularly affects active children, especially those athletes who participate in jumping or sprinting sports. Osgood-Schlatter's is more common in boys. The growth plate is most vulnerable during periods of rapid growth and therefore the incidence in boys peaks at age 13 and at age 12 in girls. It is usually caused by overuse but can also be initiated by a sudden injury.

A physician often can simply diagnose the problem by taking a history and palpating the tender area. The knee area is tender and may be swollen or enlarged. X-rays may reveal widening

of the growth plate in this area. An MRI is usually not necessary.

How do you treat Osgood-Schlatter's?

Activity modification is the main treatment for Osgood-Schlatter's. Other conservative treatment measures include ice, stretching, controlled strengthening, simple over-the-counter pain medicines, and a patellar strap. In more severe cases, a short period of casting or bracing may be recommended. Surgery is almost never necessary, except in adults with persistent symptoms.

The symptoms of Osgood-Schlatter's almost always improve with rest and also usually subside when the athlete reaches skeletal maturity (fully grown). In rare cases, a fragment of bone may not unite to the underlying tibia and symptoms may persist into adulthood. In this situation, the pain can be alleviated by a simple operation to remove the ununited fragment. Although extremely rare, an athlete who continues to play vigorous sports with persistent pain from Osgood-Schlatter's may develop a complete fracture through the growth plate at the top of the tibia. Usually, however, the only long-term consequence of Osgood-Schlatter's is a residual bump on the front of the knee cap which does not interfere significantly with sports.

