

6. The POSTUROMED and its Adjustment Options

6.1. What is the POSTUROMED

The POSTUROMED is a neuro-orthopedic therapy device with a dosable unstable therapy surface for the treatment of pathological postural reactions, particularly the functional segmental instability in load-bearing joints.



In 1992, Dr. Rašev developed a new type of active postural therapy using this therapy surface. Previous therapy surfaces did not allow for a suitable gradation of the instability of the therapy surface, which is essential for achieving good therapeutic effects.



Application of the POSTUROMED

The POSTUROMED is used in neuro-orthopedic rehabilitation and pain therapy as well as in sensorimotor training for the following purposes:

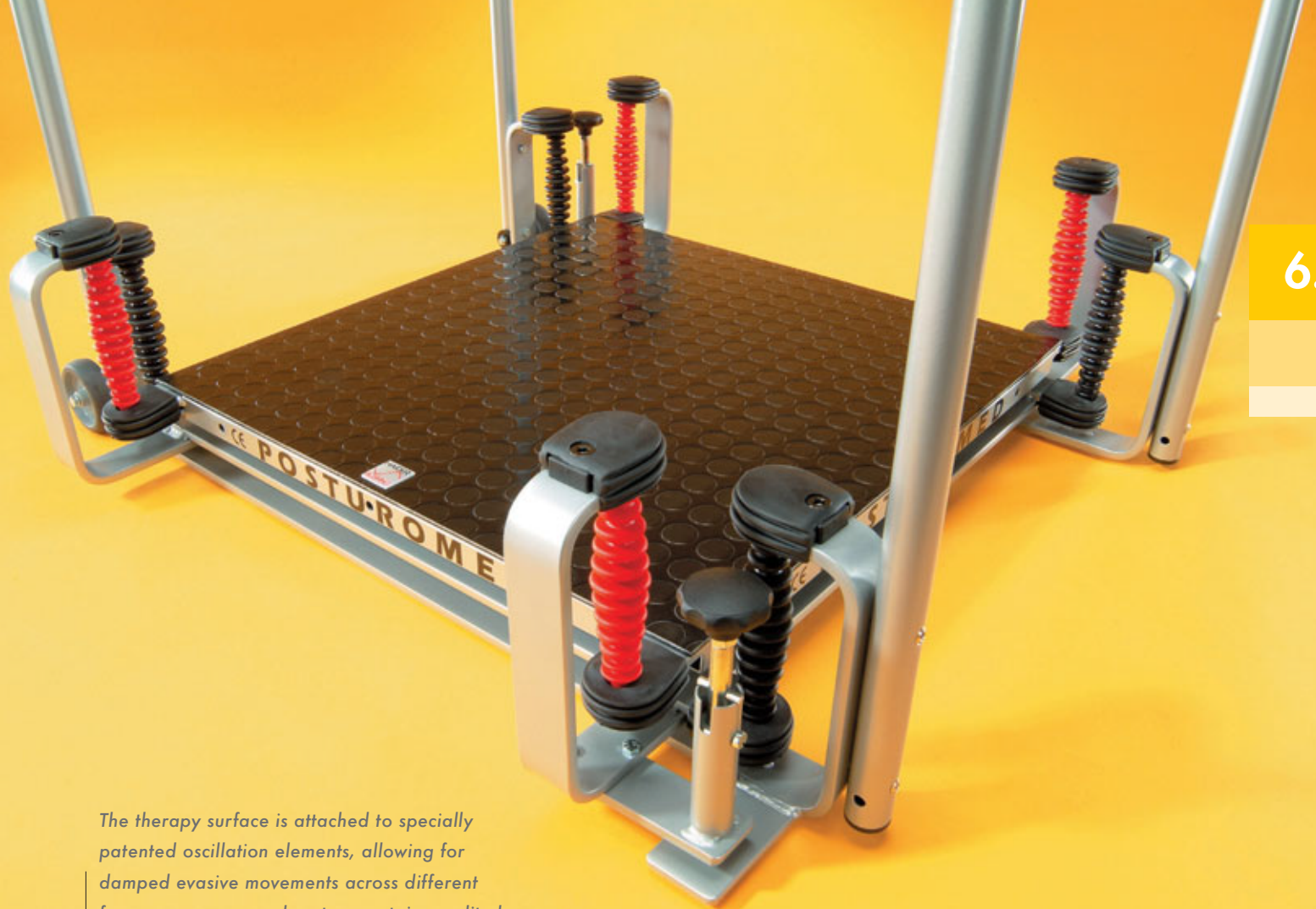
- Functional (segmental) stabilization of load-bearing joints.
- A component of pain therapy, particularly for chronic back pain and postural pain in the musculoskeletal system.
- Preventive coordination training

6.2. The Precisely Adjustable Damped Instability of the Therapy Surface

The precisely adjustable instability of the therapy surface is crucial for the dosed training of segmental coordination. Exercises on the POSTUROMED therapy surface consistently result in deflections of the surface, leading to a destabilization of the briefly assumed single-leg stance. In the next moment, the damping effect of the specially patented oscillation elements takes over, and the surface tends to return to a balanced position.

The destabilization should not be constantly excessive but rather dosed in such a way that it can be controlled by the patient, resulting in a learning effect. The primary goal is to activate segmental coordination, not the activation of polysegmental muscles.

Destabilization should occur through shifts in the body's center of gravity—such as through standardized hip flexion with a stabilized pelvis or targeted movements of the upper limbs, etc. Destabilization should not be induced by additional external stimuli (earthquakes are rare). When movements of the surface are provoked externally, this might be beneficial for certain sports but not for developing segmental coordination, which forms the essential basis for any monotonous activity performed while standing, sitting, etc.



The therapy surface is attached to specially patented oscillation elements, allowing for damped evasive movements across different frequency ranges and up to a certain amplitude.

6.3. The Brakes

The instability of the therapy surface is adjusted by simply unlocking the brake(s), which are located in the corners of the therapy surface.

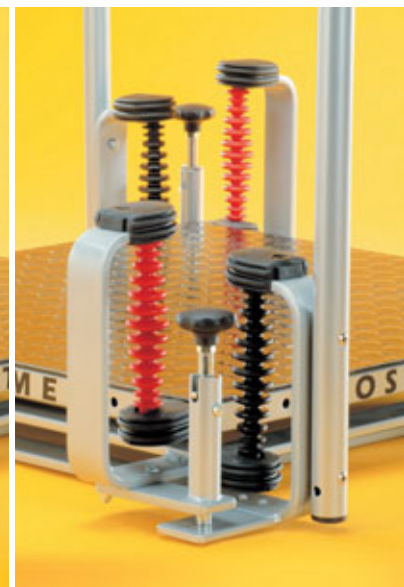
Lift the black button at the top of the brake, turn it 90 degrees, release it, and you're done.

6.4. The Safety of Exercises

During the exercises, there is never a feeling of fear or a risk of slipping. The exercises are completely safe, even for patients after a freshly implanted hip joint endoprosthesis. From the beginning of therapy in 1992 to 2004, no injuries or discomfort were ever reported during postural therapy on the POSTUROMED. An exception could be a pronounced Meniere's disease or a similar disorder of the vestibulo-cerebellar system.



Brakes: unlocked = open



Brakes: locked = closed

7. The Postural Proprioceptive Therapy (PPT) on the POSTUROMED according to Dr. Rašev

7.1. Two Components of PPT on the POSTUROMED

7.1.1. New Exercise Technique by Rašev – specifically trains “feed forward”!

Newly developed alternating exercises in the medial sagittal plane, exercises with rotation, as well as exercises with balls, Thera-Band, etc., lead to the development of feed forward during the patient’s diversion from exclusively focusing on maintaining balance in a single-leg stance. During exercises with the correct technique and dosed shifts in the center of gravity, the newly activated cybernetic postural control mechanisms for segmental coordination are automated.

7.1.2. Therapy Surface with Different Levels of Instability

– enables stepping in place while shifting body weight from one leg to the other. During the described exercises, the patient’s segmental coordination is appropriately stimulated without overwhelming them, i.e., without the patient primarily engaging the superficial polysegmental muscles for stabilizing the single-leg stance or during stepping.

Important Principle:

The standardized shift in the center of gravity with each step in place and in the single-leg stance leads to the appropriate activation of postural stabilizing control mechanisms.

7.2. General Requirements for Postural Therapy According to Rašev

- a) Before each therapy session on the POSTUROMED, functionally induced muscle imbalances must be eliminated as much as possible – further details in the course (see Chapter 13).
- b) The prerequisite for good results in postural therapy is the optimization of posture before every therapy session on the POSTUROMED.

PPT Ground Rules at a Glance

1. Lift the chest without forming a hollow back; straighten the body without pulling the abdomen forward; avoid adducting the shoulder blades.
2. Pull the shoulders downward and slightly backward.
3. The key points of the shoulder and pelvic girdle must remain as still as possible (see preparatory measures) and constantly in a horizontal plane during the exercises.
4. While stepping in place, lift the toes of the swinging leg from the first moment until the foot reaches its final position in space (see diagram).
5. Keep the calf vertically aligned and maintain a distance of 10 to 15 cm between the sole of the foot and the floor in the final position (optimal activation of hip stabilizers - mm. gluteae).
6. When moving the foot backward, the toes should touch the therapy surface of the POSTUROMED first (and not the heel or ball of the foot).
7. The SIAS (right and left) and the acromion (right and left) should show as few evasive movements as possible.
8. Constantly lift the foot in a neutral position, not in supination.
9. Always flex the swinging leg moderately abducted and in a neutral position at the hip joint; the lifted knee must not touch or cross the medial sagittal plane.
10. When throwing the ball, maintain a throwing height of approximately 60–80 cm. Throw with one hand and catch with both hands.

7.3. Ground Rules of Postural Proprioceptive Therapy on the POSTUROMED According to Rašev

7.3.1. Basic Position of Body Posture

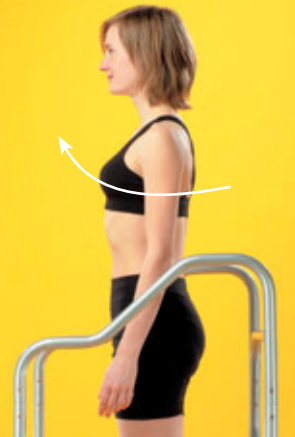
1.

Lift the chest without forming a hollow back and straighten the body without pulling the abdomen forward.

incorrect



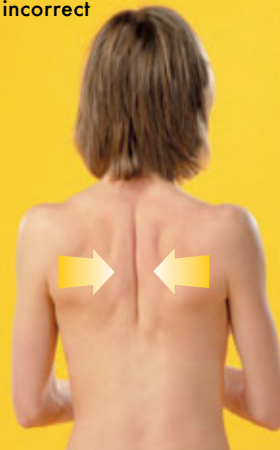
correct



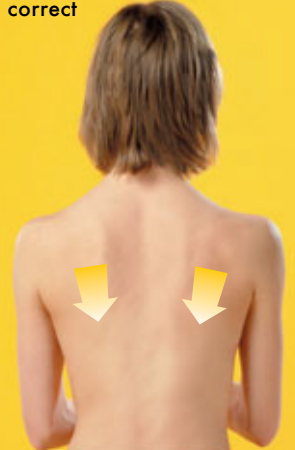
2.

Pull the shoulders downward and slightly backward. Do not adduct the shoulder blades.

incorrect



correct



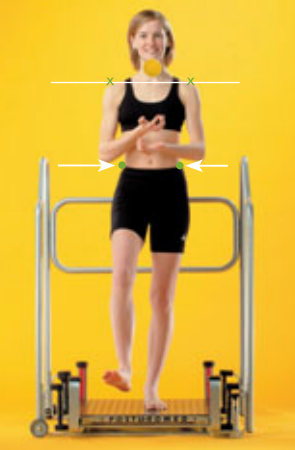
3.

The key points of the shoulder and pelvic girdle must remain as still as possible during the exercises (see preparatory measures) and always in a horizontal plane.

incorrect



correct



7.3.2. Stepping in Place

- 4.** While stepping in place, lift the toes of the swinging leg from the very first moment until the foot reaches its final position in space – see illustration.



- 5.** Keep the calf aligned vertically and maintain a distance between the sole of the foot and the floor in the final position of 10 to a maximum of 15 cm! (optimal activation of hip stabilizers - mm. glutei)

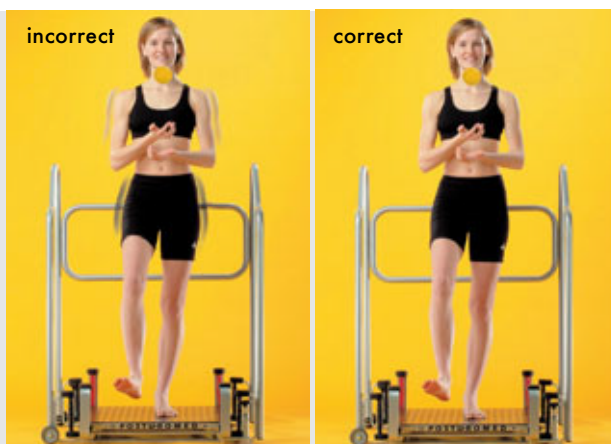


- 6.** When moving the foot backward, the toes should touch the therapy surface of the POSTUROMED first (and not the heel) – see illustration.

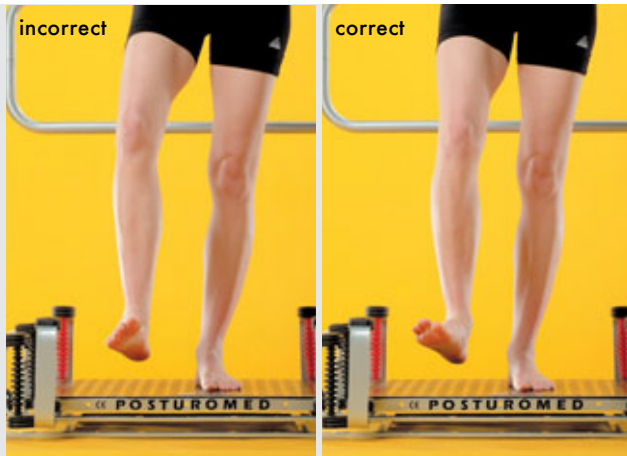


7.3.3. Single-Leg Stance

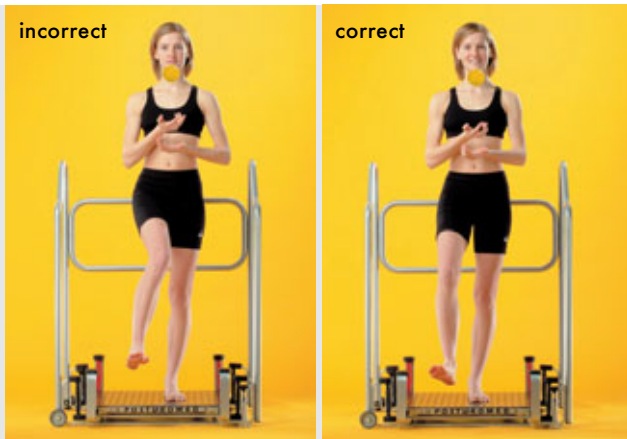
- 7.** The SIAS (right and left) and the acromion (right and left) should show as little evasive movement as possible.



8. *Constantly lift the foot in a neutral position, not in supination.*



9. *Always flex the swinging leg in moderate abduction and in a neutral position at the hip joint; the lifted knee must not touch or cross the medial sagittal plane.*



7.3.4. Throwing and Catching

10. *When throwing the ball, maintain a throwing height of approximately 60–80 cm. Throw with one hand, catch with both hands.*



8. The 7 Therapy Levels of Postural Proprioceptive Therapy (PPT) on the POSTUROMED According to Dr. Rašev

▶ Therapy Level 0

Therapy Level 0 is primarily for diagnosing postural reactions, but it is also where postural therapy begins.

During Therapy Level 0, both brakes remain engaged.

Stepping in Place

A) The patient or user stands barefoot or in thin socks on the therapy surface and begins stepping in place.

Important:

During stepping, the focus is on the standardized and appropriate shifting of the center of gravity, and therefore all basic rules must be followed.

It is particularly important to lift the foot in front of the frontal plane and not below the buttocks! The precise method of leg lifting serves the purpose of standardized shifting of the center of gravity.

If the swinging leg is lifted with the foot below the buttocks, there would be no significant shift in the center of gravity, and consequently, no substantial activation of stabilizing postural reactions.

First Sequence



First step



Second step



Third step and simultaneously a single-leg stance for 1 to a maximum of 2 seconds

Second Sequence



First step

Very important: With each step, the foot of the swinging leg must reach the same final position as in the single-leg stance! This means that during stepping in place, one must focus on maintaining the same step length.

Single-Leg Stance



B) After 3 (or 5) steps in place, hold a single-leg stance for 1 to 2 seconds.



D) If balance is lost, under no circumstances should the standing leg move abruptly. Instead, briefly hold onto the rail of the POSTUROMED, stabilize yourself, release, and then continue practicing.

C) Then take another 3 steps and hold a precisely defined single-leg stance on the other leg for 1 to a maximum of 2 seconds.

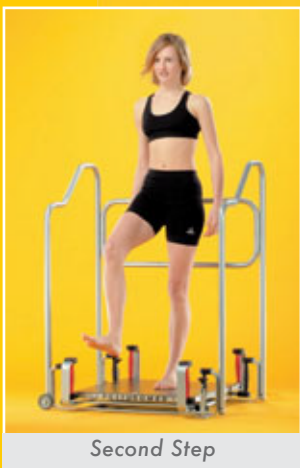
E) If you can successfully complete at least 20 seconds on the POSTUROMED without holding onto the rail, consistently alternating between 3 steps and a 2-second single-leg stance, you can proceed to Therapy Level 1 with ball throwing.



pes planus of the right foot in single-leg stance – on firm ground



well-formed arch of the same foot – on the POSTUROMED



Second Step



Third Step and simultaneously a single-leg stance for 1 to a maximum of 2 seconds



Therapy Level 1

During Therapy Level 1, both brakes remain engaged.

Therapy Technique:

The same stepping technique as in Therapy Level 0 is used, with the difference that the hands are occupied with an activity during the single-leg stance, requiring increased concentration. Anticipation – feed forward is developed.

Ball Throwing – always after achieving a stable single-leg stance!

Take a soft, lightweight foam ball with a smooth surface in one hand. Throw it in the sagittal plane to a height of approximately 60 to 80 cm, then catch it with both hands.

Note: While a tennis ball is the ideal size, its weight provokes the grasp reflex, which reduces the need for the user to focus strongly on catching, contrary to the goals of postural therapy.

First Sequence



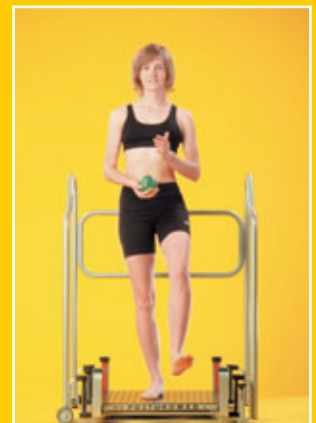
Starting Position



Foot's End Position
in the First Step



Foot's End Position
in the Second Step



Third Step and
Single-Leg Stance

First Sequence



Before catching
with both hands

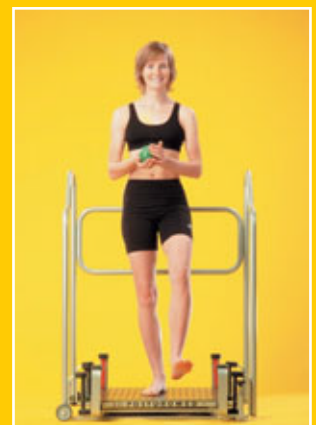


Catching
with both hands

Second Sequence and so on...



First Step



Second Step

Start with one throw, then perform 3 steps, and so on.

If the user practices at least 3 times in a row without touching the rail of the POSTUROMED or without significant oscillations in the pelvic region, they can perform 2 throws and catches in a single-leg stance, followed by another 3 steps in place, and so forth.

In the 1st, 3rd, and 5th therapy levels, throws are always performed in the medial sagittal plane.

Increase the difficulty level up to 5 throws in a stable single-leg stance.

When the technique for Therapy Level 1 is mastered flawlessly with 5 throws in a single-leg stance, proceed to Therapy Level 2.



*Throwing
with one hand*



*Third Step
and simultaneously
single-leg stance as the
starting position for
throwing*



Therapy Level 2

During Therapy Level 2, both brakes remain engaged.

Difference from the Exercise Technique in Therapy Level 1:

The same stepping technique as in Therapy Level 1 is used, but with the addition of a small yet clear rotation (10 to a maximum of 15 degrees) over the last stable segment during the single-leg stance.



Example of an
Appropriate Rotation
Over the Lumbosacral
Transition

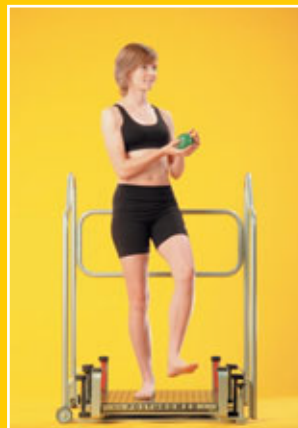
Summary:

From the neutral position of the body in a single-leg stance, rotate approximately 10–15 degrees over the last stable segment (e.g., the knee, pelvis, or shoulder line) to one side – always during a stable single-leg stance.

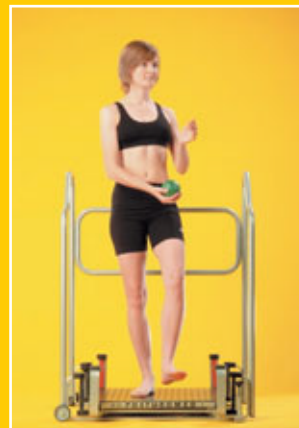
First Sequence



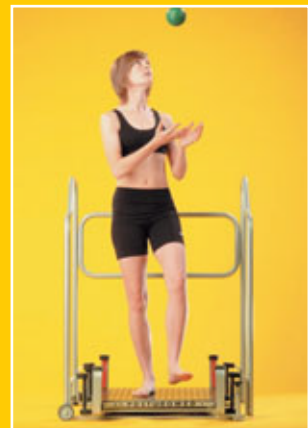
Single-leg stance after
three steps in place



Rotation

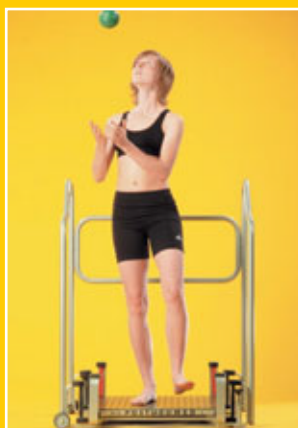


Preparing for the throw

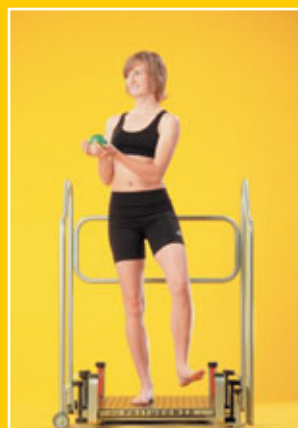


Throw

First Sequence



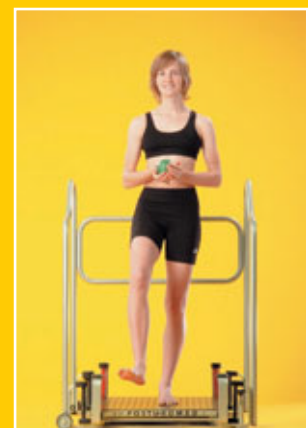
Throw



Catch with both hands



Return to the neutral
position



First step

Second Sequence

In the final position, the rotation must first be stopped and well stabilized.

Then throw with one hand, catch with both hands, and rotate again about 10–15 degrees from the medial sagittal plane to the other side.

This is followed by another throw with one hand and catching with both hands.

Then take 3 steps in place, and the entire sequence is repeated on the other leg.

If, on the POSTUROMED, the following sequence can be performed well in a single-leg stance for at least 30 seconds without needing support: "Neutral position – rotation – throw – rotation – throw – back to neutral position," the exercise is extended: After the second throw, rotate a third time through the neutral position to the other side and then throw a third time. Afterward, take 3 steps in place, and the entire sequence is repeated again.

The number of throws in the exercises of Therapy Levels 2, 4, and 6 is increased to 6 throws. Alternating – right, left, right, left, right, left. The movements should not be slow but rather brisk.

- **Only when the technique of Therapy Level 2 is mastered flawlessly should you move on to Therapy Level 3.**



Catch with both hands



Rotation



Preparing for the throw



Second step



Third step and simultaneously single-leg stance as the starting position for throwing

▶ **Therapy Level 3**

During Therapy Level 3, one brake is open and one brake is engaged.

The exercise technique is identical to Therapy Level 1.

Increase the difficulty level from one throw to five throws in a single-leg stance.

- Only when this technique is mastered flawlessly with 5 throws should you proceed to Therapy Level 4.

▶ **Therapy Level 4**

During Therapy Level 4, one brake is open and one brake is engaged.

The therapy technique is identical to Therapy Level 2.

Always throw only after performing the minimal, but relatively fast and well-stabilized rotation over the last stable body segment (rotation over the knee, pelvis, or shoulder girdle line), as in Therapy Level 2.

Increase the difficulty level from two throws to six throws in a single-leg stance.

- Only when this technique is mastered flawlessly should you proceed to Therapy Level 5.

▶ **Therapy Level 5**

During Therapy Level 5, both brakes are open.

The therapy technique is identical to Therapy Level 1.

Increase the difficulty level from one throw to five throws in a single-leg stance.

▶ **Therapy Level 6**

During Therapy Level 6, both brakes are open.

The therapy technique is identical to Therapy Level 2.

Increase the difficulty level from two throws to six throws in a single-leg stance.
(This 6th therapy level is typically achieved by only about 10% of patients.)

▶ **Therapy Level 7**

During Therapy Level 7, the vertical exercise component is introduced – further details are provided in the course.

7 Therapy Levels at a Glance

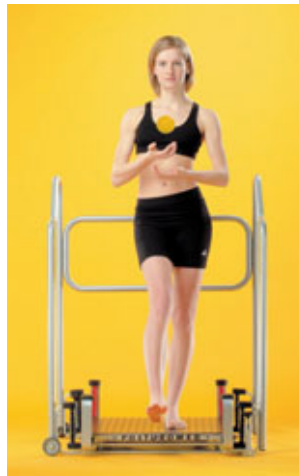
Therapy Levels	Brakes	Exercise Technique	Number of Throws
0	Both engaged	Stepping in place, single-leg stance...	0
1	Both engaged	Throwing and catching in the medial sagittal plane	1 to 5
2	Both engaged	Throwing and catching after rotation	2 to 6
3	One brake open	Throwing and catching in the medial sagittal plane	1 to 5
4	One brake open	Throwing and catching after rotation over a specific segment	2 to 6
5	Both brakes open	Throwing and catching in the medial sagittal plane	1 to 5
6	Both brakes open	Throwing and catching after rotation	2 to 6
7	Both brakes open	Throwing, catching, and the vertical component	1 to 5

9. The Most Common Errors During Exercises

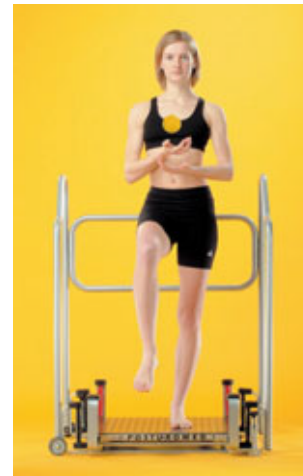
There are several sources of errors that can influence the results of postural therapy on the POSTUROMED. This publication cannot cover all potential errors in detail; they are thoroughly explained in the course along with their corrections.



• The pelvis is incorrectly positioned in an inclined position; the oblique abdominal muscles on the right are hyperactive.



• Excessive adduction of the thigh.



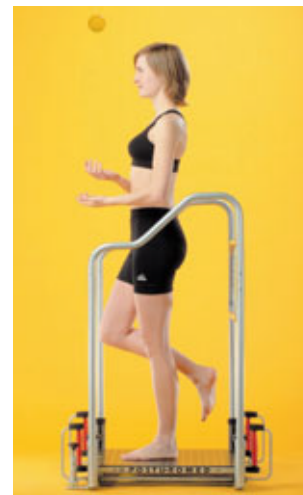
• The toes of the swinging leg droop.



• The pelvis deviates too far to the right – poor activation of the pelvic stabilizers.



• The swinging leg is lifted too high.



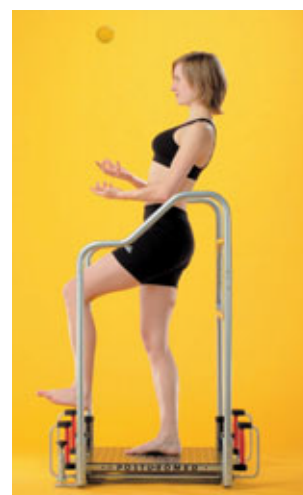
• The swinging leg is barely lifted – no shifting of the center of gravity – a very common error.



• Poor positioning of the knee joint in the swinging leg.



• The lower leg is not held vertically.



• Poor trunk posture in the starting position – backward inclination of the trunk.

10. Indications and Contraindications for Postural Proprioceptive Therapy (PPT)

9.

10.

11.

10.1. Clinical Indications for Postural Proprioceptive Therapy

1. Functional instability in load-bearing joints – knee joint, ankle joint, spine, etc.
2. Back pain caused by postural issues – the most common type of back pain.
3. All conditions following spinal surgery, knee surgery, and surgeries on load-bearing joints.
4. Conditions after implantation of hip or knee joint prostheses.
5. Joint hypermobility and muscle hypotonia with functional instability in load-bearing joints.
6. Postural weaknesses and misalignments of the trunk, especially in adolescents.
7. Incomplete flaccid paralysis in the spinal region and load-bearing joints.
8. Movement disorders of the cervical spine after “whiplash injuries,” provided suitable preparatory measures are taken.
9. Fibromyalgia, as part of a holistic postural therapy.

10. Tinnitus, if caused by dysfunction of the cervical spine.

11. All neurological and orthopedic conditions with clinical signs of inhibition of synergistic muscle activation in postural reactions.

Important: Postural therapy on the POSTUROMED should always be part of a holistic neuro-orthopedic rehabilitation program and never the sole therapy for a sensorimotor system that is not suitably prepared. More details are provided in the course on Postural Proprioceptive Therapy on the POSTUROMED.

10.2. Contraindications

Significant increase in pain during therapy on the POSTUROMED.

- Acute inflammation of load-bearing joints or their soft tissues.
- Spasticity of the muscles in load-bearing joints.
- Ankylosis of load-bearing joints.
- Ménière’s disease or severe defects in vestibular input.

11. Quality Assurance of Postural Therapy

Clinical quality assurance ensures that the patient achieves an objectively higher therapy level at the end of therapy than at the start of postural therapy. The table on the penultimate page is used for daily clinical quality assurance. Additionally,

objectification through apparatus-based 3D techniques with frequency analysis of evasive movements in body regions, as described in Chapter 3.4, is also possible.

12. The Holistic Concept of Postural Therapies

(Neuro-orthopedic = Sensorimotor Pain Therapy)

Pain of postural etiology should not be understood as a pathomorphological destructive disease and therefore should not be treated with anti-inflammatory or centrally acting pain medications.

Postural pain signals a dysfunction of control mechanisms, a clinical overload of motor function. Thus, the first adequate pain therapy is an attempt to re-program postural responses. However, the sensorimotor system must be prepared for this through suitable physical measures. Even visceral influences should be considered, with a weight adjusted for individual cases, based on the current state of motivation, the neurohumoral system, etc.

Holism lies in the proper assessment of the significance of various clinical symptoms, based on individual history, at a specific time, and in the evaluation of the basal and current reactivity of the sensorimotor system.

Holism does not mean the actionistic application of some trendy physical techniques or methods that are currently highlighted in the media for various commercial reasons.

12.1. Primary Prevention of Postural Disorders

Preventive coordination training – especially for segmental discoordination using the POSTUROMED and PROPRIOMED.

If elements of exercises on the POSTUROMED or with the PROPRIOMED and similar devices are routinely introduced into school sports and the preventive training programs of so-called health centers, we can speak of appropriate primary prevention of postural disorders.

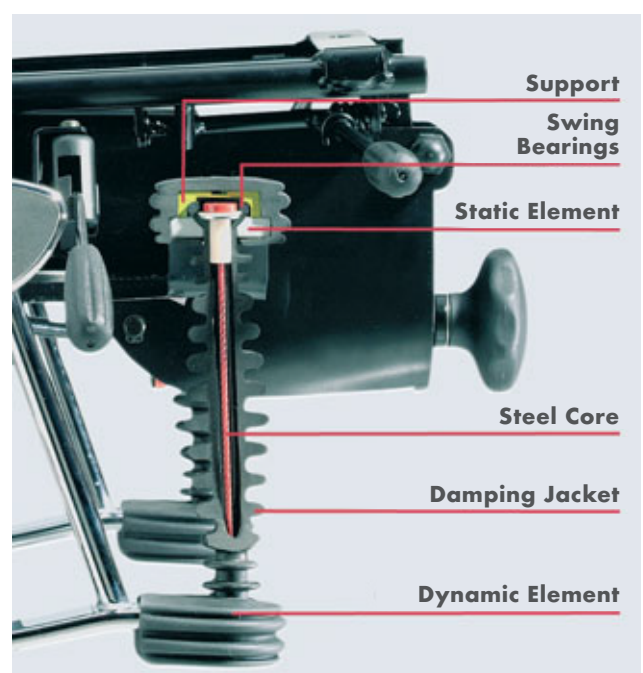
12.2. Secondary Prevention of Postural Disorders

The most frequent question after successful treatment of back pain is: "Which office chair would you recommend for me?"

The answer is clear and can be summarized in a few points:

The quality of the seat surface: It should counteract the formation of monotonous isometric muscle tension. The seat surface must not be rigid; it should allow a certain degree of freedom of movement. However, this is the main challenge with sitting on various movable seat surfaces. Many movable seat surfaces are marketed as "dynamic" seat surfaces. However, most do not allow for stable eye positioning during activities requiring high concentration, while simultaneously permitting free movements of the pelvic region, which should stimulate intersegmental coordination.

The BIOSWING Health Seating System



The most important requirement for the seat surface:

It must respond to even minor shifts in the center of gravity with damped evasive movements, ensuring that isometric muscle tension in the back area is constantly interrupted. Even a small hand movement should suffice.

However, the seat surface must not tilt or create a feeling of instability while sitting. It is also insufficient if the seat surface moves only during active, conscious movements of the trunk. Vertical evasive movements disturb the optical analyzer during focused work.

The solution is a horizontally damped, movable seat surface on which the user never feels unstable. It allows evasive movements up to a certain amplitude.

- The projection of the center of gravity remains in the so-called neutral zone.
- The seat surface enables anterior, neutral, and posterior sitting positions through its specially designed adaptive movement.
- The seat surface is mounted on patented oscillation elements.

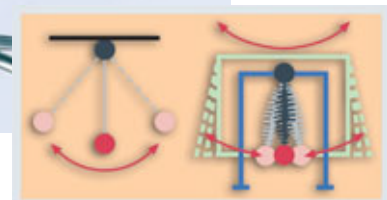
12.2.1. Sitting – BIOSWING Seating Systems – Advantages of New Ergonomics with Neurophysiological Principles

For over 20 years, BIOSWING office and seating chairs have represented a globally unique standard of quality—not because of design or extravagant crocodile-leather upholstery but because they feature truly dynamic seat surfaces that counteract the development of isometric tension in the long back muscles, thereby addressing one of the most common causes of back pain.

Furthermore, BIOSWING chairs meet all modern ergonomic requirements and have, for example, been awarded the Bavarian State Prize.



The Bioswing Pendulum Principle enables dynamic balance.



13. Courses in the Continuing Education Series: Neuro-Orthopedic Rehabilitation and Sensorimotor Pain Therapy

For optimal pain therapy in the musculoskeletal system and proper facilitation of segmental coordination in postural reactions on the POSTUROMED and with the PROPRIOMED, a thorough understanding of the cybernetic control of motor functions (clinical applied neurophysiology of the movement system – Vélé), the diagnosis of muscle tone imbalances, the biomechanics of joints, and the development of postural responses (Vojta) is essential.

Therefore, we recommend the following courses as part of the holistic concept of neuro-orthopedic rehabilitation and sensorimotor pain therapy based on the Prague School:

Some recommended courses:

- Postural (proprioceptive) therapy of segmental instability on the POSTUROMED and with the PROPRIOMED according to Dr. Rašev
- Myofascial release soft tissue techniques, also known as muscle energy techniques (MET)
- Stretching techniques – categorized according to Janda, neurophysiology, indications, practice
- Postural ontogenesis for manual therapists and physiotherapists
- Breathing techniques related to postural responses (according to Vélé – Charles University)

The holistic concept of diagnosing and treating movement disorders was systematized at the Department of Rehabilitation and Physiotherapy at Charles University. This new approach to holistic treatment is taught in the continuing education series “Neuro-Orthopedic Rehabilitation of Motor Functions and Sensorimotor Pain Therapy” by Dr. Rašev and lecturers from Charles University in Prague.

For further information and registration, contact:

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Please use this form as a template and record your therapy results in this table to evaluate treatment success.



Table for Quality Assurance of Postural Therapy with the POSTUROMED

Patient: Name, First Name

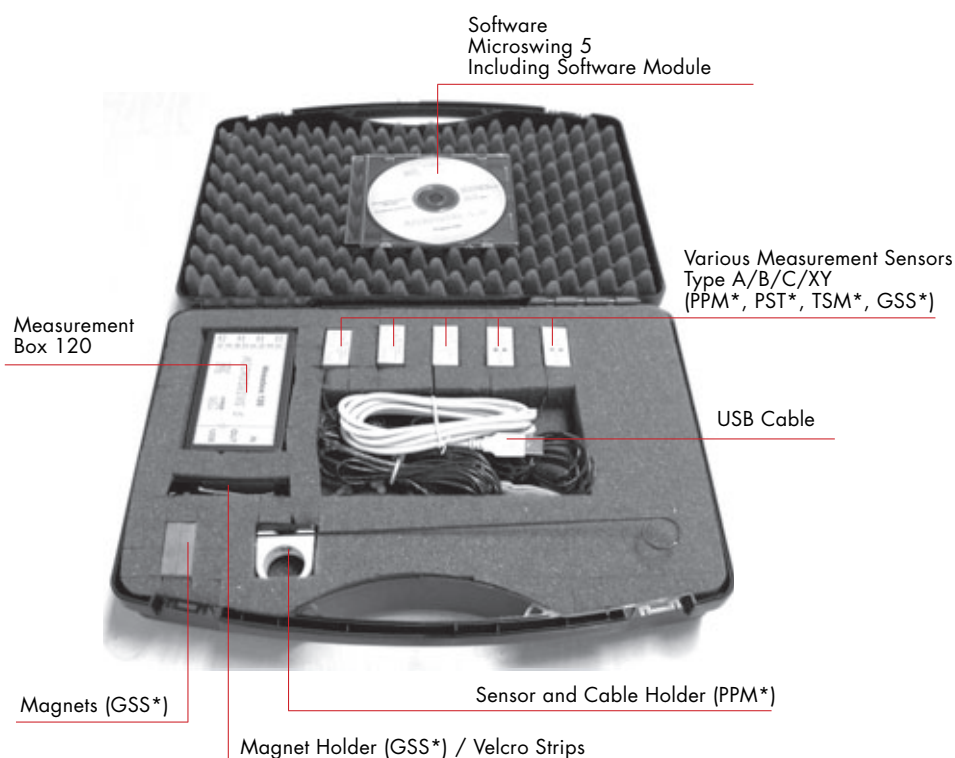
Evaluation of Evasive Movements: Up to 1 cm = 1 Up to 2.5 cm = 2 Up to 4 cm = 3 Up to 7 cm = 4 Over 7 cm = 5

6 Date	Therapy Level 1		Therapy Level 2		Therapy Level 3		Therapy Level 4		Therapy Level 5		Therapy Level 6		9 GD in Min.	15 Remarks				
	14	10	11	2-6	1-5	12	2-6	13	1-5	14	2-6	W			Ü	AR	AL	SR

- 6 Current date of the therapy
- 9 GD = Total duration of exercise sessions in minutes
- 10 Evasive movement AR = acromion right
- 11 Evasive movement AL = acromion left
- 12 Evasive movement SR = spina iliaca anterior superior right
- 13 Evasive movement SL = spina iliaca anterior superior left
- 14 Number of throws
- 15 General impression of the patient

The New MICROSWING Measurement System by HAIDER

Contents of the Transport Case Including Components for the Microswing Measurement System:

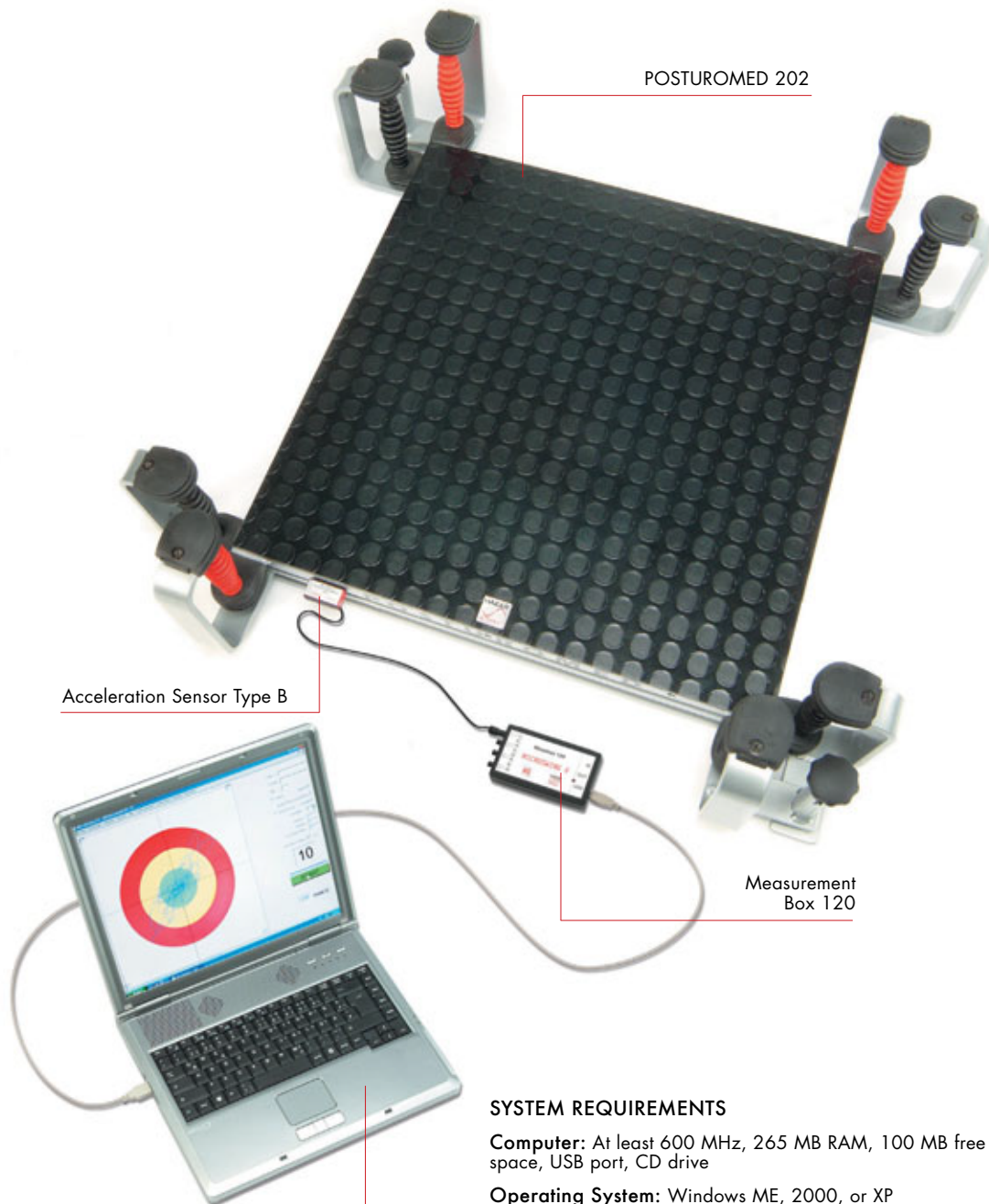


(*PPM = Propriomed / PST = Posturomed / TSM = Torsiomed / GSS = Seating System)

For motion analysis, MICROSWING collects its data using ultra-sensitive acceleration sensors. The measurement electronics feature 8 analog and 4 digital input channels as well as 4 digital output channels. The program software includes data acquisition and patient records, data evaluation, and comparison. The clearly structured interface is user-friendly.

The database can be customized to specific requirements, and its export function ensures further processing with other programs.

The new MICROSWING measurement system is a particularly valuable tool for clinics, practices, research, and training centers thanks to its real-time display.



POSTUROMED 202

Acceleration Sensor Type B

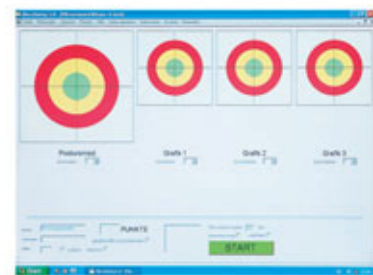
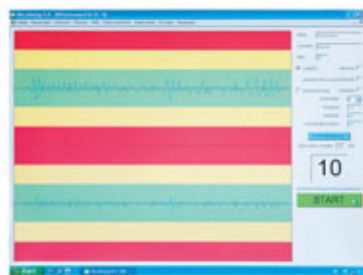
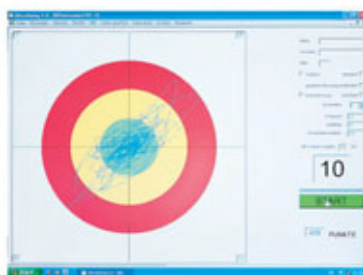
Measurement Box 120

SYSTEM REQUIREMENTS

Computer: At least 600 MHz, 265 MB RAM, 100 MB free disk space, USB port, CD drive

Operating System: Windows ME, 2000, or XP

Recommendation: Graphics resolution 1024 x 768 True Color, inkjet printer



Various graphical display options make it easier to interpret the data.



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