



FALL, 2006

EXERCISING THROUGH THE COMMON COLD

Endurance sports pose a unique problem during the winter months. Colder temperatures, wind, snow and slippery surfaces can create adventurous training conditions and lead to injuries or upper respiratory tract infections. Even with the excellent quality of outdoor underclothing, fighting off the common cold after you are cold and wet can be challenging.

The key to training through an upper respiratory tract infection (URTI) is not to catch it in the first place. Besides frequent hand washing and avoidance of anyone you know with a runny nose, some over-the-counter supplements can boost your immune system to help combat the common cold.

Zinc supplementation of 10 mg per day has been shown through some studies to decrease the severity and duration of URTIs in endurance athletes. Mild zinc deficiency has been postulated in these athletes and supplementation may be beneficial if started within 24 hours of a URTI. Evidence for daily prophylaxis against URTIs with zinc is less compelling and may not be effective unless you are zinc deficient in your diet. High dose supplementation of zinc is associated with suppression of the immune system, therefore doses above 10mg-15mg per day should be avoided.

Glutamine is an essential amino acid that serves as a metabolic fuel for lymphocytes and macrophages (types of white blood cells) and appears to help athletes fight off a URTI. Decreases in plasma levels of glutamine following prolonged endurance exercise have been found in many studies. Prolonged exercise has also been associated with an increased incidence of URTIs in the week or two following a marathon. It is thought that decreased plasma concentration of glutamine post exercise creates a depression of immune function and an increased risk for URTIs. Although studies are controversial in regard to enhanced immune function with supplementation of 100 mg per day, there is little downside to its use. Glutamine has minimal side effects and appears to enhance muscle recovery after prolonged exercise.

Finally, Echinacea dosed at 900mg per day is effective in fighting off the earlier stages of a URTI. Most Echinacea supplements found in our local pharmacies are 100mg -150mg capsules and the package insert recommends 400mg-500mg per day. Well done studies out of Germany, where herbal medications are prescription only and closely monitored by their equivalent of the FDA, found that doses of 900mg per day decrease the severity and duration of URTI symptoms. They also found that daily prophylaxis was ineffective.

For those endurance athletes that still find themselves catching multiple URTIs during the winter season, understanding the basic immune responses to training can help you prevent a URTI. During exercise, epinephrine (adrenaline) is released to help increase cardiac performance, liver metabolism of sugars and bronchial dilation in the lungs. Epinephrine also increases circulating levels of granulocytes (neutrophils, natural killer cells) and T-cell mediated immunity. After exercise, plasma levels of epinephrine drop down to normal resting levels. However, 30

minutes after exercise the level of granulocytes drops to well below normal baseline levels.

This significant drop in immune surveillance creates a vulnerable period in which risk for a URTI is increased. During

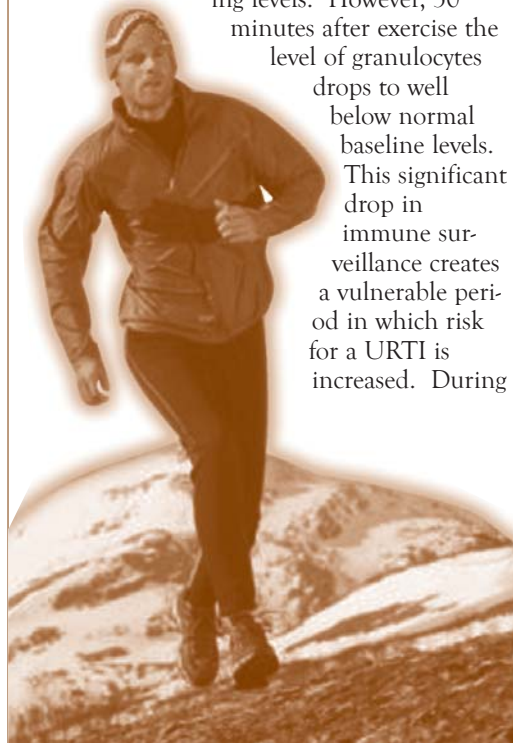
this period (2-6 hours following exercise), keeping warm and dry, hydrated, fueled and away from sick contacts are critical to staying healthy.

Some simple rules do apply to training with a URTI. If you have a fever (greater than 99.0) you shouldn't train. Many athletes have learned this lesson the hard way. Training through a viral URTI with a fever can increase your risk for a viral infection of the heart such as pericarditis or myocarditis. These heart infections can be caused by viruses that cause the common cold, mononucleosis and/or influenza. Viral infection and inflammation to the pericardial sac surrounding the heart (pericarditis), which causes chest pain and shortness of breath, typically resolve with rest and anti-inflammatory drug such as ibuprofen. Myocarditis is a viral infection of the muscular tissue of the heart causing decreased exercise tolerance, shortness of breath and chest pain. In most cases myocarditis is reversible, but it occasionally causes long term disability. Although these are rare complication of a URTI, clinically I see about 2-3 cases per year.

Another hint is to follow your first of morning heart rate. If you know what your normal AM waking heart rate (AHR) is, you can make adjustments to your training plan. If you notice a jump of 5 or more beats to your AHR, you might want to cut back on your training volume for a couple of days to help fight off infection. If you are currently symptomatic for a URTI and you have a normal temp and AHR, it is generally safe to train. The only hitch to this much generalized rule is when you are developing a pronounced cough or have chest tightness with inspiration. If you have been coughing more than 3 weeks and don't seem to be getting better, stop training and see your doctor.

For those with asthma or exercise induced asthma (EIA) you should see your doctor if you notice a drop in your peak flows, have any

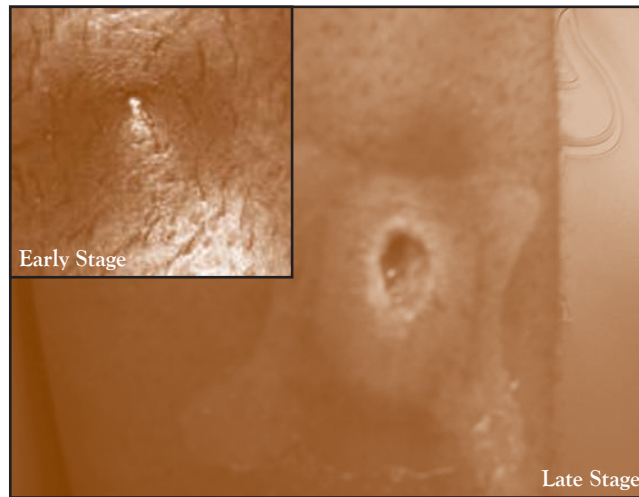
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ANTIBIOTIC-RESISTANT SKIN INFECTIONS IN SPORTS

A major safety issue for athletes is the rapid rise in community acquired methicillin-resistant staphylococcus infections (CA-MRSA) nationwide. The recent death of a TCU football player secondary to complications of a skin CA-MRSA infection should open our eyes to this very real and sometimes deadly bacterial skin infection. Professional, college and high school athletes are all at risk. According to the Centers for Disease Control and Prevention (CDC), Staphylococcus Aureus or "staph", is a bacteria which is carried on the skin and/or in the nasal mucosa of 25-35% of healthy people. These individuals are colonized with this bacteria without causing illness. Athletes who participate in sports with close person contact such as football and/or wrestling are at the greatest risk.

In the past, staphylococcus bacterial infections were easily treated with antibiotics. Unfortunately, antibiotics have been over prescribed for non-bacterial infections creating super bacteria that have developed resistance to penicillin and other types of antibiotics. According to the CDC, one percent of the population carries MRSA. In the past, MRSA infections only occurred in hospitals or nursing homes. Today MRSA can occur almost anywhere, including with healthy high school athletes.



Such infections usually appear first as a "pimple" on the skin. It rapidly turns into a pustule and becomes red, painful and swollen. Some will have purulent drainage. The infection is typically associated with abrasion or turf burns. Maintaining good hygiene and avoiding contact with lesions that are draining are the best methods for preventing the spread of MRSA.

The CDC and the National Athletic Trainers Association recommend the following precautions:

1. Keep hands clean by washing thoroughly with soap and warm water or using an alcohol-based hand sanitizer.
2. Keep cuts and scrapes clean and covered

- with a bandage until healed.
3. Avoid contact with other people's wounds or bandages.
4. Avoid sharing personal items such as towels or razors.

Any athlete with a painful, red pustule should seek medical attention immediately and be held out of practice. These infections can spread rapidly and must be treated aggressively and monitored closely. If an athlete develops CA-MRSA, they may be treated with oral antibiotics if caught in the early stages. If treatment is delayed, wound incision and drainage, debridement and intravenous antibiotics may be required. Some athletes may need up to 4-6 weeks to treat infections when treatment is delayed.

SIGNS OF SERIOUS SKIN INFECTION

- Skin barrier is broken
- Frequently recall a "spider bite?"
- Small signs of local infection occur quickly, often a benign appearance
- Localized redness, tenderness, swelling, "pimple-like"
- Noticeable change occurs in "hours"
- Increasing tenderness and swelling
- Systemic symptoms are late findings: fever, chills, rapid heart rate

DOES IBUPROFEN IMPROVE ANKLE SPRAIN OUTCOMES?

Ankle sprains are the most common problem in sports medicine. The key to a successful outcome may be different than you think. We are all familiar with PRICE management (Protection, Rest, Ice, Compression & Elevation) for the first 24 to 48 hours. However, many of you may not be aware that by using Ibuprofen or non-steroidal anti-inflammatory products (NSAIDs), you may contribute to bleeding in the surrounding damaged tissue as these products inhibit platelet function. During this "acute" period, Tylenol or acetaminophen relieves pain without effecting platelet aggregation and may speed recovery. After the acute period, NSAIDs work to decrease swelling, improve recovery and can be used



safely. Long term use of NSAIDs may inhibit healing as pro-inflammatory hormones released by damaged tissue and immune cells are needed to recruit cells to repair and rebuild damaged tissue. Non-steroidal anti-inflammatory drugs block the natural release of these pro-inflammatory hormones therefore possibly inhibiting healing. Research is mixed, however, with some studies suggesting delayed healing and others showing no delay with long term use. A safe approach might be to use acetaminophen for pain the first 24-48 hours, then switch to ibuprofen to reduce swelling and allow early motion. After 5-7 days, ibuprofen should be discontinued to promote a healing environment in the traumatized tissue.

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wheezing or shortness of breath, and if you're just not getting better after 7-10 days. For those who develop exercise induced bronchospasm (coughing until you think you might vomit) you'll need to be started on an albuterol inhaler 30 minutes prior to exercise. Occasionally, inhaled steroids and/or antibiotics are needed for severe or prolonged cases of EIA or EIB.

For those athletes or fitness junkies that are training seriously for competition and can't afford to take more than several days off from training, you may need to adjust your training schedule. As a general rule, drop the intensity of your workouts during the recovery phase of a cold or flu and cut your training volume to about half of your predicted schedule. Pace training or interval training should be limited or avoided until your heart rate returns to your normal AM resting level.

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PROPRIOCEPTION IS REHABILITATION AND PREVENTION

Rehabilitation programs for injuries have come full circle during the last 50 years. In the early days it was often thought that you shouldn't allow any injury to have swelling. Once the swelling had resolved the athlete was considered healed and returned to play. As rehabilitation programs have evolved we now know that swelling, although still important to control, is an important first step in the healing process. However, once swelling is held in check and gradually diminished, other factors are important to introduce into a rehabilitation program including the use of modalities (ice, heat, electrical stimulation, ultrasound, short wave diathermy) and exercise programs. During the exercise program, one very important exercise to begin and progress is balance exercises or what is often called "proprioception" in the athletic training world.

Proprioception can be described as the special variation of the sense of touch that encompasses the sensation of joint movement or joint position. In other words, proprioception is our joints ability to "sense" joint position and the ability to make corrections to joint positions that place the joint at risk for possible injury. For example, ankle sprains are one of the most common injuries in any sport. The most common way in which the ankle joint is sprained is to "roll" the ankle into what is called inversion (the outside of the foot is rolled under the foot via stepping on someone else's foot or perhaps an uneven part of the field). Now suppose that when the ankle joint begins to roll, your body has the ability to sense the stress to the ankle and can take corrective measures to prevent the roll from getting worse through the activation of muscles and joint stabilizers. This is what we describe as "proprioception."

When an athlete sprains his/her ankle, the athlete does not walk in a "normal" manner on that particular extremity secondary to pain. Once the athlete does not walk normally, his/her proprioception begins to diminish. This is where a sound balance program comes into play. Proprioception activities can begin early in the rehabilitation program with minimal stress and can be

progressed into more difficult tasks as the athlete improves.

Proprioception or balance exercises are simple to administer, can be performed anywhere, and are cost effective. Equipment can be very simple and is only as expensive as you want it to be. I often have athletes balance on some sort of unstable surface and then progress to more difficult positions and tasks. I also often hear from athletes the following quotes:

"What is the point of this, it's my ankle that's hurt and I can balance just fine!"
 "How does this make me better on the court (field)?"

A simple version of a proprioception program would be to have the athlete simply stand on a solid surface on just the affected side. Have them balance for up to 1 minute at a time. Work both sides. Once that task is mastered, then have the athlete balance for up to 1 minute but, have them close their eyes. Next, have them balance with their eyes open, and have them dribble a basketball, toss a soccer ball to them and have them kick the ball back to you or toss a volleyball to them and have them pass it back to you. Simple stuff using minimal equipment. One of the great things about proprioception exercises is that athletes can work on proprioception if they cannot participate fully in practices. Too often I see athletes that have a sprained ankle simply sitting on the sideline during practice not doing anything but watching. This is prime time for working on exercises to get them back to play.

There are plenty of "balance" products on the market. If your school has a wood shop, you could have your shop cut you some circular pieces of 3/8" plywood with a 12-16" diameter. Attach a round "knob" on the bottom (such as a baseball, croquet ball, softball, etc). This will increase the challenge of balancing. There are commercially made balance boards, and other devices such as the Dyna Disc, Bosu Ball, Fitter, and Slider Boards.

Finally, proprioception does not have to be limited to just injury rehabilitation. Proprioception exercises are also a very important part of injury prevention as well. Have you ever thought of going through an entire competitive season with no ankle sprains? Certainly this is possible, especially if you include proprioception as a part of your regular conditioning program.

TEN TIPS TO AVOID DEHYDRATION AND HEAT ILLNESS

1. Thirst is a poor predictor of dehydration: You are already at least 5% dehydrated when the sensation for thirst develops.

2. Know the dehydration warning signs: Signs and symptoms of dehydration include dark or concentrated urine, cramps, dizziness, headache, decreased performance and loss of coordination. Extreme symptoms such as nausea and vomiting, elevated temperature, unconsciousness and even death may occur if warning signs are ignored.

3. Fluids must be within arms reach: Water and sports drinks should always be available at team meetings, pre and post practice and during travel.

4. Drink before, during and after: Athletes should consume 16 oz of water or sport drink 2-3 hours before activity and 8 oz after warm-up. During exercise, 8 oz of fluid should be ingested for every 15 minutes of exercise.

5. Watch for the salty sweater & muscle crammer: Some athletes will have salt encrusted clothing after strenuous exercise. These athletes should always drink a sport drink to prevent cramping. Salty foods such as taco chips or pretzels should be available for snacks.

6. Dress for the weather: Wear lighter colored clothing to avoid radiant heat effects. Consider removing excess equipment or clothing during conditioning.

7. Exercise in the morning or evening: Avoid direct sunlight

8. Allow for breaks: During warmer weather allow for frequent fluid breaks in a shaded area. Have cooling fans and/or icy wet towels that can be placed over a player's neck and head during breaks.

9. Chart player's weight pre and post practice: Encourage 20-24 oz of fluid for every pound of body weight lost during exercise.

10. Have color charts in the locker room showing urine color and approximate hydration level.

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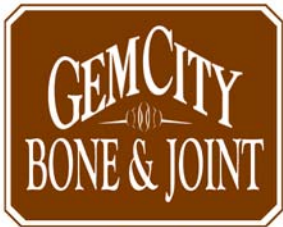
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