Dee Sports Orthopaedics
www.deesportsdoc.com

PROVIDED IN CONJUNCTION WITH DEE SPORTS ORTHOPAEDICS www.deesportsdoc.com

active living for all ages

In Motion

SUMMER 2011

Trampoline Safety Critical

By Brian R. Wolf, MD

Trampolines are growing in popularity in the United States. When used properly they can provide good fun and exercise for children and adults. However, the risk of injury when using a trampoline is significant. It is estimated that more than 100,000 people each year are treated in emergency rooms for trampoline-related injuries. In fact, the American Academy of Pediatrics recommends against using trampolines. Most injuries are bruises, sprains, or fractures. Catastrophic injuries, including paralysis or death, have occurred but are not common.

In light of this potential for injury, several recommendations can potentially help limit trampoline injuries:

- Children should be at least 6 years old to participate.
- Only one person at a time should be on the trampoline to minimize risk of injury from contact with other people.
- Children on trampolines should always be supervised by an adult.
- Somersaults, flips, and maneuvers other than simple jumping are not recommended.
- Trampolines should be located on level ground and should not have a ladder so little children can climb on unsupervised.
- Netting and pads around the trampoline are highly recommended and can help limit trampoline injuries from falling off but need to be inspected regularly.

If you are going to jump for fun this summer, do it safely and wisely!

Exercise and Asthma Can Go Together

By Daniel Solomon, MD

Asthma is among the most common medical conditions affecting athletes. More than 20 million people in the U.S. have been diagnosed with asthma, though not all need ongoing medication. Exercise-induced asthma (EIA) affects 12–15% of the U.S. population. Athletes, coaches, athletic trainers, and parents should be familiar with common symptoms and triggers, and have an asthma treatment plan.

The most common cause of breathing difficulty during or after workouts is undiagnosed or untreated asthma. Common symptoms include:

- Wheezing
- Chest tightness
- Coughing
- Fatigue
- Shortness of breath
- Nighttime breathing difficulty
- Decreased athletic performance.

EIA prevalence increases in cold, dry weather, or if air-borne particles, including allergens, pollen, and air pollution are present. Other health issues, such as hay fever or allergies, upper respiratory infections or gastroesophageal reflux (GERD), or poor physical conditioning can predispose people to EIA. Because of the prevalence with cold, dry air, winter sport athletes have increased susceptibility. Chlorine may also play a role; swimmers, especially in indoor pools, may be at higher risk. Certain medications, including aspirin, Beta-blockers, non-steroidal anti-inflammatories (NSAIDs), and diuretics can also trigger EIA.

Treatment in an acute event includes removing the athlete from competition or practice, administration of a rapid-onset metered-dose inhaler (albuterol is the most common). Spacer devices may help deliver an appropriate medication dose in more anxious patients. If the initial treatment fails or is unavailable, transfer to an emergency medical facility may be necessary.

Long-term treatment includes avoidance of trigger situations and prevention. Warm, moist air is most helpful. Proper warm-up and breathing techniques may also minimize symptoms. Relapses can occur, so an athlete who experiences an acute EIA attack should be monitored and kept out of play until respiratory effort and breathing is normal. If symptoms do not resolve completely, the athlete should not return to play.

Reference: National Heart, Lung and Blood Institute, National Asthma Education and Prevention Program. *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma: Full-Report 2007.* Bethesda, MD. August 2007.

Regular Hamstring Stretching Prevents Injury

By Robert Gallo, MD

Hamstring strains are a common cause of recurring injury in sport and account for a significant amount of lost time for both the weekend warrior and professional athlete. Stretches to improve hamstring flexibility are frequently incorporated into work-out routines to minimize risk of injuries. Improved hamstring flexibility has been speculated to improve athletic performance.

Stretching exercises are divided into static, dynamic, and proprioceptive exercises (Table 1). Static routines are the traditional stretches that are commonly used in most training regimens. Static stretches have been proven to improve flexibility to a greater degree than dynamic stretches, which are also more likely to cause injury due to potential for uncontrolled stretch of the muscle. Studies have suggested that despite advantages in flexibility static stretching may actually decrease performance.

On the other hand, dynamic stretching has been shown to improve agility, speed, and strength. Therefore, a regular regimen of static stretching combined with dynamic stretching immediately prior to athletic activity may provide the optimal balance of improved performance and flexibility. The use and knowledge of the efficacy of proprioceptive techniques remains limited because of expertise required to perform the exercises correctly.

Most hamstring stretches vary in the position of the hip at the initiation of the stretch. Studies indicate that stretches that begin with the hip and pelvis flat are more effective than those in which the hip is flexed to 90 degrees. There appears to be no difference if the stretches are performed sitting versus standing.

Lasting improvements in flexibility are related to duration of stretching. Static stretches should be held for a minimum of 30 seconds to produce a significant effect in flexibility. While the exact number of repetitions and days necessary to produce lasting improvements in flexibility are controversial, most improvements gradually fade once stretching regimens are discontinued. Therefore, in order to preserve gains in flexibility, stretching should be continued indefinitely.

Table 1

Stretch	Description
Static	Muscle stretched slowly to tolerance and held in position of maximal stretch for a defined period of time
Dynamic	Muscle stretched by moving from resting position to maximal stretch and returned to resting position; motion continues for a defined period of time
Proprioceptive	Muscle contracted directly prior to static stretch of same muscle

References

Brandy WD, Irion JM. The effect of time on static stretch on the flexibility of the hamstring muscles. *Physical Therapy.* 1994:74:845-850.

Decoster LC, Scanlon RL, Horn KD, Cleland J. Standing and supine hamstring stretching are equally effective. *J Athletic Training.* 2004:39:330-334.

Fasen JM, O'Connor AM, Schwartz SL, Watson JO, Plastaras CT, Garvan CW, Bulcao C, Johnson SC, Akuthota V. A randomized controlled trial of hamstring stretching: comparison of four techniques. *J Strength Conditioning Research.* 2009:23:660-667.

O'Sullivan KO, Murray E, Sainsbury. The effect of warm-up, static stretching, and dynamic stretching on hamstring flexibility in previously injured subjects. *BMC Musculoskeletal Disorders.* 2009:10:37.

Toning Shoes May Not Be as Beneficial as Advertised

By Monte Hunter, MD, and Jeff Dowling, PhD

Fit shoes, or toning shoes, have become the latest fitness rage. With marketing claims to burn more calories, improve endurance, tone leg muscles, reduce joint pain, and improve posture, these shoes have become increasingly popular and visible over the last two to three years. They represent the fastest growing segment of the shoe industry and are expected to create $1.5 billion in revenue in 2011.

One fit shoe style was inspired by the Masai people who are known for their perfect posture and lack of low back pain. The founder of Masai Barefoot Technology (MBT) observed that the Masai walked barefoot over soft earth and sand. The curved sole or rocker bottom of the shoe was designed to create an unstable walking base meant to mimic the natural environment of the Masai. This design is thought to strengthen muscles in the lower leg and ankle as the shoe wearer works harder to maintain balance during normal activities.

The MBT shoe is the original "fit shoe." It originated in Switzerland in 1996, and came to North America in 2003. MBT and Skecher Shape-Ups are the most common of these shoes. The Reebok Easy Tones are similar, but are designed with pods in the forefoot and heel. The common denominator is an unstable walking base and a price tag of $100 to $250. Not all shoe companies have embraced the concept and some have thus far stayed out of this market.

Fit shoes are touted as having several benefits: stronger muscles in the legs, back, buttocks, and abdominals; improved cardiovascular endurance; reduced body fat; increased circulation; and decreased neck, back, ankle, and foot pain. These benefits are mainly supported by consumer testimonials, and celebrity endorsements. Companies have performed research studies supporting the benefits of the shoes, but many of these studies are poorly designed and not peer-reviewed.

The American Council on Exercise recently released two studies comparing the benefits of fit shoes from MBT, Skechers, and Reebok with traditional running shoes from New Balance. These studies concluded there was no evidence to support the claims that fit shoes help wearers exercise more intensely, burn more calories, or improve muscular strength or tone compared to the traditional shoes.

As of March 2011, only two randomized controlled studies exist analyzing the effects of these or similar shoes. The only claims supported by these studies are some pain reduction over time in patients with moderate osteoarthritis in the knee or low back pain.

The "fit shoe" style was inspired by the Masai people who are known for their perfect posture and lack of low back pain.

Claims have also been made that wearing these shoes has caused injury (ankle sprains and even stress fractures) and increased knee or low back pain. There are currently no studies to support or suggest that these shoes are dangerous to wear or cause increased pain.

Fit shoes may benefit some patients with knee or low back pain, but cannot be recommended for the other touted benefits at this time.

Dee Sports Orthopaedics
Derek Dee, MD
3771 Katella Ave., #310
Los Alamitos, CA 90720
(562) 430-3561
www.deesportsdoc.com
www.greaterlongbeachortho.com

About AOSSM and *In Motion*

As a world leader in sports medicine education, the American Orthopaedic Society for Sports Medicine (AOSSM) is pleased to provide you with this complimentary copy of *In Motion: Active Living for All Ages*. 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 can be purchased in bulk for a nominal fee for distribution in waiting rooms and other public areas. **If you purchase 50 or more copies of any three issues (Spring, Summer, Fall, Winter) you'll get the fourth set of issues free!**

***In Motion* is now also available electronically!** AOSSM members can add their practice name and logo to an electronic version of In Motion. Personalizing *In Motion* is an easy way to get pertinent, patient-friendly sports medicine information to your patients with just a click of a mouse. For more information, please e-mail Lisa Weisenberger at lisa@aossm.org or contact the Society at 847/292-4900.

Executive Editor
Bruce Reider, MD

Managing Editor
Lisa Weisenberger

Contributors
Robert Gallo, MD, Daniel J. Solomon, MD, John D. Kelly, IV, MD, Monte Hunter, MD, Jeff Dowling, PhD, Brian R. Wolf, MD

Barefoot Running: Is it a good idea?

By John D. Kelly IV, MD

Barefoot running has become the craze with many "experts" extolling its virtues. The book sensation, *Born to Run,* has generated much interest in the subject of barefoot running. The book's thesis is that shoeless running is kinder and gentler to the body. But is this statement supported by science? Indeed, many high performance runners have succeeded in both running and training shoeless. However, most world class runners are still found wearing shoes during competition.

There actually is some basic science to support the virtues of barefoot running but the clinical data is sparse. Similarly, there are no good data to support the industry's claim that running shoes prevent injury.

The mechanics of running have changed significantly during shoe wear. During shoeless running, the edge of the foot strikes the ground with the most force and the impact stress is spread out. Also, foot pronation — Mother Nature's way of dissipating impact stress during landing — is unimpeded in the barefoot runner. Running in shoes (especially heavily padded ones) typically shifts more impact away from the arch, prevents full pronation, and shifts stress to the heel and hind foot. Shoe runners also tend not to flex their foot when running as often. Finally, oxygen consumption in runners is increased by approximately four percent when shoes are worn.

The implications of this data are that shoeless runners should have less impact related injuries and outperform their shoed counterparts. However, there are no good clinical data to substantiate this.

Clearly, one obvious disadvantage of running barefoot is skin injury from unfriendly surfaces. In response to this hazard, shoe manufacturers have devised several versions of "minimalist footwear" — shoe wear that essentially resembles a glove.

The jury is still out as to whether running "au naturel" is truly beneficial to the health and performance of the runner. However, there is some science to support its efficacy in dissipating stress and enhancing performance. One clear problem of transitioning to shoeless is that the body indeed adapts well to repeated activities. Thus, if one has been running in shoes for 10 years, the transition to shoeless should be a gradual one. Furthermore, those with any problems with sensation such as diabetes are best advised to continue with well padded and protective soles.