



SHEPHERD STEP

Shepherd Step is an intensive walking program to assist participants with motor-incomplete spinal cord injury in regaining the highest possible functional level of walking. Shepherd Step is staffed with a group of dedicated professionals who have received specialized training to deliver walking interventions. Based on the judgment of the participant's physician and physical therapist, these interventions may include use of the following devices:

- Body-Weight-Supported Locomotor Training (BWST) with either manual or robotic assistance
- Neuroprostheses
- Parastep
- Orthotics or Braces
- Training in Over-Ground Walking

WHAT IS BODY-WEIGHT-SUPPORTED LOCOMOTOR TRAINING?

Body-weight-supported locomotor training uses specialized body-weight-supported treadmill systems or systems that run on a track. In locomotor training sessions, the participant is suspended in a harness over a treadmill while either a specially trained team or the robotic system moves the participant's legs to simulate walking. As the individual regains function, they progress from the treadmill to walking over ground. Locomotor training stems from recent advances in scientific understanding about neural plasticity (the ability of neurons in the nervous system to develop new connections and "learn" new functions) and the role that the spinal cord plays in controlling stepping and standing. Locomotor training may work to "awaken" dormant neural pathways by repetitively stimulating the muscles and nerves in the lower body.

Research shows that locomotor training, through the use of body-weight-supported treadmill training, improves over-ground walking in individuals who have movement in their legs. To date, research has not shown

this therapy to improve walking in patients who do not yet have movement in their legs.

WHAT ARE NEUROPROSTHESES?

Neuroprostheses are devices that deliver functional electrical stimulation (FES) to help move the legs, which would not be functional without such a device. Neuroprostheses use electrodes placed over the legs and consist of a control box and a cable connected to a walking device. The box houses the command switch(es) for step functionality. The most widely used FES devices also have been designed to address foot drop to improve over-ground walking. Research shows promising results in all outcome measures of walking, including functional mobility, speed, spatiotemporal parameters and the physiological cost of walking.

WHAT IS TRAINING IN OVER-GROUND WALKING?

For individuals with strong leg movement who can support their body weight in an upright position, over-ground walking may be an option with or without specialized equipment and custom orthotics.

POTENTIAL OUTCOMES INCLUDE:

- Improved quality of walking
- Increased walking speed
- Increased walking endurance
- Decreased use of devices

Because of these well-documented results, over-ground walking has become a standard of practice at Shepherd Center to integrate locomotor training across the continuum of care for individuals with leg movement. The program serves inpatients and outpatients, including those in Shepherd Center's Spinal Cord Injury Day Program and Beyond Therapy®.

SPECIALIZED EQUIPMENT

- **Bioness/Walk Aide Neuroprosthesis** – A device used to stimulate the lower leg during locomotor training
- **Lokomat®** – Robotics-assisted treadmill training with body-weight support
- **Orthotics or Braces** – Evaluation and training completed in conjunction with a consulting orthotist
- **Pacer and Arjo** – Professional equipment resembling a “super” walker used to provide over-ground training
- **Parastep** – A neuroprosthetic device used to stimulate the entire leg during locomotor training
- **TheraStride** – Manual treadmill with body-weight support
- **Zero G** – A static or dynamic system with body-weight support used with over-ground training
- **Exoskeleton** – A robotic device that may be used to perform walking activities, primarily over level surfaces

CRITERIA FOR ADMISSION TO SHEPHERD STEP

Individuals selected for Shepherd Step must meet the following guidelines:

- Must safely tolerate upright position and weight-bearing
- Have defined and realistic functional ambulation goals
- Must have prescription from physician

MORE INFORMATION

To get additional information, contact Dina Mallya, Shepherd Center Post-Acute Admissions Representative, at 404-350-7502 or dina_mallya@shepherd.org