User Guide

www.bioswing.de

HAIDER®
BIOSWING

BIOSWING Posturomed®

The sensorimotor prevention and therapy system

2nd edition

MDR 2017/745

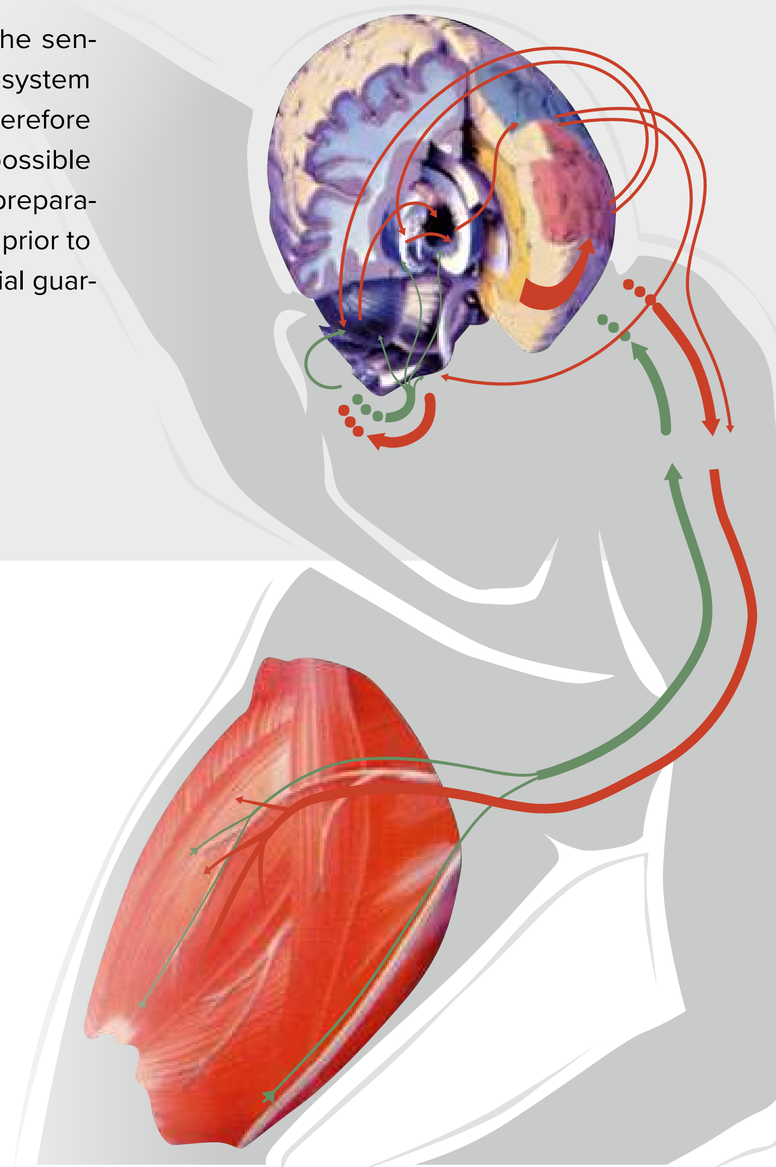
Contents

Introduction

The everyday work and leisure time of many people is dominated by a lack of exercise and by monotonous movements. Driving a car, office work, watching television or monotonous movement sequences in industrial jobs are typical examples for this. Activities performed while sitting and standing with constantly recurring, monotonous and filigree static or dynamic movement sequences were still an exception a hundred years ago, but have become the rule nowadays. These constantly recurring motion patterns, mainly in flexion and inner rotation with the corresponding mechanical and neurophysiological strains, could be the cause of musculoskeletal as well as vegetative function disorders often accompanied by pain.

In the neuro-orthopaedic therapy of your patients, you must consider these faulty neuronal control and regulation processes; the therapy must not contribute further to these motion patterns.

In these therapy instructions for the sensorimotor prevention and therapy system BIOSWING Posturomed®, we will therefore pay special attention to the best possible general posture. Correct physical preparation and adjustment of your patient prior to using the Posturomed® is an essential guarantor for your therapy success!



!

Pain in the sense of increased nociception from the musculoskeletal system is frequently caused by function disorders of the neuromuscular system, and is not primarily the result of structural failure due to pathological changes!

1. The BIOSWING Posturomed®

The Posturomed® is the sensorimotor prevention, therapy and diagnosis device with an attenuated oscillating unstable platform. This platform is suspended on an oscillation frame that enables dosed attenuated compensating movements with variably adjusted oscillation amplitudes and oscillation frequencies. The degree of difficulty can thus be optimally adjusted to the neuromuscular abilities of your patients.

The Posturomed® was introduced to the market in 1995 as the first attenuated oscillating sensorimotor therapy device of its kind, and was intended for therapeutic use right from the start. Its development started at the end of the 1980s in close cooperation between HAIDER BIOSWING GmbH and physical therapists as well as medical specialists.

The BIOSWING Posturomed® with its oscillation frame and the characteristic attenuation elements.

!

In sensorimotor therapy with unstably oscillating platforms, qualitatively and quantitatively adjustable and attenuated evasion movements are indispensable for individual application!

1.1 Intended use according to MDR 2017/745

1.1.1 Intended patient population

The BIOSWING Posturomed 202 and the BIOSWING Posturomed compact are intended for children (from 6 years), adolescents (from 13 years) and adults (from 19 years).

1.1.2 Medical requirements and indications

The BIOSWING Posturomed 202 as well as the BIOSWING Posturomed compact require free stabilization of the upper body and head as a minimum requirement.

Indications

- Increased risk of falls in the elderly
- lack of postural control
- lack of balance
- Inadequate strength
- Lack of inter- and intramuscular coordination
- Prevention of age-related degeneration processes
- Insufficient ankle stabilization
- degenerative hip joint diseases
- Total endoprostheses (TEP) of the hip joint
- chronic, unspecific pain in the lumbar spine
- pelvic floor weakness

Contraindications BIOSWING Posturomed® 202 & compact

- severe disturbances or damage to the vestibular apparatus
- severe functional pathologies of the neuromuscular system
- Inflammation of the load-bearing or stressed joints
- Pain of unknown cause
- neurological symptoms of unknown cause
- Spasticity of the primarily stressed or stressed muscles

1.1.3 User group

- The BIOSWING Posturomed 202 and the BIOSWING Posturomed compact are designed for use by Patient.
- The BIOSWING Posturomed 202 and the BIOSWING Posturomed compact are designed for use by medical / therapeutic staff.

1.1.4 Intended use

Intended place of use

- The BIOSWING Posturomed 202 as well as the BIOSWING Posturomed compact are used in medical-therapeutic Facilities.
- The BIOSWING Posturomed 202 as well as the BIOSWING Posturomed compact are used in medical-preventive Facilities.

Intended usage environment

The BIOSWING Posturomed 202 and the BIOSWING Posturomed compact are set up on a level, solid surface.

Invasiveness

The product is non-invasive.

Intended body location of the application

The BIOSWING Posturomed 202 and the BIOSWING Posturomed compact only come into contact with intact skin, mainly the hands and feet.
The BIOSWING Posturomed 202 and the BIOSWING Posturomed compact should not come into contact with injured skin or mucous membranes.

Scheduled duration and frequency

The BIOSWING Posturomed 202 as well as the BIOSWING Posturomed compact are used for up to 30 minutes per application. Training with the device can be carried out several times a day.

Cleaning, disinfection and sterilization

- The BIOSWING Posturomed 202 and the BIOSWING Posturomed compact are not delivered sterile and do not require any sterilization.
- The BIOSWING Posturomed 202 and the BIOSWING Posturomed compact are intended for multiple use.
- The BIOSWING Posturomed® 202 as well as the BIOSWING Posturomed® compact can be cleaned with a damp cotton cloth and disinfected with all surface disinfectants according to the VAH list (e.g. Schülke kodan wipes disinfectant wipes).

1.1.5 Claims

Performance

- The BIOSWING Posturomed 202 can be swung in a frequency range of 1.0 to 3.2 Hz (unlocked) or 2.0 to 4.2 Hz (locked).
- The BIOSWING Posturomed compact can be swung in a frequency range of 2.0 to 4.2 Hz (unlocked) or 3.8 to 6.0 Hz (locked).

Usability and ergonomics

- The BIOSWING Posturomed 202 has a specially curved three-sided handrail, which enables safe ascent onto the swinging surface and a wide variety of exercises.
- The BIOSWING Posturomed compact has a one-sided handrail with folding function and a handle for easy and compact transport.
- The BIOSWING Posturomed 202 and the BIOSWING Posturomed compact each have two transport rollers.

Sterility

The BIOSWING Posturomed 202 and the BIOSWING Posturomed compact are not delivered sterile and do not require any sterilization.

Benefit for the patient

- The BIOSWING Posturomed can improve balance by reducing the COP swaying path [Freyler et al. 2015; Ritzmann et al. 2014].
- The BIOSWING Posturomed can increase strength [Granacher et al. 2007; Ritzmann et al. 2014].
- The BIOSWING Posturomed can reduce spinal excitability [Taube 2012; Taube & Gollhofer 2012; Taube et al. 2009] and reduce the cortical activation [Taube et al. 2008].
- The BIOSWING Posturomed can reduce the cocontraction of antagonistic muscle groups by up to 19% [Freyler et al. 2015; Ritzmann et al. 2014].
- The BIOSWING Posturomed can reduce the reflex reaction times of the thigh muscles by up to 196% [Freyler et al. 2015; Ritzmann et al. 2014].
- The BIOSWING Posturomed can improve intramuscular coordination [Granacher et al. 2007; Gruber & Gollhofer 2004; Taube et al. 2007].
- The BIOSWING Posturomed can improve intermuscular coordination [Freyler et al. 2015; Ritzmann et al. 2014; Nagai et al. 2012].
- The BIOSWING Posturomed can improve intersegmental coordination [Freyler et al. 2015; Ritzmann et al. 2014].
- The BIOSWING Posturomed can increase motor control in tripping situations [Granacher et al. 2006; Granacher et al. 2009 (2); Oliveira et al. 2013].

Health care benefits

Due to the benefits for the patient, relief and thus benefits for the health care system can be derived. By increasing sensorimotor skills, the risk of accidents, injuries and falls, especially for older and pre-damaged people, can be reduced, which in turn can reduce the financial burdens on the health system.

Disclaimer Clauses

The BIOSWING Posturomed must not be used for the sole clinical evaluation of postural instabilities or balance disorders, but must be supplemented by appropriate clinically valid procedures.

1.1.6 Risks

With the BIOSWING Posturomed® 202 as well as the BIOSWING Posturomed®, side effects, complications and clinical risks are not known and not to be expected.

1.1.7 Side effects

With the BIOSWING Posturomed, side effects, complications and clinical risks are not known and are not to be expected

2. The BIOSWING Posturomed® models

The Posturomed® is available in two model variants that essentially differ in size and thus in their application field:

The Posturomed® 202

The Posturomed® 202 with a oscillating platform of 60 x 60 cm is designed for stationary use. It features a three-sided railing, transport rollers, latch extensions and an intervention pull with 12 screw eyelets. The Posturomed 202 is a non-active class I medical device according to Regulation (EU) 2017/745 for medical devices, Annex VIII, classification rule 1.

The Posturomed® compact

The Posturomed® compact with a oscillating platform of 40 x 40 cm is designed for mobile use. It features a one-sided fold-down railing, large transport rollers and a carrier handle. The Posturomed compact is a non-active class I medical device according to Regulation (EU) 2017/745 for medical devices, Annex VIII, classification rule 1.

3. Function and effectiveness of the BIOSWING Posturomed®

Depending on the indication and therapy objective, the task of your patient is to settle down the oscillating Posturomed® platform as fast as possible or keep it settled down, or to make it oscillate directly and maintain this oscillation. The resulting physical action principle is to create cyclically stimulated, controlled attenuated oscillations in a frequency range from 1.0 to 4.2 Hz (Posturomed® 202) or 2.0 to 6.0 Hz (Posturomed® compact). This forces the neuromuscular system to adapt to the oscillation frequencies. The neurophysiological effect is that afferent impulses with a dosed stimulus density are applied to the musculature in a closed chain of movement, which leads to the stimulation of the synergistic muscle activation (co-activation).

A healthy and thus efficient neuromuscular system is able to quickly level the oscillating instability of the oscillating platform or maintain this while keeping (unconscious) control over the body. This effect is of decisive importance for any stability requirements on the locomotor system with vertical alignment of the body against gravity. The sensitivity of the motor cybernetics can be directly optimised with the preset oscillation amplitude of the Posturomed® platform as well as with additional cognitive exercises.

Regular exercising on the Posturomed® trains the neuromuscular system in the sense that an increasingly demanding exercise level can be coordinated with a stable posture. This results in the optimisation of the postural system (“dynamic posture stabilisation”), and ultimately in the improved performance of the locomotor system.

!

The correct use of the Posturomed® can result in better central motor control due to the quantitatively and qualitatively boosted afferent input.

4. Properties of the BIOSWING Posturomed®

The oscillating platform is characterised by a progressively attenuated oscillation behaviour. This is enabled by the therapy platform, which is freely suspended on an oscillation frame in two oscillators. Special attenuating elements form the core of the oscillation system. These envelop the supporting steel cores and ensure dynamic bearing. This “progressively attenuated” oscillating behaviour is important in neuro-orthopaedic therapy to ensure a dosed afferent input without “information overload” of the locomotor system. Progressively attenuated oscillating behaviour means that the attenuation and thus the deflection resistance increases with increasing deflection of the oscillating platform.

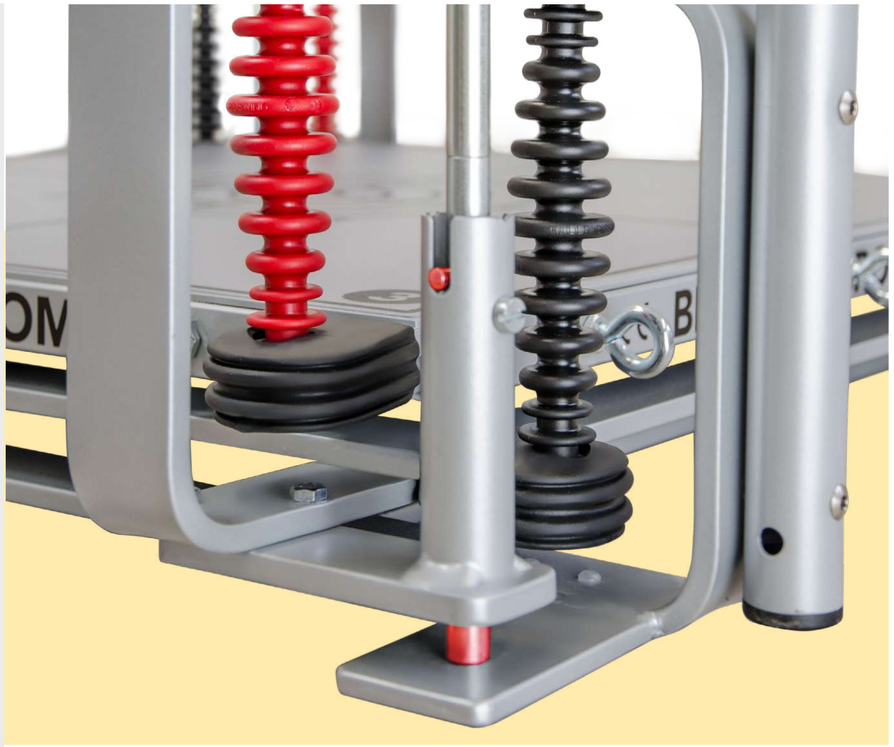
In principle, two physical characteristics can influence the effectiveness of the Posturomed®:

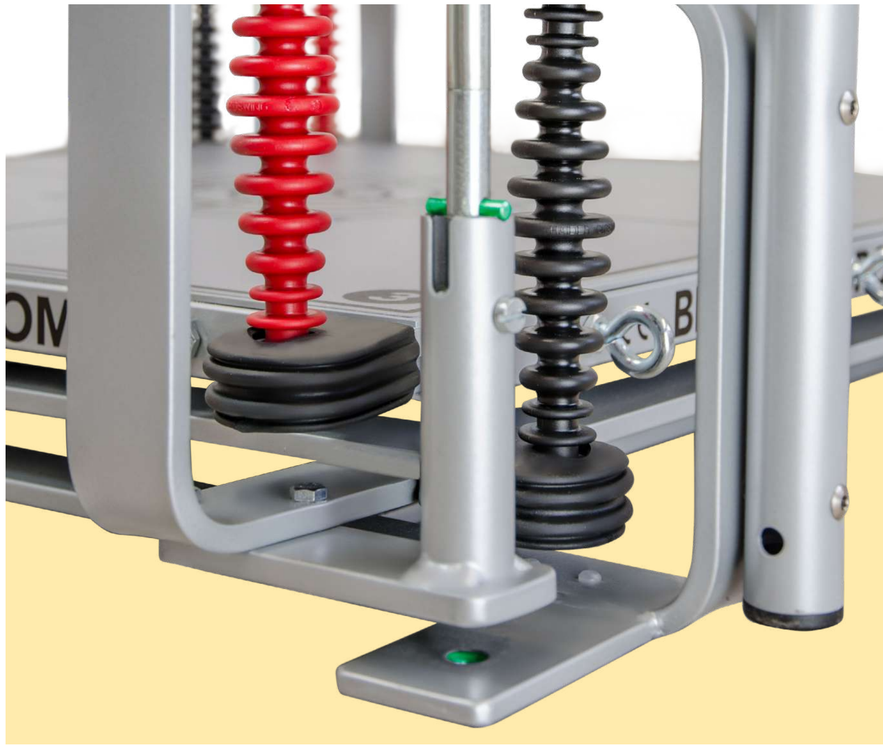
1. Changing the oscillation amplitude and at the same time the oscillation frequency by locking or releasing the second oscillator.

2. External motion impulses (provocations) on the oscillating platform.

4.1 Changing the oscillation amplitude and the oscillation frequency

The oscillation amplitude and the oscillation frequency at which the platform is deflected depend on the locking or the release of the second oscillator by the therapist. In principle, three oscillation amplitudes can be set on each Posturomed®. In the first and thus smallest oscillation amplitude, both latches are closed, which blocks the second oscillator. In the second oscillation amplitude, one latch is open; in the third and thus largest oscillation amplitude, both latches are open and therefore both oscillators released. The higher the oscillation amplitude of the oscillating platform, the higher the possible amplitude of the centre of pressure (COP), and the more demanding the stabilisation of the body in the respective support surface.

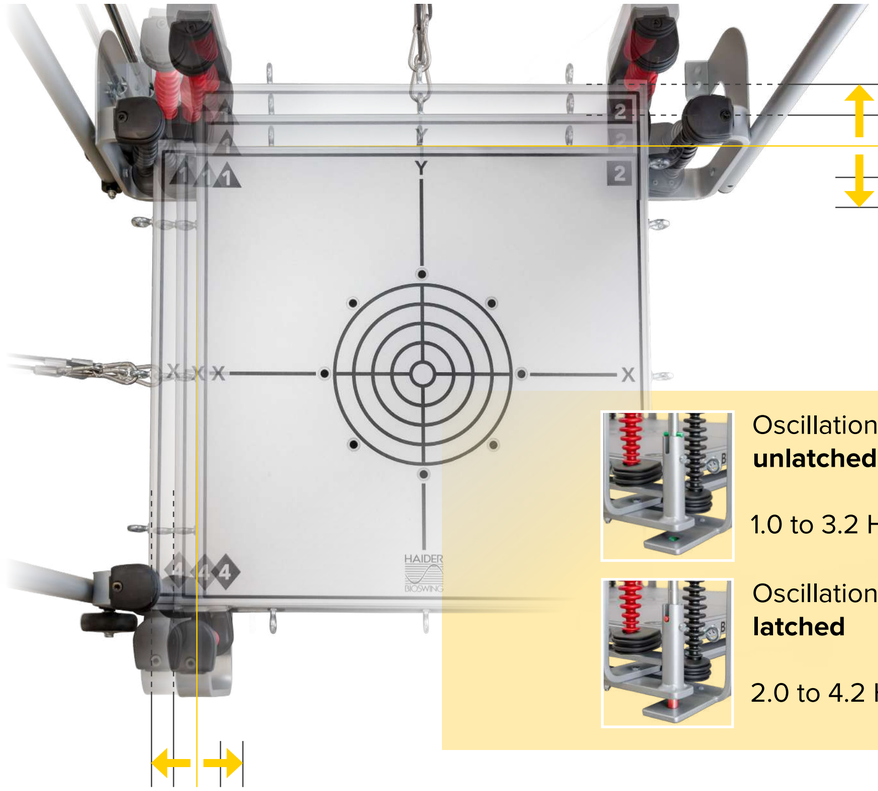




In the left figure the latch is closed; in the right figure it is open.

The surface deflections and oscillation frequencies are as follows:

Posturomed® 202



y-axis

Max. deflection 80 mm (unlatched)

Max. deflection 40 mm (latched)

Initial position/rest position

x-axis

Max. deflection 50 mm (unlatched)

Max. deflection 25 mm (latched)

Initial position/rest position

Oscillation frequency spectrum **unlatched**

1.0 to 3.2 Hz

Oscillation frequency spectrum **latched**

2.0 to 4.2 Hz

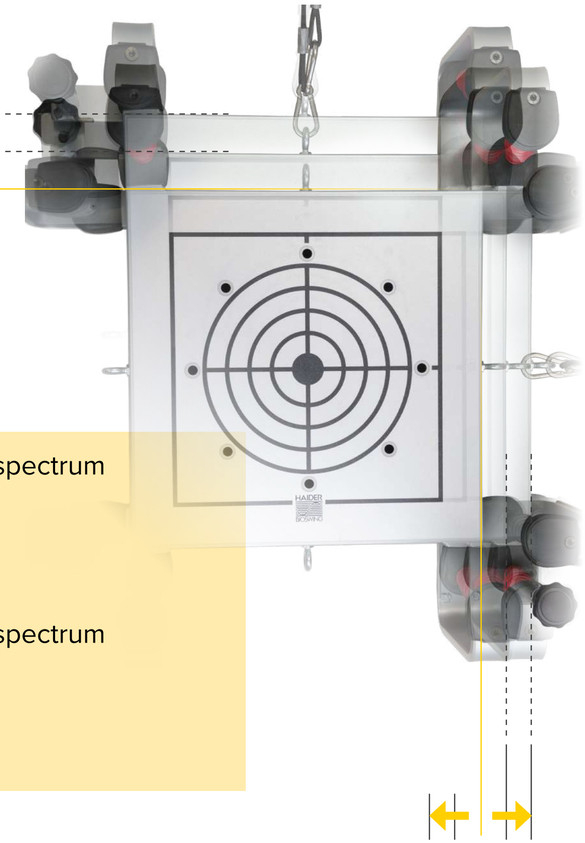
Posturomed® compact

y-axis

Max. deflection 80 mm (unlatched)

Max. deflection 40 mm (latched)

Initial position/rest position



x-axis

Max. deflection 50 mm (unlatched)

Max. deflection 25 mm (latched)

Initial position/rest position

Oscillation frequency spectrum **unlatched**

2.0 to 4.2 Hz

Oscillation frequency spectrum **latched**

3.8 to 6.0 Hz

!

The higher the oscillation amplitude, the more demanding the exercise! Resistance progression in the deflection of the oscillating platform is important for the therapy.

4.2 External movement impulses (provocations)

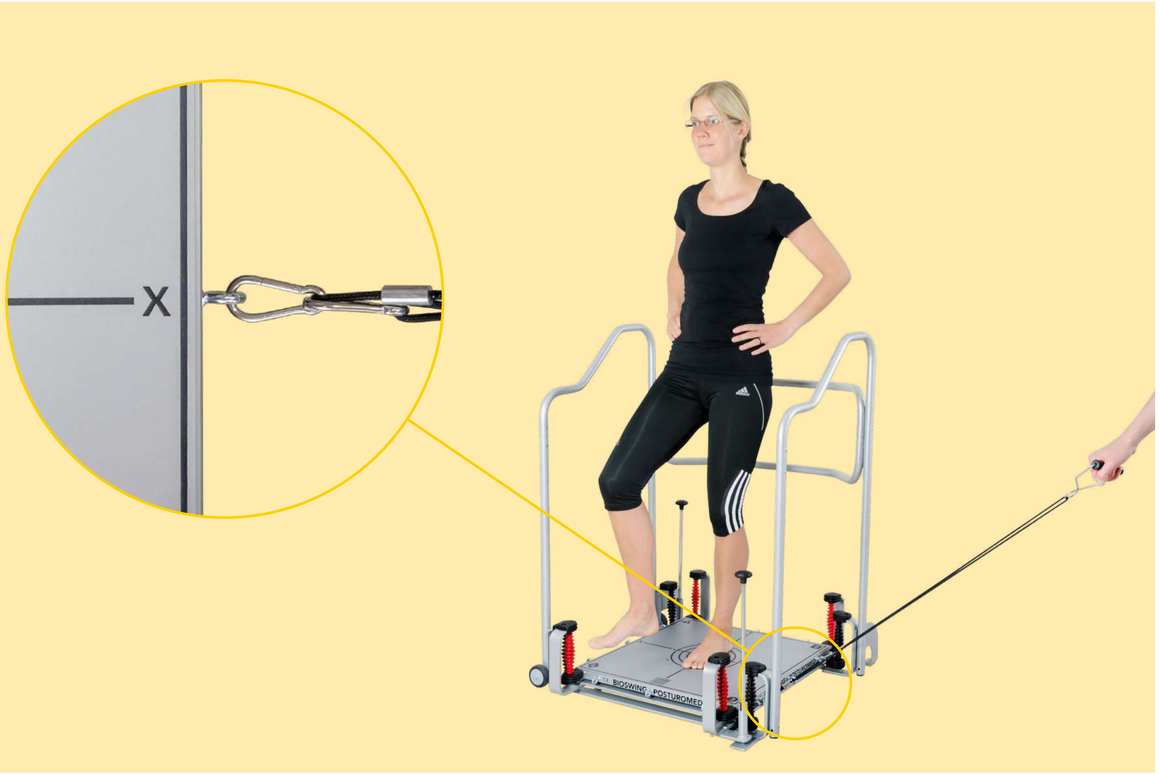
Motion impulses on the oscillating platform are created by the person exercising on the platform (proactive training). The stronger the motion amplitudes or body sways, the stronger the motion impulses on the oscillating platform and the stronger the deflection. The exercising person must intercept his/her own motion impulses in order to settle the platform and stabilise his/her body. We refer to this as feed-forward control, because the exercising person has deflected the platform through his/her own motions previously planned in locomotor function programs, and has already worked out compensating, i.e. body-stabilising (postural) programs beforehand in the motion-planning stage. These are stimulated to a higher performance through the unstable position of the oscillating platform, but have already been created beforehand (feed-forward) and confirmed or corrected by the central locomotor system through permanent re-afference.

External impulses on the oscillating platform (reactive training) are a different matter. The central locomotor system has to respond to such external (surprising) provocations without having worked out a targeted motion plan beforehand. Here we speak of feedback control or, with a focus on processes, of feedback-training. In principle, there are two different ways to perform feedback training on the Posturomed®: The first option is to use an intervention pull. With this lever, you can not only level the therapy platform manually for your patient, but also exert provocations in different directions on the oscillating platform, including rotation components, by pulling or releasing the pull. By connecting the provocation module to the Posturomed, you can trigger external provocations in three standardised deflection stages of 10, 20 and 30 mm. Especially in the context of objectifying the feedback control with the MicroSwing® measuring system, these standardised impulses are indispensable.

!

The stronger and faster the external motion impulse, the more demanding the exercise!

Intervention pull



Besides manual stabilising of the therapy platform, the intervention pull also allows targeted deflections (provocations) of the Posturomed® oscillating platform in different directions and with varying force.

Provocation module

The provocation module enables standardised deflections (provocations) of the Posturomed® oscillating platform.

5. General information about performing the exercises

The Posturomed® allows a large variety of exercises. There are many possibilities to change the exercise level. In the scope of this user guide, we can therefore only introduce you to three essential basic exercises for use of the Posturomed® with load-stable patients. The targeted and promising therapeutic use of the Posturomed® can only be implemented on the basis of your creativity regarding exercises coupled with your expertise.

The contact module for the Posturomed 202 is a methodical aid to support the quality of the exercises through tactile stimuli via the rubber tubes that can be positioned accordingly. The tubes can also be used as resistors.

- According to its intended purpose, the Posturomed should only be used in medical-therapeutic or medical-preventive facilities.
- Only use the Posturomed® if there is enough space!
- Your patients should be rested and load-stable!
- Your patients should always exercise without shoes!
- First train the best possible general posture of your patients before using the device for the first time (see section 5.1)!
- Observe the indications, contraindications and termination criteria for for working with the Posturomed®!
- Select the demand level of the exercises so that your patient is challenged but not overstressed!

Evidence-based indications

- Increased risk of falls in the elderly
- Lack of postural control
- Lack of balance
- Inadequate strength
- Lack of inter- and intramuscular coordination
- Prevention of age-related degeneration processes
- Insufficient ankle stabilization
- Degenerative hip joint diseases
- Total endoprostheses (TEP) of the hip joint
- Chronic, unspecific pain in the lumbar spine
- Pelvic floor weakness

Attention!

- Diffuse pain
- Inflammation
- Acute injuries
- Diffuse symptoms (above all vegetative/neurological)
- Defect of the vestibular system
- Polyneuropathy

Contraindications

- Severe disturbances or damage to the vestibular apparatus
- Severe functional pathologies of the neuromuscular system
- Inflammation of the bearing or stressed joints
- Pain of unknown cause
- Neurological symptoms of unknown cause
- Spasticity of the primarily stressed or stressed muscles

Criteria for termination

- Developing pain
- Deflective movements/wrong motion patterns (e.g. increasing flexion and internal rotation patterns)
- The oscillating platform can no longer be controlled
- Muscle cramps
- Signs of exhaustion

! Your expertise and therapeutic attentiveness is especially required when working with a sensorimotor therapy device like the Posturomed®! Therefore, according to its intended use, the Posturomed is intended for use by medical / therapeutic staff.

5.1 Best possible general posture

To ensure the effectiveness and specificity of the respective basic exercises, as well as that of all exercises with the Posturomed® based on these, it is important to exercise the best possible indication-dependent general posture of your patients while observing any counterindications. This both contributes to preventing excess strain on passive structures and allows optimum activation of the postural system. The best general posture in a two-legged stance and modified in a one-leg stance is characterised by an initially conscious alignment of the following body segments:

!

The sensorimotor system can only be controlled “species-appropriately” on the basis of the best possible general posture!

Head:

- The head is located on the erect thorax, with a corresponding decrease of the cervical spine lordosis and with an anterior-posterior neutral position in slight inclination.
- The patient is looking straight ahead, eyes slightly downcast.

Legs:

- The frontal leg axes are adjusted in the physiological support line (centres of hip, knee and upper ankle joint).
- The knee joints are actively stabilised (“active lock”), especially with genu recurvatum.
- In a one-legged stance, the non-supporting leg is lifted approximately 10 cm off the ground, the lower leg remains vertical, and the foot is dorsiflexed.

Torso:

- The thorax is erected via the sternum, and the thoracic spine is in physiological kyphosis.
- The shoulder blades are actively stabilised in their physiological position at the dorsal thorax. Here, pay special attention to the caudal position of the scapula (spina scapulae max. at the height of Th3) and an angulus inferior that does not protrude from the thorax.

Pelvis:

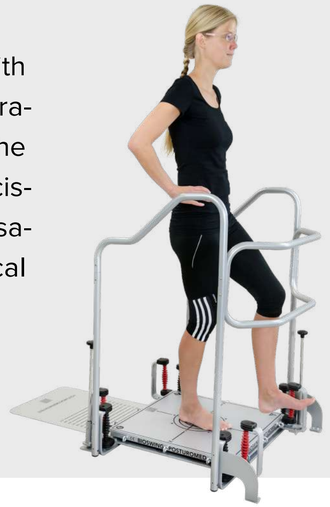
- The pelvis is sagittal in neutral position (pelvic tilt angle 50°-60°) and forms the basis of a physiological lumbar spine lordosis with the stably erected thorax.
- In a one-legged stance, the pelvis remains stable in the frontal plane, does not tilt towards the non-supporting leg side, and is not lifted on the non-supporting leg side.

Feet:

- The patient assumes a step-wide stance (approximately 5-13 cm distance between both heel centres).
- The anatomic longitudinal foot axis is rotated outwards by approx. 7°.
- The load on the foot is borne to approximately 60% on the heel.
- The arches of the foot are actively “raised” (e.g. “short foot” acc. to Janda, spiral dynamics® acc. to Larsen).

6. The basic exercises without additional modules

As already mentioned in Section 5, the Posturomed® offers a large variety of exercises. It is vital that you observe the indications and contraindications that apply to your patients. The targeted and promising therapeutic use of the Posturomed® can only be implemented on the basis of your creativity regarding exercises coupled with your expertise. In the scope of this therapy instruction manual, we will introduce the three essential basic Posturomed® exercises for general proactive postural stabilisation of your patient in the body's vertical axis.



!

The strain on the motor system should not be increased until the patient has mastered these three basic exercises!

Posturomed

6.1 Basic exercise 1:

Frontal ascent to one-legged stance

Please direct your attention to the following substeps. First perform the exercise yourself before you instruct your patients. If necessary, adapt the exercise to your patients with respect to their indications and counterindications.

Posture

To achieve the desired therapeutic effect, it is necessary to observe the notes on establishing the best possible general posture as described in 5.1.

Posturomed

Basic exercise 1

Performance

Quick step forward to the centre of the oscillating platform into one-legged stance (-> 5.1).

The patient should be able to quickly stabilise and maintain the one-legged stance without wobbling.

Patient orientation towards the Posturomed®

- The patient stands in front of the Posturomed®.
- A suitable aid is the use of the BIOSWING® step mat for reproducible performance of the relatively even step length.
- The hands rest on the hips.

Strain parameters

- Exercise time:
  approx. 5 sec./one-legged stance
- Exercise repetitions:
  5 - 10/side, alternating
- Break time:
  max. 5 sec. (time for assuming the starting position in front of the Posturomed®)
- Strain increase:
  Gradual release of the oscillation amplitude with safe mastering of the one-legged stance.

Additional conscious exercises

- Motoric: Vertical tossing of a ball; one hand tosses, both hands catch while maintaining a one-legged stance.
- Cognitive: Calculating in rows of figures while maintaining a one-legged stance.

Posturomed

6.2 Basic exercise 2:

Lateral ascent to one-legged stance

Please direct your attention to the following substeps. First perform the exercise yourself before you instruct your patients. If necessary, adapt the exercise to your patients with respect to their indications and counterindications.

Posture

To achieve the desired therapeutic effect, it is necessary to observe the notes on establishing the best possible general posture as described in 5.1.

Basic exercise 2

Performance

Quick lateral step to the centre of the oscillating platform into one-legged stance (-> 5.1).

The patient should be able to quickly stabilise and maintain the one-legged stance without wobbling.

Patient orientation towards the Posturomed®

- The patient stands lateral to the Posturomed®.
- A suitable aid is the use of the BIOSWING® step mat for reproducible performance of the relatively even step length.
- The hands rest on the hips.

Strain parameters

- Exercise time:
  approx. 5 sec./one-legged stance
- Exercise repetitions:
  5 - 10/side, alternating
- Break time:
  max. 5 sec. (time for assuming the starting position in front of the Posturomed®)
- Strain increase:
  Gradual release of the oscillation amplitude with safe mastering of the one-legged stance.

Additional conscious exercises

- Motoric: Vertical tossing of a ball; one hand tosses, both hands catch while maintaining a one-legged stance.
- Cognitive: Calculating in rows of figures while maintaining a one-legged stance.

Posturomed

6.3 Basic exercise 3:

Walking in place with tossing a ball

Please direct your attention to the following substeps. First perform the exercise yourself before you instruct your patients. If necessary, adapt the exercise to your patients with respect to their indications and counterindications.

Posture

To achieve the desired therapeutic effect, it is necessary to observe the notes on establishing the best possible general posture as described in 5.1.

Basic exercise 3

Performance*

The patient walks three steps in place and then stands level on one leg (-> 5.1). While in a one-legged stance, the patient tosses a light ball approx. up to the height of the top of the head with one hand and catches it with both hands.

Patient orientation towards the Posturomed®

- The patient stands with both legs in y-direction in the centre of the Posturomed® oscillating platform.
- The arms hang loosely at the side, and a light ball is held in the hand.

*see here the methodical approach in "Postural therapy" by Rašev

Strain parameters

- Exercise time: depending on the number of ball tosses (a max. five tosses)
- Exercise repetitions: 5 - 10/side, alternating
- Break time: Ø
- Strain increase: Gradual release of the oscillation amplitude with safe mastering of the one-legged stance with a max. five ball tosses.

Additional conscious exercises

- Cognitive: Calculating in rows of figures in one-legged stance with tossing a ball.

7. The basic exercises with the additional modules

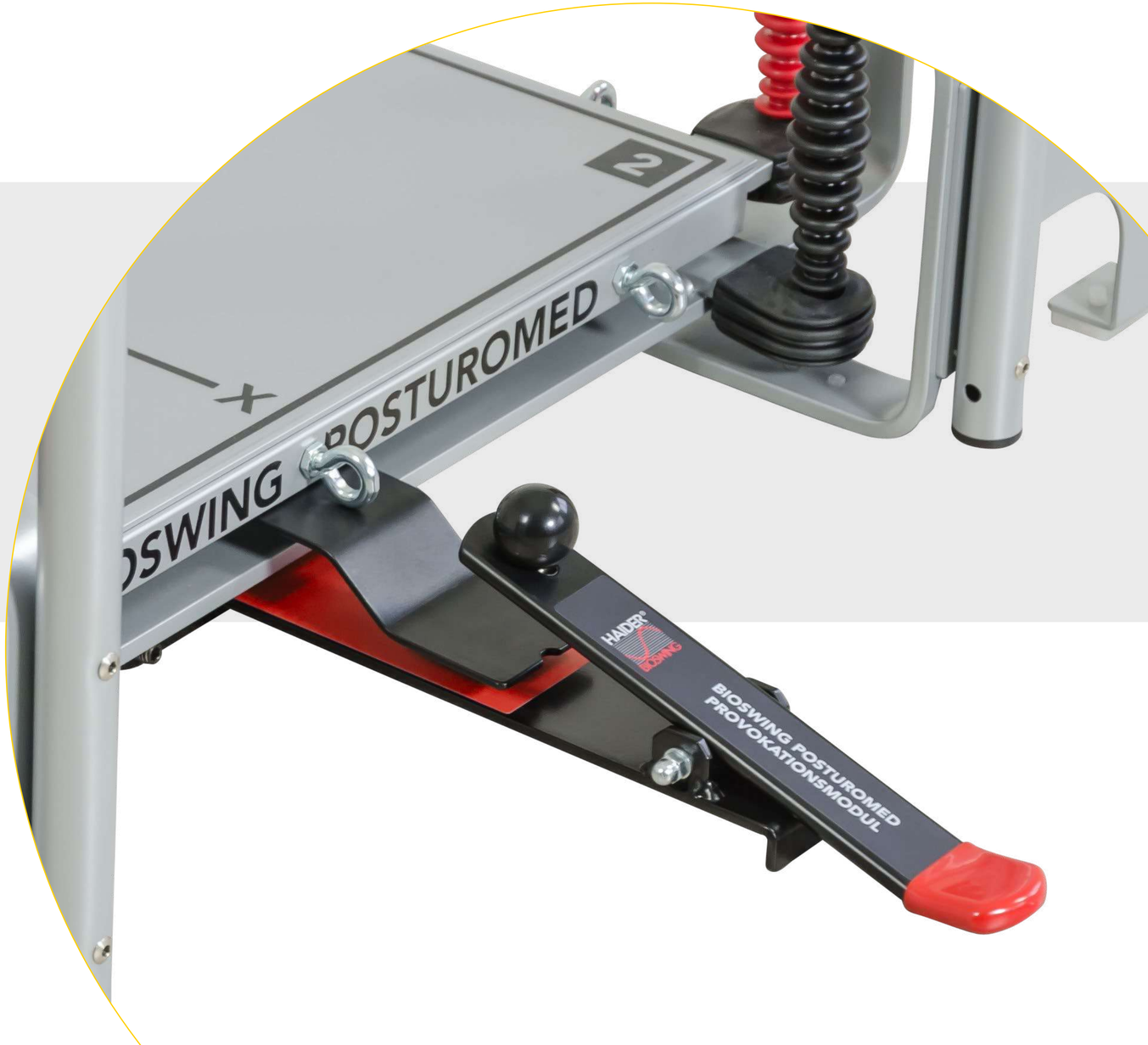
Numerous expedient additional modules are also available for the Posturomed®. It is up to your expert judgement which module should be used with your patient in which prevention or rehabilitation phase. Due to the large variety of exercises available with the additional modules, we will now introduce basic exercises for use with the additional modules.

!

The methodical principle “from the simple to the complex” applies here, meaning the complexity should not be increased until the patient has mastered the exercise!

7.1 The provocation module

The provocation module serves to deflect the oscillating platform of the Posturomed® in the x-axis for targeted feedback training (reactive training) in medio-lateral or anterior-posterior direction (depending on the patient's position on the Posturomed). The provocation module deflects the oscillating platform by 10, 20 or 30 mm and maintains this until released by the therapist's foot.



Posturomed with provocation module

7.1.1 Basic exercise 1:

Reactive training, both legs

Please direct your attention to the following substeps. First perform the exercise yourself before you instruct your patients. If necessary, adapt the exercise to your patients with respect to their indications and counterindications.

Posture

To achieve the desired therapeutic effect, it is necessary to observe the notes on establishing the best possible general posture as described in 5.1.

Basic exercise 1

Performance

The therapist triggers the provocation.

The two-legged stance should be quickly stabilised.

Patient orientation towards the Posturomed®

- The Posturomed® oscillating platform is initially deflected by 10 mm and arrested by the provocation module attached on the side.
- The patient stands with both legs in y-direction in the centre of the Posturomed® oscillating platform.
- The hands rest on the hips.

Strain parameters

- Exercise time:
  approx. 3 sec. after the start of provocation
- Exercise repetitions:
  5 - 10/provocation direction, alternating (attention: observe the provocation direction and thus the body alignment!)
- Break time: max. 5 sec.
  (time for deflecting and arresting the oscillating platform)
- Strain increase:
  Increasing deflection (20 and 30 mm) with safe and rapid stabilisation of the oscillating platform.

Additional conscious exercises

- Cognitive: Calculating in rows of figures without interruption when the impulse is triggered.

Posturomed with provocation module

7.1.2 Basic exercise 2:

Reactive training, one-legged

Please direct your attention to the following substeps. First perform the exercise yourself before you instruct your patients. If necessary, adapt the exercise to your patients with respect to their indications and counterindications.

Posture

To achieve the desired therapeutic effect, it is necessary to observe the notes on establishing the best possible general posture as described in 5.1.

Basic exercise 2

Performance

The therapist triggers the provocation.

The patient should be able to quickly stabilise the one-legged stance.

Patient orientation towards the Posturomed®

- The Posturomed® oscillating platform is initially deflected by 10 mm and arrested by the provocation module attached on the side.
- The patient stands on one leg in y-direction in the centre of the Posturomed® oscillating platform.
- The hands rest on the hips.

Strain parameters

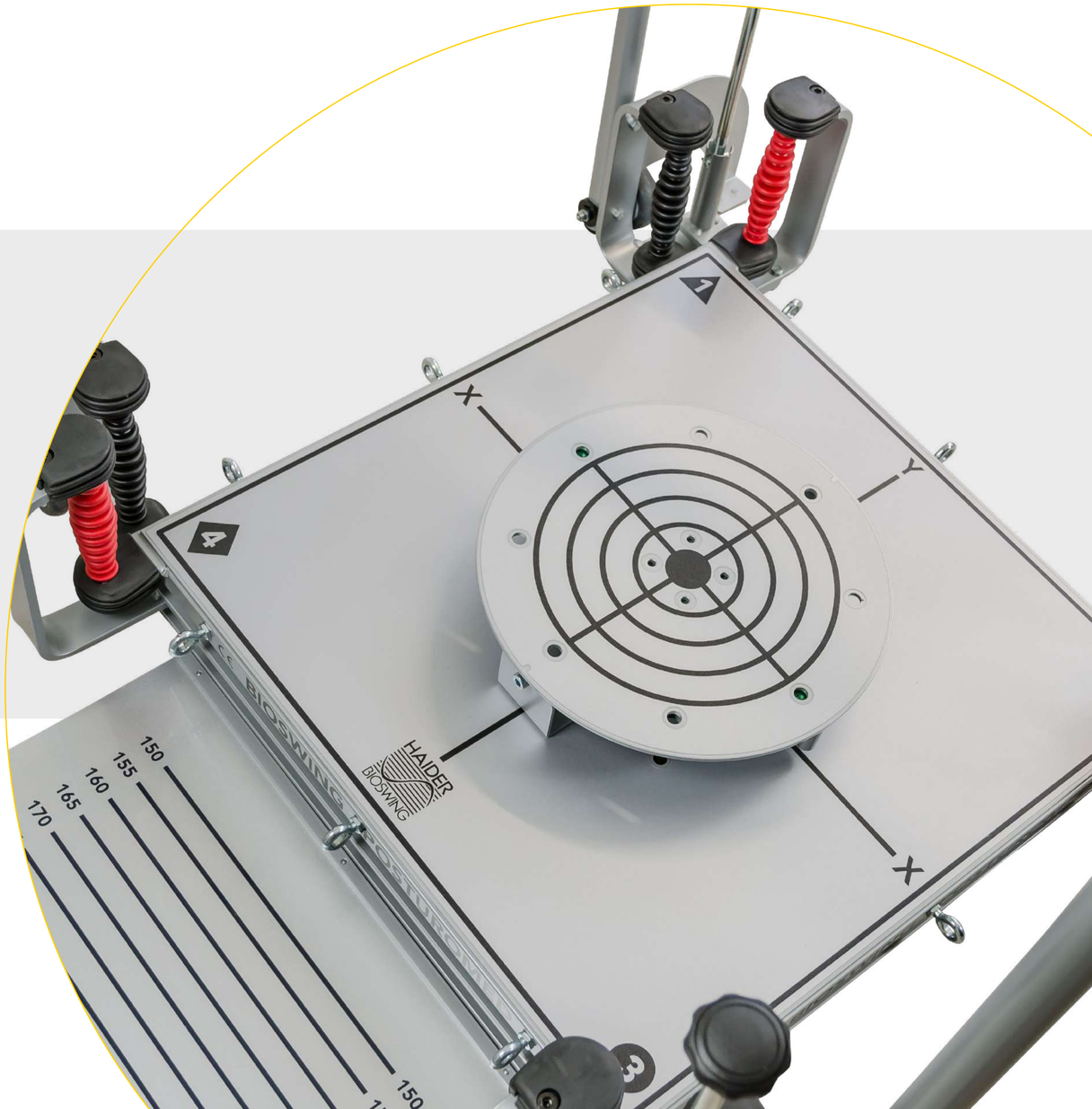
- Exercise time:
  approx. 5 sec. after the start of provocation
- Exercise repetitions:
  5 - 10/side, alternating (attention: observe the provocation direction and thus the body alignment!)
- Break time: max. 5 sec.
  (time for deflecting and arresting the oscillating platform)
- Strain increase:
  Increasing deflection (20 and 30 mm) with safe and rapid stabilisation of the oscillating platform.

Additional conscious exercises

- Cognitive: Calculating in rows of figures without interruption when the impulse is triggered.

7.2 The OSG module

With the OSG module, the sensorimotor stimulating movement impulses of the Posturomed® oscillating platform are also used outside of the horizontal level. The different function axes of the ankles with reference to their stabilisation capacity can be provoked on the OSG module depending on the alignment of the OSG module and/or the alignment of the patient's foot. To avoid contraindicated movement deflections, the tilt of the 32 cm large platform can be limited to 7° (maximum physiological angle for medial and lateral gaping of the OSG), 10°, 15° or 20°, both symmetrically and asymmetrically. In addition, the tilt axis can be horizontally aligned at a 45° angle through fixation of the Posturomed® on the unstable platform. An extension platform can also be attached on the OSG module to extend the therapy and training spectrum.



Posturomed with OSG module

7.2.1 Basic exercise 1:

Proactive training, both legs

Please direct your attention to the following substeps. First perform the exercise yourself before you instruct your patients. If necessary, adapt the exercise to your patients with respect to their indications and counterindications.

Posture

To achieve the desired therapeutic effect, it is necessary to observe the notes on establishing the best possible general posture as described in 5.1.

Basic exercise 1

Performance

The two-legged stance should be stabilised with horizontal alignment of the OSG module's oscillating platform.

Patient orientation towards the Posturomed®

- The patient stands in y-direction with both legs in the centre of the OSG module that is also arrested in y-direction on the Posturomed® oscillating platform.
- The hands rest on the hips.

Strain parameters

- Exercise time:
  approx. 10 sec.
- Exercise repetitions:
  5 - 10
- Break time:
  5 to 10 sec.
- Strain increase:
  Gradual release of the oscillation amplitude with safe mastering of the two-legged stance.

Additional conscious exercises

- Motoric: Vertical tossing of a ball; one hand tosses, both hands catch.
- Cognitive: Calculating in rows of numbers.

Posturomed with OSG module

7.2.2 Basic exercise 2:

Proactive training, one leg

Please direct your attention to the following substeps. First perform the exercise yourself before you instruct your patients. If necessary, adapt the exercise to your patients with respect to their indications and counterindications.

Posture

To achieve the desired therapeutic effect, it is necessary to observe the notes on establishing the best possible general posture as described in 5.1.

Basic exercise 2

Performance

The one-legged stance should be stabilised with horizontal alignment of the OSG module's oscillating platform.

Patient orientation towards the Posturomed®

- The patient stands on one leg in y-direction in the centre of the OSG module. This is also aligned in y-direction with its tilt axis. (Please always observe the correct alignment of the foot/feet in relation to the axis of movement when using the OSG module.)
- The hands rest on the hips.

Strain parameters

- Exercise time:
  approx. 10 sec.
- Exercise repetitions:
  5 - 10/side, alternating
- Break time:
  5 to 10 sec.
- Strain increase:
  Gradual release of the oscillation amplitude with safe mastering of the one-legged stance.

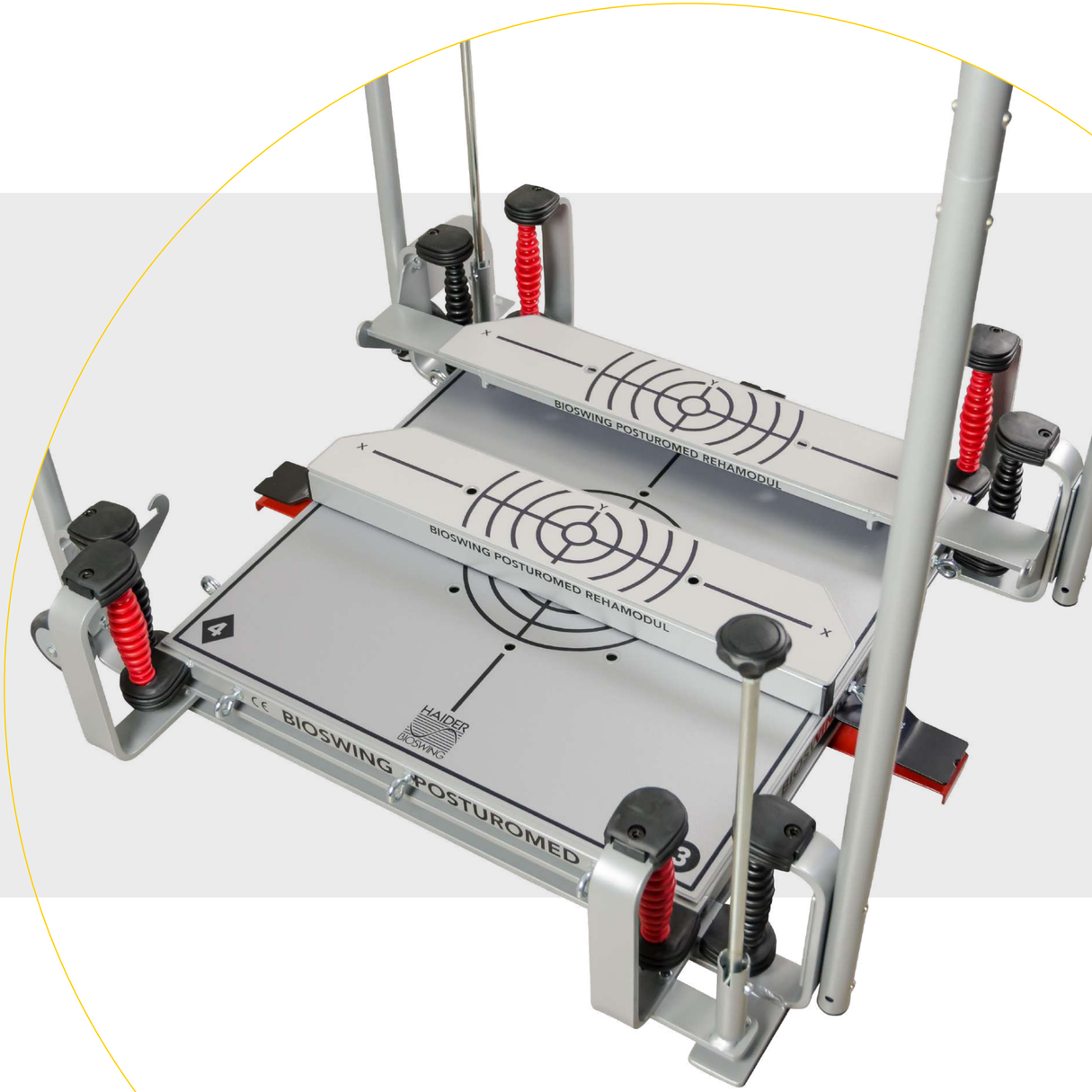
Additional conscious exercises

- Motoric: Vertical tossing of a ball; one hand tosses, both hands catch.
- Cognitive: Calculating in rows of numbers.

7.3 The rehab module

With the rehab module, your patients can perform functional stabilisation exercises for knees and pelvis in a closed kinetic chain, either in the form of isometric stabilisation exercises or as dynamic stabilisation exercises in the higher-frequency muscle synergism. With the possible partial relief and corresponding co-contraction of the joint-stabilising musculature in the closed kinetic chain of the lower extremities, the rehab module can be applied in a very early rehabilitation phase (e.g. after foot, knee or hip surgery). While the patient stands stably on one leg on the fixed element on top of the oscillating platform (fixed point), the other leg stands unstably (mobile point) on the slide element that is safely locked on the oscillating platform of the Posturomed® 202. The rehab module can be optimally combined with the intervention pull for manual resistances, with cable pulls (attention: weight adjustment in small steps with multiple-pulley cable pulls) or resistance bands.

To enable safe use of the rehab module with reference to the quality of movement, visual feedback on the maintenance of the correct movement direction is required: either mechanically via the feedback module or electronically via the MicroSwing® measuring system.



Posturomed with rehab module

7.3.1 Basic exercise 1:

Hip extension, isometric and dynamic

Please direct your attention to the following substeps. First perform the exercise yourself before you instruct your patients. If necessary, adapt the exercise to your patients with respect to their indications and counterindications.

Posture

To achieve the desired therapeutic effect, it is necessary to observe the notes on establishing the best possible general posture as described in 5.1.

Basic exercise 1

Performance 1: isometric

Starting from the starting position, a hip extension to the furthest extent possible is performed with the non-supporting leg from the hip joint and maintained for the duration of the exercise.

The pelvis and the entire torso remain level and the best possible general body posture is maintained.

Performance 2: dynamic

Starting from the starting position, active rhythmic hip extensions from the hip joint are performed with the non-supporting leg.

The pelvis and the entire torso remain level and the best possible general body posture is maintained.

Patient orientation towards the Posturomed®

- The patient stands in x-direction on the rehab module; both latches of the Posturomed® are undone.
- The patient stands with one foot centrally on the fixed element (supporting leg), and with the other foot centrally on the slide element (non-supporting leg) of the rehab module.
- The body weight is evenly distributed to both legs when releasing the strain.
- The hands rest on the hips.

Strain parameters

- Exercise time: approx. 10 sec.
- Exercise repetitions:
  5 - 10/side, alternating
- Break time: 5 to 10 sec.
- Strain increase,
  dynamic performance of exercise:

1. Increasing the frequency and decreasing the amplitude by locking the second oscillator.
2. Hip extension from the pre-tensioning position using the feedback module. Complete return motion of the oscillating platform to the resting position is to be actively prevented.
3. Hip extension against additional slight external resistance (e.g. cable pull or resistance band).

Additional conscious exercises

- Motoric: Vertical tossing of a ball;
  one hand tosses, both hands catch.
- Cognitive: Calculating
  in rows of numbers.

Posturomed with rehab module

7.3.2 Basic exercise 2:

Hip abduction, isometric and dynamic

Please direct your attention to the following substeps. First perform the exercise yourself before you instruct your patients. If necessary, adapt the exercise to your patients with respect to their indications and counterindications.

Posture

To achieve the desired therapeutic effect, it is necessary to observe the notes on establishing the best possible general posture as described in 5.1.

Basic exercise 2

Performance 1: isometric

Starting from the starting position, a hip abduction to the furthest extent possible is performed with the non-supporting leg from the hip joint and maintained for the duration of the exercise.

The pelvis and the entire torso remain level and the best possible general body posture is maintained.

Performance 2: dynamic

Starting from the starting position, active rhythmic hip abductions from the hip joint are performed with the non-supporting leg.

The pelvis and the entire torso remain level and the best possible general body posture is maintained.

Patient orientation towards the Posturomed®

- The patient stands in x-direction on the rehab module; both latches of the Posturomed® are undone.
- The patient stands with one foot centrally on the fixed element (supporting leg), and with the other foot centrally on the slide element (non-supporting leg) of the rehab module.
- The body weight is evenly distributed to both legs when releasing the strain.
- The hands rest on the hips.

Strain parameters

- Exercise time: approx. 10 sec.
- Exercise repetitions:
  5 - 10/side, alternating
- Break time: 5 to 10 sec.
- Strain increase,
  dynamic performance of exercise:

1. Increasing the frequency and decreasing the amplitude by locking the second oscillator.
2. Hip abduction from the pre-tensioning position using the feedback module. Complete return motion of the therapy platform to the neutral position is to be actively prevented.
3. Hip abduction against additional slight external resistance (e.g. cable pull or resistance band).

Additional conscious exercises

- Motoric: Vertical tossing of a ball;
  one hand tosses, both hands catch.
- Cognitive: Calculating
  in rows of numbers.

7.4 The seat module

With the Posturomed® seat module, it is possible to perform stabilisation exercises while seated. This module can be applied, for example, in geriatrics, neurology or orthopaedics if your patients are not able to perform the corresponding exercises while standing up, or if targeted stabilisation training while seated is indicated.

Posturomed with seat module

7.4.1 Basic exercise 1:

Reactive dynamic torso training with the provocation module

Please direct your attention to the following substeps. First perform the exercise yourself before you instruct your patients. If necessary, adapt the exercise to your patients with respect to their indications and counterindications.

Posture

To achieve the desired therapeutic effect, it is necessary to observe the notes on establishing the best possible general posture as described in 5.1.

Basic exercise 1

Performance

The therapist triggers the provocation.

A level seated position should be quickly stabilised.

Patient orientation towards the Posturomed®

- The Posturomed® oscillating platform with the attached seat module is deflected by 10 mm and arrested by the provocation module attached on the side.
- Depending on the indication, the patient sits in x or y-direction on the seat module, and the feet are placed on the oscillating platform.
- The hands rest on the hips.

Patient is aligned along the y-axis. The impulse direction is medio-lateral.

Patient is aligned along the x-axis. The impulse direction is anterior-posterior.

Strain parameters

- Exercise time:
  approx. 3 sec. after the start of provocation
- Exercise repetitions:
  5 - 10/provocation direction, alternating
- Break time:
  max. 5 sec. (time for deflecting and arresting the oscillating platform)
- Strain increase:
  Increasing deflection (20 and 30 mm) with safe and rapid stabilisation of the oscillating platform.

Additional conscious exercises

- Cognitive: Calculating in rows of figures without interruption when the impulse is triggered.

Posturomed with seat module

7.4.2 Basic exercise 2:

Proactive dynamic torso training

Please direct your attention to the following substeps. First perform the exercise yourself before you instruct your patients. If necessary, adapt the exercise to your patients with respect to their indications and counterindications.

Posture

To achieve the desired therapeutic effect, it is necessary to observe the notes on establishing the best possible general posture as described in 5.1.

Basic exercise 2

Performance

1. The patient performs rhythmic oscillating motions from the pelvis with stable thoracic erection in anterior-posterior direction.

2. The patient performs rhythmic oscillating motions from the pelvis with stable thoracic erection in medio-lateral direction.

Patient orientation towards the Posturomed®

- The seat module is arrested on the Posturomed® oscillating platform.
- Depending on the indication, the patient sits in y-direction on the seat module, and the feet are placed on the ground.
- The hands rest on the hips.

Strain parameters

- Exercise time:
  approx. 10 sec.
- Exercise repetitions:
  5 - 10/direction, alternating
- Break time:
  5 to 10 sec.
- Strain increase:
  Increasing the frequency and decreasing the amplitude by locking the second oscillator.

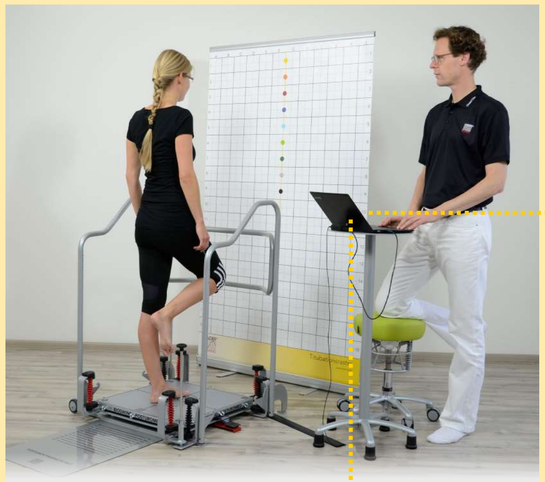
Additional conscious exercises

- Motoric: Vertical tossing of a ball; one hand tosses, both hands catch.
- Cognitive: Calculating in rows of numbers.

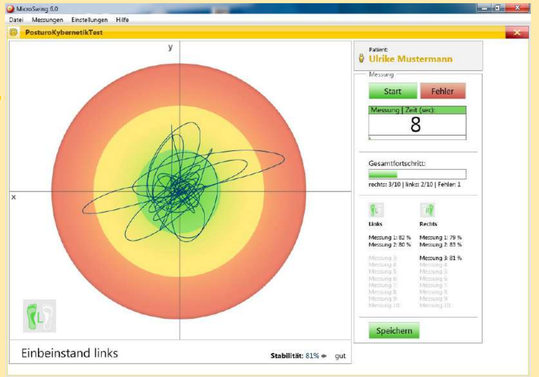
8. Objectification of the postural stabilisation quality

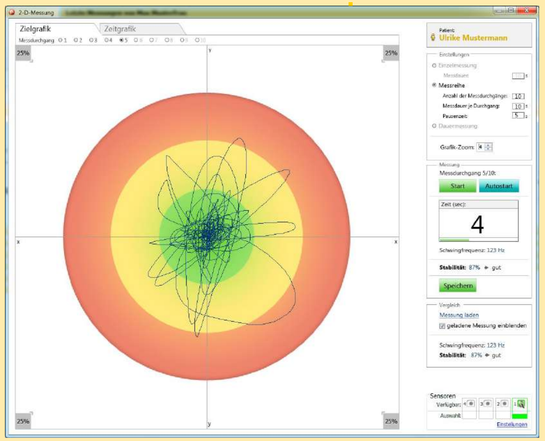
The objective display of the therapy advancements of your patient is indispensable when it comes to proving the effectiveness of the therapy!

The MicroSwing® measuring system allows you to objectively assess the oscillation quality and quantity of the Posturomed® with your patients. MicroSwing® has been specially developed for use with the BIOSWING® therapy systems. The software and hardware of the MicroSwing® measuring system comprise a highly sensitive measuring unit. It allows you to easily record, evaluate and assess the accelerations and thus the oscillation behaviour of the Posturomed®. This medical product comprises open measuring programs and standardised tests for the indirect quantitative and qualitative assessment of your patients' central motor system coordination capacity. The software interface has a clear and logical structure. It is designed for intuitive use, which is confirmed by its large acceptance in clinical application, amongst other things. Selection menus allow individual composition of different parameters – geared towards your patients. The easy export function for the saved data enables further data processing, e.g. in all standard statistics programs. MicroSwing® not only enables the indirect objective analysis of the actual state of your patient coordinated by the central motor system, but also allows optimum feedback training thanks to real-time displays.



The measuring position of the MicroSwing® measuring system when linked to the Posturomed® 202.



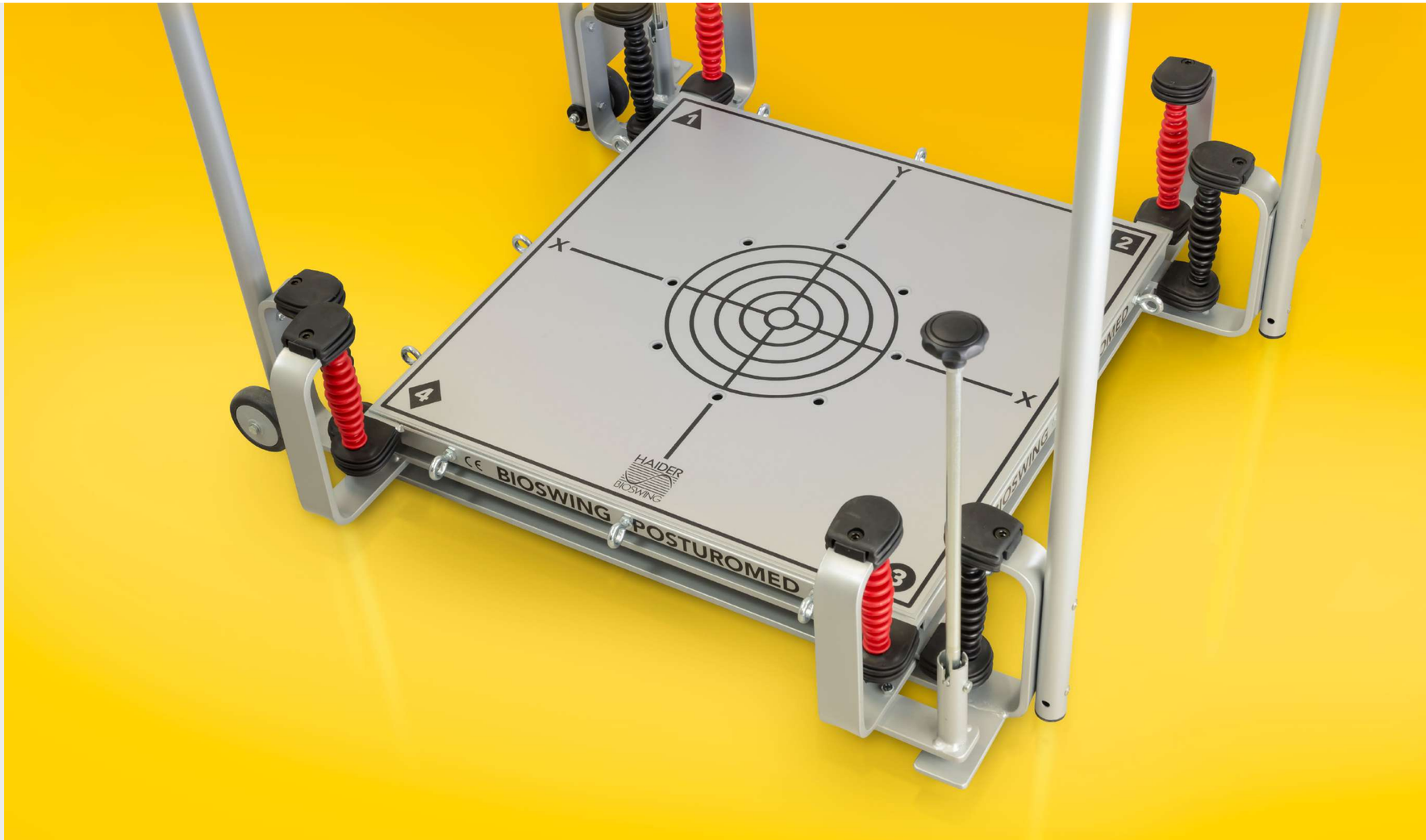


Software of the MicroSwing® measuring system. Besides the open measuring program (left fig.), in which you can implement your own measuring methodology and/or give your patients realtime feedback on their movement quality, the PosturoCyberneticsTest (fig. above) provides you with a standardised measuring method.

9. Complementary care and safety of the BIOSWING Posturomed®

For the safety of your patients and for your own safety, the BIOSWING Posturomed® is a Class 1 medical product (EU) according to MDR 2017/745. The Posturomed® consists of powder-coated steel and a plastic-coated oscillating platform. The BIOSWING Posturomed® 202 as well as the BIOSWING Posturomed® compact can be cleaned with a damp cotton cloth and disinfected with all surface disinfectants according to the VAH list (e.g. Schülke kodan wipes disinfectant wipes).

Please note that the level of safety of the device can only be kept if it is checked regularly for damage, wear and completeness. Defective or missing parts must be immediately replaced or supplemented by original parts from the manufacturer. In case of deficiency, the device can be up to repair no longer be used.



Legal data

Publisher:

HAIDER BIOSWING GmbH
D-95704 Pullenreuth
Phone: +49 (0) 9234 / 9922 0
Fax: +49 (0) 9234 / 9922 166

www.bioswing.de
info@bioswing.de

Note: All serious incidents that have occurred in connection with the product must be reported to the manufacturer and the competent authority of the Member State in which the user and / or patient is established.

Author:

Dipl.-Sportscientist Christof Otte

2nd revised edition from May 25th, 2021

For further information about HAIDER BIOSWING® therapy systems, the BIOSWING® seminar offers and current study results, please visit www.bioswing.de/therapiesysteme.