NeuroGym Technologies Inc.

Ankle Trainer

Product Manual

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Table of Contents

Product Overview

Strengthen weak, paretic, sprained or post-surgical ankles by isolating and training targeted muscle groups through a complete range of motion. The NeuroGym® Ankle Trainer is a lightweight, portable device with an axle and foot platform that can be locked into place. This unique design permits strength and control training in dorsiflexion, plantar flexion, inversion, eversion, internal and external rotation—motions that are difficult to isolate and specifically strengthen.

Specifications

17" x 16" x 11"

Weighs 15 lbs

Benefits

Improves standing balance and stability

Improves weight bearing and weight transferring capabilities

Improves safety when ambulating

Facilitates gait retraining expediting a return to more independent ambulation

Movement specific training enables an individualized approach to program design and delivery

List of Precautions for the Ankle Trainer

1. Do not use Ankle Trainer after ankle/foot surgery unless and until training for strength and range of motion has been cleared by a physician.

2. Ensure resistance is not excessive. Due to the limited weight of the Ankle Trainer, heavy resistance from a pulley may pull the machine (and attached ankle) forward. When operating with heavy resistance, it is recommended to have the therapist step down on the base plate arms to secure the position of the Ankle Trainer.

3. When used in standing, ensure that the user is stable on his/her contralateral leg and supported by an upper extremity.

4. When adjusting the foot plate angle with the adjustment knob it is advisable to rotate the foot plate such that the knob is not directly over the metal base plate arm to avoid catching the fingers between the base plate and the adjustment knob.

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Identifying the Parts of the Ankle Trainer

(See Figure #1)

Foot and Heel Straps – 2
Heel Slider Plate
Heel Slider Plate Adjustment Knob
Base Plate
Base Plate Arms – 2
    Anterior
    Posterior
Base Plate Resistance Attachment Points (on Base Plate Arms) – 2
    Anterior
    Posterior
Foot Plate
Foot Plate Arms – 4
    Medial/Lateral
    Posterior
    Anterior
Foot Plate Resistance Attachment Points (on Foot Plate Arms) – 4
    Medial/Lateral
    Anterior
    Posterior
Foot Plate Angle Adjustment Knob and Arm

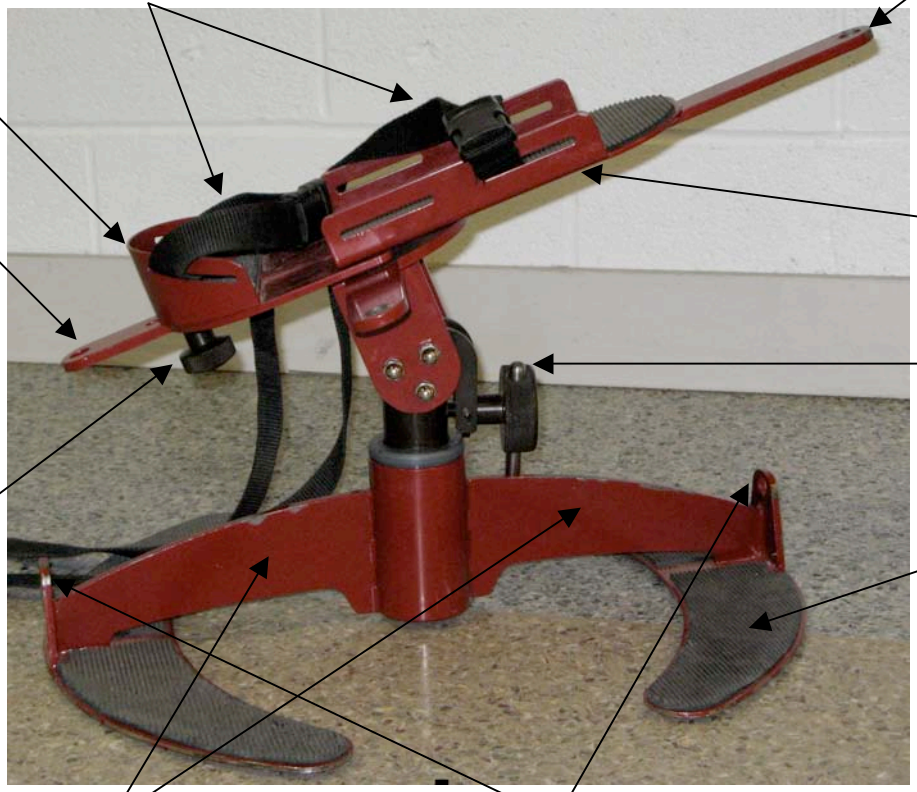
Figure #1 – Ankle Trainer

Medial & Lateral Foot Plate Resistance Attachment Points *(on Medial & Lateral arms of the Foot Plate)*

Anterior Base Plate Resistance Point

Anterior Foot Plate Resistance Attachment Point *(on Anterior Foot Plate Arm)*

Foot and Heel Straps



Heel Slider Plate (Posterior Lip)

Posterior Foot Plate Resistance Attachment Point *(on Posterior Foot Plate Arm)*

Foot Plate

Foot Plate Angle Adjustment Arm

Heel Slider Plate Adjustment Knob

Base Plate

Base Plate Arms Posterior and Anterior

Base Plate Resistance Attachment Points

Instructions for Use

Complete the Following Prior to Training

Seat client behind Ankle Trainer either on a chair or in a wheelchair. If in a wheelchair, swing foot rest of affected ankle to the side.

Place desired foot onto Foot Plate and slide the heel back until it is in contact with the posterior lip of the foot plate. With Heel Slider Plate Adjustment Knob, adjust length of heel plate according to training goals (longer heel leverage would be biomechanically easier). Buckle foot strap firmly.

Position Base Plate either such that front and back arms are parallel to and directly below the front (anterior) and back (posterior) arms of the Foot Plate respectively, or, orthogonal to that position.

If using with elastic resistance, tie one end of the resistance tubing to the Anterior Base Plate Resistance Point (with the exception of plantar flexion, where it is attached to the posterior base plate).

Isolating Training Range of Motion

Internal Rotation
(See Figure # 2)

Loosen Footplate Angle Adjustment Arm (counterclockwise) and position the Foot Plate such that it is parallel to the floor. Tighten the Foot Plate Angle Adjustment Arm (clockwise) to secure Foot Plate in the parallel plane.

Attach the free end of the tubing to the Medial Foot Plate Resistance Attachment Point (arm that is closest to the midline of the client's body). Wrap the tubing around snuggly to provide the desired level of resistance. During the wrapping, ensure the medial arm of the Foot Plate remains at right angles to the anterior arm of the Base Plate.

Remember, the more tension that is placed on the tubing during wrapping, the greater resistance the tubing will offer during the training of the internal rotation movement.

If a pulley system is available to provide resistance, the pulley can be attached directly to the medial arm of the Foot Plate, eliminating the need for any resistance tubing. Once connected, pulley should run approximately parallel to the ground.

Instruct client to rotate foot inwards (direct big toe towards the midline of body). If client is unable to independently initiate and complete this movement, the trainer can assist the client by directing the Foot Plate inwards using the anterior resistance attachment arm. Complete the movement by allowing the Foot Plate to return to the starting position.

Perform a series of repetitions to fatigue ankle muscles and initiate the training effect.

Suggested intensity: 10 repetitions maximum (RM) (i.e. resistance against which user is able to complete 8-10 repetitions maximum OR as recommended by physical therapist.

Figure #2

External Rotation

Position Foot Plate parallel to the floor as outlined above under Internal Rotation.

Attach the free end of the tubing to the Lateral Foot Plate Resistance Attachment Point closest to the baby toe and outside edge of the working foot (opposite from above). Maintain the Lateral Foot Plate Resistance Arm at right angles to the anterior arm of the base plate while wrapping. Remember that pulling the tubing tight during wrapping will increase the tubing resistance, and make it more difficult for the client to initiate the external rotation movement.

If a pulley system is available to provide resistance, the pulley can be attached directly to the Lateral Foot Plate Resistance Attachment Point, eliminating the need for any resistance tubing. Once connected the pulley should run approximately parallel to the ground.

Instruct client to rotate foot outwards (direct big toe away from midline of body) assisting the client by directing the Anterior Foot Plate Arm first outwards and then back to the starting position. Repeat movement. As fatigue sets in, repetitions will be harder to perform and range of motion will decrease as client will be able to contribute less to the movement effort.

Inversion
(See Figure #3)

Position the Foot Plate at a 45-degree angle to the floor (or at an angle as acute as recommended by physical therapist) by loosening Foot Plate angle adjustment arm and tipping toe upwards. Tighten adjustment arm to secure Foot Plate in that plane. Secure tubing & initiate ankle movement outlined above under Internal Rotation, to train inversion motion.

If a pulley system is available to provide resistance, the pulley can be attached directly to the Lateral Foot Plate Resistance Attachment Point, eliminating the need for any resistance tubing. Once connected the pulley should run approximately parallel to the ground.

Figure #3

Eversion
(See Figure #4)

Position Foot Plate at 45-degree angle to the floor (or at an angle as acute as recommended by physical therapist) by loosening Foot Plate Angle Adjustment Arm and tipping toe upwards. Tighten adjustment arm to secure Foot Plate in that plane. Secure tubing and initiate ankle movement outlined above under External Rotation, to train eversion motion.

If a pulley system is available to provide resistance, the pulley can be attached directly to the Lateral Foot Plate Resistance Attachment Point, eliminating the need for any resistance tubing. Once connected the pulley should run approximately parallel to the ground.

Figure #4

Dorsiflexion
(See Figures #5 & 6)

Loosen Foot Plate Angle Adjustment Arm. Attach the free end of the tubing to the Anterior Foot Plate Arm tightening to the desired level of resistance and maintaining the Anterior Arm of the Foot Plate directly above and aligned with the anterior arm of the base plate.

If a pulley system is available to provide resistance, the pulley can be attached directly to the anterior arm of the Foot Plate, eliminating the need for any resistance tubing.

Instruct client to pull their toe directly upwards toward the ceiling with no deviation of the foot to the left or the right. If client is unable to independently

initiate and complete this movement, the trainer can assist the client by directing the Foot Plate upwards using the anterior resistance attachment arm. Complete the movement by allowing the Foot Plate to return to the starting position.

Perform a series of repetitions to fatigue ankle muscles and initiate the training effect.

Adjust heel slider position forward/backward to increase/decrease resistance.

Figure # 5

Figure # 6

Plantarflexion

Loosen Foot Plate Angle Adjustment Arm. Attach one end of the elastic tubing to the posterior base plate attachment point. Attach the other end of the tubing to the Posterior Arm of the Foot Plate, tightening to the desired level of resistance and maintaining the anterior arm of the Foot Plate directly above and aligned with the anterior arm of the base plate.

If a pulley system is available to provide resistance, the pulley can be attached from behind above the user's shoulder and directly to the anterior arm of the Foot Plate, eliminating the need for any resistance tubing.

Instruct client to push their toe directly downwards toward the floor with no deviation of the foot to the left or the right. If client is unable to independently initiate and complete this movement, the trainer can assist the client by directing the Foot Plate downwards using the posterior resistance attachment arm. Complete the movement by allowing the Foot Plate to return to the starting position.

Perform a series of repetitions to fatigue ankle muscles and initiate the training effect.

Maintenance

The Ankle Trainer should be dusted/wiped regularly to keep it clean.

Sample Evaluation

When pulley is available, the suggested training intensity, for example 10 RM, becomes a valid measure of ankle strength. Other measures could be active range of movement in a given direction, or the functional measure of timed single leg stance.

Other Products

Sit-to-Stand Trainer

Actively assist the standing motion with support at the knee, trunk and arms to promote early mobility. The NeuroGym® Sit-to-Stand Trainer uses a counter-weight mechanism to provide a safe and effective way to strengthen weight-bearing muscles and increase standing stability and endurance.

Bungee Walker

The NeuroGym® Bungee Walker is a versatile body weight support mechanism enabling safe, intensive motor retraining. The unique patented design enables the re-training of gait and natural protective reactions by counteracting loss of stability as naturally as possible. Comparable to a pool environment in terms of support, the Bungee Walker allows graduated weight bearing while normal protective reactions such as sidestepping are re-developed. The Bungee Walker provides graduated support from underneath, rather than a harness mechanism that provides the support from above. Supporting the patient from above does not allow this 'natural' graduated support, particularly upon loss of balance. The Bungee Walker enables more realistic safe practice of gait, and most importantly, the protective reactions necessary to prevent falls.

NeuroGym Trainer

The NeuroGym® Trainer II is a mobile, multi-faceted biofeedback device designed to help clients regain motor control and coordination. The NeuroGym Trainer II uses input from various sensors to control the action of computer games, for instance to move a paddle to intercept a ball or to steer a car along a track.

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