

**What is an electromechanical gait trainer and what is it for?**

An electromechanical gait trainer – also called a Gait Trainer – is a piece of equipment that is used to help regain walking skills (gait) after a stroke. Gait Trainers are used in stroke rehabilitation centers instead of, or as well as other types of walking training such as walking on a treadmill or walking over obstacles. Gait Trainers help move the leg through the stepping motion. They provide a way for patients to practice walking in a natural pattern.

Two main types of Gait Trainers are:

1. **End-effector gait trainers** look similar to a large treadmill. The patient stands on a treadmill surface or on footplates. The patient wears a harness around his/her upper legs and torso for support. The treadmill or footplates are motor-driven to move the patient's legs through the correct position and movements of walking.
2. **Exoskeleton gait trainers** use a treadmill or a walking frame on wheels. The exoskeleton is a robotic orthosis that attaches to the patient's legs. The patient stands on a treadmill surface and is supported by a harness, or stands within a walking frame on wheels. The orthosis guides the legs through the correct walking patterns. These are also called robotic gait trainers.

**Why do we use a Gait Trainer after a stroke?**

A stroke can affect aspects of walking such as:

- How fast you walk
- How long you walk for before tiring
- The length of your step
- The number of steps you take
- The symmetry of your leg movements
- Your risk of falling
- Your confidence when walking.

If you have difficulty walking after a stroke, your rehabilitation will probably include gait (walking) training. Gait Trainers may be a safe way for you to begin walking training if you are not able to walk safely by yourself, because:

- The harness supports your body and takes some of the weight off your legs,
- The Gait Trainer guides your legs through the walking patterns.

Gait Trainers can be used to help some patients walk sooner after a stroke, especially if they require help from two people to walk over ground. It also allows some patients to practice walking when they are not ready to walk over ground.

### **Do electromechanical gait trainers work for stroke?**

Gait Trainers enable patients to practice repetitive walking movements. It is believed that this repetition may help rewire the area of the brain affected by the stroke. When the patient performs repetitive walking movements, the brain cells form new 'pathways' to repair the damage from the stroke.

Research shows that Gait Trainers are as good as usual gait rehabilitation (e.g. normal walking training, treadmill training) after stroke. Gait Trainers may be more useful than usual gait training methods for improving:

- Leg motor function in the very early stage of recovery (up to one month post-stroke)
- Activities of daily living, functional walking skills, leg muscle strength and walking endurance in the rehabilitation phase (1-6 months post-stroke)
- Functional walking skills, gait patterns, general mobility and leg muscle strength more than 6 months post-stroke.

Further studies are needed to better understand who can benefit most from this type of training. Gait Trainers are best used in conjunction with standard physical therapy.

### **What can I expect?**

There are many different types of Gait Trainers. Here is what you can expect when using most types of Gait Trainer:

- You will wear a harness over your clothes
- The harness is fastened to an overhead suspension system. This harness supports your upper body and reduces the amount of weight you carry through your legs while you walk. Your therapist will decide how much of your body weight is supported by the harness and how much is carried through your legs
- Your therapist will start the Gait Trainer at a very low speed. As your walking skills improve, your therapist can (a) increase your walking speed slowly, and (b) increase the amount of weight you are taking through your legs
- The device will guide your legs through walking movements.

### **Are there any side effects or risks?**

There are no specific side effects from using Gait Trainers. In fact, research has shown that it is easier on your heart if you walk with your body weight supported. As such, it may be easier for some patients who have had a stroke to use the gait trainer than walking on the ground.

### **Who provides the treatment?**

Gait Trainers are usually used by a physical therapist at a rehabilitation center. An assistant may be present to help you get ready by putting on your harness and staying with you during rest periods.

Gait Trainers are a fairly new treatment device and are labor-intensive. It requires specific equipment that is quite costly. As such, Gait Trainers may not be available in all rehabilitation centers.

### **How much does it cost?**

Gait Trainers are very expensive pieces of equipment and are only suitable for use in rehabilitation centers under supervision of a trained rehabilitation professional. They are not suitable for private use.

### Is a Gait Trainer suitable for me?

Gait Trainers have been shown to be as good as other walking rehabilitation approaches for most outcomes after stroke. Factors such as time since stroke, the severity of your stroke, and your rehabilitation center's access to a Gait Trainer may affect your ability to use this form of rehabilitation. Ask your rehabilitation specialist if this is a suitable intervention for you.

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