

Therapy Information

Lokomat® Training for Spinal Cord Injury

(Also known as paraparesis, tetraplegia, tetraparesis)

Spinal Cord Injury (SCI) is a paralytic condition caused by complete or partial damage to the spinal cord. It is characterized by the loss of motor, sensitive, and vegetative functions below the lesion. This condition has the following phenomena:

- Total or partial loss of the ability to perform controlled movements in the affected body areas.
- Sensitivity to touch, pain, temperature, and depth are lost or reduced.
- The vegetative paralysis causes, among other things, problems with bladder and rectal function, impaired sexual function, problems with perspiratory gland function, and problems with peripheral circulation and temperature regulation.

Paraplegia results from damage to the spinal cord at chest level or in the lumbar spine area, with resulting paralysis of the muscles of the torso and legs.

Tetraplegia results when the arms are also paralyzed. Damage to the cervical spinal cord (from C4) also impairs the functioning of the respiratory system.

Complete paraplegia is the term used to refer to a total loss of function of the spinal cord, while with **incomplete paraplegia**, the spinal cord is only partially damaged.

What are the expected effects of training with the Lokomat system on paraplegic patients?

Lokomat training is used mainly for patients with incomplete SCI; in other words, for patients who still have some residual function in their arms and legs. The walking ability of such patients can be improved with the support of the Lokomat system. The gait orthosis can be adjusted to the individual functional level of each patient, and supports the patient as much as necessary, but as little as possible. A large number of repeated movements that represent a physiological gait pattern give patients the best possible help as they work to improve their walking ability.^(1, 2, 3)

While Lokomat training does not cause any functional development in cases of complete paraplegia, but it can lead to an improvement in secondary effects, such as: stimulating the metabolism, stabilizing circulation, reducing spasticity and long-term improvement of the intestine and bladder function.

Note: At this point, we would like to expressly state that these improvements are not due exclusively to training with the Lokomat system. They must always be regarded as a result of Lokomat training in combination with other physiotherapeutic interventions.

How often should training take place?

We recommend three to five times per week for 30 - 45 minutes (depending on the patient's stamina and the therapy plan). For more information, please see the "Recommendations for clinical practice" in the Products/Lokomat/Interest Groups section of our website.

Who should not use the Lokomat system for training?

As with any form of therapy, there are known contraindications for the Lokomat system. For a list of these contraindications, please see "Purpose and contraindications of the Lokomat System" in the Products/Lokomat/Interest Groups section of our website.

Which clinics have experience with the Lokomat system?

If you have any questions about therapy with the Lokomat system, please contact your local clinic directly. For a list of reference clinics, see the Lokomat / References section on our website.

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- ⁽¹⁾ Wirz M, Zemon DH, Rupp R, Scheel A, Colombo G, Dietz V, Hornby TG. Effectiveness of an automated locomotor training in patient with a chronic incomplete spinal cord injury: a multicenter trial. Arch Phys Med Rehabil. 2005 Apr;86:672-80.
- ⁽²⁾ Hornby TG, Campbell DD, Zemon DH, Kahn JH. Clinical and quantitative evaluation of robotic-assisted treadmill walking to retrain ambulation following spinal cord injury. Topics in spinal cord injury rehabilitation. Physical Therapy 2005; 85:52-66.
- ⁽³⁾ Winchester P, McColl R, Querry R, Foreman N, Mosby J, Tansey K, Williamson J. Changes in supraspinal activation patterns following robotic locomotor therapy in motor-incomplete spinal cord injury. Neurorehabil Neural Repair 2005; 19: 313-24.