EQUEST

Project result 3: Module 4 of 6

Module 4: Therapeutic Lunging and Vaulting Progressions

Practical Guidelines for 3D Gait Biomechanics, Vaulting Gymnastic Progressions, and Lunging Circle Control

Exercises in this module:

- 4.1 The Longeur's Gait & Circle Geometry Audit [STAFF + HORSE]
- 4.2 The Vaulting Balance & Biomechanics Check [STAFF + HORSE]

Exercise settings:

- [STAFF ONLY] no participants or horse
- [STAFF + HORSE] no participants
- [OBSERVING A LIVE SESSION]
- [WITH PARTICIPANTS]

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1. Theoretical & Scientific Baseline

1.1 Biomechanics of Neuromotor Rehabilitation

The Gait Stimulus: In therapy of persons with disabilities, the walking horse is a powerful and unique therapeutic partner. The horse's pelvis moves in three distinct planes (anterior-posterior, lateral, and rotational) during a walk, mimicking the biomechanics and kinematics of the human walking gait.

The Impulses-per-Minute Metric: During a single mounted session, the walking horse transmits between 90 and 110 rhythmic, three-dimensional physical impulses per minute directly from its back to the participant's pelvis.

Postural Corrections & Evidence: These rapid pelvic impulses force continuous, involuntary postural adjustments, activate core musculature, build trunk stability, and help normalise muscle tone in flexor and extensor groups. Clinical evidence (Zadnikar & Kastrin, 2011 meta-analysis) shows that hippotherapy and therapeutic horseback riding improve postural control and balance in children with cerebral palsy[1].

1.2 Therapeutic Equestrian Vaulting

Vaulting combines unmounted and mounted gymnastic exercises on a horse moving in a circle. It is an exceptionally adaptable rehabilitation and educational tool. The safety and therapeutic quality of vaulting depend on the competence of the person lunging the horse. Their role is to maintain absolute control over the horse's gait, speed, circle size, and rhythm, allowing the therapist in the arena to focus 100% of their attention on guiding the participant's physical movements.

2. Mounted Progressions & Specialised Tack

Adaptive Tack Selection: Instead of a traditional saddle, vaulting utilises specialised equipment, which provides the rider with a secure handhold while keeping their legs in direct contact with the horse's back, maximising pelvic movement transmission.

Although a sturdy vaulting surcingle (girth with handles) is often used, we suggest using a bareback pad with integrated handles. It positions the rider further forward—closer to the horse's shoulders and thoracic sling—rather than directly over the mid-thoracic or lumbar spine, which is the weakest structural area of the back. To uphold equine welfare and anatomical best practices, select adaptive tack that fits the horse's back architecture and ensures proper weight distribution.

Progressive Gymnastic Sequence:

1. **Static Sitting at a Walk:** Centering the pelvis, finding the rhythmic gait, and releasing muscle tension.
2. **Active Reaching:** Reaching one hand forward or out to the side to challenge dynamic trunk balance.
3. **Position Changes:** Moving to sit sideways, backwards, or transitioning to a kneeling position on a steady, lunged horse.

3. Practical Exercises for the Arena

Exercise 4.1 The Longeur's Gait & Circle Geometry Audit

[STAFF + HORSE] | **Who:** Instructors (the person lunging) and an observing colleague | **Time:** 5 minutes of observation | **You need:** A 15-metre circle; a stopwatch; a tracking sheet

Objective: Develop the technical equine skill of maintaining a stable, rhythmic circle for therapeutic lunging sessions and therapeutic vaulting. Lunging a therapy horse, especially during mounted vaulting progressions, requires a qualified equestrian professional with specific competence in lunging mechanics and arena safety.

Instructions:

1. Lunge an experienced therapy horse at a walk and light trot in a designated 15-metre circle.
2. Have a colleague stand outside the arena with a stopwatch and tracking sheet for 5 minutes, evaluating:
    a. **Circle Geometry:** Does the horse stay on a true 15-metre track or drift into an oval?
    b. **Tempo Stability:** Count strides per minute: does the horse maintain a steady walk or fluctuate?
    c. **Line Tension:** Is line contact light and steady, or constantly snapping tight and dropping slack?
3. **Reflect:** inconsistent circle geometry or speed disrupts rider balance. The person lunging the horse must master rhythm before participants are introduced.

Builds on Professional Profile (R1) competency 2.4

Exercise 4.2 The Vaulting Balance & Biomechanics Check

[STAFF + HORSE] | **Who:** Instructors and therapists in training, with a qualified colleague lunging | **Time:** About 2 minutes with eyes closed, then three movements | **You need:** A steady horse; a bareback pad and vaulting surcingle

Objective: Experience and evaluate the transmission of the horse's 3D pelvic impulses during progressive balance movements with eyes closed.

Closing the eyes can heighten proprioceptive awareness. Shutting visual input isolates vestibular and somatic feedback and each specific posture alters pelvic alignment and core stabilisation in relation to the horse's movement.

Instructions:

1. Have a qualified colleague lunge a steady horse with a bareback pad and vaulting surcingle at a quiet walk, with all necessary safety precautions.
2. Mount the horse, sit centred, close your eyes for 2 minutes, and focus entirely on pelvic movement (feeling lateral rocking, forward-backward tilt, and rotational twist).
3. Open your eyes and perform three progressive movements:
    a. **T-Position:** Extend both arms out horizontally to the sides.
    b. **Sideways Sitting:** Move legs over to sit sideways on the horse.
    c. **Kneeling:** Transition to a kneeling position on hands and knees on the horse's back.
4. Reflect on core muscle activation changes across postures.

Builds on Professional Profile (R1) competency 1.3, 2.4

Notes and sources

1. Zadnikar, M. and Kastrin, A. (2011). Effects of hippotherapy and therapeutic horseback riding on postural control or balance in children with cerebral palsy: a meta-analysis. Developmental Medicine & Child Neurology 53(8): 684–691. The meta-analysis pooled 8 studies of children with cerebral palsy; the authors note that the small sample size may limit how far the findings can be generalised.