

Movement is important – particularly to patients confined to bed



The motor driven and software controlled bed trainer for gentle movement therapy:

- to move the legs passively, assistively and actively
- to be used in clinics, rehabilitation centres, skilled nursing facilities or at home
- with SmoothDriveSystem, MovementProtector and electronic SpasmControl
- with TrainCare leg guides, to prevent the knees from blocking or overstretching

MovementTherapySystem for patients confined to bed

Daily movement: The precondition to maintain mobility and physical functions

Many important physical functions don't run without movement – for example, blood circulation, breathing, heart- and circulation activity, metabolism or bladder and bowels activity etc.

A person able to walk obtains basic movement in daily life (on average 4,000 – 6,000 steps a day).

Examinations prove that staying 9 days in bed reduces the fitness of a person by 20 % and the size of the heart by 10 %. The weaker the muscles get the less physical fitness the person retains.

Due to a complete loss of natural movement ability, many patients confined to bed must face substantial physical and psychological limitations and ailments. This is a vicious circle.

Multiple daily mobilizations of the lower extremities by a physiotherapist can only be done in very few cases. Here, the doctor or physiotherapist has the possibility to make use of the MOTomed letto, the motorized and computerized MovementTherapySystem letto, in order to support the therapy.



The MOTomed letto is principally used with the following indications:

- coma or apallic syndrome (coma vigil)
- artificial respiration
- post surgery (early rehabilitation of traumatized and post operated patients)
- neurological conditions (e.g. multiple sclerosis, stroke, Parkinson's disease, polyneuropathies)
- orthopaedics (hip, knee)
- geriatric conditions
- haemodialysis
- patients in intensive care



Therapies

Passive training

In the passive mode the electric motor moves the legs – in a way similar to cycling. The speed can be set in finely graduated gears from approx. 0 to 60 revolutions.

This very natural motion sequence stimulates the blood flow and stabilizes the circulation through the pumping force of the leg muscles on the veins. Tissue, skin and muscles are supplied with fresh oxygen. Muscles and joints keep being flexible.

The gentle and fluent motion of the specific Smooth-DriveSystem can loosen muscles and relieve tension (reducing muscle tone).

Assistive training

The function ServoCycling allows the patients to cycle with their own muscle strength no matter how weak that muscle strength is and the MOTomed letto works with them to achieve this.

Active training

Patients with stronger residual muscle strength can pedal against finely graduated gears applying own force – from very light to heavy.

Therapy goals

①

Support of physiotherapy:

Passive mobilization of patients confined to bed tends to cause substantial physical strain on therapists and relatives (working with bent back). With the **MOTomed letto** MovementTherapySystem, patients mobilization several times a day is smoothly possible even on the week ends.

Therapists benefit as the patients are more flexible after alternating movements with the MOTomed. Manual physical therapy afterwards can usually be done more effectively.

Patients with fear of movement can gently be introduced to active movement therapy by the comfortable smooth movements of the motorized MOTomed.

②

Prevention of decubitus and thrombosis

The MOTomed therapy helps to prevent physically thrombosis and decubitus (without negative side effects) by activating the venous system. Cycling-similar exercise can increase the blood backflow rate in the legs and pelvis area by up to 400 % compared to rest position.

A better oxygen supply of the blood brings better oxygen supply to the brain, the extremities and the whole body. Cold, painful legs can become pleasantly warm and painless due to the stimulation of the blood circulation.

③

Muscle tone and spasticity

The gentle, harmonious true motions can ease muscle tensions (increased muscle tone) immediately.

The MOTomed MovementProtector monitors the muscle condition throughout the movement and will release any sudden spasm by the MOTomed SpasmControl. The regular loosening up of the muscles results in many cases in long-term lower muscle tone.

④

Range of motion, prevention of contractures

Muscles shorten and tendons harden if they are not moved regularly. The joints also get increasingly stiff. With the **MOTomed letto**, e.g. during the acute phase, patients confined to bed can avoid muscle shortening and thus avoid that these consequences have to be treated with more efforts in other therapies.

With the **MOTomed letto**, the legs can be stretched and bent hundreds of times in 10 minutes for example. This helps to lubricate the joints and to make the muscles more flexible.

⑤

Bladder and bowel

Normally the abdominal muscles assist the bowel movements. However, due to paralysis and lack of exercise, the abdominal muscles can become inactive and therefore unhelpful to the digestive process. Due to the indirect effect of the MOTomed training on the abdominal muscles, bowel movement can be stimulated and digestion complications can be prevented.

Bladder problems are often aggravated by tension (spasticity) in the bladder, pelvic floor and thigh muscles. This tension can be eased with a few minutes of passive MOTomed training which in turn can have a positive effect on emptying the bladder.





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Muscle strength and coordination – preparation for walking

With many patients confined to bed, there is some residual strength remaining. However, it is sometimes concealed or inhibited by spasticity. To make a complete movement, this residual strength is often insufficient or it fades away quickly. The MOTomed letto has a special function to help to rediscover this residual strength and to train it: the MOTomed ServoCycling. This function works similar to a power-assisted steering system in a car and makes it possible to perform a complete and fluid cycle movement even with minimal muscle strength.

Patients are moved with strong support to legs and knees. Movements that had been lost for a long time will be initiated again.

Patients with stronger residual muscle strength can even cycle against light resistances in finely graduated gears. This contributes to promote walking ability, particularly for patients who cannot get out of bed early. As a further benefit of the MOTomed movement therapy the coordination will be improved and leg muscles built up.

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Influencing the general patient condition

To be able to move the legs continuously has a positive effect on the mental well-being of immobile patients. Usually the sensory stimulation by the movement therapy improves the general patient condition.

At the same time, COB-patients (chronic-obstructive bronchitis) have shown that purely passive as well as additional active exercise with the MOTomed increases the oxygen uptake, respiratory frequency and respiratory minute volume.

(Pneumology, edition 2/2002, Klinik Ambrock, Hagen, Prof. Dr. med. Karl-Heinz Rühle)

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Save time and cost

The additional daily movement therapy with the MOTomed letto accelerates and improves the patient to enable earlier mobilisation (e.g. stroke patients). Primarily, the MOTomed therapy should prepare, facilitate and support subsequent therapies.



MOTomed letto, item no. 79

Training data and progress made visible

Model 1: removable remote control with spiral cord (included in the basic price)

The operation of the MOTomed letto is safe and easy. The therapy/nursing staff can set directly all the functions they need for the daily movement therapy:

- fast or slow
(Revolutions per minute can be set in fine graduations from approx. 0 to 60)
- light or heavy
(Resistance can be set in finely graduated gears from 1 to 12 Nm)
- forwards or backwards rotation of the pedals

Only upon pressing the button "start" the device will start to move the legs slowly and gently. At the same time all functions are activated which are required for the training and ensure the users' safety (MovementProtector, SpasmControl with automatic change of direction etc.)

The display shows in a rolling-update format the following feedback:

velocity (rpm), duration of training (min), distance covered (km), muscle tone (approx. Nm), performance (approx. kJ and kcal), SymmetryTraining.



VELOCITY: 20 RPM

TIME: 7 min

Scale of the displays: 1:1 (65 x 12.5 mm/2.6 x 0.5 inches)

Model 2: stationary operating panel with large display

(accessory item no. 153 – not available as retrofit kit)

These are the differences of the stationary operating panel to the above standard remote control:

- large display (110 x 85 mm/4.5 x 3.4 inches) with large letters and numbers (20 mm/0.8 inch)
- large, concise operating buttons
- extended training analysis
- not removable and therefore only to be operated by the therapist/nursing staff:

On the display the following feedback shows up alternately:

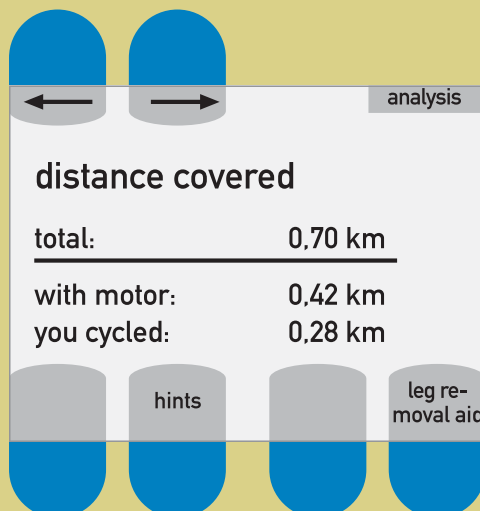
In the purely passive mode:

velocity (rpm), duration of training (min), muscle tone (Nm), distance covered (km), revolutions.

If part of the training is in active mode:

gear, performance (approx. watt), energy consumption (approx. kJ and kcal), symmetry-analysis (activity of left and right leg), revolutions.

Training duration and covered distance are separately indicated for the active and passive parts of the training.



The display in a smaller scale. Original size: 110 x 85 mm/ 4.5 x 3.4 inches

Safety features/handling

The MOTomed MovementProtector

(limitation of motor power)

The MOTomed MovementProtector monitors the muscle condition throughout the whole training and stops the MOTomed at the slightest sign of a cramp.

This is what is special about it: regardless of how the basic muscle tone changes, the MOTomed MovementProtector adjusts to the changing muscle condition and it is therefore always optimally sensitive. The machine stops immediately if a sudden spasm occurs, and the MOTomed SpasmControl can then ease the muscle contraction.



The SpasmControl

with automatic direction change

After a spasm has been recognized by the MovementProtector and the pedal movement has been stopped, the SpasmControl changes gently the direction of pedal rotation repeatedly until the spasm can be eased (according to the therapeutic principle: antagonistic blocking).

TrainCare leg guides with knee protection

(Accessory, item no. 115)

Firm and secure hold of the legs is a precondition for moving coma-patients and leg paralysed patients with the MOTomed letto.

The TrainCare leg guides with softly padded lower leg guides:

- hold the lower legs safely, prevents them from unintentional lateral movement
- prevent the knee joints from overstretching and blocking
- enable easy insertion and removal of the legs



Ankle Joint Control with SlidingScales

(Pair, accessory, item no. 149 – only in connection with the TrainCare leg guides)

- for a specific adjustable motion of the ankle joints (dorsal flexion and plantar flexion)
- the calf muscle pump (venous pump) is activated and blood circulation in one or both legs can be increased
- to prevent and treat oedema
- recommended for prevention of talipes equinus
- effective prevention of thrombosis



moving to the bed



fixation



insertion of the legs



moving the legs

The MOTomed letto excels by a practicable, simple and safe handling. Manoeuvrable as a shopping cart you can move it easily from bed to bed due to its four castors with brakes.

The MOTomed letto is robust and stable and can be fixed to the bedframe within seconds. No tools are

required to set the height with the spring-supported height adjustment. During positioning of the pedals the patient can stay in bed.

The MOTomed letto can also be used from a therapy bench (e.g. during haemodialysis).

Technical Specifications

Basic model:

Motor driven passive/active trainer with the features SmoothDriveSystem, ServoCycling, MovementProtector, SpasmControl, GentleStart & Stop.

- Power requirements
 - Europe: 220 - 240 V ~/50 Hz, 0,56 A
 - USA, Canada: 110 - 120 V ~/60 Hz, 1,0 A
 - Asia: according to country specifications
- Safety voltage: motor and electronics 32 volt, remote control 15 volt
- Pedal rotation: approx. 0 to 60 revolutions per minute
- Direction change control forwards and backwards
- Adjustment of the motor power: from 1 to 9 Nm
- Measurements: length: approx. 92 cm/36.8 inches, width: 52 cm/20.8 inches, height: from 125 cm/50 inches
- Weight: approx. 50 kg/110 lb (basic model)
- Mobile with extra large castors and brakes
- Chassis width adjustable from 51 to 71 cm/ 20.4 to 28.4 inches (outer edge) and 43 to 63 cm/ 17.2 to 25.2 inches (inner edge)
- Safety foot shells with 5° outward rotation
- Bed mount adjustable from 3.3 to 9 cm/1.3 to 3.6 inches to the width of the bed frame
- For use on beds in clinics and home care, as well as on therapy benches (e.g. during haemodialysis)



- Distance adjustment towards the patient: the foot shells can be brought towards the patient. The patient does not need to be transferred.
- Remote control with intelligent display: the operating guide and the feedback of the training data are visual on the display.
- Therapy time can be preset from 0 to 120 min.
- For safety you can set speed and motor power separately.
- Automatic system self-test
- Quiet, gentle, harmonious running
- All-metal design: top quality and stability
- Resistance ranging from light to heavy (1 to 12 Nm) can be set in 12 finely graduated gears for active muscle work out.

Fax response ++ 49-73 74-18 480 or via post mail, address see below

- Please send me free of charge and without obligation prices and information on the other MOTomed MovementTherapySystem models.
- Please send me experience reports and scientific papers from physicians and physiotherapists.
- I'd like to purchase the MOTomed letto. Please send me an order form and prices.
- Please contact me regarding a MOTomed demonstration.
- I'm interested in a visit of your sales rep.
Please call me on the following number:

Phone: _____

Day: _____

Time: _____

Name, address, institution or clinic:

Date/Signature: _____

Our competent helpdesk is happy to give you more information on the motor driven MovementTherapySystem MOTomed letto.

Call ++ 49-73 74-18 85

Or via website www.motomed.com



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