

2.4 Two-Spring Model

In every athletic movement, both muscle and tendons are active in both force absorption and production. They work together, in series, never alone. When considering the interaction between tendon and muscle, it is very applicable to consider that each represents a spring, becoming loaded and unloaded with each movement. This idea brought about what we call the two-spring model for sports training.

Typically, when training for sports, emphasis is placed on developing absolute strength in hopes of increasing force production for an athlete to utilize their sport. This type of training creates a very strong “muscular spring”. This is generally good in practice, until you consider the interaction of the two springs, muscle AND tendon. When one spring becomes dominant, in this case the muscle, it can lead to increased stress on the other spring, ultimately increasing likelihood of injury. Take for example, a powerlifter (or perhaps a thrower that focuses solely on developing absolute strength). Most often, these athletes injure their tendons. Their muscle is producing too much force for the tendon to handle.

To prevent this, tendons must be developed to withstand the forces produced by muscles. The best way to do so is by training at the high velocities mentioned in the previous section. Essentially, training at high forces develops the muscle, and training at high speeds develops the tendon. On the other hand, if an athlete focuses too much on speed training, the tendons will become well developed, leaving the muscle susceptible to injuries such as strains, and in some cases even full on tears.

It is important to try to maintain balance between muscle and tendon. This is very well achievable through proper periodization as utilized in [Triphasic Training](#). This is why programs that utilize triphasic methods are so successful. As you should know by now, the Eccentric and Isometric phases primarily train the muscle. The 80 – 55% (power) block trains a balance of both muscle and tendon, and finally the below 55% (speed) block develops tendons to their fullest capability. A well-developed two-spring system overall will lead to athletes that are not only stronger and more explosive, but also more resilient to injury.

For a more in depth discussion concerning the Two Spring Model, click on the [this video](#).