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Get moving

Dear readers,

This issue of pt focuses on "Stable and mobile". According to the Duden dictionary, stability means being constant or fixed and mobility means being mobile. At first glance, the two together appear to be opposites. This is not the case for humans, as good body stability is required to remain stable in our living environment.

to be mobile. While most injuries or illnesses to the lower extremities restrict the mobility of those affected. massively restrict the upper extremity, everyday movements and activities in particular are severely impaired. Of course, the stabilizing and moving, coordinating trunk should not go unmentioned at this point. The patient's "stable psyche" should also be considered from a holistic perspective. After all, it is no secret that thoughts, fears and anxieties influence motor skills. Posture and movement are not just mechanical processes, but also a psychomotor expression of our inner self.

Education and exercise are effective physiotherapeutic approaches for this. There is sufficient evidence for this. However, a great deal of effort is still required, as the diagnosis, interpretation and consideration of psychosocial risks is not yet deeply enough rooted in German physiotherapy. Very few of us have learned it during our training. This area has been constant for too long, and now things are finally starting to move (1, 2).

I wish you a good balance of stability and mobility.

Doreen Richter

Your

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2 Boßmann T. 2019 onset into the future of physiotherapy. Professional and an educational policyasus knacksus. Z. f. Physiotherapists 71, 12:86-9
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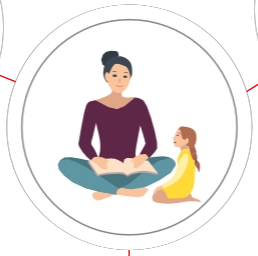
For the sake of readability, the pt does not use all genders simultaneously. All persons of all genders are treated equally.

For reasons of gender equality, male and female designations apply.

P POLITICS

D DIALOGUE



N NEWS & PEOPLE

T THERAPY SUBACROMIAL PAIN SYNDROME

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RPUNKT
d mobile

F RESEARCH & EVIDENCE

L TEACHING

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S SERVICE

BRAIN MASSAGE

OUR FOCUS IN 2020

ZEITSCHRIFT FÜR PHYSIO THERAPEUTEN

JANUARY
Brain in view

FEBRUARY
Stable and mobile

MARCH
CircleRun

APRIL
Nervous tickle

MAY
Hands off

JUNE
Return to ...

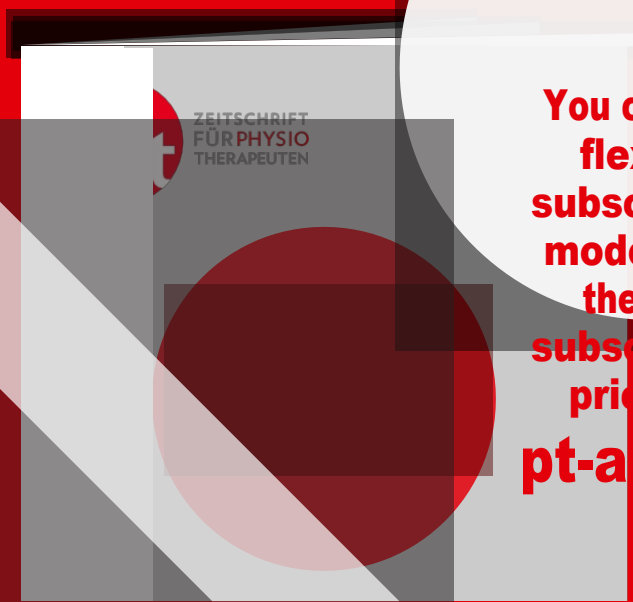
JULY
Therapy 4.0?

AUGUST
Cha
in the

OCTOBER
Everything under control

NOVEMBER
Smoothly

DECEMBER



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Neuroorthopaedic therapy for hereditary spastic paraplegia

The activity shapes the structure

A contribution from Renata Horst

The core idea is that functional activities form structures. The aim of the therapy is for the patient to learn to act rather than just being treated. The therapist uses manual therapeutic knowledge and neurophysiological principles to promote the plasticity of the brain.
"Reset the Brain" is the strategy.

People are the concept

Knowledge of physiological and pathophysiological processes is fundamental to the design of therapy. It is crucial to know which body structures need to function and how, so that people can organize safe and economical motor strategies in everyday life. Neuroorthopaedic therapy according to
N.A.P. (neuroorthopaedic activity-dependent plasticity) is oriented towards the needs and potentials of the individual and builds a bridge between orthopaedics and neurology (1-3).

HSP - a neurodegenerative disease

Hereditary spastic paraplegia (HSP) is a genetic neurodegenerative disease. Noxae (nerve toxins) destroy atlastin (protein). This leads to degeneration of the long corticospinal tracts of the first motor neuron, which causes gait disorders (4). This leads to mitochondrial dys-
function through the destruction of the cell membrane. The oxidative stress causes a reduced, retrograde, axoplasmic flow (5). A causal therapy is not yet possible. One

distinguishes "pure" HSP, i.e. simple courses, from "complicated" courses.

1. pure HSP: The main symptoms are gait disorders characterized by muscle stiffness. Frequent stumbling, especially on uneven ground, is a major symptom In addition, there is urinary incontinence despite a strong urge to urinate and back pain.

2. Complicated courses: If more than one person is affected, visual disturbances, muscle cramps, paralysis and cognitive impairment may occur.

Case study

The 50-year-old patient, Ms. K., a physiotherapist by profession, registered as a test subject for a clinical course. She was admitted to a clinic as an emergency in January 2018 due to acute respiratory distress and severe swallowing difficulties. She was also barely able to lift her arms and walking was virtually impossible. Botox intoxication was diagnosed and treatment with pyridostigmine meant that she was able to lift her arms up to 90 degrees within 30 minutes and was able to walk again to some extent. The patient was also successfully treated by a speech therapist for her breathing and swallowing disorders.

Medical history

Ms. K. first noticed 16 years ago that she was stumbling while walking. The first suspected diagnosis was multiple sclerosis. She was initially treated with glucocorticoids. Her symp- toms in her legs worsened
and she also developed tingling palsies in her hands. The doctor diagnosed a herniated disc in the amount of

C5-6 with spinal cord compression. The patient was surgically treated with a plastic implant. Initially, her gait disorders improved. After one year, the problems returned.
problems, however. Two years

Later, bending
spasticity in the legs, which were treated with Baclofen. The patients
reported that she felt drained of energy and tired quickly. After another two years, she was diagnosed with HSP. Since then, she has had additional injections of botolinum toxin

those in a hi
Hereditary spastic paraplegia (HSP) is one of the genetically determined neurological disorders.
degenerative diseases. With a
In the case of "pure" HSP, gait disorders are in the foreground, while more complicated courses are accompanied by numbness and cognitive impairments. The case study shows the therapy strategy based on the core idea that "activity shapes

the structure".

into the legs, as well as muscle relaxants (Tolperison). In January 2018, the patient came to the clinic as an emergency with acute respiratory distress and severe swallowing difficulties as a result of Botox poisoning.

Restrictions in everyday life (activity level/participation level)

In April 2018, Ms. K. was still suffering from shortness of breath when walking. Climbing stairs was very difficult for her and was not possible without a handrail. She still had difficulty swallowing and could barely lift her arms to lift and carry objects. She also found supporting activities difficult. It was not possible for her to work as a physiotherapist at this time.

Hypothesis

Upper motor neuron syndrome (UMNS) is associated with plus and minus symptoms. Muscle weaknesses of the postural synergies and the associated tissue stiffness are probably the main cause of the impairments in the patient's everyday life (6).

The Upper Motor - Neuron syndrome goes with plus and minus symptoms accompanied.

Investigations

The gait analysis showed a significantly reduced stride length on the first day. It was eleven centimeters on the right and 23 centimeters on the left. There was a strong forward torso tilt with a downward gaze, the patient showed hardly any arm swing, as well as a strong hip flexion and internal rotation. The feet were strongly supinated and the heels did not reach the ground. The gait speed during 10-meter walk test was 0.33 meters per second.

In the Rivermead Visual Gait Assessment, Ms. K. scored 30 points for the right lower limb and 29 out of 59 for the left side. The tests for sen- sibility and depth sensitivity were without findings.

The muscle function tests (MFT) showed reduced strength (MFT one to two) of the extensor synergy (plantar flexors, knee flexors, hip extensors/abductors). In contrast, the strength values of the flexor synergy (dorsal extensors, knee extensors and hip flexors) were sufficient (MFT three to four). The mobility tests of the contractile and non-contractile structures revealed movement restrictions in the dorsiflexion of the foot. During transfer to the prone position, the patient showed sufficient hip and knee extension. The dorsal non-contractile structures showed reduced mobility (slump test/finger-to-floor distance). The patient stated that she could only walk with great effort. Climbing stairs was only possible with a handrail. She was unable to go for longer walks with her dog.

Goals

Table 1 shows an overview of the treatment goals for the patient.

Interventions

The patient received one hour of therapy on three consecutive days, which also included a medical history, tests and documentation. Three exercises were carried out on each of these days. Table 2 shows an example of the course of the first day.

Table 1 Therapy goals

Goals at activity level	Goals at body structure/function level
To choke less when eating.	Promotes elasticity of the back extensors, auxiliary respiratory muscles, hip flexors, adductors, internal rotators, knee flexors, plantar flexors.
To be able to go for longer walks with the dog without getting tired.	Endurance strength of the hip external rotators, abductors, -The foot is used to train the extensors, forefoot stabilizers and intrinsic foot muscles.
be sure of the quantities	Promoting the elasticity of the shoulder's internal rotators and adductors, -extensors.
to climb stairs without d.	Endurance strength of the shoulder external rotators and abductors, -flexors.
for transfers and overhead activities .	Promotion of connective tissue mobility to enable nerve gliding.
other therapist on a part-time basis to provide therapy.	Support for diaphragmatic breathing (attenuation of sympathetic tone).
	Achieve an increase in cardiopulmonary performance.

To lead groups in the profession as a physical occupation

Table 2 Therapy course first day

Exercise 1			
Why?	**Where?**	**What?**	**How?**
The objective of the exercise	Organization of the therapy situation	What is the goal of the movement, where should the movement go?	Methods: How does the therapist promote the execution of the action?
Connective tissue mobilization to reduce sympathetic tone.	Lateral position with support on the forearm on the treatment table	The patient should sit up from lying down. To do this, the feet should first be slowly lowered towards the floor so that the pelvis moves downwards and the upper side of the torso actively extends.	The therapist applies longitudinal traction to the connective tissue (action massage of the long back extensor on the upper side) (Fig. 1). Alternatively, the upper spinous process can be stabilized by the therapist from the upper side and the lower spinous process can be moved upwards from the lower side. This creates an opening of the facet joints and the intervertebral foramen in this segment.
Exercise 2			
Why?	**Where?**	**What?**	**How?**
Deep costal breathing should be promoted (serratus inferior muscle) and dynamic stability of the thoracolumbar transition should be achieved via the eccentric function of the long back extensor.	The patient sits on the floor in a reclined position.	She grabs her left trouser leg with both hands to pull it down while breathing out.	The therapist uses her right hand on the posterior costal arch to guide the direction of movement of the lower ribs in inspiration (she moves downwards and outwards). During exhalation, it supports the direction of movement of the ribs upwards and outwards with intermittent pressure. Your left hand stabilizes the left ribcage from the front (Fig. 2).
Exercise 3			
Why?	**Where?**	**What?**	**How?**
elevation.	patient sits on the diaphr sitting cross-legged bottomwith a washcloth and around her hand. oxyge lin	She wipes the cupboard with upwards with her left hand. With her right hand, she leans on her left knee to support the weight transfer to the left pelvis.	The therapist practises train after train lateral cranial dorsal during inhalation. Your right hand stabilizes the right costal arch ventrally (Fig. 3).

Figures four to nine show the exercises from days two and three.

Treatment planning was based on the fundamental assumption that the patient was suffering from a primary weakness of the postural synergies (stability of the plantar flexors, concentric function of the hip extensors, abductors and external rotators, eccentric function of the knee flexors, eccentric function of the hip abductors and external rotators). and trunk extensors) has developed a compensatory stiffness of the plantar flexors, hip flexors, adductors, internal rotators and back extensors in order to stabilize itself. The gen- eration of tonic activity leads to joint misloads in the hips, knees, feet, shoulders and cervical spine. The thoraco-lumbar transition in particular is in hyperextension in order to counteract the trunk protrusion.

Fig. 1 Day 1 Action massage long back extensors

Fig. 2 Day 1 Promotion of deep costal breathing

Photos: Renata Horst

Fig. 3 Day 1 Promotion of diaphragmatic breathing

Fig. 4 Day 2 Improving the bio-mechanical situation of the lower ankle joint for weight transfer

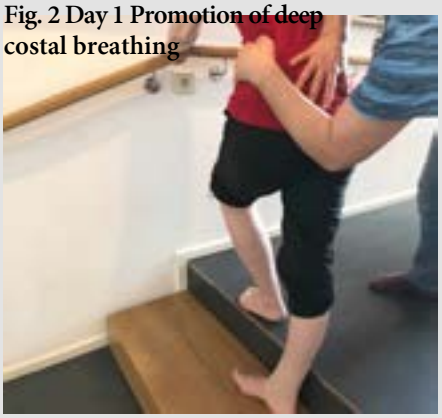

Fig. 5 Day 2 Relief of the SI joint and lumbar spine by promoting dorsal ileum rotation

Fig. 6 Day 2 Training the extensor synergy of the lower limb

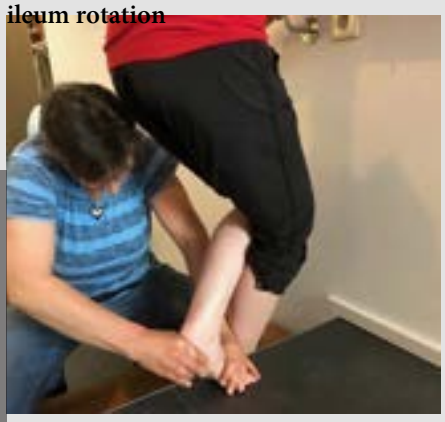

Fig. 8 Day 3 Training forefoot stability and explosive strength of the plantar flexors

Fig. 9 Day 3 Promoting the support activity of the arms

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Tab. 3 Overview of the process

Test	T0	T1	T2	T3
RVGA right (max. 59 points)	30 points	23 points	13 points	2 points
RVGA left (max. 59 points)	29 points	24 points	15 points	3 points
10 MWT	0.33 m/s	0.42 m/s	0.75 m/s	0.94 m/s
Step length right	11 cm	14 cm	26 cm	38.5 cm
Step length left	23 cm	21 cm	29 cm	38.5 cm
Cadence	86.7 steps/min.	93.3 steps/min.	100 steps/min.	102.9 steps/min.
Track width	-0.5 cm	0 cm	1.1 cm	1.86 cm
FRT	8 cm	11 cm	15 cm	17 cm

T_0 = before treatment on the first day; T_{1-3} = after the respective treatment (1st-3rd day); RVGA = Rivermead Visual Gait Assessment; 10MWT = 10 meter walk test; FRT = Functional Range of Motion

This is where the sympathetic ganglia are located, which are responsible for the blood supply to the lower extremities. The difficult, severely slowed gait leaves the patient little opportunity to adapt to changing environmental conditions. The patient is at risk of falling and, due to the stiff gait pattern, has a
Reduced cardiopulmonary performance.

Which parameters have changed immediately?

The stride length was already almost even on the second day and increased on both sides. On the third day, it reached 38.5 centimeters on both sides. This effect was also reflected in the gait speed: on the second day, the gait speed was 0.75 meters per second; after the third therapy session, the gait speed was 0.94 meters per second.

Ms. K. now showed clear heel contact in the middle stance leg phase and achieved full hip extension. She pushed off with her forefoot and her arm swing indicated an increased torso alignment and rotation. The hips were no longer adducted and internally rotated. Mrs. K. reported that for the first time in ten years she was able to walk up several flights of stairs without a handrail and that her husband noticed the change.
had noticed enthusiastically. She walked[illegible]ng longer stretches together with her dog

[illegible]ace. –

Video comparison

The success of the therapy can be seen in the video

https://www.renatahorst.de/video/videohspvergleich.m4v

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THE TOP TOPICS IN MARCH

Intensive and international - Specialty: Cardiac rehabilitation

A contribution by Andreas Fründ

Geriatric assessment

A contribution by Patrick Heldmann et al.

Barefoot running - what's the truth?

A contribution from Annemarie Frank

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