



FUNCTIONAL INJURY PREVENTION EXERCISES

Part 3

“The Ankle Complex”

Talk to any athlete and ask them if they have ever sprained their ankle. I would say, about 90% will tell you they have at least “rolled” their ankle at one point during their athletic career. Of this 90%, I would bet 50% of them lost some playing time and 20% might have lost significant time. Thank God, most athletes today have Athletic Trainers to turn to for injury evaluation, rehab, and taping; which will shorten potentially lengthy missed sport participation time. Hopefully, most athletes can look to a good Strength & Conditioning Coach for exercises to keep the “Ankle Complex” as healthy as possible. In addition to this, we also know that a strong kinetic chain begins from the ground up; thus decreasing the potentials for knee and hip injuries.

The ankle complex is made up of many muscles, tendons and ligaments. The muscles are responsible for the following movements of the ankle joint: dorsi-flexion (pulling the foot upward), plantar flexion (pushing the foot downward), eversion (turn foot outward), inversion (turn foot inward), and combined angle movements. For those of you who are anatomy

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buffs, I will include the primary muscles responsible for these movements, but this article is not going to be an anatomy paper. I am including them because I think it is important for individuals to research these muscles for their origins and how they relate to movement and stabilization of the ankle.

Dorsi-Flexion: Tibialis Anterior, Extensor Digitorum Longus, Peroneus Tertius, and Extensor Hallucis Longus.

Plantar Flexion: Peroneus Longus, Peroneus Brevis, Tibialis Posterior, Plantaris, Flexor Digitorum Longus, Flexor Hallucis Longus, Soleus, and Gastrocnemius.

Eversion: Extensor Digitorum Longus, Peroneus Tertius, Peroneus Longus, and Peroneus Brevis.

Inversion: Tibialis Anterior, Extensor Hallucis Longus, Tibialis Posterior, Flexor Digitorum Longus, and Flexor Hallucis Longus.

When an athlete “rolls” his or her ankle it is typically classified as an inversion or eversion sprain. They will have a strain to one or more muscle tendons and sprain one or more ligaments. The ligaments (Anterior Talofibular, Calcaneofibular, and Deltoid) attach bone to bone and help stabilize the ankle joint.

I will be focusing the remainder of this article towards the preventive exercises that I have my athletes perform to help prevent or lessen the severity of an ankle sprain.

Banded Eversion:

Sit on the floor with your legs straight. Take an Iron Woody Fitness #3 band and loop it around your foot and your torso. Then reach down with both hands and grasp the band with each hand at approximately half the distance down your shin and sit back. This will put tension on the band. Keep the ankle locked in a perpendicular position, or at 90 degrees. Keeping tension in the outer side hand, pull with the inner side hand and stretch the ankle into an internally rotated position as pictured. It is important to keep the ankle still, and perpendicular to the floor. You will then turn the ankle and foot outward against the resistance of the band. This should be a smooth movement and allow for full range of motion in the ankle. Return back to the internally stretched position also in this smooth fashion. You do not want the motion to be “jerky”. Repeat this for the desired number of reps (typically 12 reps).



Banded Inversion:

This is just the opposite of the banded eversion. Band position is identical, but you will keep tension in the inner hand/band and pull the outer hand/band tight which will externally rotate the ankle and foot. Still keep the ankle perpendicular to the floor. You will then rotate the ankle internally against the resistance of the band and return in a smooth motion to the stretched externally rotated starting position. Repeat for the desired number of reps (typically 12).



It is important to remember that whether you are internally or externally rotating the ankle/foot that the ankle stays **perpendicular** to the floor through the entire movement. Most athletes will make the mistake of pushing the foot down toward plantar flexion as they are rotating the ankle/foot. If done correctly, you will feel a quick muscle burn in the outer and inner lower foreleg; particularly in the peroneus muscles.

Resisted Dorsi-Flexion

There are various ways to train this anterior shin area. Pictured will be resistance against a weight plate. I use two 2 x 4's to raise the heels up from the floor. For a smaller athlete, a single 2 x 4 may be adequate. Have the athlete sit at the end of a bench with his/her knees bent at 90 degrees and their heels placed on the board(s). Then, have the athlete place a plate on his/her distal foot at the base of their toes. The athlete will then dorsi-flex the ankle/foot for the desired number of reps prescribed (typically 10-12).



Another great way to apply work to the dorsi-flexors is by utilizing manual resistance (not pictured). Instruct the athlete to sit on a bench with legs straight and their heels off the end of the bench. The strength coach will then apply resistance to the distal portion of the foot (same position as the plates) and instruct the athlete to pull the foot towards their shins against this resistance. The athlete will then try to hold this position as the strength coach pulls the feet back to the original starting position. Repeat until fatigue starts to set in. Manual resistance can also be used in a similar fashion for inversion and eversion exercises.

Plantar flexion type of exercises (not pictured), commonly known as calf raises, can and should be done standing and seated. When done seated off a bench, place the 2 x 4 under the toes with the feet at shoulder width and the knees at 90 degrees. Place weight (plates, dumbbells, kettlebells) on the distal portion of your quads above your knees and then raise your calves up through the full range of motion for the desired number of reps.

When doing standing calf raises, hold weight in your hands or place a barbell across your upper back, in a "high bar" back squat position. Place your toes and distal foot on the 2 x 4 with the feet spaced at shoulder width, heels on the floor. Raise your heels off the floor through the full range of motion and squeeze your calves at the top position. Lower back to the floor and repeat for desired reps. Some coaches will instruct athletes to turn their toes in and then out to "emphasize" different portions of the calf muscles. I do not do this with my athletes. I opt to have them stand in a wider than shoulder width and then with their feet together in a narrow stance when performing reps. I have funky rep sets with different names that my athletes laugh about. For example, Satan Calves 6/6/6, would be 6 reps at shoulder width, then 6 reps at a wide stance, followed by 6 reps at a narrow stance done consecutively. This is our heaviest calf workout. Another example would be Dirty Dozen Calves 12/12/12, this would be done just as Satan calves but with 12 reps in each position. This is a higher rep, lighter weight, calf workout. Of course there are always other ways to train plantar flexors. I am not a real fan of machines, but many people use them.



In my next article of the Functional Injury Prevention series, I will be focusing on proprioception and kinesthetic awareness for the athlete. For questions and/or comments contact me at varietytrainer@yahoo.com.

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