

# PENDULUM STEPPER



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## UNPACKING INSTRUCTIONS

The Pendulum Stepper is shipped fully assembled. Simply remove protective packaging.

### FIGURE 1: THE PARTS OF THE PENDULUM STEPPER



## GENERAL INFORMATION

The NeuroGym Pendulum Stepper is a self-assisted trainer of reciprocal stepping in a sitting position and can be used from the supine position. As such, it improves the strength and endurance of the stepping motion even in people with significant weakness.

### OBJECTIVES

- **Safe** intensive training of the lower extremities in reciprocal motion
- **Improvement** in transferring ability
- **Enhanced** lower extremity strength
- **Increased** lower extremity active range
- **Improved** endurance
- **Enabled** support of the movement by an assistant
- **Decreased** staff requirement for transferring the user
- **Ability** to use the upper extremities for self-assist or for independent training

### FEATURES & BENEFITS

- Light frame (20 kg) with wheels for easy movement from resident to resident
- No client transfer required
- Small (70 cm x 50 cm) footprint for ideal storage
- Pendulum like arms for optimal range of motion for the lower extremities
- Handles for the upper extremities (self assist) or therapist's assist
- Bungee loops for gradual smooth resistance as well as for unilateral use
- Intuitive and easy to use

### TRAINING FROM A SEATED POSITION

1. Position the Pendulum Stepper against a wall or in front of the user. The chair or wheelchair should be about 20 cm from the front base of the Pendulum Stepper. (See Figure 2)

2. Place the user's feet on the footplates and secure the straps. Ensure that the user's chair is stable. If the chair is not completely stable, it may be placed against a wall to avoid any backward tipping motion.



### SAFETY NOTE

The wheelchair must be equipped with rear support brakes and these must be properly engaged before using the Pendulum Stepper to ensure that the chair does not tip backwards.

3. If necessary, adjust the distance of the chair from the Pendulum Stepper to provide optimal amplitude of leg movement.
4. Add resistance loops as needed (wrap around the tops of both moving arms) (See Figure 1)

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## FIGURE 2: TRAINING WITH THE PENDULUM STEPPER FROM A SEATED POSITION

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## TRAINING IN SUPINE

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1. Position the user in supine lying with the knees bent. Place the Pendulum Stepper on top of the plinth/bed with front bar just in front of the users feet (See Figure 3).
2. Place the user's feet onto the foot pedals and secure the straps. Start the stepping motion – assist by moving the upper extremity handle (if required). Ensure the stability of the Pendulum Stepper while on plinth/bed (the therapist might be required to spot and secure Pendulum Stepper).

## FIGURE 3: USING THE PENDULUM STEPPER IN THE SUPINE POSITION

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## TRAINING TIPS

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### ENCOURAGING HANDS FREE TRAINING IN THE PENDULUM STEPPER

The Pendulum Stepper is an effective tool for improving the range, strength and coordination of the lower extremities. Users are therefore encouraged to use their lower extremities as much as possible and use the arms only as self assist to enable more effective (e.g., larger amplitude) training – except for some cases, where the upper extremities or the paretic extremity would be particularly targeted by the therapist.

## TRAINING INTENSITY

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Regular training 2-7 times a week to improve client's endurance, lower extremity strength and range of motion is recommended. Sessions can last from 5-30 minutes (it is recommended that users consult a physician before commencing on a regular training routine).

## PENDULUM STEPPER USE IN SPECIAL POPULATIONS

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### STROKE, BRAIN INJURIES AND PARTIAL SPINAL CORD INJURIES

Effective for training of the affected leg and arm with the contra-lateral limbs acting as active assist. At the discretion of the therapist, the affected upper extremity may be placed on the handle to assist with the control of the Pendulum Stepper.

### MULTIPLE SCLEROSIS

Improves the endurance, strength and the coordination of the stepping motion; especially effective to maintain the strength and range of motion of the hip and knee flexors – muscles that are typically weakened in people with MS.

### PARKINSON'S DISEASE

Maximal step length is encouraged in the Pendulum Stepper to improve hip flexion and minimize shuffling.

### HIP/KNEE REPLACEMENTS

Enables early easy mobilization of the lower extremities to facilitate optimal recovery.

### OSTEOPOROSIS

Emulates Weight bearing exercises (stepping) to improve bone density.

## PRECAUTIONS

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- As with other endurance type training, consult a physician before embarking on an intensive program.
- Users in wheelchairs need to ensure that the back safety wheels are installed to avoid tipping.
- If a straight chair is used, it must be stable to avoid tipping backwards.
- A spotter may be required if the user's chair is not completely stable.
- When not using the arms, beware of the movement of the handles and keep the user's head at a safe distance.

## MAINTENANCE

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Replace elastic loops (resistance) when loose.

## OTHER NEUROGYM® PRODUCTS

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### 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 MOBILITY TRAINER

The NeuroGym® Bungee Mobility Trainer 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 Mobility Trainer allows graduated weight bearing while normal protective reactions such as sidestepping are re-developed. The Bungee Mobility Trainer 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 Mobility Trainer enables more realistic safe practice of gait, and most importantly, the protective reactions necessary to prevent falls.

### ANKLE TRAINER

Strengthen 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 training in dorsiflexion, plantar flexion, inversion, eversion, internal and external rotation—motions that are difficult to isolate and specifically strengthen.

### EXERCISE WHEELCHAIR

The NeuroGym® Exercise Wheelchair converts from a standard wheelchair into a variable resistance flexion and extension exercise machine for the trunk and lower extremities. With the flick of a switch, the wheelchair seat, backrest or both can be enabled to allow for flexion and extension exercises of trunk, hips and knees. The special footrest apparatus, which is stored under the seat, pulls out smoothly for use in exercise and folds back up easily so that it does not interfere with standard use of the wheelchair.

### NEUROGYM®™ TIMTRAINER

The NeuroGym® TIMTrainer creates an engaging and motivational environment for re-learning motor abilities using a combination of camera-captured movement technology and NeuroGym®'s patented computer algorithms for movement training. The location of coloured sensors held by or attached to the user is recorded by the camera and interfaced with computer games. Desired movements such as reaching, standing up from a seated position, weight shifting or stepping can then control a computer game. The range, speed and general complexity of the game can be changed to allow for the user's ability and progress. Three games are included: Ski, Pong and Pinch.



NEUROGYMTECH

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