



Ankle Foot maXimizer

## **ECCENTRIC LOADING WITH AFX**

### **WHAT IS ECCENTRIC LOADING?**

An “eccentric” muscle contraction is one in which the muscle is lengthening while under tension. For example, when you plant your foot on the ground during walking or running, the muscles of your lower leg (calf) are contracting eccentrically to slow the downward movement of your body. When you push off from the ground, the calf muscles are shortening, or contracting concentrically. “Eccentric loading” involves the application of higher resistance levels to the muscle, in a controlled manner, while it is contracting eccentrically.

### **BENEFITS OF ECCENTRIC LOADING**

Scientific studies have shown that eccentric loading results in the following significant benefits for injury prevention, athletic performance, and rehabilitation:

- Reduced risk of muscle or tendon injury
- Lower risk of recurrent injuries
- Successful rehabilitation of patients with chronic ankle tendonitis, where traditional treatment methods were unsuccessful
- Improved stair-descending ability and balance in the elderly, thereby reducing the risk of falling
- Greater increases in muscle strength, storage of elastic energy, and neural activation, resulting in improved power output, as compared to traditional methods of athletic performance training.

### **ECCENTRIC LOADING WITH AFX**

With standard exercise equipment, it is difficult to apply controlled eccentric loads through a full range of motion to the muscles that cross the ankle joint, and to the intrinsic muscles of the feet. AFX allows for unassisted, safe, and controlled eccentric loading of these muscles through a full range of motion.

### **PRECAUTIONS**

- Eccentric loading may result in significant muscle soreness one or two days after the exercise session. To keep this soreness to a minimum, begin eccentric loading with only one or two high-resistance eccentrics at the end of each set. Each workout, you can add an additional high-resistance eccentric to each set, until all repetitions are performed in this manner.
- If you have an existing injury of the foot or ankle, you must consult with a qualified healthcare practitioner before beginning this exercise program, and only use eccentric loading under the guidance of a qualified healthcare practitioner.
- If any sudden pain or discomfort is experienced during the program, stop immediately and consult a qualified healthcare practitioner.

### **GUIDELINES**

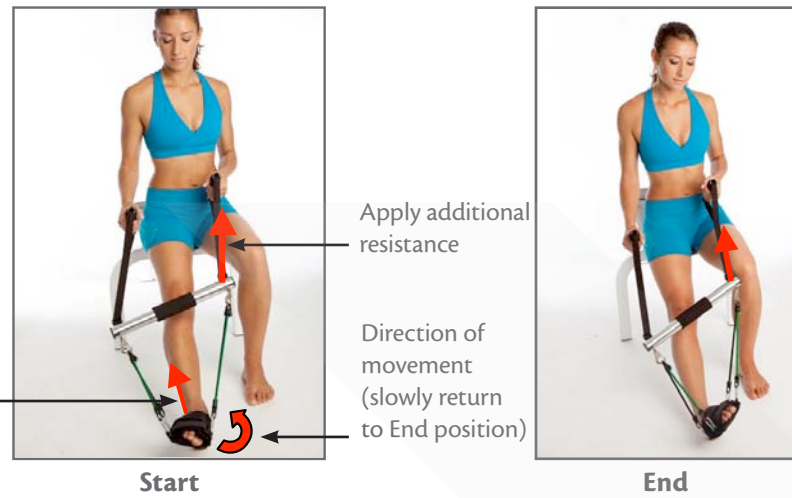
- Please refer to the AFX Instruction Manual or Poster for more information regarding device set-up and directions for use. When you first begin training with eccentric loading, the added resistance should be approximately 10 to 20% greater than the concentric resistance, followed by a gradual increase over time.
- Each eccentric contraction should be done slowly, taking approximately 4 to 6 seconds to complete.
- Gradually work up to 8 to 12 repetitions per set performed in this manner.

**The following are a series of exercises that you can use to strengthen your foot and ankle while following one of the Rehab or Training programs. Follow the warm-up, stretching and strengthening guidelines as outlined in the specific Training or Rehab program that you are following.**

## EXERCISES

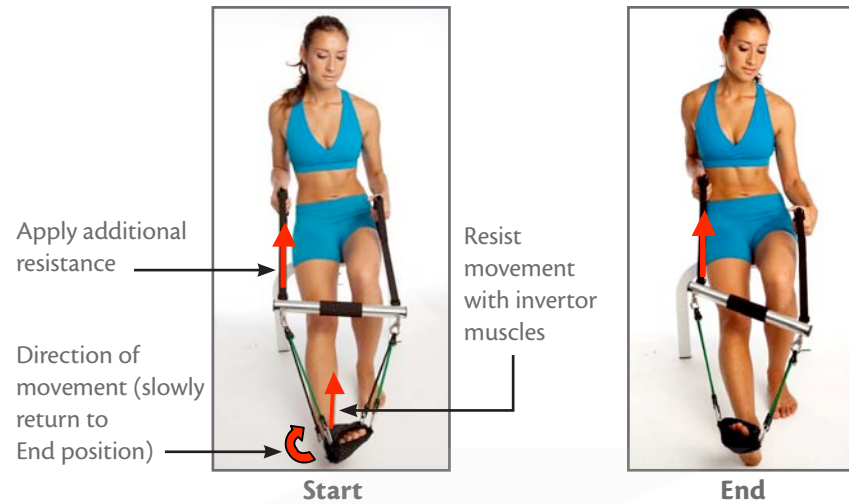
### Eccentric Loading of Evertor Muscles

- Perform full range of motion eversion
- When the foot/ankle is in full eversion, pull back on the handle on the opposite side of the foot (medial side), and resist the movement with the evertor muscles ("Start" position)
- Continue to resist the movement until the foot/ankle is in full inversion ("End" position)
- Repeat cycle above.



### Eccentric Loading of Invertor Muscles

- Perform full range of motion inversion
- When the foot/ankle is in full inversion, pull back on the handle on the opposite side of the foot (lateral side), and resist the movement with the invertor muscles ("Start" position)
- Continue to resist the movement until the foot/ankle is in full eversion ("End" position)
- Repeat cycle above.



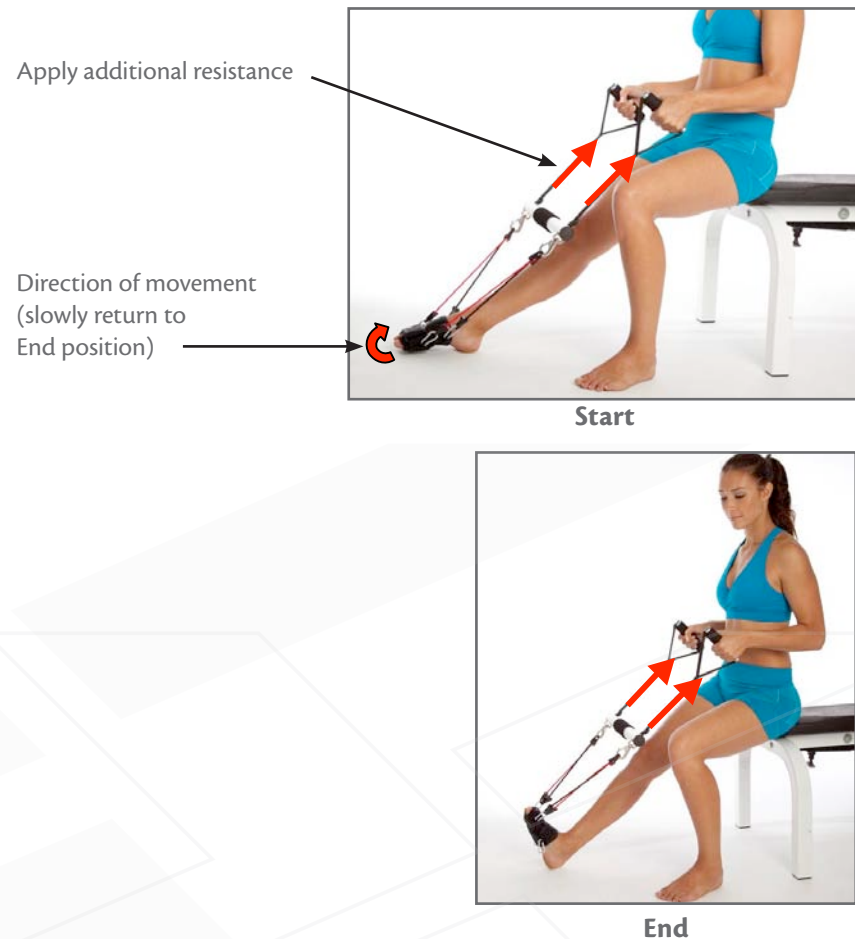
### Eccentric Loading of Toe Flexor Muscles

- Disconnect the resistance cords from the rear section of the foot support and attach them to the toe section
- Perform full range of motion toe flexion
- When the toes are in full flexion, pull back on the handles and resist the movement with the toe flexor muscles ("Start" position)
- Continue to resist the movement until the toes are in full extension ("End" position)
- Repeat cycle above
- Reattach the resistance cords to the rear section of the foot support for the next exercise.



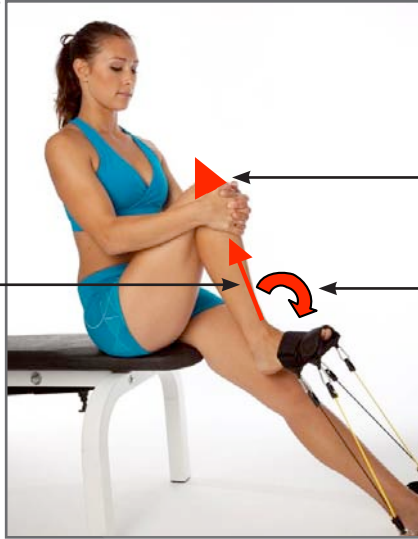
### Eccentric Loading of Plantar Flexor and Toe Flexor Muscles

- Perform full range of motion plantar flexion and toe flexion
- When the ankle is in full plantar flexion and the toes are fully flexed, pull back on the handles and resist the movement with the plantar flexor and toe flexor muscles ("Start" position)
- Continue to resist the movement until the ankle is in full dorsi flexion ("End" position)
- Repeat cycle above.

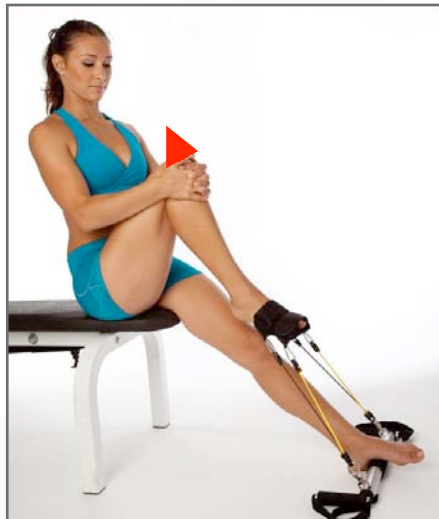


### Eccentric Loading of Dorsi Flexor and Toe Extensor Muscles

- Perform full range of motion dorsi flexion and toe extension
- When the ankle is in full dorsi flexion, pull back on the shin and resist the movement with the dorsi flexor and toe extensor muscles ("Start" position)
- Continue to resist the movement until the ankle is in full plantar flexion and the toes are fully flexed ("End" position)
- Repeat cycle above.



Start



End

Apply additional resistance

Direction of movement (slowly return to End position)

Resist movement with dorsiflexor muscle

For more information visit: [www.AFX-online.com](http://www.AFX-online.com)