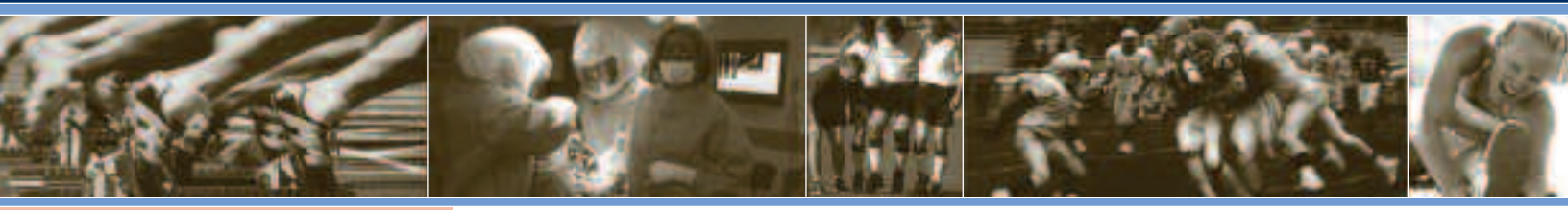
# LOCAL MOTION

Summer 2006 • A Hinsdale Orthopaedic Associates Publication

SPORTS MEDICINE INJURY CLINIC
AT HINSDALE ORTHOPAEDIC ASSOCIATES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## IN THIS ISSUE



# Don't just assume "Shin Splints"
# Lower Leg Pain May Be More Serious

By Robyn Vargo DO and Peter Drab ATC

"Activities involving repetitive jumping or long distance running can cause pain along the front of the leg bone between the knee and the ankle. Tenderness can be felt along the inside of the shin bone, called the tibia, or along the adjacent muscles and is commonly referred to as 'shin splints'," explains Dr. Robyn Vargo.

The inflammation and soreness associated with "shin splints" can develop from over-use, starting a new activity, high impact activities on hard surfaces or from lack of proper warm-up. Athletes who have a flatter arch are more susceptible than others.

Symptoms include pain with activity or following activity, warmth and swelling. "Shin splints" often occur in both legs at the same time. If only one leg is persistently painful or if tenderness is localized to a small isolated area of the bone (size of a dime or a quarter), a stress fracture may be present and should be evaluated by a physician.

Treatment includes R.I.C.E (Rest, Ice, Compression, Elevation), three to four times a day. Using an ice cup to perform an ice massage for five to seven minutes usually works best, but an ice bag wrapped on the leg can sooth the pain as well. Consideration of modifying or removal from activities that increase pain should be made to facilitate healing. Increasing the flexibility and strength (eccentric) of the calf muscles can aid healing and resolution of symptoms. If the athlete has flat arches, orthotics may be considered by the physician if abnormal mechanics seem to be playing a significant role. Additionally, worn out shoes must be replaced with new supportive ones.

Successful prevention of "shin splints" for any athlete is a good warm-up, followed by light stretching before and after activity followed by ice at the end of activity. The body needs time to adjust to moderate increases in time, distance, and/or intensity of running and jumping activities. Eccentric strengthening exercises for the soleus have also been helpful.

Should you have any further questions regarding the treatment or prevention of "shin splints", contact your high school certified athletic trainer or team physician.

# HYDRATE
## For Performance

By Kristen Miller ATC

Adequate fluid intake is essential to optimal performance in the classroom and on the playing field. Fluids enable your body to work at maximum efficiency and minimize injury.

Everyone, no matter their activity level, should consume approximately 80 oz. of water per day. (There is also large amounts of water in the solid food we eat). This is the average amount of water the body normally looses each day. Producing large amounts of light colored urine is the best way to know that you are adequately hydrated and are consuming sufficient amounts of water. The amount and timing of water intake are also important to optimize athletic performance and recovery. These are some fluid intake recommendations for before, during and after exercise:

- 16 oz. or more two hours before exercise
- 8 oz. ten minutes before exercise
- 4-8 oz. every 15-20 minutes during exercise
- 16 oz. or more after exercise (16 oz. for every pound lost)
- Sports drinks with electrolyte replacement are only necessary and beneficial when:
  - Continuous exercise is greater than an hour
  - Exercise is endurance (i.e. soccer, cross country)
  - The exercise environment is hot and humid
  - You have sweated profusely (1 pound lost = 80-100 mg of potassium and 400-700 mg of sodium)

If adequate fluids are not consumed, dehydration can easily occur resulting in a marked decrease in performance. The onset of dehydration is quicker with a cold or flu, with some medications like antihistamines, with the consumption of caffeine, and when wearing heavy clothing in warm/humid weather.

- At just 3% of body weight lost of water, muscle endurance decreases
- At 4-6% of body weight lost:
  - Dramatic decreases in muscle endurance occur
  - Decreases in muscle strength
  - Heat cramps
  - Muscle spasms
- Over 6% of body weight lost:
  - Severe heat cramps
  - Heat exhaustion
  - Heat stroke
  - Potentially Death

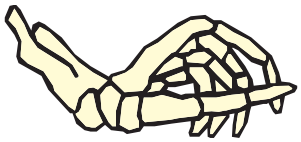
The take home message is that the proper consumption of water surrounding athletic contests is crucial to avoid dehydration and optimize performance. The timing and amounts of water consumption are both important. Water is still the best fluid replacement choice and staying properly hydrated has a more significant effect on performance than any other fancy energy drinks or pills. Just drink water.

# "Wrist Sprains"
## May Be A Hidden Fracture

By Ted Hirschfeld ATC

The scaphoid (also known as the navicular) bone is the most commonly fractured carpal bone in the wrist in young high school-aged athletes. This injury usually occurs from falling on the outstretched hand. Often, the athlete mistakenly believes that he/she just sprained his/her wrist. Scaphoid fractures can be problematic because a delay in diagnosis and treatment can lead to non-healing of the fracture, avascular necrosis of the scaphoid (dying and collapse of the bone), early arthritis and chronic wrist pain.

The scaphoid is a biomechanically important carpal or wrist bone, located under the "anatomical snuff box" or the triangular depressed area at the base of the thumb when placed in the "hitch hiker's" position.



Because the blood supply to the scaphoid is limited, the bone has difficulty healing once fractured (broken). If the fracture is not immobilized early and/or displaces (separates), the fracture does not heal and sometimes, the blood supply to a portion of the bone may be disrupted resulting in avascular necrosis, collapse and resorption of the dead portion.

To make the diagnosis, x-rays of the wrist are taken. Unfortunately, the fracture is often not visible on the first x-rays, but may show up on an x-ray up to 2-4 weeks later. Many patients require a bone scan or MRI to make the diagnosis.

Once a fracture is suspected, the patient is placed in a cast which includes the thumb until a definitive diagnosis can be made by MRI, bone scan or complete resolution of symptoms combined with negative repeat x-rays. If the bone has a non-displaced (non-separated) fracture, the cast is continued for at least six weeks and radiographic evidence of healing. If the fracture is displaced (separated), surgery is required to reduce (put together) the fracture and allow healing.

To ensure proper treatment and a good outcome, athletes must report all painful wrist injuries to their certified athletic trainers or team physician.

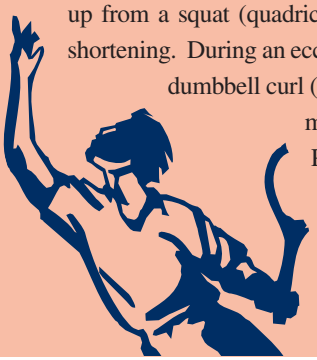
# Plyometric Training For Athletes

By David Koch ATC

Plyometrics is a term that is frequently misused, misunderstood, and sometimes even feared by athletes, coaches and parents. Plyometrics however, when used properly with other types of training, can be an excellent way to improve athletic performance and prevent injury.

Plyometrics is a training method for developing explosive power. Explosive power is demonstrated in most athletic activities such as a basketball player jumping for a rebound, a tennis player serving or a sprinter coming out of the starting blocks. Therefore, it makes sense that plyometric training techniques to increase explosive power would be beneficial to most competitive athletes.

In order to understand plyometric training, we must first understand how our muscles work. There are two types of muscle contraction: Concentric (positive) and Eccentric (negative) muscle contractions. During a concentric muscle contraction such as curling a dumbbell (biceps) or standing up from a squat (quadriceps, gluteus maximus), the muscle fibers are shortening. During an eccentric muscle contraction such as lowering the dumbbell curl (biceps) or squatting down (quadriceps, gluteus maximus), the muscle fibers are lengthening. Plyometric training incorporates eccentric (negative) muscle contraction followed immediately by explosive concentric (positive) muscle contraction to help train our bodies to better perform the explosive movements required during athletic competition. For example, jumping back up on a box immediately after landing is an excellent plyometric exercise to increase vertical leap for sports like volleyball and basketball.



Performing plyometric exercises as any explosive athletic activity does carry some risk for injury. However, if performed correctly with proper warm-up and technique, plyometrics may actually help prevent injury during competition. Recent research has shown that plyometric training can be performed safely by children as young as 12 years old if done properly. Injuries most frequently occur from trying to utilize a "one size fits all" plyometric program for a group of athletes.

**The keys to a safe plyometric program are:**

1. Assessing each individual athlete's ability to perform plyometric drills
2. Using a logical progression from easy to more difficult activities based on each individual's performance
3. Ensuring that each activity can be performed with proper technique
4. Warm-up properly before

There are many references available to assist with this program development including books such as High Powered Plyometrics by James C. Radcliffe and Robert C Farentinos; Essentials of Strength Training and Conditioning edited by Thomas R. Baechle; websites such as the University of Oregon Plyometrics Page, www.uoregon.edu/~j15; and videos such as Jump! Jump! Jump! by Vern Gambetta and Steve Odgers. So as a parent, coach or athlete looking to improve athletic performance, a well-designed plyometric program may be just what is needed.

# Cheerleading Injury Rates
## Jump to New Highs

By Kristen Miller ATC

Between 1990 and 2002, over 208,800 youths (ages 5-18) visited the emergency room for cheerleading-related injuries. Poor practice facilities, riskier stunts, limited access to medical personnel and poor supervision and coaching may contribute to the increase in injuries. Injuries rose 110%, averaging 16,100 per year but the number of participants, ages 6 and up, rose only 18% to about 1.5 million nationwide. With this dramatic increase in the rate of injury per participating cheerleader, the need for good coaching-with an emphasis on safety-is becoming more and more important.

Sixty-two percent of cheerleading injuries happen at school and most occur during tumbling or stunting routines. The most common injuries are still minor muscle strains and ligament sprains. However, over half of the reported catastrophic sporting injuries (those involving severe skull and spinal damage) between 1983 and 2004 resulted from cheerleading.

The American Association of Cheerleading Coaches and Advisors (AACCA) and the National Council for Spirit Safety and Education (NCSSE) provide safety training for coaches. The AACCA website (www.aacca.org) provides detailed safety rules for high schools.

Some general guidelines include:

- All practices should be supervised by a trained coach and located in a safe environment with appropriate safety equipment.
- The squad's activity should be determined by the squad's ability level.
- All cheerleaders should receive proper training before attempting tumbling, stunts, pyramids and jumps.
- Proper training of spotting techniques should be mandatory for all squad members.
- All cheerleading squads should adopt comprehensive conditioning, strength training, and flexibility programs to increase skills and decrease risk of injuries.

Uniform requirements regarding safety training and certification for cheerleader coaches could help reduce the risk of injury and improve injury management. By August 2006, the NCAA will require all cheerleading squads to be supervised by a safety-certified coach. It is anticipated that this requirement will also make its way to the high-school level.

# Brachial Plexus Injuries Need Prompt Attention

# Shoulder "Stingers"

By Justine Gaspari ATC

The words "burner" and "stinger" are familiar ones on football sidelines, but this injury can happen to other athletes including wrestlers and swimmers. A burner is an injury that occurs to the brachial plexus. The brachial plexis is a complex network of nerves that run from your neck down to your upper extremity (arm). This network provides sensation to and controls the movement of your shoulders, arms, and hands.

The injury usually occurs when the head and shoulder are forced in opposite directions resulting in traction or stretching of the brachial plexus. This stretching can injure the nerves, ranging from a mild "strain" to complete tearing of the nerves. Fortunately, most stretching injuries to the brachial plexus from sport are minor resulting in only transient (short duration) "burning or stinging" pain (and thus, the name) which runs along the course of the nerves down the arm and into the fingers. Muscle weakness, decreased arm function, loss of sensation, and other pain in the shoulder, arm, and hand can be experienced. The signs and symptoms will vary in severity and duration according to the amount of the stretch injury. Milder injuries can last minutes to hours. More severe injuries may result in permanent loss of sensation and paralysis. All brachial plexus injuries should be immediately examined by the certified athletic trainer or team physician.

The athlete should not return to competition until he/she can demonstrate full recovery of nerve function, including sensation, strength, and reflexes. Return to play before full recovery can result in repetitive injury to the nerves and possibly permanent nerve damage, including chronic pain, loss of sensation, and weakness or paralysis of muscles. If an athlete is cleared to play, he/she should be retested frequently and report any reoccurring signs and symptoms immediately.

Athletes can limit their risk for brachial plexus injuries. Strength and range of motion exercise programs that focus on the neck, trapezius, and shoulder stabilizing muscles can prevent injury to the plexus. For football, special shoulder under-paddings (cowboy collars) and neck rolls provide additional protection when combined with proper tackling techniques.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