4.0 – Modified Spring Ankle Test

As discussed earlier the arch of the foot plays a vital role in transference of force from the body into the ground. A highly functioning arch in the foot is imperative for withstanding force during high velocity movements. Without a highly efficient transference of force through the arch, the athlete will overload their foot leading to a massive amount of diminished energy as well as possible structural damage to the foot. The Navicular Drop Test is a widely recognized test often implemented in order to assess variations in the arch of the foot, more specifically the navicular tuberosity, during movement. The downfall of this test is that it is performed in a low force tolerance environment. Remember there is no standard exercise or movement performed in the weight room that occurs at a higher velocity or produces the inertial force then single limb movement during a high velocity sprint.

Our modified spring ankle test is meant to identify the arch's ability to withstand and perform optimally under load or strain. This very nature of sport dictates that we need to assess how the foot functions while only on one leg. What this means is that whether an athlete is accelerating or at top end speed the only part of the body to make contact with the ground is a single limb. Often times this high velocity demand occurs at a hundredth of a second. If an athlete lacks the proper function in the arch of the foot, they will experience a collapse under load, thus a major lack of stabilization throughout the foot and ankle. Once again, we can follow this deficiency in function up the chain into an athletic population that exhibits chronically tight lower backs and hips. It is simple, athletes with improperly functioning feet have injury issues. Soft tissue takes a beating, reducing cocontraction rates which increases infrastructural stress on the system. We need to ensure that the athlete is strong in all five positions of the spring ankle series. As an athlete becomes stronger, they will exhibit an increase in neuromuscular efficiency which will coincide with a reduction in unnecessary energy leaks during propulsion.

In order to perform the test, place the athlete in a seated position on a bench. From this position instruct the athlete pull their big toe off of the ground into extension. From here the athlete will transition into a single leg standing position. When the athlete is fully standing, keeping the big toe in full extension during the entirety of the movement, have them push their knee forward two inches over their foot. Make sure to monitor positioning of the arch the entire time. After the athlete pushes their knee forward over their toes by two inches they will transition to a fully standing and extended position with all of their weight being placed on the big toe. An athlete functioning optimally will be able to achieve a 45-degree angle from the base of the big toe through the elevation of the heel.

This test in an essence is a three-part test. You are observing any deviation in the navicular tuberosity during the initial ascent. Continuing to monitoring during the down phase of the single leg squat while the athlete is pushing their knee two inches forward. Lastly, assessing the angle of the foot when rising onto the big toe. The test can be

marked as acceptable when the athlete's navicular deviation does not exceed 3-5 mm. We consider deviation less than 3 mm optimal before progressing the athlete.

This is a high tolerance test that will help to provide feedback on whether or not the athlete can perform optimally while sprinting at high speeds. When the athlete performs at an adequate level on our modified test you can decrease the volume of spring ankle exercises to once a week. However, until the athlete can perform this test and produce suitable results, we suggest completing spring ankle exercises at a minimum of three days per week. Monitoring structural integrity and overall fatigue will also help dictate how often an athlete can perform the ankle spring exercises.

There are a handful of moving parts associated with performing this test properly. Be sure to click on the videos in this section to get a better understanding of how to perform and implement the test. We have broken the test down into several different views in the video to help you get a better understanding of every element and angle of the test.