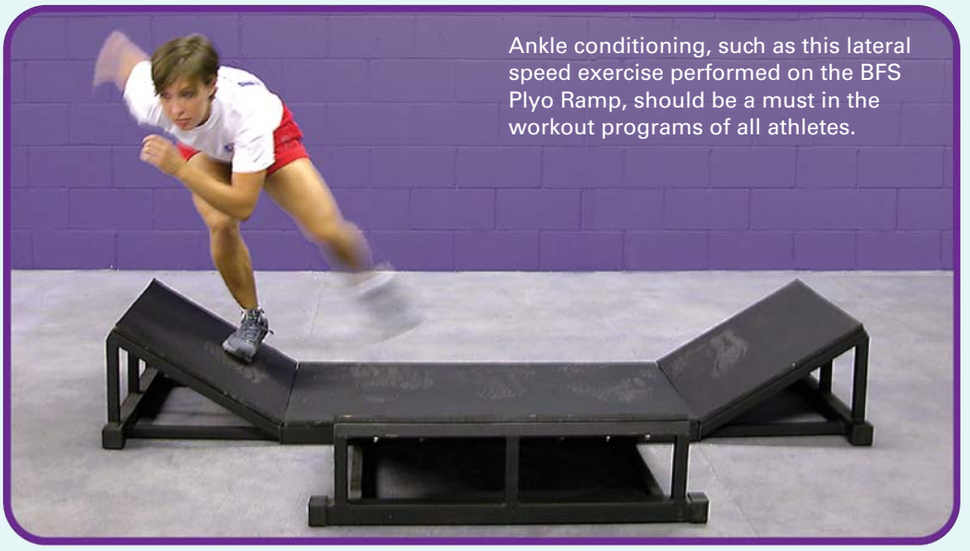


Ankle conditioning, such as this lateral speed exercise performed on the BFS Plyo Ramp, should be a must in the workout programs of all athletes.

Practical Steps to Prevent *Ankle Injuries* PART 2

Our second installment on how to take ankle conditioning to the next level

BY **KIM GOSS**

Approximately one third of all sports injuries involve the ankle or foot, and any weakness here can contribute to poor posture and injuries to other areas, especially the knees. Further, an athlete who injures an ankle is five times more likely to injure it again. With these alarming statistics, it is vital that coaches take an aggressive approach to conditioning the lower extremities and wearing proper footwear.

To demonstrate the effectiveness of ankle conditioning, earlier this year I asked Heather Sonne, the women's basketball coach at Hunter High School in Salt Lake City, Utah, if I could have her athletes try several of the ankle exercises described in Part I of this series (March/April 2006). I had a special reason for selecting this group of athletes.

The majority of Coach Sonne's players had been suffering recurring ankle injuries to the point where the coach had to spend approximately 45 minutes before every practice taping ankles. The results of my limited experiment, although certainly not typical, were amazing. Says Sonne, "After about six weeks using these exercises, my athletes' conditioning improved so dramatically that I no longer had to tape any ankles. In fact, the only ankle injury we suffered since performing these exercises occurred in the final playoff game of the year, and it was an unavoidable accident that happened when one of our players' feet landed on top of the foot of one of the opponents."

Posturology Makes Perfect

Last issue I introduced the science of posturology and how it can help prevent and resolve ankle injuries. Based on revolutionary research in neuroscience, the

FIGURE 1

Jay Kiss (sunglasses) and Paul Gagné perform a posturology exam on weightlifter and gymnast Maegan Snodgrass. The exam evaluates how the feet, jaw and muscles of the eyes affect postural alignment.

practical aspects of posturology were developed by Dr. Bernard Bricot, one of the most respected orthopedic surgeons in Europe. Although posturology is relatively unknown in the US, thousands of medical practitioners (especially those in orthodontics) have taken extensive courses in posturology in Europe.

Two of the foremost practitioners and instructors of posturology are from Canada, strength coach Paul Gagné and podiatrist Dr. Michel Joubert. Gagné has gained an impressive reputation in the golf world with his work with Michelle Wie, Michael Campbell and a long list of other professional golfers. In 2004 I had the opportunity to take a course in posturology from Gagné and Dr. Joubert. Although their lecture on neuro-anatomy made my brain hurt, the practical portion of their seminar made me appreciate the application of this field in preventing injuries and improving athletic performance.

FIGURE 2

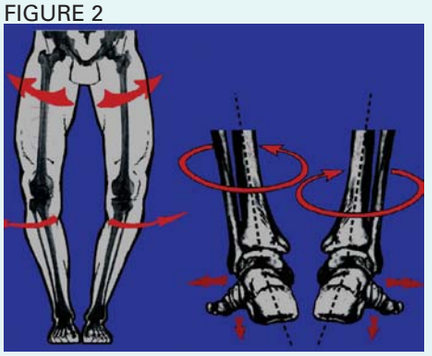


FIGURE 3

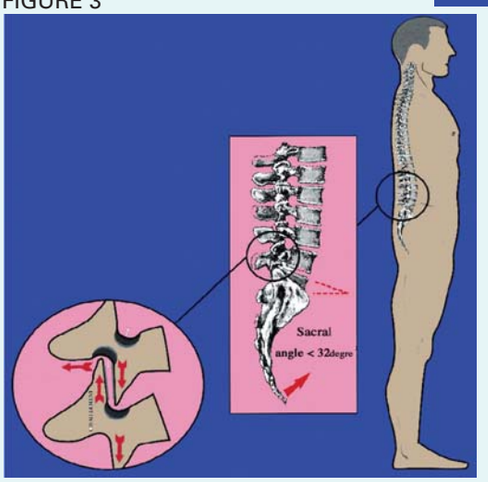
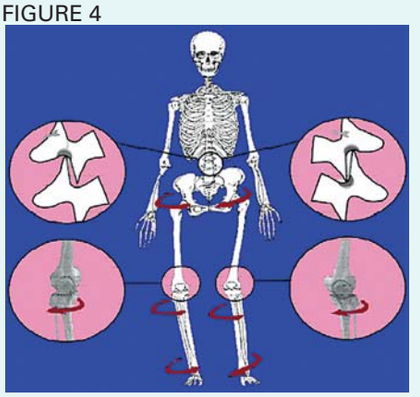


FIGURE 4



In a varus foot (Figures 2 and 3) the lower leg excessively rotates outward, placing unnatural stress on the ankles, knees and spine. Disharmonic feet (Figure 4), involves asymmetrical foot postures that further increase the risk of acute and chronic injuries.

Posturology offers a relatively simple, and quick, method to assess postural problems and prescribe practical ways to permanently correct them. One thing that makes a postural assessment different from a regular postural evaluation that a chiropractor or physical therapist might perform is the special attention that is paid to the muscles of the eyes and the jaw. And in addition to static assessments, athletes perform a few simple movements to determine how their posture changes while in motion.

Earlier this year I visited Gagné at his training facility at the David Leadbetter Golf Academy in Champions Gate, Florida. With me was Maegan Snodgrass, whom I was coaching at the Junior National Weightlifting Championships that same weekend. Gagné agreed to do a posturology assessment on Maegan, who had a stress fracture and a history of tendonitis in her left knee. Figure 1 shows some of the tests Maegan performed for Gagné and his partner, therapist Jay Kiss.

Despite an excellent conditioning program that includes up to an hour a day of both static and dynamic stretching, Maegan had some severe postural problems caused by improperly aligned

FIGURE 5

FIGURE 6

Posture exercises derived from modern dance and single-leg squats are excellent exercises to help prevent and rehabilitate ankle injuries.

feet. (Gagné noted that Maegan's eye muscles were fine, as was her jaw alignment, although he warned her that her persistent gum chewing could cause postural problems in the future – seriously!) Her left foot was *valgus* (for illustrations, see our March/April 2006 issue), which means the bones of the upper and lower leg are rotated excessively inward. Her right knee, in contrast, was *varus*, which means these bones are rotated excessively outward (Figure 2).

A varus foot not only places the ankle in an unnatural position but also creates tremendous stress on the knees, making them more susceptible to ACL injuries. In Maegan's case, Gagné believes this may be responsible for her stress fracture and tendonitis, and he pointed out that when Maegan attempted a single-leg squat on that leg, her right knee immediately buckled inward. Also, the rotation of the leg bones flattens the spine (Figure 3), which reduces the ability of the spine to absorb shock and thereby increases the risk of lower back injuries.

Having both a valgus and a varus foot is a condition Gagné calls *disharmonic feet,* which, as shown in Figure 4, creates an unnatural shift in the spine that makes an individual more susceptible to groin and back injuries. Although Maegan has never had any back injuries, she did have a nasty groin pull that kept her out of gymnastics for several months.

Having completed the posturology assessment, Gagné attached therapeutic insoles to Maegan's feet to see if they would have any effect. These devices, which are worn in shoes, provide a steady electrical current that increases the sensitivity of the feet. After standing on these for just a few minutes, Maegan's body alignment and knee and ankle stability dramatically improved – she could even perform single-leg squats on her right knee without any excessive buckling of the knee! "This is one of the most dramatic cases of postural improvement from these insoles I've ever seen," says Gagné. "If Maegan wore insoles for three weeks, her posture would be close to ideal and after a few months she would no longer need to wear the insoles except on a very infrequent basis."

One Step Beyond

Although postural insoles will help improve alignment and stability, as will eye and jaw exercises if indicated (the eye and jaw provide the brain with sensory input that will affect body alignment), an athlete needs more to gain maximum protection from ankle injuries. Exercises that strengthen the muscles that lift the arch of the foot and increase body awareness are especially important. One sports medicine doctor in the US who heartily concurs with this belief is Dr. Michael Ripley.

Dr. Ripley has worked with 25 world and Olympic medalists in sprinting, long jumping and triple jumping. In addition to his medical background, he has a degree in dance. He uses many modern dance and Tai Chi exercises, such as the one in Figure 5, with his elite athletes to strengthen the ankles and improve performance.

However, because he strives for maximum performance, Ripley will take the exercises a step further, such as by having the athletes hold dumbbells and barbells while performing them, then progressing to single-leg variations of the movements. "These exercises must be done with heavier loads when appropriate and, depending on the exercise performed, on just one leg, to approximate the stresses on the body that occur in sprinting and other ballistic activities that occur in sport," says Ripley. "However, many of the elite athletes I work with have to start with only bodyweight activities, or even simpler toe flexor exercises with manual resistance or tubing."

After developing a base of strength with specialized foot exercises, athletes can take it to the next level. The plyo ramp is a great next step for beginners, as the angle of the box makes it easier for those who have valgus feet, which account for about 75 percent of the population, Gagné says. Single-leg squats (Figure 6) are excellent, as they involve the leg and hip muscles that help stabilize the knee and ankle. Also, Gagné says warming up with the BFS Dot Drill will help prevent injuries by increasing body awareness.

These measures might seem like a lot of work to do to prevent ankle injuries, but actually their importance cannot be emphasized enough. Prevention is undoubtedly the best medicine, and the steps you can take to prevent ankle injuries are certainly far easier than dealing with the consequences of neglect. BFS

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