

7.1 – Training Co-contractions

We can train co-contractions on the track and in the weight room in various ways. For example, if you are using mini-hurdles runs, you can put mats in between the mini-hurdles. This way you can ensure that the athlete is going to hit the mat and they can focus on the rhythm and timing in control of the exercise. In order to elicit the greatest and safest training effect initially, especially for athletes with a lower training age, the mat should be about 1/4 of an inch to 3/4 of an inch high in varying densities. Varying densities is important because when the body does not feel the traditional stiffness on ground contact that it is accustomed to, it will initiate impulses at a faster rate to create the necessary joint stiffness to meet the demands. This means that the body will create the stiffness and stability that it needs to press into the ground quicker. The ankle joint will now become stiffer. You can vary the density of the mat to range from very rigid with no give to a mat that is softer and absorbs a small percentage of the force created by foot contact. Keep in mind that you do not want to go too soft as it will create a scenario where an athlete could turn or “roll” an ankle. We believe that the more efficiently an athlete’s foot is functioning, you can use a more forgiving or softer of a mat insert in between the mini hurdles. When utilizing this concept, it is important that you do not make it a consistently soft surface at point of contact between hurdles. It is necessary that you keep the rigidity high with the spontaneity of soft surfaces.

Another training concept that you can apply this approach to is box jumps. To set up box jumps simply place a mat in front of the box at its base. This mat can be anywhere from a one inch to three inches thick. The athlete will now jump onto the mat in front of the box driving their toes into the surface just prior to making the next large bound up on to the box. This once again will force the body to contract and create stiffness throughout the joints being utilized in the movement. Meaning it will aid to eliminate any slack in the jump. This “lack of slack” is what makes an athlete explosive in a game situation.

You can also use over speed training to improve co-contraction in the ankle and hip complexes. By speeding up exercises the body is forced to preload sooner than during traditional high velocity movements. When this adaptation occurs and becomes the accepted manner of sprinting, a regular sprint movement will begin to become more graceful and elastic. There are currently several ways to implement overspeed training. You can tow the athlete slightly faster than what they normally sprint. We prefer to use the 1080 Sprint. This device provides ultra-calibrated and adjustable resistances applied to the athlete while also matching the inertia the athlete produces while running. You will also be provided information on peak and average velocity and power output. The end product is an incredibly smooth pull without a jerking motion on the torso. However, if you do not have access to equipment like this you can use band resistance or other towing systems. Keep in mind that you want to remain within a 3-4% maximum overload. This range is where we have seen the greatest results. This guideline will also help to ensure that they athlete maintain kinematic balance throughout the movement. A common mistake often seen with overspeed training is that the athlete is loaded with too

much resistance. This results in the athlete being jerked and pulled while coincidentally losing all mechanical soundness.

Remember that when training for speed we are considering a hundredth of a second as measurable and applicable data. Pulling an athlete with the maximum resistance is not the aim of overspeed training on the track. I like to use mini-hurdles and tow them through the mini-hurdles so that I am forcing faster cycling of the legs as well as creating a springy pretension in the ankle and hip joint. You can also do boom-booms under tension with rubber bands off the edge of a box which forces a better pretension. Once you get the boom-booms down off the edge of a box you can then transition to adding weight. This will force the athlete to possess an even tighter and more rigid response. The outcome will be a systematic chain that does not collapse when coming in contact with the ground. This phenomenon is precisely what we are looking for as it replicates the speed needed to create more force through the foot. You can de-stabilize the movement by adding water bag. You can also bring this concept into the weight room by utilizing French Contrast Methods. This is done by quickly following your eccentric or isometric work with over speed methods and short box jumps.