



HIPPOTHERAPY

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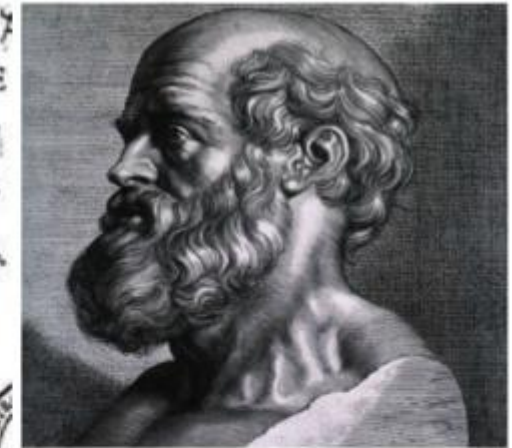


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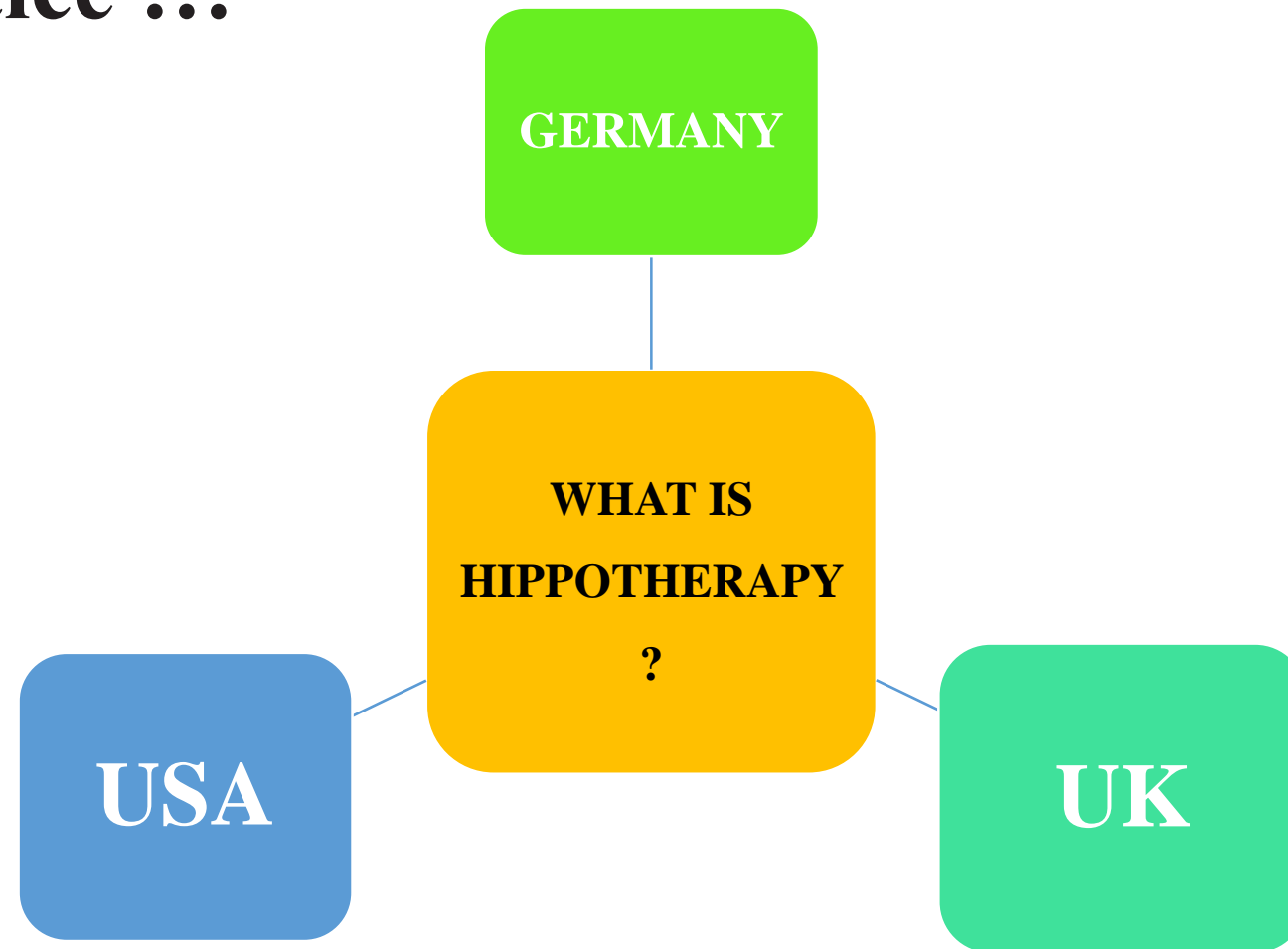
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HIPPOTHERAPY HISTORY

- therapeutic value of riding horses has been known since the days of ancient Greece.
- Hippocrates was the first to describe the therapeutic benefits of horseback riding, calling it a universal exercise with a “healing rhythm”.
- The value of horseback riding for the rehabilitation of persons with physical disabilities has been recognized since 1875.
- More recently, in the the 1960s, therapeutic riding centres emerged throughout Europe, Canada, and the United States.



The use of the term “hippotherapy” varies in different parts of the world, as does practice ...



DESCRIPTION OF HIPPO THERAPY (1)

- **Hippotherapy** refers to how *occupational therapy, physical therapy, and speech-language pathology professionals* use evidence-based practice and clinical reasoning in the purposeful manipulation of equine movement to engage the *sensory, motor, and cognitive systems* to achieve functional outcomes.
- In conjunction with the affordances of the equine environment and other treatment strategies, hippotherapy is part of a patient's integrated plan of care (*American Hippotherapy Association, 2016*).



DESCRIPTION OF HIPPO THERAPY (2)

- **Hippotherapy** is a *specialised physiotherapy treatment* that makes use of horses' unique three-dimensional movement impulses at walk to facilitate movement responses in patients astride the horse.
- During hippotherapy the patient does nothing to actively influence the movement of the horse; on the contrary, the patient is moved by the horse and responds to the horse's movement.
- The physiotherapist directs a specially trained horse handler to vary the horse's movement as required, through changes in cadence, stride length and direction (*Debuse, 2006*).



DESCRIPTION OF HIPPO THERAPY (3)

- **Hippotherapy** is considered a medical intervention and must be provided by a *physician or a licensed physical or occupational therapist*, with the additional aid of *horse leaders and sidewalkers* to control the animal and support the rider.
- In hippotherapy, the horse serves only as a treatment tool, providing a continuous, rhythmical motion with the client on his back. The horse influences the rider rather than the rider influencing the horse (*Stickney, 2010*).



CLASSIC HIPPO THERAPY vs. MODERN HIPPO THERAPY

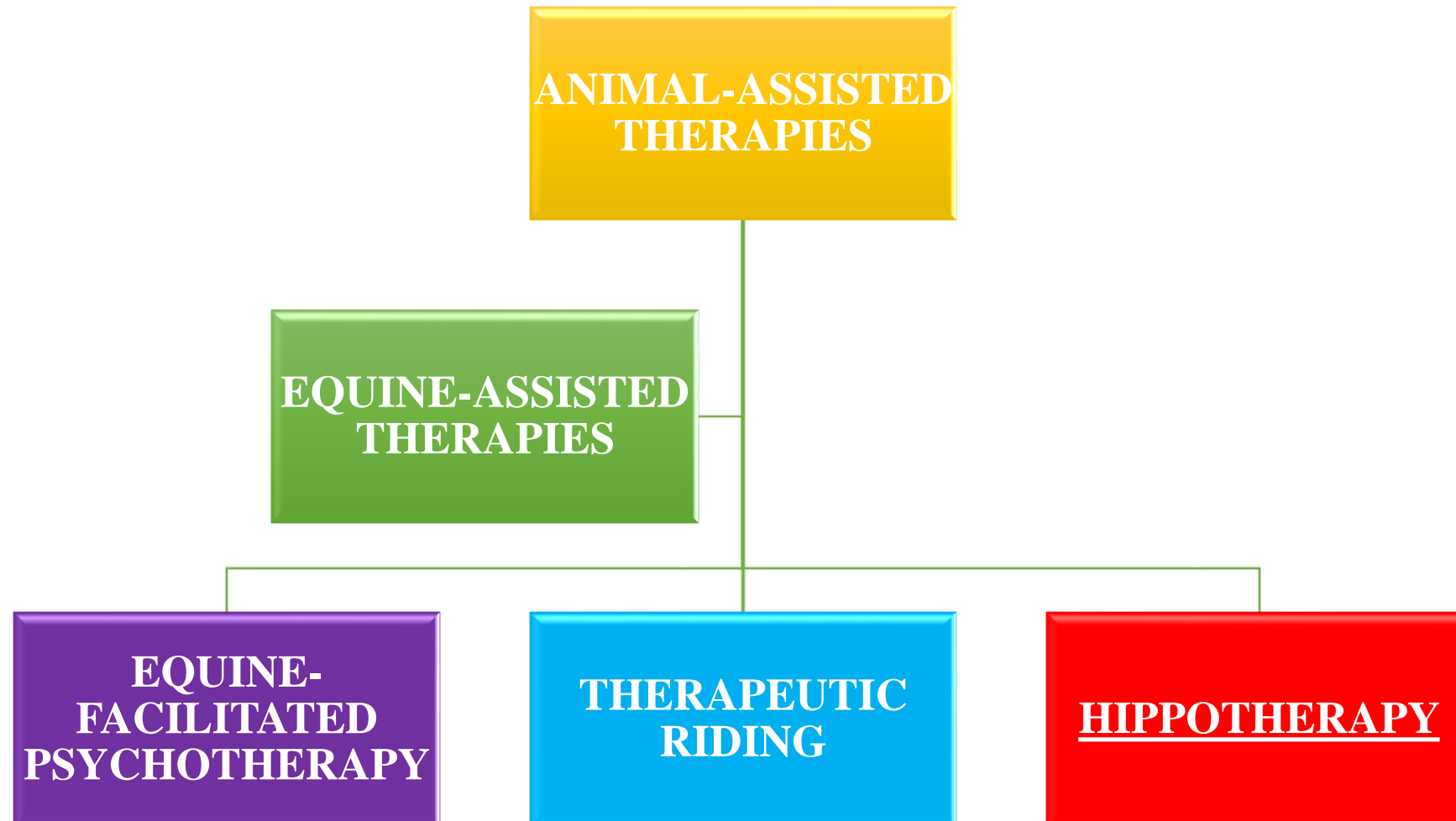
CLASSIC HIPPO THERAPY

- *Classic hippotherapy is performed with 1 rider (the patient) and at least 1 therapist (a physiotherapist, occupational therapist, or a speech-language therapist) and a horse.*
- *The therapist uses the three-dimensional movement of the horses back as an apparatus to manipulate the passive body of the patient. The treatment consists entirely of the horse's movement and the patient's response to this movement. The patient may be positioned astride the horse in different positions such as facing forward or backward, or lying prone or supine.*
- *This therapy, based on the positive effect of the horse's movement on the person, is beneficial for the rehabilitation of neuromuscular (Agi, 2011).*

MODERN HIPPO THERAPY

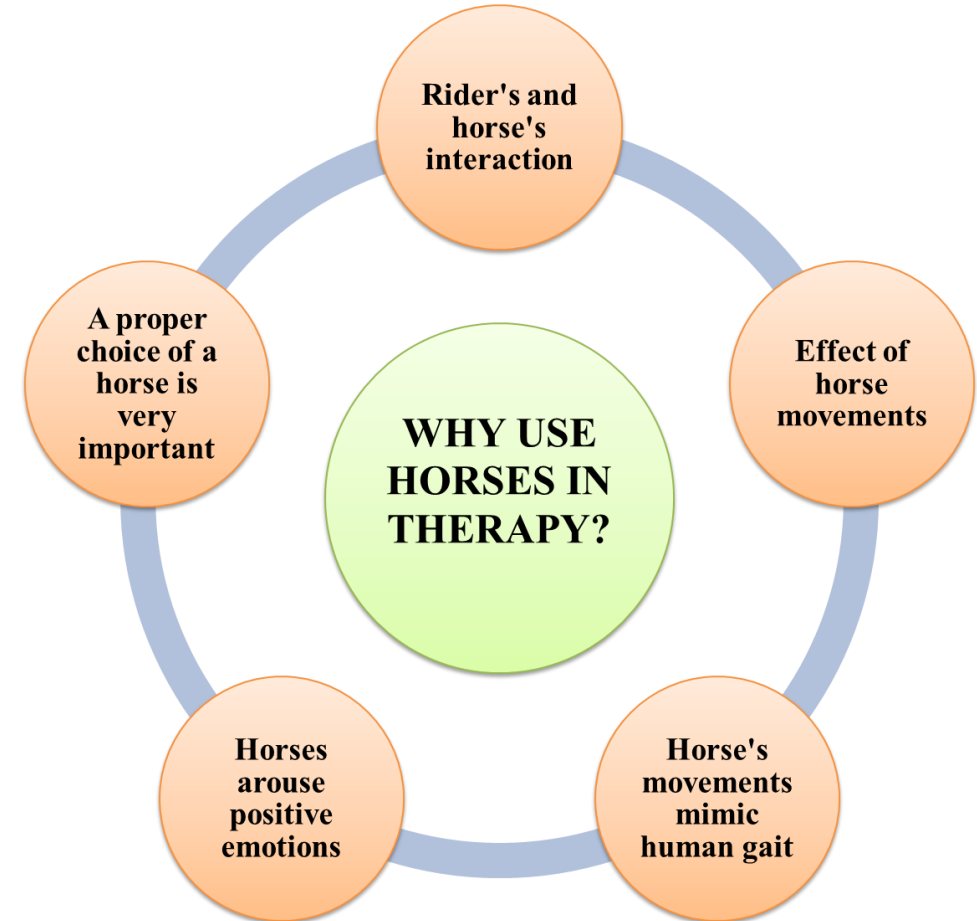
- *Present-day hippotherapy is a treatment approach that uses the movement of the horse as in classic hippotherapy, but with the added component of psychological intervention.*
- *Modern hippotherapy is used to achieve physical, psychological, cognitive, social, behavioural, and educational goals. It represents a multidisciplinary form of treatment that can be applied by a physiotherapist, occupational therapist or psychologist. This treatment approach uses activities with a horse to address the specific needs of a patient.*
- *Modern hippotherapy is not only used for physical rehabilitation.*

CLARIFICATION



WHY THE HORSE?

- Horses used in a therapy setting have received substantial specialized training in order to provide the symmetry, self-carriage, and straightness needed to optimize the movement quality transmitted to the patient.
- The movement of the horse is multi-dimensional and provides systems-wide impact on human neurophysiology.
- The horse's movement is rhythmic, low amplitude, consistent, and can be sustained over time.
- Dynamic movement of the horse combined with the dynamic environment leads to functional change.



WHY THE HORSE?

MULTI-DIMENSIONAL MOVEMENT

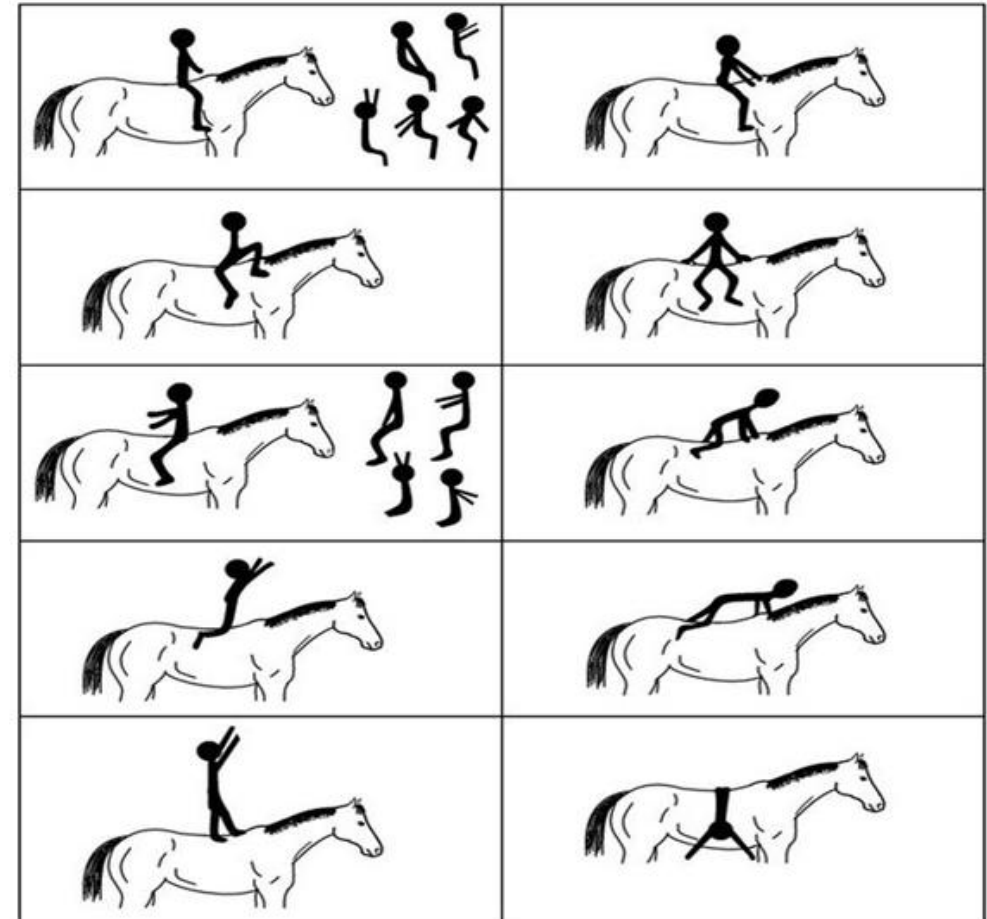
- Movement of horse's pelvis is tri-planar; mirrors the same 3 movement planes as the human pelvis: anterior-posterior, lateral, rotational.
- Provides stimulation of what a normal gait pattern should feel like.
- Movement of the horse can not be duplicated by any piece of equipment.

RHYTHM AND REPETITIVE

- The movement of the horse is consistent and predictable, just as human walking is.
- Number of “steps” or movement challenges during a typical treatment session is in excess of 2,000 repetitions.
- Allows patient ample opportunity to practice and refine balance responses, leading to improvements in core stabilization and postural control.

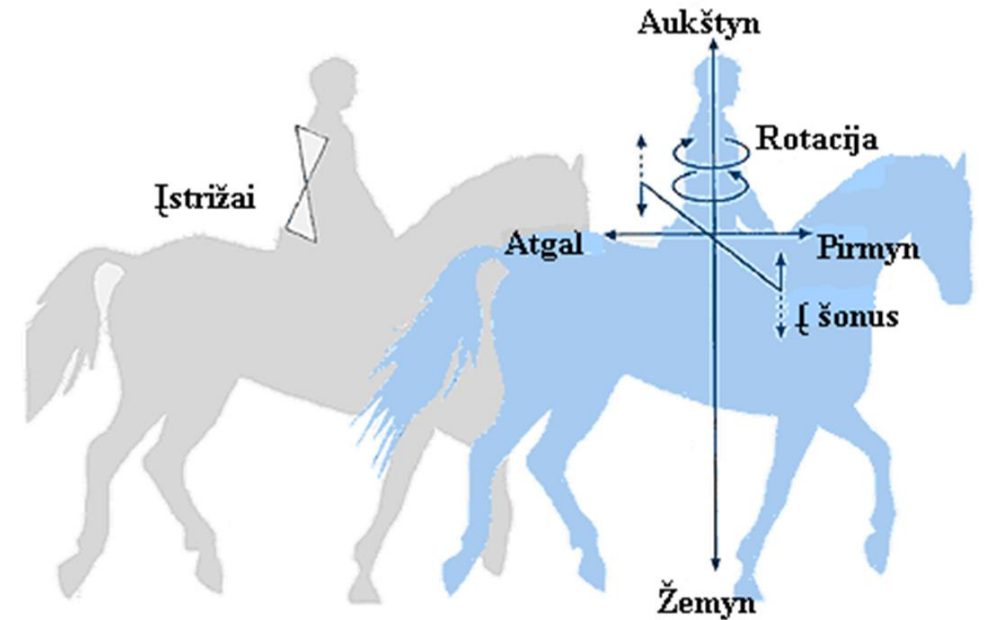
PURPOSEFUL MANIPULATION OF EQUINE MOVEMENT

- The therapist can modify the movement of the equine to appropriately stimulate/challenge their patient:
 - *Impulsion, tempo, and speed: engagement of the horse's hind legs, how fast they walk, and how many steps they take;*
 - *Changes in direction: reverses, circles, serpentines, figure-8s;*
 - *Transitions: from one gait to another, acceleration/deceleration, start-stops.*
- The therapist can also modify the position of the patient on the horse to change how the movement influences them: *forward-facing, rear-facing, side-sitting, prone, or supine.*



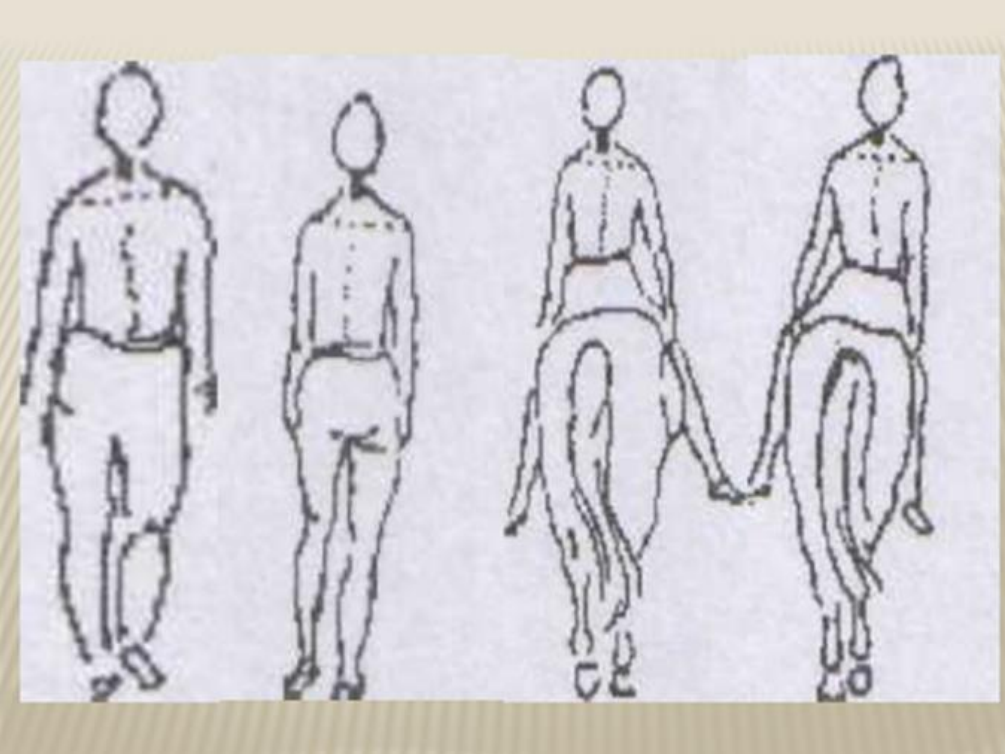
HORSE'S MOVEMENT IN A THREE-DIMENSIONAL SPACE

- Horses and their movement provide new possibilities of movement and cognitive functions for psychomotor skills of people.
- This is a horse's movement in a three-dimensional space (up and down, forwards and backwards, to the left and to the right): movements of a horse's hips, pelvis and limbs provoking rider's movements of a kind.



HORSE'S MOVEMENTS MIMIC HUMAN GAIT

When a horse is moving, a human body is forced to move accordingly into different directions and with different rhythm or speed due to constant and repetitive three-dimensional movements during riding.



EFFECT OF HORSE MOVEMENTS

Three sensory systems are being stimulated: vestibular, visual and proprioception. For people with neurological disorders horses provide possibilities to learn movements due to constant and repetitive movements of pelvis and body. The rate of movement impulses communicated to a rider makes 90-100 impulses per minute.

RIDER'S AND HORSE'S INTERACTION

A certain body fixing scheme is being formed when riding a horse. When a body is maintained in a vertical position, a coordination system and activity of pelvis and back muscles play a significant role.

HORSES AROUSE POSITIVE EMOTIONS

Touching a horse, different horse colours, specific smell and sounds of hooves stimulate various body systems (motor, proprioception, vestibular, sensory and psychic). Therefore therapeutic horseback riding provides psychological, educational and social benefits, apart from a physical one.



A PROPER CHOICE OF A HORSE IS VERY IMPORTANT

Depending on the rhythm of a horse's gait, it is possible to stimulate human proprioceptors and to increase the muscle tone or to reduce the muscle tone by limiting the speed of stimuli of information from proprioception.

THE EFFECT OF HIPPO THERAPY

The effect of hippotherapy is multifunctional, therefore it is difficult to mark out a single effect or benefit. After hippotherapy, positive changes in physical and psycho-emotional status are noticed.

THE NATURAL GAIT OR STRIDE OF THE HORSE, COUPLED WITH THE ANIMAL'S WARMTH, PROVIDES NUMEROUS BENEFITS, INCLUDING:

Improvements

in:

1. Muscle tone and strength;
2. Gross motor skills such as sitting, standing and walking;
3. Range of motion;
4. Coordination;
5. Endurance.

Advances

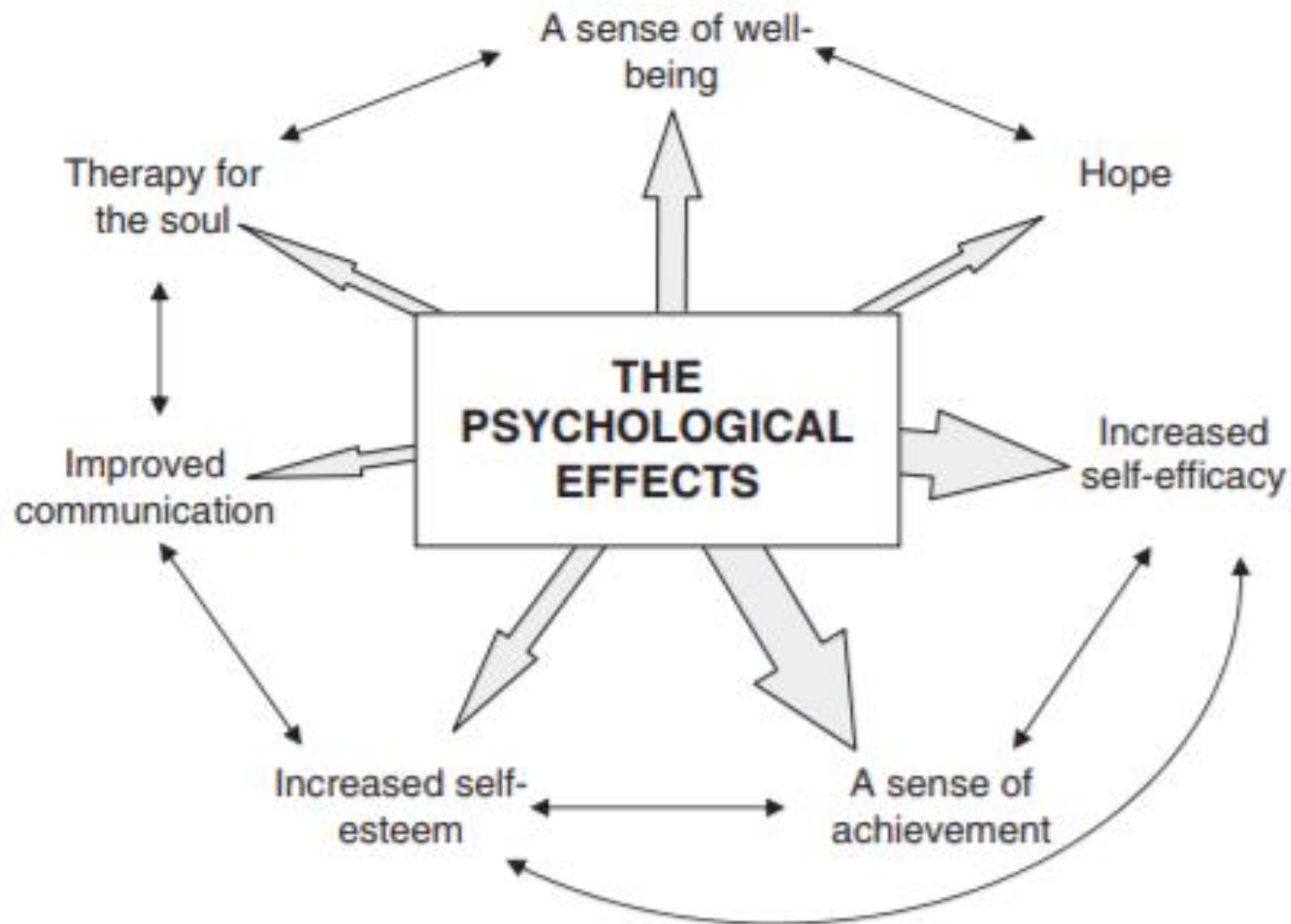
in:

1. Balance/ equilibrium;
2. Head and trunk control;
3. Body awareness;
4. Posture;
5. Mobility.

Positive effects on:

1. Eye-hand coordination;
2. Limbic system function related to arousal, motivation and attention;
3. Sensorimotor function;
4. Oral motor control, voice quality and vocal/verbal communication.

THE PSYCHOLOGICAL EFFECTS



THE SOCIAL EFFECTS

- Communication and social skills;
- Learning appropriate behaviour and manners;
- Interaction with peers: individuals and groups, human/animal contact and bonding;
- Building relationships;
- Consideration for others and taking on responsibility.



EVIDENCE-BASED PRACTICE

Hippotherapy in Children with Developmental Delays: Physical Function and Psychological Benefits

Freda Thompson, Caroline J. Ketcham*, Eric E. Hall

Department of Exercise Science, Elon University, Elon, USA

Hippotherapy as a Speech Therapy Treatment Strategy for Receptive and Expressive Language Deficits

Tina M. Rocco, M.A. CCC-SLP, HPCS / January 27, 2012

<http://www.americanhippotherapyassociation.org/research/>

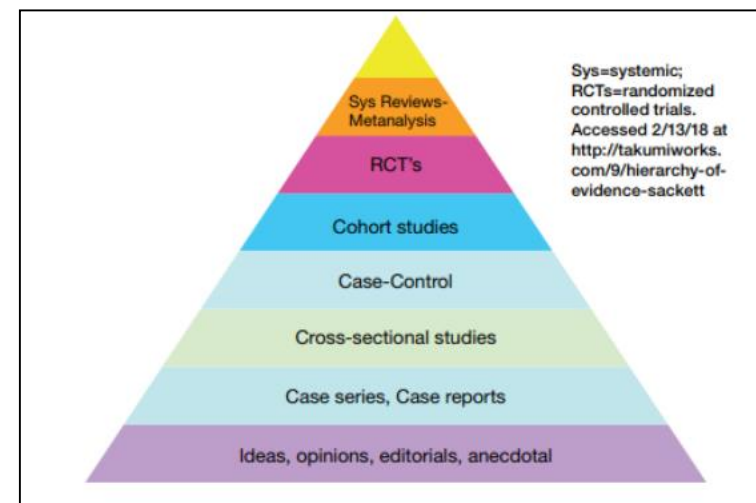
Effects of hippotherapy on people with cerebral palsy from the users' perspective: A qualitative study

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HIPPOTHERAPY USE TO TREAT A WIDE VARIETY OF DIAGNOSES. THESE INCLUDE:

- **Autism** (Stickney, 2010; Bloch, 2018; Xue-Ling Tan, Simmonds, 2018; Trzmiel et al., 2018).
- **Cerebral Palsy** (Bertoti, 1988; McGibbon, 1998; Sterba et al., 1998; Kulkarni-Lamborne et al., 1999; Benda et al., 2003; Casady, Larsen, 2004; Straubergaitė, Mockevičienė, 2006a, 2006b; Hamill, 2007; Snider et al., 2007; Straubergaitė, Mockevičienė, 2007; Encheff, 2008; Zurek et al., 2008; Debuse et al., 2009; McGee, Reese, 2009; Gotter et al., 2009; McGibbon et al., 2009; Talari et al., 2018; Deutz et al., 2018).
- **Down Syndrome** (Copetti et al., 2007; De Miguel et al., 2018; Simpson et al., 2018; Cunha et al., 2018).
- **Developmental Delay** (Lewis et al., 2018; Brand, 2018).
- **Sensory Integrative Dysfunction** (Trzmiel et al., 2018; Tan et al., 2018).
- **Learning or Language Disabilities** (Kaiser et al., 2006, Mourey, 2018; Fabio et al., 2018).
- **Cerebral Vascular Accident (Stroke)** (Marquez et al., 2018; Diaz, 2018).
- **Traumatic Brain Injury** (Gocheva et al., 2018; Marquez et al., 2018).
- **Spinal Cord Injuries** (Straubergaitė ir kt., 2005; Straubergaitė, Mockevičienė, 2006a, 2006b; Straubergaitė, Mockevičienė, 2007; Unger et al., 2018; Flanagan et al., 2018).
- **Genetic Disorders** (Lewis et al., 2018).
- **Attention Deficit** (Oh et al., 2018; Simpson et al., 2018).

Significant studies

- **Horse reduces symmetrical lesions of the muscle**
- Benda et al., (2003) found the effect of hipotherapy on the symmetrical muscular activity of children with CP in electromyographic studies. The mean change in symmetry was 65% after 8 hipotherapy sessions and 12.8% after a roll session.
- Increases balance and coordination
- Zadnikar and Karstin (2011). found the effect of therapeutic riding on the control and balance of children with CP. therapy was effective and beneficial in 76 of 84 subjects.

Significant studies

- **Increasing muscle tension**
- McGibbon et al. (2009) conducted a study to evaluate the effect on the symmetry of the pull muscles and to compare it with the effect of the static seat. the short-term effects were statistically significant for those riding, while those sitting were worse. similar results were obtained with long-term effects
- A study by Bass et al. (2009) investigating the effects of therapeutic riding on the psychomotor performance of autistic children. They found significant improvements in **sensory integration and sensitivity, attentiveness, and motivation for social communication.**

Significant studies

- **The horse reduces movement deviations**
- Persons with limited amplitude who experience movement (locomotion) on a horse (Kulkarni-Lamborne et al., 2001; Casady, Larsen, 2004; Straubergaitė, Mockevičienė 2006a, 2006b, Narkelishvili, 2008)
- The horse causes **functional changes in the muscles.**
Rhythmic, gentle, smooth hinges on the horse force symmetrical muscles on both sides of the body of the person sitting on the horse (Benda et al., 2003, McGibbon et al., 2009, Straubergaitė, Muckus, 2010).

INDICATIONS FOR UTILIZATION OF HIPPO THERAPY AS A TREATMENT STRATEGY

BY PRESENTATION:

- Impaired muscle tone
- Impaired range of motion
- Impaired postural alignment
- Impaired dynamic postural control
- Impaired communication
- Impaired sensorimotor function
- Impaired mobility
- Impaired coordination
- Impaired cognitive function

BY DIAGNOSIS:

- Developmental delay
- Cerebral palsy
- Autism spectrum disorder
- Brain injury
- Sensory processing disorders
- Functional curvature of the spine
- Neuromuscular dysfunction
- Genetic syndromes
- Dyspraxia
- Developmental coordination disorder

These lists are a sample of impairments/diagnoses which may benefit and are not all-inclusive.

SOME CONDITIONS THAT MAY BE CONTRAINDICATED FOR HIPPO THERAPY INCLUDE:

ORTHOPEDIC/NEUROLOGIC

- Atlantoaxial Instability-describe neurologic symptoms
- Coxa Arthrosis
- Cranial Deficits
- Heterotropic Ossification/Myositis Ossificans
- Joint Subluxation/dislocation
- Osteoporosis
- Pathologic Fractures
- Spinal Fusion/Fixation
- Spinal Instability/Abnormalities
- Hydrocephalus/Shunt
- Seizure
- Spina Bifida/Chiari II Malformation/Tethered Cord/Hydromelia

MEDICAL/PSYCHOLOGICAL

- Allergies
- Animal Abuse
- Physical/Sexual/
Emotional Abuse
- Blood Pressure Control
- Dangerous to self or
others
- Exacerbations of
medical conditions
- Fire Settings
- Heart Conditions
- Hemophilia
- Medical Instability
- Migraines
- PVD
- Respiratory
Compromise
- Recent Surgeries
- Substance Abuse
- Thought Control
Disorders
- Weight Control
Disorders
- Indwelling Catheters

PHYSICAL THERAPISTS ROLE IN HIPPO THERAPY

The physical therapist can overlay a variety of motor tasks on the horse movement to address the motor needs of each patient and to promote functional outcomes in skill areas related to gross motor ability such as sitting, standing, and walking.



PHYSICAL THERAPY PRINCIPLES

Development of balance and postural control

- Patients can improve their core stability by working to maintain midline position on the horse with movement challenges;
- Improvements are seen in postural tone as patients use their muscles to maintain an upright position on the moving surface;
- Spontaneous postural adjustments due to the manipulation of equine movement in linear dimension and speeds;

Influence on musculoskeletal function

- Movement of the horse influences movement of the pelvis and spine in a multi-dimensional pattern; it is rhythmic and symmetrical, and allows for many repetitions in a single session;
- Positioning on the horse can address range of motion, postural control, and skeletal alignment.



OCCUPATIONAL THERAPISTS ROLE IN HIPPO THERAPY

The occupational therapist is able to combine the effects of the equine movement with other standard intervention strategies for working on fine motor control, sensory integration, feeding skills, attentional skills, and functional daily living skills in a progressively challenging manner.



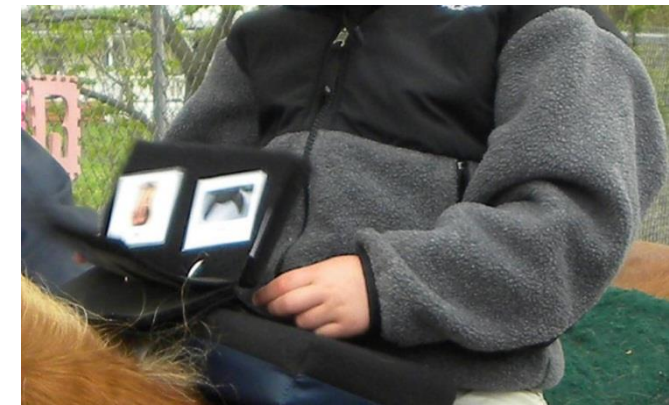
OCCUPATIONAL THERAPY PRINCIPLES

- The horse provides an engaging platform for healing and the movement of the horse impacts the whole person, providing input that the therapist can alter to physical, sensory, cognitive, and emotional systems.
- Occupational therapists can incorporate the horse into treatment using movement, ground activities, and relationships with the horse to address functional goals.
- Sensory input from equine movement stimulates the limbic system, particularly vision, proprioception, vestibular, and olfactory. This system is also involved with emotions.
- Activation of postural control mechanisms influences arousal.



SPEECH-LANGUAGE PATHOLOGISTS ROLE IN HIPPO THERAPY

The speech-language pathologist is able to use equine movement to facilitate the physiologic systems that support speech and language. When combined with other standard speech-language intervention strategies, the speech-language pathologist is able generate effective remediation of communication disorders and promote functional communication outcomes.



SPEECH AND LANGUAGE THERAPY PRINCIPLES

Influence of postural mechanisms affecting speech

- Equine movement facilitates improvements in postural alignment and control, which are integral for coordination and timing of sufficient respiratory support, speech production, and vocal control;

Influence on cognitive and linguistic function

- Equine movement provides repetitive, multi-system sensory stimulation that is graded and precise;
- This helps with the development or regulation of:
 - More normalized arousal states, attentional focus, and communication (expressive, receptive, pragmatic, and higher-level language skills);
 - Well-integrated tactile and proprioceptive systems;
 - Well-integrated vestibular system;
 - Efficient speech and language production is dependent on the proper function of each of the above systems.





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My Riding Choices



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Tonic Neck Reflex

Reflex Action Result of Head Position

Symmetrical

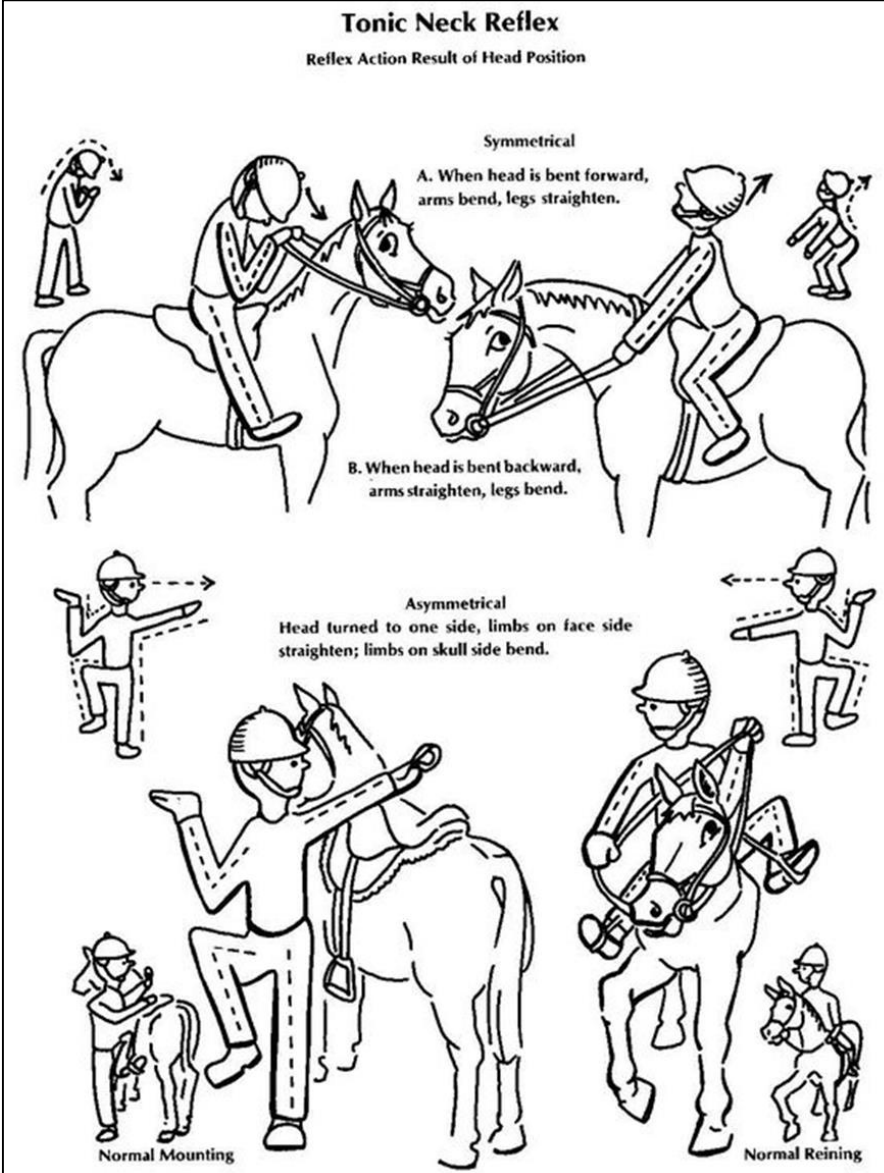
A. When head is bent forward, arms bend, legs straighten.

B. When head is bent backward, arms straighten, legs bend.

Asymmetrical
Head turned to one side, limbs on face side straighten; limbs on skull side bend.

Normal Mounting

Normal Reining



Tonic Labyrinthine Reflex

Reflex Action Result of Head Position

A. When head is face up, body moves into extension.

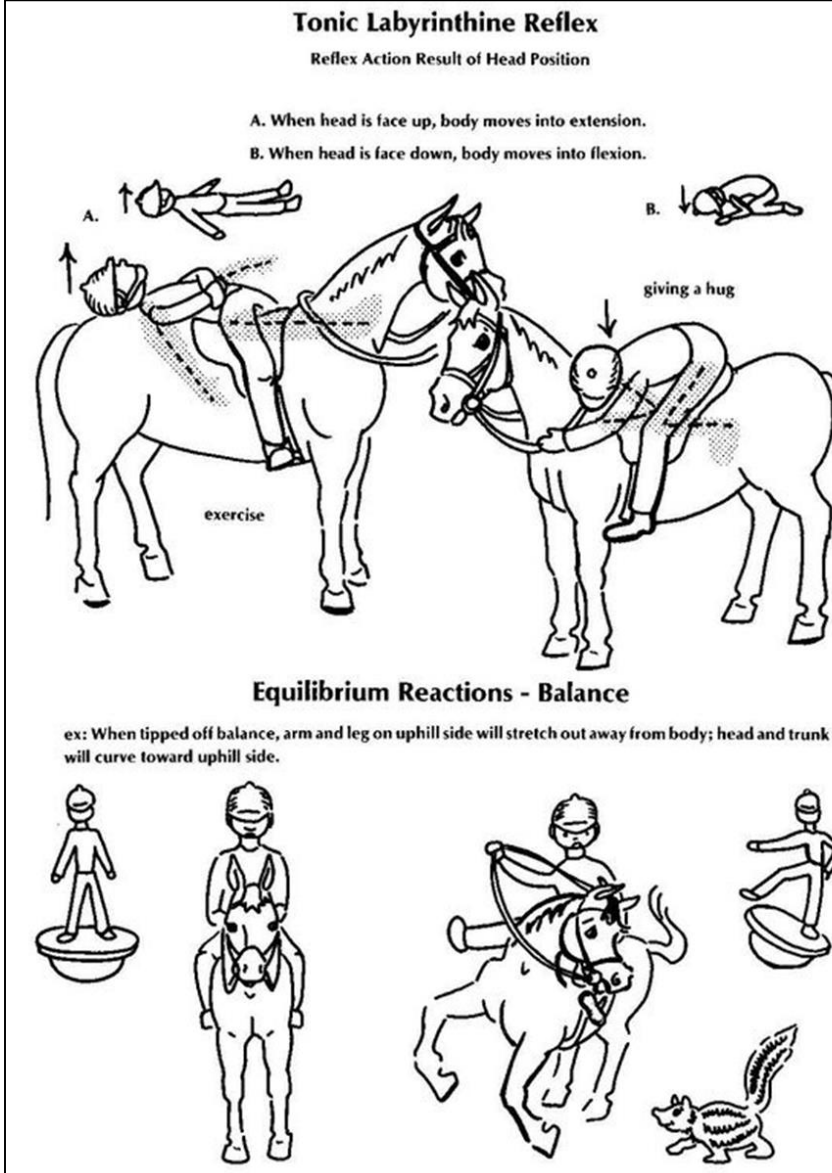
B. When head is face down, body moves into flexion.

exercise

giving a hug

Equilibrium Reactions - Balance

ex: When tipped off balance, arm and leg on uphill side will stretch out away from body; head and trunk will curve toward uphill side.



PHYSICAL ACTIVITY BEFORE HYPOTHERAPY

Raises body temperature, prepares muscles, CNS, tendons, ligaments, CCH, KS for hypotherapy

Increases muscle elasticity (reduces the likelihood of injury)

It is a good time for a specialist to assess the patient's strength, flexibility, body awareness

Gives you the opportunity to get to know a horse without riding, to gain self-confidence and a horse (learning how to move freely)

Provides playfulness, fun, and etc..

Objectives for Adapting Functional and Physical Condition Assessment in Persons with Neurosensomotor Disorders:

- 1. To evaluate the functional and physical condition of persons with neurosensomotor disorders in order to accurately and objectively select a person's position on the horse, methodology of hypotherapy, tools, etc .;*
- 2. To evaluate the functional and physical condition of persons with neurosensomotor disorders to determine the effectiveness of hypotherapy and to adjust the program.*

WARMING

ACTIVITIES

Strengthening exercises

Stretching exercises

Body perception

Aim

Increase muscle strength
(„Core“)

Increase range of motion

„To “know” the movements
that will be integrated into
the hypotherapy session

LAIKAS

~ 5 min.

~ 5 min.

Depends on need

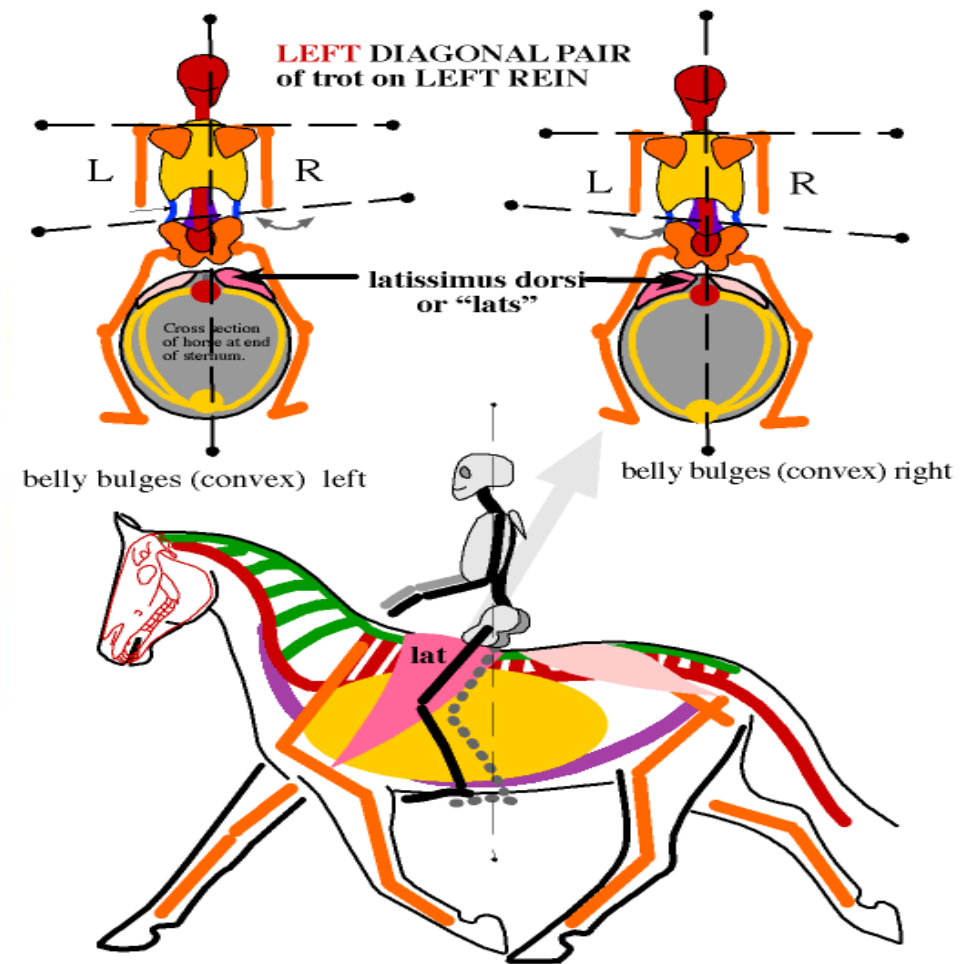
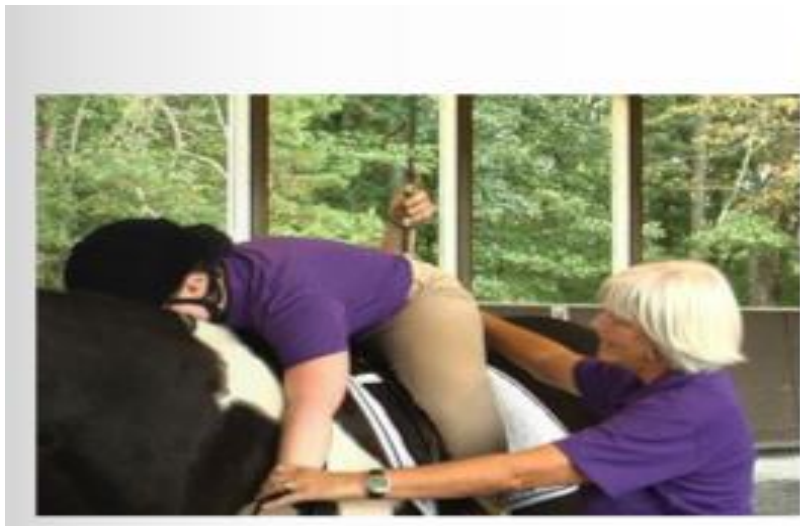
WARMING STAGES:

- Exercises to increase horse and self-confidence;
- Exercises that develop torso muscle strength and stability;
- Exercises that increase flexibility;
- Posture adjustment;
- Using additional tools.

MOST EXERCISES ARE PERFORMED ON THE THERAPEUTIC BALL AND ON THE HORSE (WITHOUT MOVING). However, they can also be adapted to be practically seated on a stable chair at home.

EXERCISES TO INCREASE RIDING AND YOUR RELIABILITY

Hug and Roll Up



IMPORTANCE OF BEHAVIOR POSTURE ADJUSTMENT

The Spiral Seat

The spiral seat is named for the spiral winding of muscle fibers and other connecting tissue tracts around the body. These work much like a "Chinese finger trap" to tighten when under tension, keeping the body from being pulled apart.

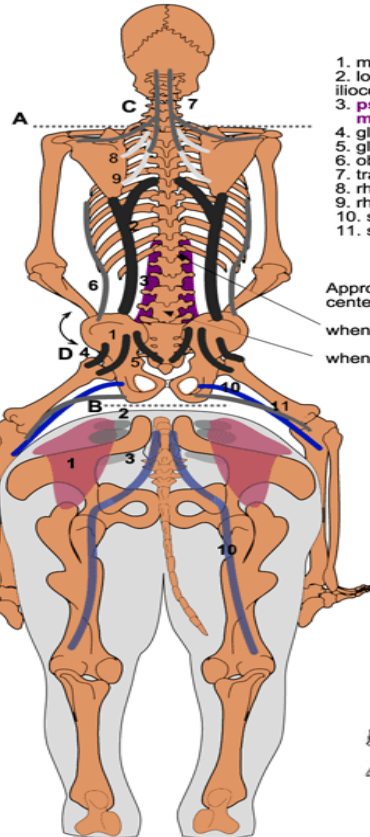
Of critical importance is the action of the psoas and iliacus muscles to move pelvis alternately up-in and then back-down in a spiral motion that AVOIDS SHIFTING THE CENTER OF MASS RIGHT OR LEFT. This keeps the weight aids pure and precise in their meaning to the horse.

A) Shoulders are level and shoulder blades are kept free to slide softly across the upper back (KEY TO AN INDEPENDENT SEAT!). This freedom of hands and seat to act independently depends on relaxation to the rhomboideus and trapezius muscles.

B) Seat bones are level although weight is subtly distributed from one to the other for lateral work and bending, without breaking at the waist (usually accomplished by allowing more weight in the inside stirrup, or in the direction of movement).

C) Head, which weighs about 10 to 12 pounds, is carried without tilting right or left, neck is softly stretched upward. Riders should take care not to twist the neck or clench their jaws.

D) Seat muscles, especially the gluteals and thighs, are relaxed in order to free the motion of the hip joint and pelvis to match the actions of the horse's back muscles.



1. medial gluteal muscle
2. longissimus dorsi, iliocostalis dorsi
3. **psoas, iliacus muscle system**
4. gluteus minimus
5. gluteus maximus
6. oblique abdominals
7. trapezius
8. rhomboideus minor
9. rhomboideus major
10. semitendinosus (part)
11. semimembranosus

Approximate position of center of mass
when riding, and
when standing

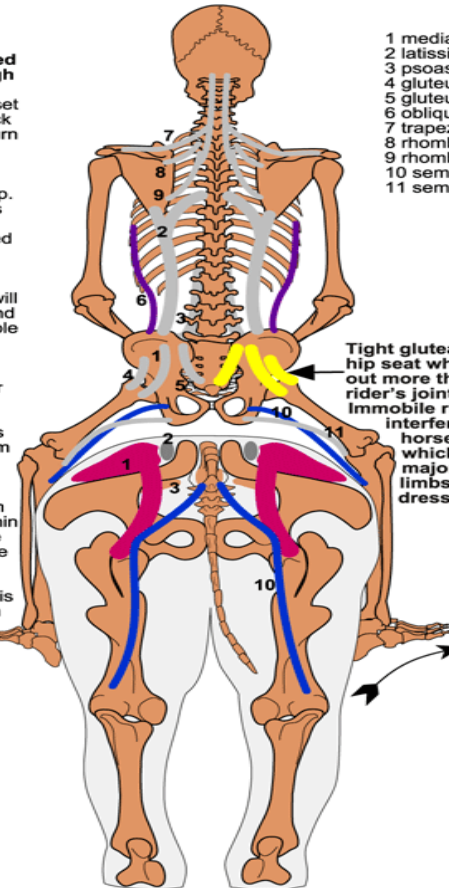
Problems with the seat: "toe out" rider (contracted gluteal and inside of thigh muscles).

Contracting the gluteal set of muscles (1, 4, 5) will lock the pelvis to the sacrum, turn out the toes more than is normal for human leg conformation and will also restrict movement at the hip. A tight backside interferes with a deep, relaxed seat and is usually accompanied by tightened inner thigh muscles.

As a consequence, the heel (here the right heel) will dig into the horse's side and the leg and hip will be unable to follow the movement of the horse. The rider also risks injury to the leg if the toe is caught on a fence or other vertical piece of construction.

The inner thigh muscles (grippers) are different from the riding muscles of the thigh (10,11). The riding muscles of the thigh are connected from the bottom of the pelvis to the upper shin bone and help position the pelvic bone when using the spiral seat.

Riders frequently turn their toes out in canter. This seems especially common with the inside legs.



- 1 medial gluteal muscle
- 2 latissimus dorsi
- 3 psoas muscles
- 4 gluteus minimus
- 5 gluteus maximus
- 6 oblique abdominals
- 7 trapezius
- 8 rhomboideus minor
- 9 rhomboideus major
- 10 semitendinosus (part)
- 11 semimembranosus

Tight gluteal muscles lock at hip seat when toe is turned out more than is normal for rider's joint conformation. Immobile rider pelvis interferes with activity of horse's back muscles, which in turn play a major role in moving limbs to produce dressage gaits.

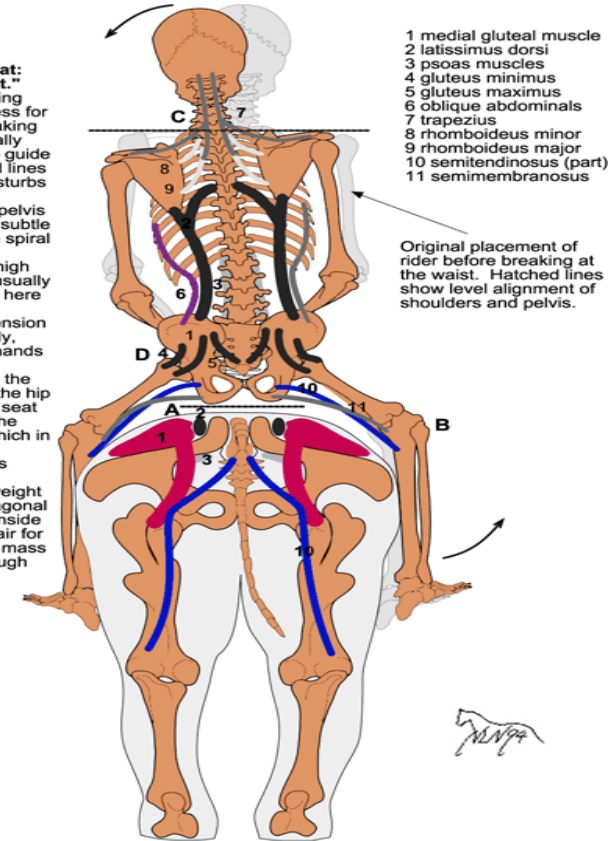
Problems with the seat: "breaking at the waist."

A common habit of losing balance and straightness for the rider is called "breaking at the waist." It is usually seen when riders try to guide the horse along curved lines or in lateral work. It disturbs the seat because it

A) unevenly loads the pelvis to one side so that the subtle alternate "dance" of the spiral seat is disabled, B) draws the leg and thigh away from the horse (usually the outside leg, shown here as the right leg),

C) produces uneven tension in the whole upper body, making the arms and hands more difficult to use, D) produces tension in the muscles which control the hip joint of the overloaded seat bone, interfering with the mobility of the thigh, which in turn interferes with the operation of the horse's shoulder,

E) causes the rider's weight to interfere with the diagonal pair connected to the inside hind leg, the "prime" pair for carrying the combined mass of horse and rider through turns.



- 1 medial gluteal muscle
- 2 latissimus dorsi
- 3 psoas muscles
- 4 gluteus minimus
- 5 gluteus maximus
- 6 oblique abdominals
- 7 trapezius
- 8 rhomboideus minor
- 9 rhomboideus major
- 10 semitendinosus (part)
- 11 semimembranosus

Original placement of rider before breaking at the waist. Hatched lines show level alignment of shoulders and pelvis.

Laikysenos vertinimo skalė „The Gainesville Riding through Equine Assisted Therapy (G.R.E.A.T.) Postural Scale“

The G.R.E.A.T. Postural Scale
Gainesville Riding through Equine Assisted Therapy

Lateral View

Head Cervical Spine						
Shoulders Thoracic Spine						
Pelvis Lumbar Spine						
Hip Angle						
Knee Flexion Heel Orientation						

• **Evaluation areas:**

- head / neck spine,
- shoulder / thoracic spine,
- pelvis / lumbar spine,
- hip angle and knee flexion / heel orientation.
- Each of the areas adds to the total score, which represents how much the client's body matches the proper body alignment.
- A final score of 0 indicates excellent posture, which means that any score above 0 indicates certain posture problems.

IMPORTANCE OF STRETCHING AND STRENGTH EXERCISE

STRECHING

- **Flexibility achieved** (body clearance): change in tendon length, changes in amplitude of motion, reduction of muscle tension, improvement of body perception, improvement of blood circulation and lymphatic flow, etc.).
- For maximum benefit - stretching while maintaining rule posture.
- The importance of deep breathing.
- Išmokite išstarti

STRENGTH

- The ability of the torso muscles ("core") is important to maintain the correct position when sitting on a horse.
- They must have forces in the hands and feet to influence the horse's direction, gait and balance (patient motivation).
- Maximizing Benefit - Strengthening while maintaining rule posture.
- Multiple repetitions of exercises in the correct posture - much more useful than many repetitions in the wrong posture.

FLEXIBILITY (amplitude of joints movement)

- Human Physicality Flexibility is one of the basic physical attributes and is understood as the ability of a person to perform movements of various joints over a large amplitude.
- Flexibility is not a general feature of the whole body, it is specific to a particular joint. Therefore, when it comes to flexibility, we mean the amplitude of the movement of one or more joints.
- Lack of joint mobility, elasticity of muscles, tendons, ligaments adversely affects the locomotor system and various vital functions of the body.
- **Goniometric measurements are highly variable in measuring amplitude** of motion in children with CP (and especially with spasticity) (McDowell, Hewitt, Nurse et al., 2000).

NECKING AND STRENGTH EXERCISES:

Look Up and Down

- When looking down, it is important to keep your back straight, without falling.
- When looking at an athlete, it is important not to bend the back and "push" the ribs forward..



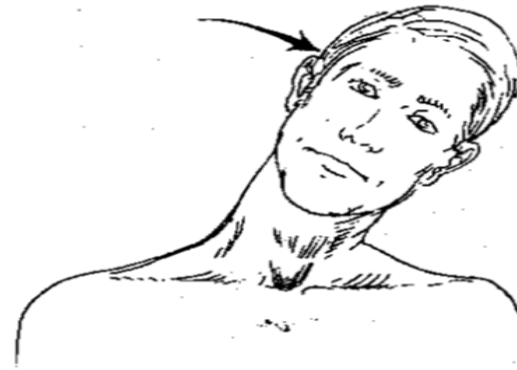
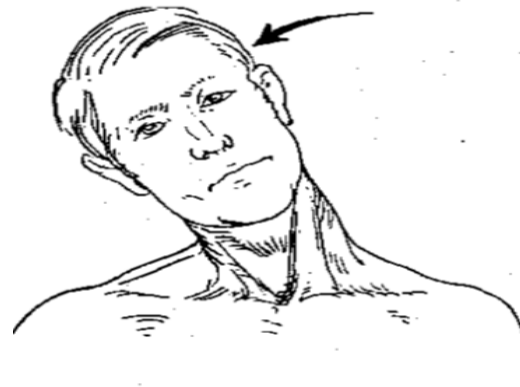
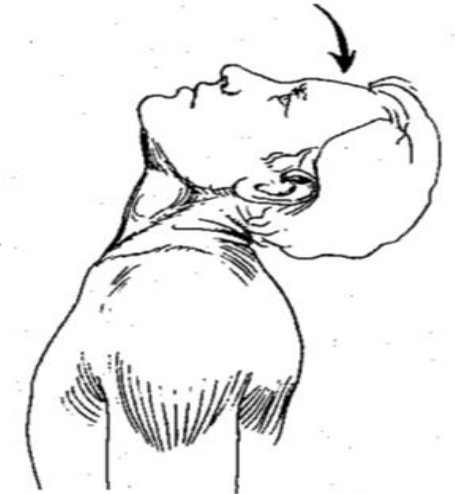


It is incorrect for the athlete to turn the shoulders when she moves her head.



Look Side to Side

Active evaluation of cervical spine motions



STRETCHING AND STRENGTH EXERCISES FOR HANDS AND SHOULDER STRIPS

- Flexibility of the shoulder joints is very important for maintaining correct posture.
- It is important to learn how to perform manual movements without torso movements.



Arm Circles (anterior- posterior, small- big)

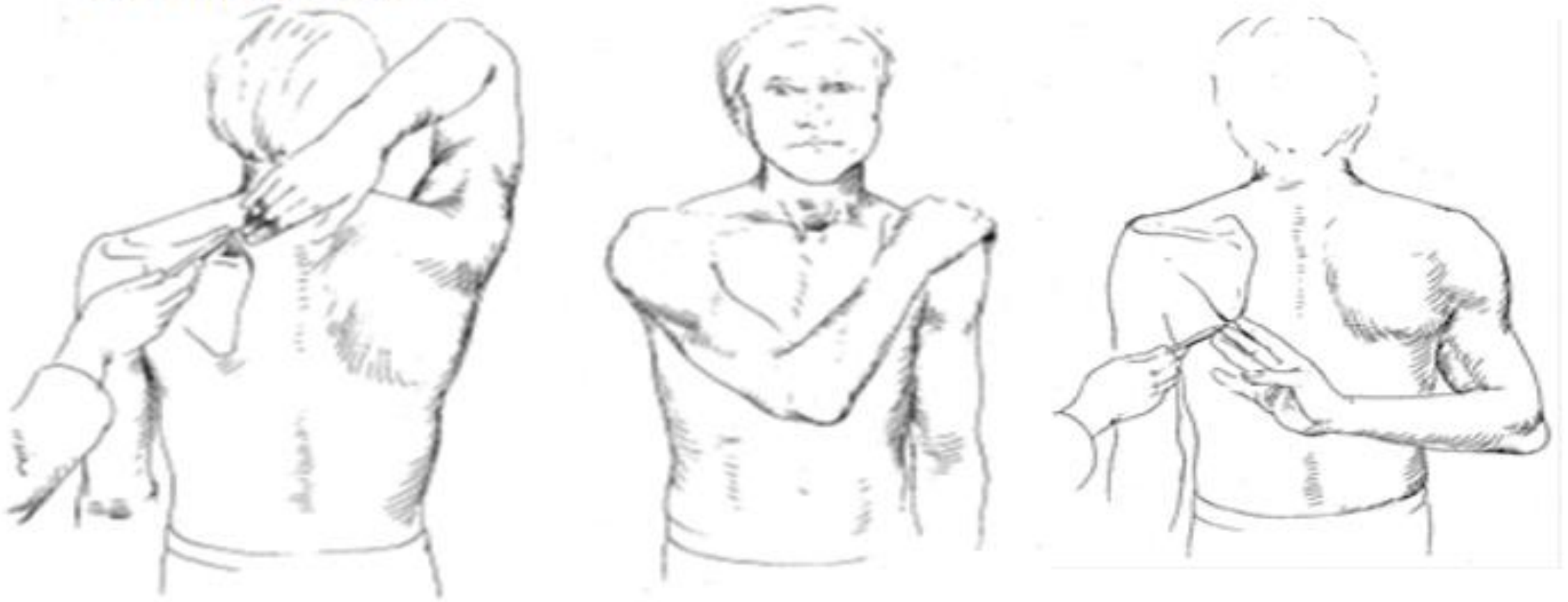
Roll Shoulders (inferior-superior, rotate anterior-posterior (both), rotate one shoulder and than other)





Reach Up
(reaches as high as possible without raising shoulders)

THE APLEY „SCRATCH“ TESTAS



THE APLEY „SCRATCH“ TESTAS (2) (range of motion)



Atitraukimas ir išorinė rotacija:
abi rankos už kaklo, alkūnėmis
atgal.

Pritraukimas ir vidinė rotacija:
abi rankos už nugaros ir siekti
menčių apatinius kampus.

TENSIONING AND STRENGTH EXERCISE FOR THE BODY

- Core flexibility is very important.
- Core stability and capacity help keep the rider in a secure position and the flexibility to follow the horse's movements.
- Harmonious work with the horse.

Twist with arms crossed in front



Correct



Correct



Incorrect

Twist with arms extended to the sides



Hinge Back



Incorrect – Arched Back



Incorrect – Collapsing



Correct



Active waist range of motion evaluation



DRAWING AND STRENGTH EXERCISES FOR LEGS AND FEET

Touch Opposite Foot



Point and Flex



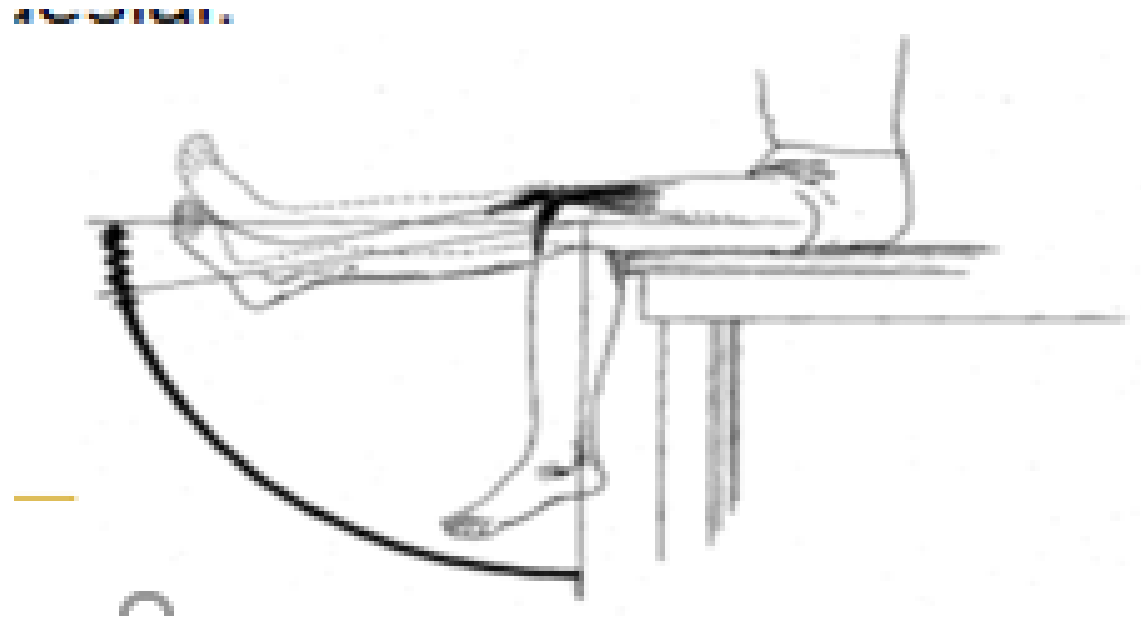
Active hip joint range of motion evaluation:

- Abduction - Stand with your feet as far apart as possible. Legs shall be at least 45° from the midline.
- Adduction - clench your legs and twist. first right then left. the amplitude of the attraction corresponds to 20°
- Flexion - to pull the thigh bent over the knee and knees towards the chest while remaining torso straight. corresponds to 135

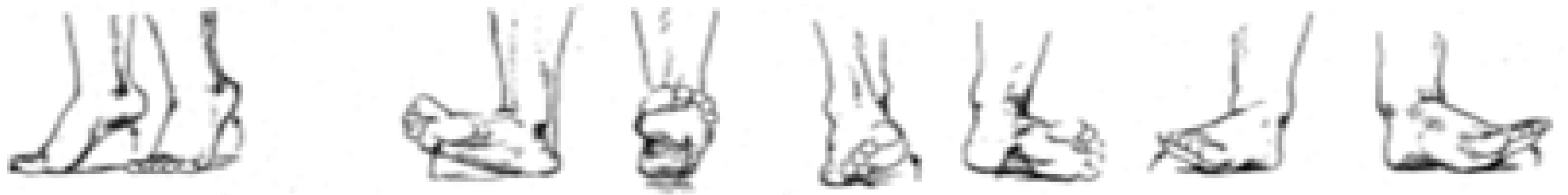
- Flexion and pulling - sitting on a chair "foot to foot"
- Flexion, abduction and external rotation - Sitting on a chair to put the outside of the foot on the knee of the opposite leg
- Extension - Cross your arms on your chest and stand up from a sitting position

Active knee joint range of motion evaluation

- Flexion – a deep sigh from a standing position
- Extension - getting up from a hunch. compensatory movements are observed



Activ foot joint range of motion evaluation



THE IMPORTANCE OF BODY PERFORMANCE EXERCISES





Pulling on the Reins

Hips Moving Side to Side

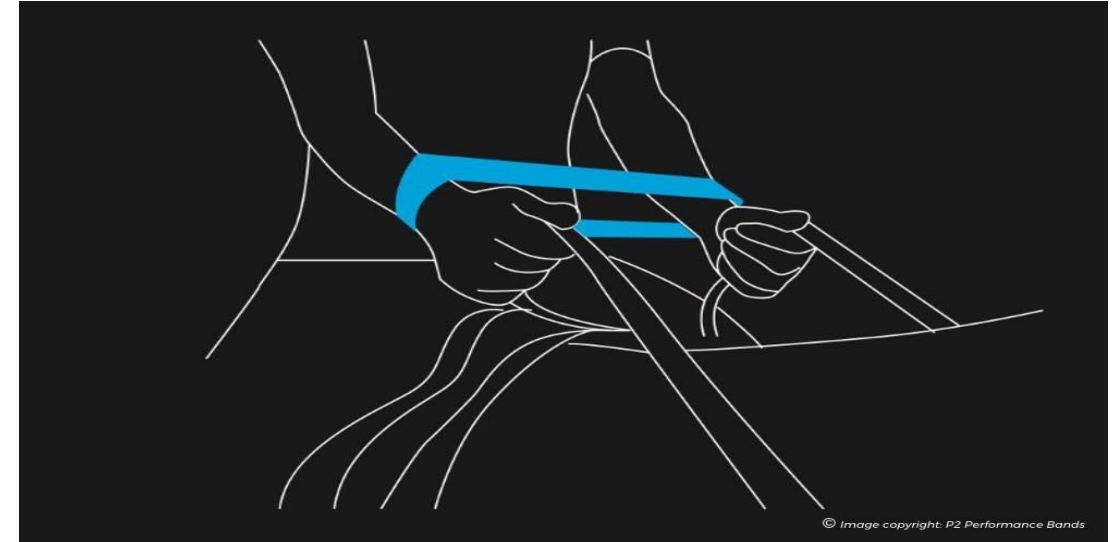


Arched and Straight Back



How do I improve / enhance torso performance and stability? What exercises work best for topical small back stabilizers?

- Exercise while standing up (for example, with your hands) activates the lower torso stabilizers (multiple muscles) rather than lying down!
- Back / torso muscles / stabilizers bind arm and leg movements: Without a stable back, it will not be possible to coordinate hand-torso-leg work.
- Strong back and abdominal muscles are not the same as a stable back.



Waist Control Assessment - A Functional Achievement Test

A measuring scale (cm) shall be affixed to the wall, at the height of the subjects' shoulders, with a line marked on the floor which cannot be crossed. While standing near the wall, subjects are asked to aim with their hands (clenched fist) forward as far as possible (without leaning against the wall) and without moving their feet. The maximum distance that the subject can reach while maintaining the same support area is measured from the distal part of the third palmar. Subjects perform one unregistered test and two recordings, which record the best result.

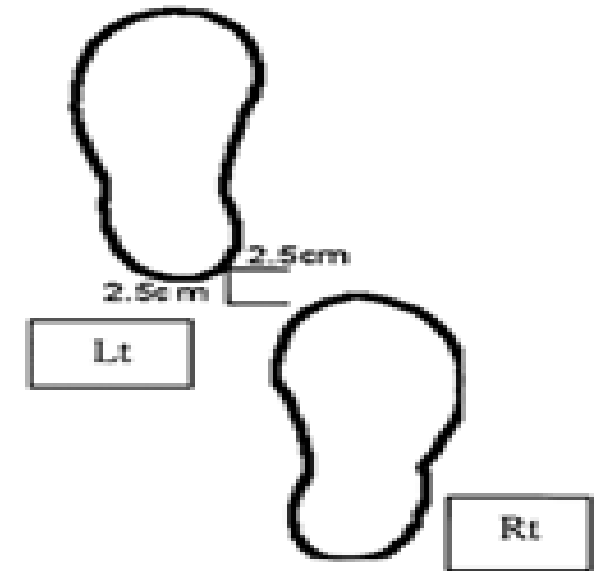


Risk of fall (3 meter test)



Near Tandem Stand Test

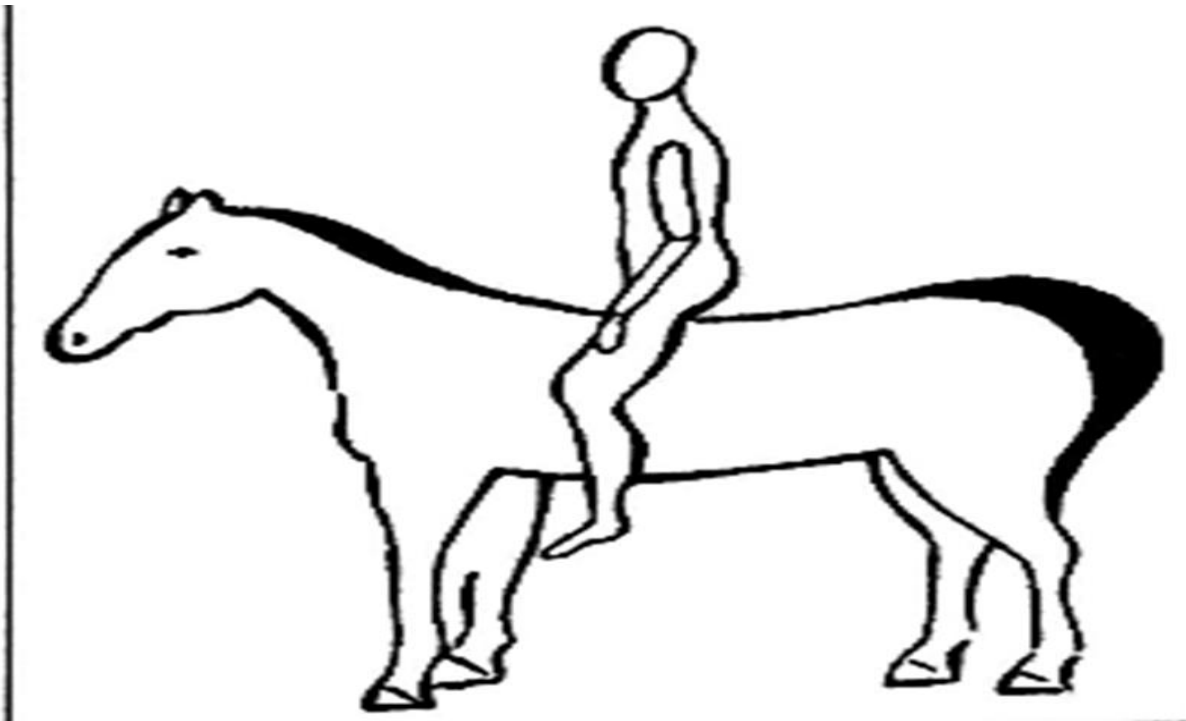
- This is a modification of the Tandem test that is too difficult for older people to perform.
- Lateral stability is appreciated as a key factor in maintaining balance and preventing sideways collapse.
- For this test, subjects are asked to stand foot to foot with a distance of 2.5 cm between the heel of one foot and the toe of the other foot. Then rotate the leg positions. Time is counted in the stopwatch. If an adult cannot sustain this condition for more than 10s, he or she is at increased risk of falling. Do not lean on the supports during the test.



PRACTICAL GUIDELINES

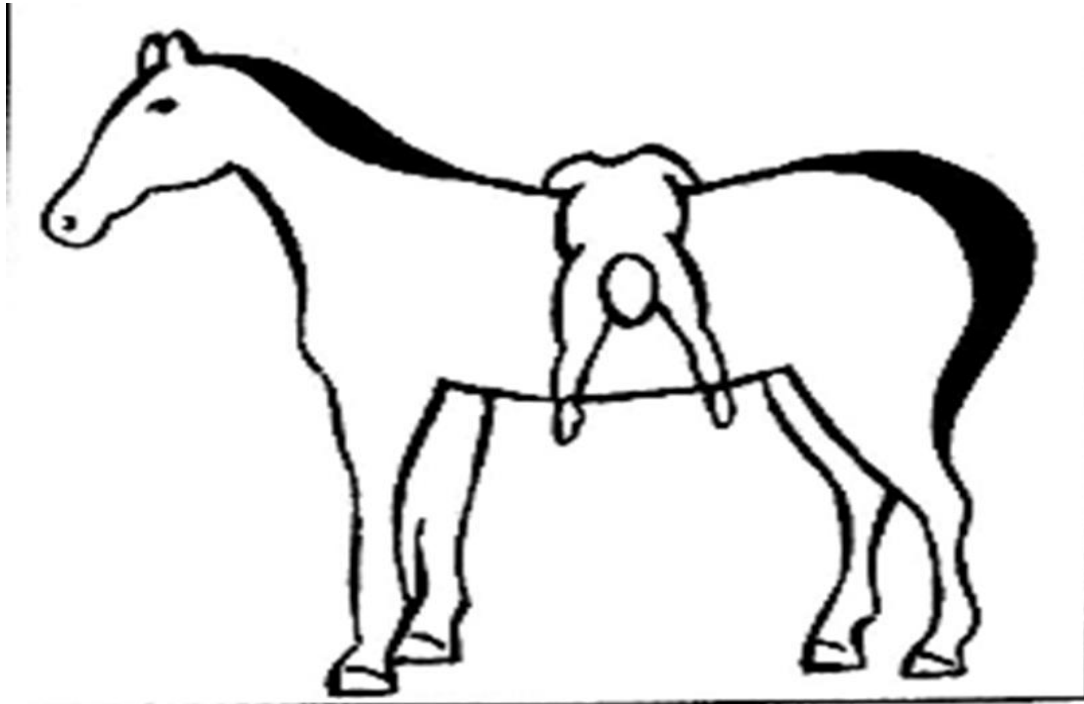
- Systematics (head-lower extremities);
- Body posture and alignment;
- Associate advanced exercise with hypotherapy;
- Progressiveness and slow pace;
- Diversity;
- Breathing;
- Individuality;
- Regularity

The rider sits on a horse with a rider face down



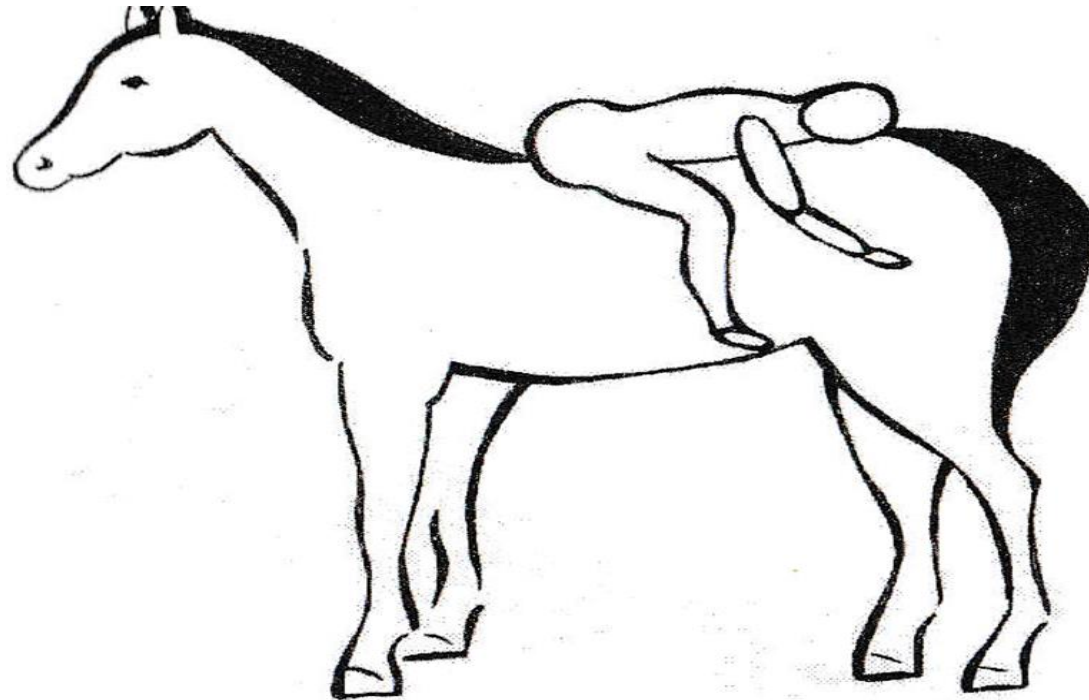
- This position is used to integrate vestibular and / or visual information;
- Postural muscles tighten, their function to keep the body in an upright position for long periods;
- The thigh pull muscles are also active.

The rider lies on his abdomen across the horse's core



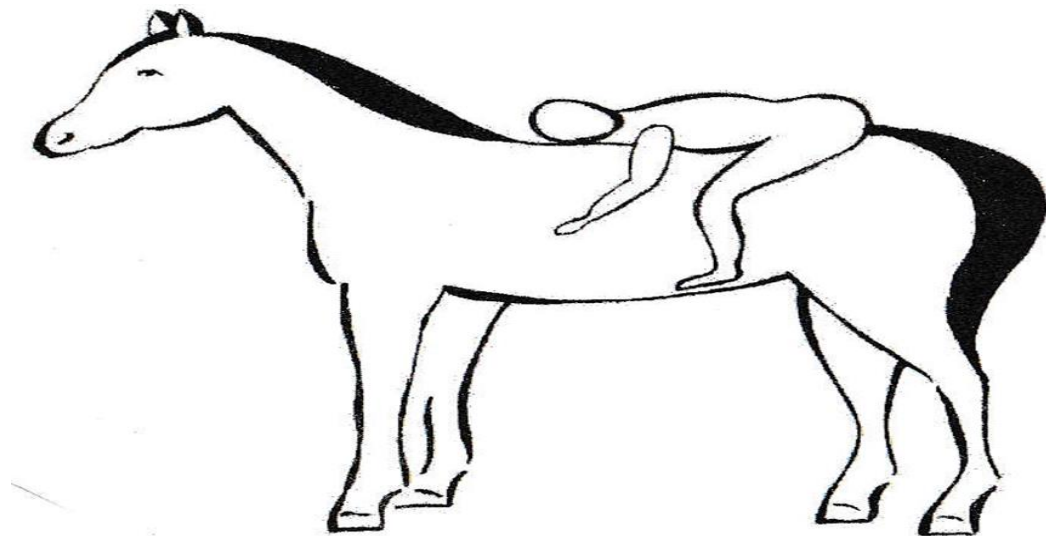
- In order to train and strengthen extensors;
- This position allows the physiotherapist to focus on body symmetry;
- Relax the pelvis and back.

The rider is lying on his stomach with his back to the horse



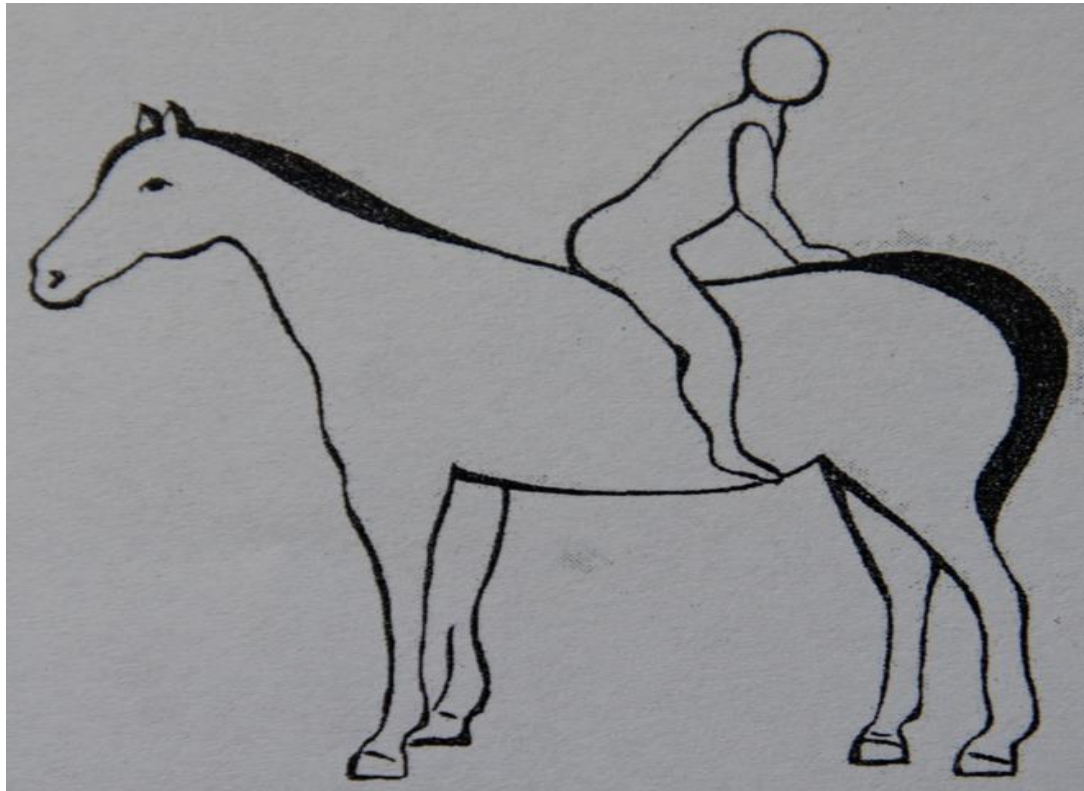
- This position provides greater opportunities for the physiotherapist to incorporate relaxation exercises to reduce rider spasticity;
- Shaping and / or improving armrest with forearms, improved head control, lumbar stability, extended armrest;
- Hamstrings are stretched and extensional dorsal exertion is increased;
- Loss of muscle tone.

The rider lies on his stomach face to the horse



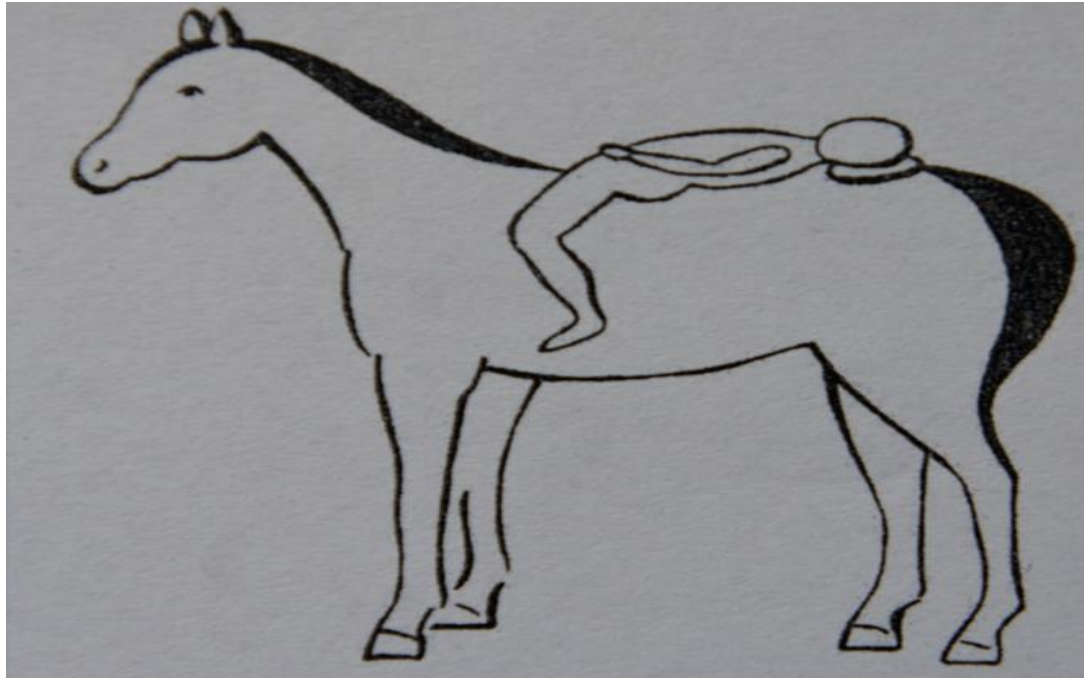
- To reduce muscle tone;
- Stretching hamstrings, relaxing shoulder strap (blade protrusion);
- Head control is formed;
- In this position, respiratory, rider response and behavior should be monitored for reflexes, allergies, and whether the patient has a shunt with hydrocephalus.

The rider sits with his back facing forward



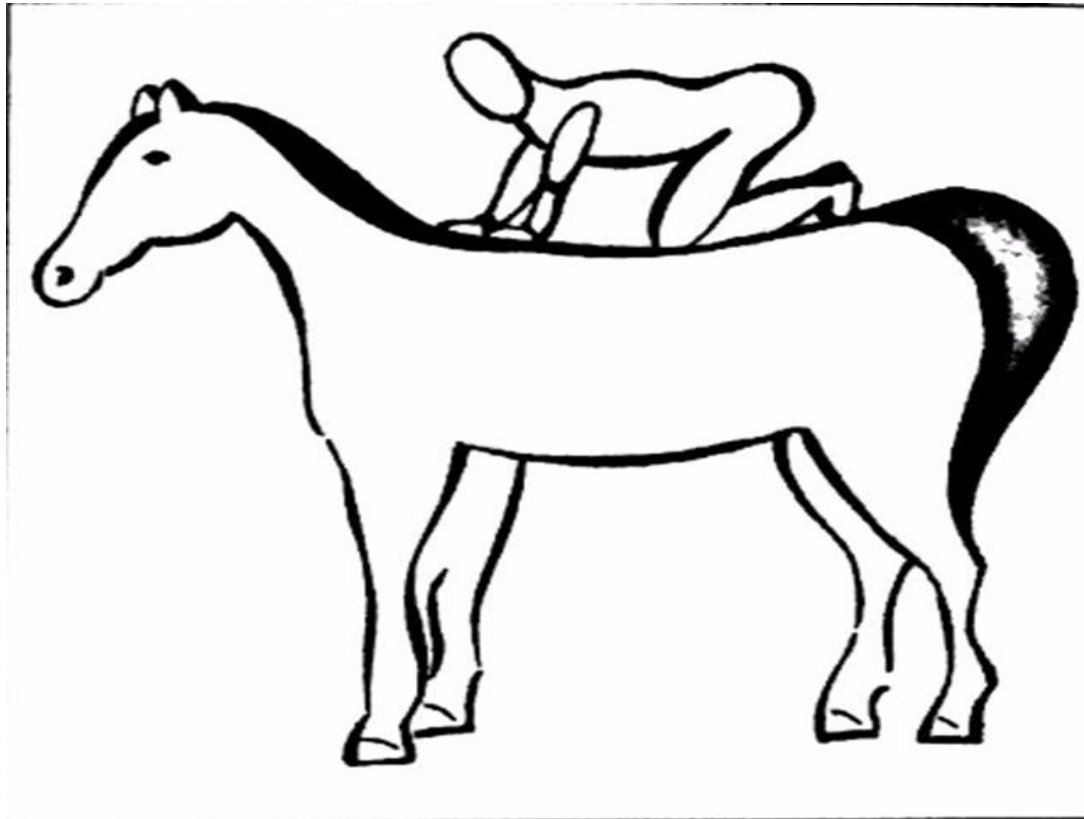
- In order to activate the waist extension and adjust the pelvis position. This position is useful for persons with anterior pelvic tilt and / or thoracic kyphosis. The position of the rider's feet promotes abduction and external rotation, as well as helping to stretch the hamstrings.

Lie on your back



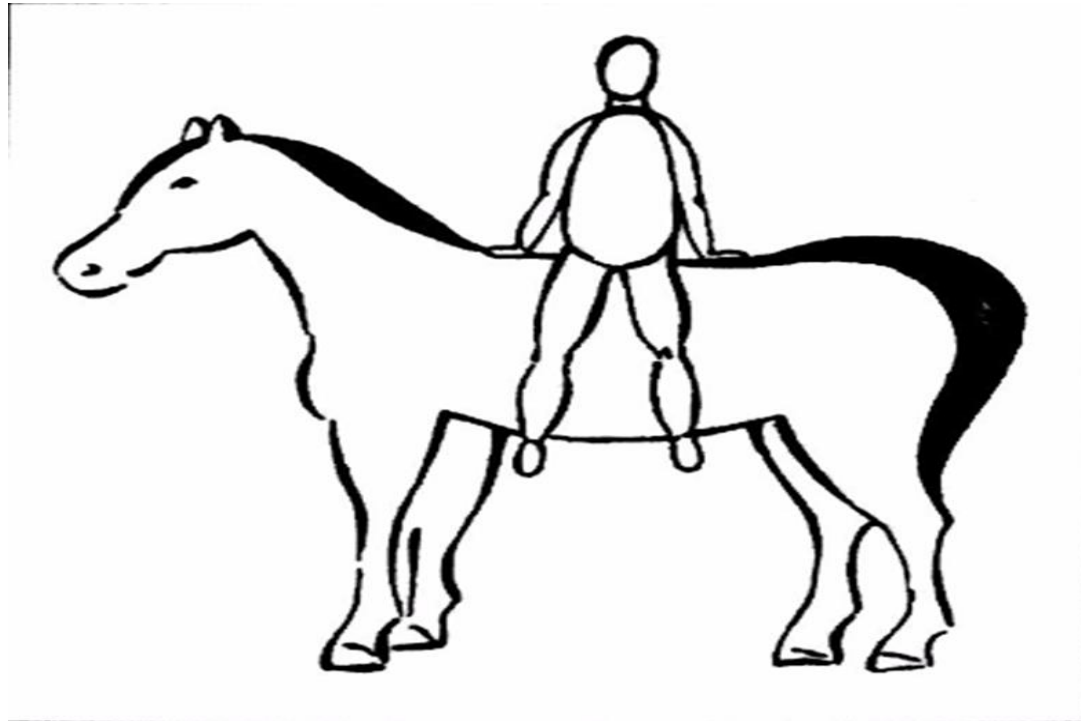
- The goal is to extend neck and torso muscles, strengthen upper, lower extremities, abdominal muscles and / or pelvic dissociation.
- Thigh flexors stretched.

Rider on horseback in position on four



- Stimulate turnip function to improve torso rotation and lateral flexion. Requires a horse with wide back, for safety and stability, and a gantry saddle.

The rider sits sideways on the horse



- To develop lateral torso flexion, weight transfer in the hips, rotation with both hands on the horse's pelvis.

HIPPOTHERAPY SESSION



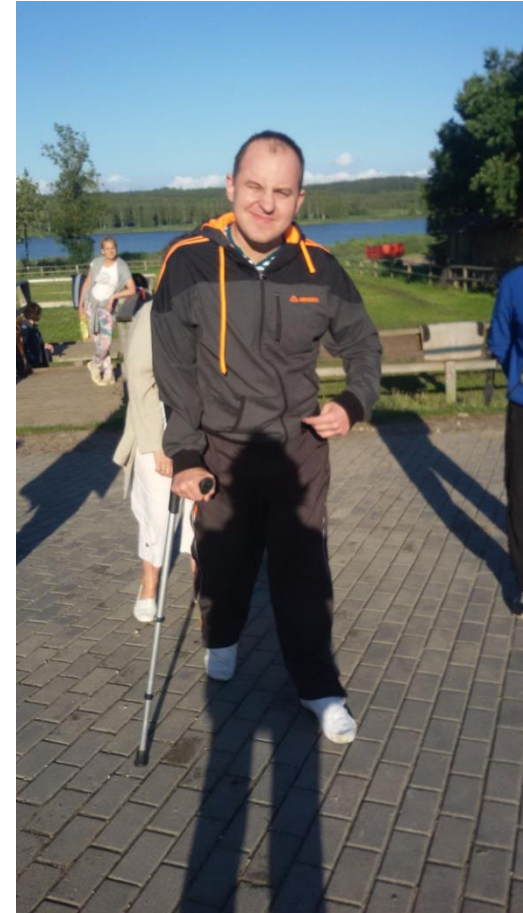
HIPPOTHERAPY SESSION



HIPPOTHERAPY SESSION



HIPPOTHERAPY SESSION





HIPPOTHERAPY

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