Making Heads and Tails of Hippotherapy

Fall Tri-State Conference 2021

Beth Stamp, PT, DPT, Board Certified Pediatric Clinical Specialist
Meredith Flowers, PhD, PT, DPT, Board Certified Pediatric Clinical Specialist
Learning Objectives

At the end of this presentation, participants will be able to:

• Define hippotherapy
• Explain how equine movement and biomechanics directly impact human systems
• Describe patients who may benefit from hippotherapy as a component of their PT plan of care
• List recommended tack and equipment necessary to incorporate hippotherapy into your physical therapy practice
• Describe examples of goal-directed PT interventions that incorporate hippotherapy as a tool
• Discuss hippotherapy certification opportunities available to physical therapists
• Describe practice considerations specific to utilizing hippotherapy
What is Hippotherapy?

• “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 sensory, neuromotor, and cognitive systems to achieve functional outcomes...hippotherapy is part of a patient’s integrated plan of care.”

- American Hippotherapy Association
The term “hippotherapy” was first used when horses were incorporated into PT sessions in Germany, Switzerland, and Austria.

1987
18 American and Canadian PTs traveled to Germany to study hippotherapy and began development on a North American hippotherapy curriculum.

1992
The American Hippotherapy Association (AHA) was formed.

1999
American Hippotherapy Certification Board (AHCB) was established and first HPCS exam administered.

2004
AHA, Inc. established as the education and networking body for therapists utilizing hippotherapy in practice.

2013
AHCB Entry Level Certification introduced.
Associated Terminology Clarification

- **Equine Assisted Therapy** – goal-directed intervention/treatment led by licensed healthcare professionals\(^1\)
  - Hippotherapy led by PTs, OTs, and SLPs falls into this category

- **Equine Assisted Activities** – global term used to describe any activity that takes place in an equine environment under the direction of riding instructors, educators or coaches\(^1\)
  - Therapeutic Riding and Adaptive Riding fall into this category
The Horse
Equine Conformation

• Balance – proportionate, symmetrical, equal

• Soundness – overall health; no illness or injury

https://extension.uga.edu/publications/detail.html?number=b1400
Four Equine Gait Patterns

• Walk – 4 beat pattern; left hind, left fore, right hind, right fore
• Trot/Jog – 2 beat pattern; diagonal pairs move simultaneously (i.e., left hind and right fore together followed by right hind and left fore)
• Canter/Lope – 3 beat pattern; left hind, left fore and right hind together, right fore
• Gallop – 4 beat pattern; left hind, right hind, left fore, right fore with a period of suspension when all feet are lifted
Horse Gaits - The Walk

1st beat

2nd beat

3rd beat

4th beat

https://www.horsesandus.com/the-4-basic-horse-gaits-explained/#walk
Horse Gaits - The Trot

1st beat

2nd beat

https://www.horsesandus.com/the-4-basic-horse-gaits-explained/#trot
Desirable Equine Movement Qualities

• Suppleness – horse’s ability to shift weight smoothly
• Rhythm – regularity of footfalls
• Symmetry – evenness of movement and step/stride length on both sides of the horse
• Straightness – alignment of the horse’s body in relationship to the direction of travel
• Self-Carriage – ability of the horse to remain balanced and light without help from the rider; impacts all other qualities
Unique Contributions of Equine Movement

• Multi-modal sensorimotor input that can be modified by the therapist
• Highly organized input in a variable environment
• Motivating environment with opportunities to practice functional skills
• Increased practice opportunities for postural control, balance, and pelvic/spinal movement; more than can be replicated in clinical setting
  • ~3,000 steps (inputs to the patient) per 30 minute treatment session
Manipulating Equine Movement

• Impulsion – forward thrust of the horse’s pelvis and hind legs

• Tempo – steps per minute; should remain consistent

• Speed – time it takes to cover a specific distance; most often modified by changing stride length but can be modified by changing tempo
Manipulating Equine Movement

• Change in Direction – horse’s spine and pelvic alignment change with changes in direction

• Transitions in Speed/Gait – acceleration or deceleration, changing gait patterns, halting

School Figures
Horse & Human Interaction
Horse & Human Interaction: Pelvis$^{2-4}$

• Three-dimensional movement translated from the horse’s pelvis to the human’s pelvis and center of gravity
  • Lateral pelvic tilt
  • Anterior-posterior pelvic tilt
  • Pelvic rotation
  • Lateral pelvic displacement
  • Vertical displacement

Horse & Human Interaction: Musculoskeletal

- Pelvic/spinal movement in all three planes
- Repetitive joint approximation and vibration influences joint stability and bone health
- Opportunity to normalize muscle tone though neutral warmth, rhythmic rotation, and prolonged stretch (especially pelvis and hips)
- Opportunity for muscle strengthening (especially core and postural muscles)
Horse & Human Interaction: Respiratory

• Positioning and movement options for trunk elongation and chest opening
• Opportunity for postural muscle strengthening leading to optimized respiratory muscle function
• Normalization of diaphragmatic muscle tone through rhythmic activation and concussive forces
• Lung secretion mobilization with repetitive concussive forces
Horse & Human Interaction: Sensory\textsuperscript{13-15}

- Visual
- Vestibular
- Olfactory
- Tactile
- Proprioceptive
- Kinesthetic
Patients
Identifying Appropriate Patients

- Age
- Height & weight
- Cognitive ability
- Mobility & ROM
- Sitting balance
- Muscle tone
- Fear/anxiety
- Environmental considerations
Absolute Contraindications for Hippotherapy

- Active mental health disorders that would be unsafe
- Acute injury/exacerbations
- Acute herniated disc
- Chiari II malformation with neurologic symptoms
- AAI
- Coxa arthrosis
- Grand mal seizures (uncontrolled)

- Hemophilia (recent or active bleeds)
- Indwelling urethral catheters
- Open wounds over weight bearing surfaces
- Pathologic fractures
- Symptomatic tethered cord
- Unstable internal hardware
Questions to Consider

• Can equine movement be effectively used to assist your patients in meeting their individual goals?
• Have you reviewed the contraindications and received a physician’s release?
• Are you and your team members able to safely handle emergencies that might occur with your patient in an equine setting?
• Do you have access to a horse that will meet your patient’s needs?
• Do you have necessary equipment/tack that will meet your patient’s needs?
• Do you have access to reliable staff/team members who will help you meet your patient’s needs?
Reported Positive Outcomes of Hippotherapy

- Cerebral Palsy\textsuperscript{16-22}
- Autism Spectrum Disorder\textsuperscript{13-15}
- Sensory Processing Disorder\textsuperscript{13-15}
- Down Syndrome\textsuperscript{23}
- Traumatic Brain Injury\textsuperscript{24}
- Individuals with balance deficits\textsuperscript{5,7}
- Individuals with other\textsuperscript{18,22} neurological disorders\textsuperscript{22,24}
Tack & Equipment
Safety Equipment & Tack

**Patients**
- Safety Belts
- Helmets
- Abdominal Binders
- Boppy Pillow/Positioning Pads
- Postural Supports

**Horses**
- Halter & Lead Rope
- Bridle
- Saddle Pad
- Saddle
- Safety Stirrups
- Surcingle
- Leather Grab Strap
Therapy Equipment & Supplies

- Rings
- Cones
- Poles
- Bean Bags
- Floor Spots
- Reacher Stick
- Puzzles
- Hairclips/Clothespins
- Barrel/Tires
- Flashcards
Treatment
Treatment

• Treatment should take place mounted and unmounted.

• Skills practiced on the horse should translate to functional activities on the ground.

• Utilize your entire environment and team to your advantage.
Horse Selection

- Size (height, width, length)
- Movement (impulsion, tempo,)
- Temperament
- Breed
Red Light, Green Light (Strengthening & Motor Planning)

• Items Needed: red and green racing flags

• Activity Instructions:
  • Line patient and horse up on one end of the arena
  • Starter holds a red and green flag at the other end of the area, opposite the patient
  • Flags are waved, alternating between red and green
  • Patient must communicate “stop” or “start” based on flag color

• Progression:
  • Alter horse’s speed
  • Alter patient’s position (ex: decrease hand support, sit stand)
  • Number/Type of commands
  • Transition to the ground

• Considerations - horse’s movement and speed; patient’s position; communication method
Seated Lifts (Strengthening, Range of Motion)

• Items Needed: saddle or saddle pad

• Activity Instructions:
  • Seated forward astride, the patient places hands on cantle and pushes through arms to lift bottom off of saddle
  • Can also be performed forward astride on saddle pad

• Progression:
  • Move hand placement on saddle to saddle pad
  • Increase repetitions
  • Increase length of hold phase

• Considerations – tack; patient’s upper extremity range of motion
Tack & Untack (Strengthening, Balance)

• Items Needed: horse and desired tack
• Activity Instructions:
  • Assist patient in tacking and untacking horse
  • Provide cues for safety, sequencing, manipulation of buckles and straps
• Progression:
  • Increased height of horse to increase distance of required lift
  • Increase weight of tack to lift
  • Increase distance that patient must carry tack (from saddle rack to horse)
• Considerations – height of horse; height and strength of patient; weight of tack items to be lifted; difficulty of manipulation of buckles and straps
Standing Progression (Strengthening, Balance)

• Items Needed: saddle pad
• Activity Instructions:
  • Patient placed in standing or quadruped
  • From quadruped, patient can transition into kneeling, tall kneeling and standing
Standing Progression Continued

• Progression:
  • Alter horse’s speed and movement
  • Increase duration of position hold
  • Add dynamic upper extremity movement
  • Transition immediately into standing and walking over ground

• Considerations:
  • Patient’s size
  • Therapist and side walker's ability to maintain safety
  • Horse’s tolerance for alternative patient positions
  • Patient’s need for additional equipment for standing on or off horse (ex: orthotics, knee splints, walker, gait trainer, etc.)
Leading the Horse (Gait, Strengthening, Balance)

- **Items Needed:** horse and lead rope
- **Activity Instructions:**
  - Patient leads horse over varied terrain
- **Progression:**
  - Alter terrain
  - Add patterns (practice on horse and off horse)
  - Alter walking speed
- **Considerations** – safety of horse and patient (environmental awareness); level of physical assistance patient needs
Play (Hand-eye Coordination, Motor Planning, Participation)

- Multiple people + horse = playmates!
- Opportunities to learn sharing, turn-taking, and how to be part of a team
Chores & Responsibilities (Strengthening, Balance, Participation)

• Feeding
• Grooming
• Cleaning stalls/areas in arena
• Helmet and belt routine before and after ride
• Consider how chores & responsibilities at the barn transfer to performance of similar tasks at home and school
Professional Practice
Certification

- American Hippotherapy Certification Board (AHCB)
  - Certifying body of the American Hippotherapy Association

- AHCB Hippotherapy Certification Exam
  - Entry level

- Hippotherapy Clinical Specialist
  - Advanced
Considerations for Practice

• Land
• Arena – indoors or outdoors
• Horses
• Staff – equine specialist, horse handlers, paid vs. volunteer staff, staff vs. contract therapists
• Insurance
• For-profit vs. non-profit organization
Documentation

• Lead with your discipline. Your patient had a physical therapy session...NOT a hippotherapy session.

• The “Therapy Ball Rule”
  • If you would write therapy ball in your note, you can write horse.
Reimbursement

• Reimbursement can be made by the patient or a third party payer.
• Commonly billed CPT codes:
  • 97110 – Therapeutic Exercise
  • 97112 – Neuromuscular Re-Education
  • 97530 – Therapeutic Activities
• Hippotherapy/Equestrian Therapy is a code in the Healthcare Common Procedure Coding System (HCPCS). This code should not be billed for physical therapy sessions that incorporate equine movement.
Reimbursement Continued

• You are always a physical therapist who provides physical therapy services to your patient - NOT hippotherapy services.
• Develop a relationship with your funding sources and be willing to provide education and documentation to support your use of hippotherapy in your PT sessions.
• Prior-authorizations or letters of medical necessity may be required by some insurance companies for payment.
• Cash-based/private pay is also an option.
Case Study
Nora

• 21 year old female
• Diagnosis of spina bifida (lower thoracic/upper lumbar level lesion)
• Utilizes a manual wheelchair as primary means of mobility
• Received physical therapy that included hippotherapy when she was younger, but Nora had not had any direct treatment in the 3 years prior to the initiation of this plan of care
• Presented with decreased core strength, decreased sitting balance (static and dynamic), decreased trunk and cervical ROM, postural asymmetries
Goals

• Nora’s goals for herself: increase independent performance of all functional tasks in home, school, community environments; increase safety when driving her hand-controlled van

• Physical Therapy Goals
  • 6” forward reach without propping with upper extremities or LOB
  • 6” lateral reach (right and left) without propping with upper extremities or LOB
  • Increased core strength
  • Improved postural alignment
  • Improved trunk and cervical rotation ROM for improved driving safety
Interventions

• School figures and changes in horse’s speed/direction
• Thera-Band FlexBar upper extremity exercises focused on posterior trunk muscles, shoulder external rotators
• Reaching activities while seated on dynamic surface
• Head Laser activities to address trunk and cervical rotation
• Mirror activities to promote improved understanding of postural alignment and ability to self-correct to midline
• Driving practice
Case Results

• Cervical ROM now exceeds peak angles reported as needed for safe driving
• Able to self-correct sitting posture to midline with use of mirror and no additional external cues
• Improved core strength now allows her to hold midline postures while engaged in dynamic movements while riding
• Lateral reach distance has almost doubled
Case Results

<table>
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<tr>
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<th>2018</th>
<th>2020</th>
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<tbody>
<tr>
<td>Right lateral reach</td>
<td>11.25 cm</td>
<td>18.75 cm</td>
</tr>
<tr>
<td>Left lateral reach</td>
<td>13.75 cm</td>
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Summary

• Hippotherapy is a discipline-specific, evidence-based treatment tool that utilizes the purposeful manipulation of equine movement to promote improved function.

• Horse selection directly impacts patient outcomes.

• Growing body of evidence supports use of hippotherapy as a PT treatment tool to impact functional goals for a variety of patient populations.

• Treatment should carryover from the arena into the “real world.”

• Unique considerations exist for hippotherapy practices.
Questions?
References


References Continued


