

Speech-Language Pathology Incorporating Horses

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ABSTRACT

Incorporating horses into speech-language pathology services is a valid treatment strategy that can be used to help the client achieve their communication and/or swallowing goals. The purpose of this article is to discuss the history and terminology of incorporating horses into rehabilitation, explain theories for why incorporating horses works, and provide clinical applications to the American Speech-Language-Hearing Association's nine areas of practice with clinical reports.

KEYWORDS: Equine-assisted therapy, Hippotherapy, Speech-language pathology, Communication, Horses, Rehabilitation

Learning Outcomes: As a result of this activity, the reader will be able to (1) define hippotherapy and differentiate hippotherapy from therapeutic riding; (2) explain at least one neurological and/or theoretical foundation for incorporating horses into speech-language pathology services; (3) describe at least one speech-language pathology session activity incorporating a horse.

Equine-assisted therapy (EAT) is the overarching term used to describe the integration of a specially trained horse into speech-language pathology (SLP) therapy sessions. The term "equine-assisted activities (EAA)" is used to describe therapeutic riding which occurs outside of skilled therapy services. The most prevalent way horses are incorporated into SLP services is through hippotherapy. Hippotherapy and its history will be discussed in the next section. The term "hippotherapy," while well defined by the American Hippotherapy

Association, Inc, has been problematic because many people believe hippotherapy to be a standalone therapy (it is not) and that therapists who use hippotherapy are "hippotherapists" (no, they don't exist). In addition, people are often confused between therapeutic riding and hippotherapy. Borrowing from the aforementioned terms, therapeutic riding is an EAA and hippotherapy is an EAT. Members of the American Hippotherapy Association, Inc., advocate for "therapy first" and not "animal first" language such as "SLP incorporating horses."

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They believe that emphasizing the therapy first would improve and clarify communication to funding agencies, clients, physicians, and other stakeholders; that the incorporation of horses by licensed, credentialed therapists into a therapy session is a tool or strategy used within their scope of practice and not a stand-alone type of therapy.¹

Hippotherapy is described as “the purposeful manipulation of equine movement as a therapy tool to engage sensory, neuromotor, and cognitive systems to promote functional outcomes.”² In a typical treatment session that incorporates hippotherapy, the client sits on the back of the horse on a bareback pad attached by a surcingle around the horse. The horse is led using a halter and lead rope or a bridle or the horse is long-lined/ground driven. The majority of therapy sessions incorporating hippotherapy are conducted while the horse is walking. The horse’s walk is modified in speed and direction at the request of the treating speech-language pathologist to facilitate client responses that move the client toward their specific treatment goals. This combination of professional competence within SLP and professional competence in understanding how to modify the horse’s movement requires a high level of skill. To practice “at the highest level of professional competence and performance” as stated by Principle II of ASHA’s Code of Ethics, speech-language pathologists who incorporate horses into their clinical practice need to have documentation of additional education, training, and, ideally, certification through the American Hippotherapy Certification Board, to ensure their clients that they are maintaining the highest level of service provision.³

NEUROLOGICAL AND THEORETICAL FOUNDATIONS OF HIPPO THERAPY

An average horse walks at a rate of approximately 100 to 125 steps per minute. Therefore, a person sitting on a walking horse would move as the result of the horse’s walk 500 to 625 times in 5 minutes, 3,000 to 3,750 times in 30 minutes, and 5,000 to 6,250 times in 50 minutes.⁴ SLP sessions vary greatly in length, but are typically between 30 and 50 minutes.^{5,6} In

addition to being moved by the movement of the horse, the client’s nervous system is simultaneously receiving sensory input across proprioception, vestibular, touch, pressure, vision, hearing, smell, etc. There is no man-made treatment tool including the therapy swing, therapy ball, exoskeleton, or even a mechanical horse, which can provide the whole body neuromotor and sensory integration at this level of controlled repetition over time.⁷ This combination of whole body systemic, repetitive motor movement, and multisensory integration occurs only during hippotherapy. As a result, the neurological system of the client is primed for learning and progressive treatment goals across all areas of communication and swallowing can be achieved effectively and efficiently.

Speech-language pathologists must be able to defend why a specific horse was chosen for a specific therapy session for a specific client as well as when and why a new or different horse is needed. A therapy session depending on the movement of the horse is only as good as the horse involved. Therapy activities can be made easier or more difficult just through the incorporation of different horses over time. Therapy horses must be well conditioned, trained to modify their movement within one gait, across gaits, and be desensitized to the mounting ramp, Hoyer lift (if used at the location), and typical therapy materials such as bubbles, rings, and noise-making toys, to name a few. Most equestrian facilities that host or offer speech-language therapy incorporating horses have a 1- to 3-month, on average, documented training and sensitization program for their horses. Horses that successfully complete this program are then incorporated into therapy sessions. Ideally, the horses incorporated into the therapy sessions should be long-lined (i.e., driven), as it encourages the horse to be engaged throughout the body which can result in better quality of movement. Horses can also be led using a halter and lead rope or bridle during the therapy session.⁸ When led, the horse leader must not impede the horse’s natural walk, yet encourage the horse to do what is asked of them such as going from a slow walk to a medium walk, walking on and off a 6-inch platform, or stop in front of a mirror without moving. Additionally, everyone involved must acknowledge that

horses are unpredictable and even the most well-trained therapy horses can spook and accidents can happen. The therapist must be able to produce documentation of the horse and facility standards to show that they are practicing within industry standards.⁹ Horses of all sizes and breeds can be incorporated into therapy; the key is the quality of the horse's movement. It is in the best interest of speech-language pathologists to have access to different therapy horses to have appropriate options for their clients throughout treatment.

Research from dynamic systems theory and dual-task paradigms in rehabilitation support the idea that whole body movement and sensory input co-occurring with skilled treatment techniques and strategies facilitate improved function.¹⁰⁻¹³ Specifically, dynamic systems theory proposes that motor development results from the interactions and integration of multiple subsystems within the nervous system combined with functional tasks in the environment.^{14,15} Within SLP, the motor movements for articulation, respiration, voicing, swallowing, pointing, etc., can be facilitated through the simultaneous activation of the different subsystems combined with functional tasks—in other words, using hippotherapy in combination with functional activities. The horse's movement simultaneously activates different neurological subsystems, while the speech-language pathologist engages the client in functional tasks. This combination can result in spontaneous verbalizations, word production, initiation of communication, increased eye contact, and desire to communicate, as well as decrease negative behaviors.

Dual-task paradigms are used to study situations in which an individual performs two tasks, typically motor and cognitive, simultaneously.¹⁶ The ability to perform two tasks simultaneously is learned over time as part of normal development. That is, older children and adults are able to complete more complex dual tasks than younger children, while children around 2 years of age may have difficulty completing simple dual tasks.¹⁷⁻¹⁹ Dual-task training has also been used to improve function in elderly people with cognitive decline.²⁰ When dual-task paradigms are applied to SLP incorporating horses, the physical task is staying

centered and balanced on a moving horse and the cognitive task is communication. The speech-language pathologist is able to control the physical and the cognitive (dual) tasks of the client throughout treatment. The physical load is the position of the client on the horse and the movement of the horse. The physical load may be used to explain why difficult motor tasks are practiced first when the horse is stopped and then practiced while the horse is walking. The cognitive load is the communication or swallowing skill—articulating a phoneme correctly, control of voicing, control of respiration, saying a sentence, auditory comprehension, bolus control, initiation of swallow, etc. By asking the client to perform increasingly difficult speech, language, and swallowing tasks while on a moving horse, the speech-language pathologist is able to replicate functional skills. As a result, the client's nervous system learns to manage these tasks during development or after neurological injury. Presentations at the HETI Congresses described the effectiveness and efficiency of therapy sessions incorporating horses. In some case reports, communication goals were achieved much faster than off-the-horse speech therapy.²¹⁻²⁵

Two bonuses that occur when incorporating horses are the increased feelings of happiness and well-being that occurs as a result of a release of endorphins that the client experiences while on the horse and the relationship that develops between the client and their horse.^{26,27} These social and emotional aspects of language cannot be ignored. The relationship between the horse and the client can facilitate communication. The horse may establish eye contact with the client before and/or after a therapy session. The client may talk to the horse before talking to people. The client may even talk about their horse to other people, e.g., "My horse's name is Sunny." Additionally, the increased feelings of well-being by the client when they are on the horse may facilitate greater attention to task and willingness to engage in difficult activities than when the client is off the horse (Fig. 1).

While hippotherapy is the primary way horses are incorporated into SLP, it is not the only way. The speech-language pathologist can use horse-related activities such as grooming, feeding, and leading as therapy activities. For



Figure 1 Relationship through eye contact and touch between the horse and the client after their second session together.

example, grooming requires a specific order of differently shaped and colored brushes and how to use them which can be used to target sequencing, listening and receptive language, self-correction, use of expressive speech for questions, and to talk about what they are doing. Feeding requires following directions, measuring grain, carrying hay, and making sure the correct horse gets the correct bucket of feed. Leading requires communicating with the horse and planning where to go. These activities can also be used to target goals within SLP, but the client is off the horse.

Because hippotherapy is a treatment tool within physical and occupational therapy as well as SLP, interprofessional practice and cotreatment can readily be achieved. For example, the physical therapist can target gross motor function, such as trunk control, while the speech-language pathologist targets communication and/or swallowing. In fact, the physical therapist may facilitate better body posture and position in the client which may then facilitate

greater success with communication and/or swallowing activities with the speech-language pathologist. The same symbiotic relationship can also occur with other aspects of interprofessional practice, for example, with clinical psychology or physical therapy, and may make cotreatment using hippotherapy very effective.^{28–33}

HISTORY AND RESEARCH

The history of using horses to benefit people can be found as early as 400 BC as documented by Hippocrates and was followed by writings from physicians and therapists in Europe through the 1800s. However, the seminal moment that ignited exponential growth in using horses in rehabilitation occurred in 1952 when Liz Hartel, a woman with leg paralysis from polio, won the Olympic silver medal in the equestrian competition of dressage. Ms. Hartel described how riding horses helped her improve physical function post-polio. As a result,

physical therapists in Europe began using “hippotherapy” in their clinical practice.³⁴ Hippotherapy comes from the combination of *hippos*, the Greek word for horse, combined with the word *therapeia*, the Greek word meaning “healing, curing.”³⁵ The majority of published research studies in hippotherapy have focused on physical therapy goals such as improvement in balance, posture, gait, and/or gross motor coordination, and reduction of spasticity. These studies revealed positive gains in each of these areas when hippotherapy was used as a treatment tool.^{36–53} Over the past 20 years, additional research in hippotherapy has been published within occupational therapy and SLP. The number of peer-reviewed hippotherapy publications follows in the same order with the most publications from physical therapy, followed by occupational therapy, and finally SLP. A systematic mapping review of hippotherapy publications from 1980 to 2018, published in 2021, found 78 articles that met strict inclusion criteria, of which only two were from SLP—Macauley and Gutierrez⁵⁴ and Macauley.⁵⁵ It needs to be noted that confusion over terminology between countries continues to make literature searches quite difficult.⁵⁶ Hippotherapy in the United States is defined and implemented differently than hippotherapy in Europe. In Mexico and other Spanish-speaking countries, hippotherapy is called equinoterapia. In Germany, hippotherapy is used within physical therapy, but is considered therapeutic riding within SLP.⁵⁷

LANGUAGE DISORDERS

The first study to document the impact of incorporating horses into speech therapy was written by Dismuke in 1981. Dismuke used the term “therapeutic riding” to describe speech therapy sessions conducted while the participants were mounted on horseback. While the term “therapeutic riding” was acceptable in 1981, hippotherapy or SLP using equine movement would be the correct terminology if the article were published in 2021. In this study, 26 children with a moderately severe language disorder and learning disabilities served as participants, with 11 receiving speech therapy in the public-school setting

and 15 receiving speech therapy using hippotherapy. Results indicated that the children who received speech therapy using hippotherapy showed greater improvement in all language measures when compared with the children who received speech therapy in the public-school setting. Dismuke stated that the results indicate the value of carefully designed SLP/hippotherapy programs and concluded that further research must focus on generating empirical support for the effectiveness of hippotherapy within SLP.⁵⁸

Macauley and Gutierrez⁵⁴ examined the effectiveness of hippotherapy versus traditional therapy for children with language-learning disabilities (LLD). Three boys aged 9, 10, and 12 years and their parents independently completed a satisfaction questionnaire at the end of traditional therapy (time 1) and again at the end of speech therapy/hippotherapy (time 2). A comparison of the responses from time 1 and time 2 indicated that both the parents and the children reported improvement in speech and language abilities after both traditional treatment and hippotherapy, but the boys reported less improvement and more motivation following the hippotherapy sessions than following the traditional therapy. The authors suggest that the boys did not think their SLP/hippotherapy sessions were “therapy” and as a result did not think they had improved their language skills. The parents reported a higher increase in language skills following the hippotherapy sessions than traditional sessions. They also reported that their sons talked about their SLP/hippotherapy sessions with their family and friends but did not talk about their traditional speech therapy sessions with anyone. The authors concluded that SLP using hippotherapy was effective and had the added bonus of greater motivation and satisfaction for the clients.⁵⁴

At the 2006 Horses in Education and Therapy, Intl. Congress, Macauley presented the results of a grant-funded study that investigated the use of hippotherapy as a SLP treatment tool to facilitate expressive communication in children with autism spectrum disorders. Fifteen children aged 2 to 12 participated in 12 weeks of speech-language therapy incorporating equine movement. Sessions occurred for 50 minutes

once a week. Attention and communication behaviors were measured through parent and teacher surveys before the initiation of the treatment sessions with the horse and following the last treatment session with the horse. In addition, objective data from session notes were reviewed for each participant. Results indicated that the most improvement was observed in the four children who were nonverbal because all four children either verbalized or said a word during the speech therapy sessions incorporating equine movement. 93% of the participants met their speech therapy treatment goal by the end of the 12 weeks. An 80% reduction in negative behaviors such as self-stimulation was also observed during the speech therapy sessions incorporating equine movement. Eleven of the 12 participants maintained their improved communication abilities 1 month following the end of the study.⁵⁹

The most recent peer-reviewed article on SLP incorporating horses was written by Jackson-Maldonado. In this study, the communication and language abilities of nine children with Down syndrome aged 4 to 7 years were measured at time A—before the initiation of speech therapy, Time B—after 3 months of school-based speech therapy, and Time C—after 6 weeks of biweekly speech therapy sessions incorporating hippotherapy in addition to the school-based therapy. Results indicated that the participants' expressive language abilities, as recorded by standardized assessments, improved at a faster and greater rate between Times B and C (6 weeks) than between Times A and B (3 months). The author concluded that SLP incorporating hippotherapy resulted in greater improvements than school-based speech therapy alone.⁶⁰ The difficulty in generalizing these results arises in that the participants received a greater amount of speech therapy from Time B to Time C, 6 weeks \times 2 SLP incorporating hippotherapy sessions and 1 school-based therapy session = 18 sessions, than from Time A to Time B, 12 weeks of once-a-week school-based therapy sessions = 12 sessions. The greater improvement in language scores between Times B and C could be explained by the dosage increase in speech therapy, horse notwithstanding.

ARTICULATION

Macauley⁵⁵ used a single-subject multiple-baseline design to study respiration and motor speech abilities in two persons with cerebral palsy and dysarthria. Respiration measurements including tidal volume, vital capacity, and total lung volume and diadochokinetic rates for pa, ta, ka, and pataka were taken immediately before and after speech therapy sessions that used hippotherapy, equine movement, as a treatment tool. Results indicated that respiratory volumes increased and the diadochokinetic rates were faster immediately following each treatment session for both participants. Baseline diadochokinetic rates and respiratory volumes both showed increases after seven sessions. These increases were maintained at least 1 week posttreatment.⁵⁵

COMMUNICATION MODALITIES

A peer-reviewed SLP using hippotherapy publication was conducted by Drewry and Macauley. They investigated whether hippotherapy facilitated spontaneous communication in a young adult with a severe traumatic brain injury who used a picture-based augmentative communication device. They recorded the number of times the participant initiated communication using her device during a baseline phase, speech therapy sessions in a treatment room, speech therapy using hippotherapy, and a generalization phase. Results indicated that the participant initiated communication using her device in 0% of opportunities during baseline, 0% of opportunities during speech therapy in a room, 60% of opportunities during speech therapy using hippotherapy, and 39% during generalization. They concluded that speech therapy using hippotherapy stimulated the attentional systems of the body resulting in increased desire and motivation to communicate.⁶¹

SLP incorporating horses has also been the subject of many presentations at the American Speech-Language-Hearing Association; American Hippotherapy Association, Inc.; Horses in Education and Therapy Intl.; and the Professional Association of Therapeutic Horsemanship, Intl. conferences over the years. Specific information can be found in their respective program books and/or conference proceedings.

CLINICAL APPLICATIONS

The following are examples of activities for SLP treatment sessions incorporating the horse for the big nine areas of scope of practice for speech-language pathologists as stated by the American Speech-Language Hearing Association. These activities are by no means the only activities an SLP can use when incorporating horses into treatment sessions. These activities and associated case reports from the clinical files of the author are meant to be a starting point, a source of discussion, and encouragement for speech-language pathologists, especially those with horse backgrounds, to add horses as a treatment tool in their clinical practice.

I. ARTICULATION

Goal: Improve intelligibility of connected speech and correct production of specific phonemes.

Sample activity: Client sits on the back of the horse and practices saying the target phoneme while the horse is led at a walk by an equine professional. The SLP walks beside the client and uses their professional skills to elicit correct articulatory placement, using different positions of the client on the horse (e.g., forward sitting, side sitting, backward sitting, prone, supine) and different movements of the horse (e.g., slow walk, medium walk, fast walk, trot), during different movement patterns (e.g., straight lines, curvy lines, circles, serpentine) to facilitate correct articulatory placement. The positions of the client and horse movement are determined by the desired articulatory placement of the phoneme and the ease or difficulty of the production of the phoneme off the horse. For example, a bilabial phoneme may be elicited more readily through prone position, while a velar phoneme may be elicited more readily using the supine position. Correctly articulating the phoneme while the horse was standing still would be the easiest horse "movement," while correctly articulating the phoneme while the horse was walking would be more difficult. Adding slow, medium, and fast walking followed by different patterns would increase the difficulty even further. Phonemes that require more muscle engagement, such as /r/, may be elicited easier following the jog or trot which naturally engages more muscles throughout the body.

The client can also sit on the moving horse and different picture cards are placed around the arena, dropped on the ground, taped to the sides, hidden under cones, or placed in a mailbox in the arena. The horse stops at each place where there is a picture card and the client practices the correct placement 10 times before the horse walks to the next one.

Case Report 1

A 10-year-old boy with significant difficulty articulating /r/ participated in SLP treatment sessions incorporating hippotherapy. At the beginning of therapy, he was less than 25% correct producing singleton /r/, (e.g., read, rod), 10% correct producing vocalic /r/ (such as ear, oar, ire), and 10% correct producing /r/ clusters (e.g., tr, dr, pr, kr, sr) following 5 years of speech therapy. Synthesizing the movement of the horse (slow walk, fast walk, trot) with client positioning (forward facing, backward facing, sitting sideways, and standing), and /r/ facilitatory techniques, the client produced repeated clear singleton /r/ during the second treatment session incorporating hippotherapy and repeated clear vocalic /r/ during the fourth treatment session incorporating hippotherapy. After 6 months of 50-minute speech pathology treatment sessions incorporating hippotherapy using different horses, the client was 70% correct with singleton /r/, 50% correct with vocalic /r/, and 65% correct with /r/ clusters during conversation (Fig. 2).

Case Report 2

A 4-year-old boy with developmental apraxia of speech participated in SLP treatment sessions incorporating hippotherapy. At the beginning of therapy, he had errors in 10 phonemes and 3 vowels and was unintelligible to unfamiliar listeners. In addition, he was becoming reticent to speak and beginning to throw tantrums. This child was seen for 50-minute speech-language therapy sessions utilizing equine movement once a week. Correct placement of articulators was taught using facilitatory speech therapy treatment techniques, principles of motor learning, and gradual progression of horse movement with different positions of the client



Figure 2 Saying sentences filled with /r/ words while engaging all of the body muscles to stand on the horse. Please note this is a boy with strong physical skills and the side walkers were just out of the photo. Using a smaller horse for this activity promoted higher engagement of muscles and a clearer /r/.



Figure 3 Practicing correct articulation while looking in mirror on the wall in front of the horse.

on the horse. This client showed improvements in articulatory agility and was approximately 50% intelligible to unfamiliar listeners after 8 months and his tantrums disappeared (Fig. 3).

Case Report 3

A 26-year-old female with dysarthria following traumatic brain injury demonstrated clearer

articulation and greater intelligibility following once-a-week, 50-minute speech-language therapy sessions utilizing equine movement over a 3-year period. At the start of speech therapy, she was approximately 55% intelligible to familiar listeners and 15% intelligible to unfamiliar listeners. In addition, her voice was soft, she ran out of breath while speaking, and she was unable to regulate loudness. Her

functional goals were to speak publicly on behalf of other young TBI survivors and sing karaoke with her father. During the treatment sessions, she started forward facing and practicing CV, VC, CVC with the different phonemes. As her articulation became consistent, the CVC was increased and the horse was asked to walk a little faster, or go from a slow to a medium walk. As she grew in confidence and ability, she was put on different horses for different sessions because individual horses have individual patterns of walking. By changing the horse, the movement is changed, and the activities can be made easier or more difficult. At discharge, the client was 99% intelligible to familiar listeners, 75% intelligible to unfamiliar listeners, was able to control loudness, and had met both of her treatment goals. It was interesting to note that this client demonstrated greater improvement immediately following treatment sessions in which the horse with dressage training was used as compared with the treatment sessions in which horses without dressage training were used. The dressage training may have helped the horse to “get in a good frame” while long-lined resulting in more symmetrical movement patterns across all three planes of movement.

II. FLUENCY

Goal: Increase fluent speech and decrease number of disfluencies.

Sample activity: The client practices their fluency-enhancing techniques while sitting on a walking horse. The position of the client and the movement of the horse can be varied (as described earlier) to modify the difficulty of the activity. Talking to the horse is also considered a fluency-enhancing technique.

Another activity is using the horse’s steps as a metronome. The client says one word with each step of the horse. First in unison with the therapist and then on their own. This is a higher-level skill as the client must be able to feel the steps. The horse can walk slow and then fast to change difficulty.

Another activity is for the client to voluntarily stutter whenever the horse changes direction or turns or passes a specific place in the arena.

Case Report

A 17-year-old male with severe blocks, that occurred an average of 2.8 times per minute in conversation, participated in speech therapy incorporating hippotherapy. The client sat on the horse’s back facing forward on a western pad and surcingle while the horse was long-lined. The professional horse handler kept the horse moving in an engaged walk at the same tempo in one direction and switched to the opposite direction halfway through the 50-minute sessions. The speech-language pathologist walked beside the horse and engaged the client in conversation on topics that the client rated “not anxiety provoking” to “highly anxiety provoking.” The client was asked to “just talk” and to not worry about blocking. This was extremely difficult initially for the client, but after eight sessions of speech therapy incorporating hippotherapy, his average number of blocks per minute had decreased to 1.2 per minute and from as long as 30 seconds to an average of 12 seconds. These improvements carried over into his speech off the horse. He continues to receive speech therapy incorporating horses (Fig. 4).

III. VOICE AND RESONANCE

Goal: Decreased hypernasality.

Sample activity: Client practices velopharyngeal closure while lying supine on the back of the horse, first while the horse is standing still, then while the horse is walking slowly, and then while the horse is walking at a regular pace. This body position brings the tongue and velum closer to the posterior pharyngeal wall. When the client is in this position, correct posterior tongue placement for back phonemes (e.g., /k/, /g/, /r/) and velopharyngeal port closure can be facilitated, resulting in clearer articulation and improved distinction between nasal and non-nasal phonemes.

Case Report 1

A 7-year-old boy with repaired bilateral cleft lip and palate had difficulty articulating /s, sh, k, g, r/. He was very talkative and quite social. He enjoyed the challenge of “telling his brain where to put his tongue” when in different positions



Figure 4 Conversation with speech-language pathologist during hippotherapy while horse is long-lined.

on the horse—forward facing, backward facing, and lying on his back. A horse with a wide back without prominent vertebrae was used to facilitate comfort when the client was lying supine on the horse's back. The client would practice in the supine position while the horse walked and then sit upright and practice his sounds when the horse stopped at the large mirror at the end of the arena. He has shown great progress and continues in speech therapy incorporating hippotherapy.

Case Report 2

A 12-year-old girl with a cognitive disorder and poor intelligibility due to hypernasal speech improved her nasal/nonnasal abilities following speech therapy sessions using hippotherapy. This client spent a lot of time going back and forth from sitting forward facing to lying supine on the horse. First, she practiced nasal/nonnasal phoneme activities (may-bay, knee-dee) while lying down on the back of the horse while the horse was standing still. Then she was helped to sit up and asked to say the same words with the same clarity. This was difficult for her to do and motivation using the horse was added. After 20 trials, she could do a fun activity on the horse, such as put rings on poles, go over the ground poles, or trot a few steps. She responded to the motivation activities very well. As she became more consistent with nasal/non-

nasal activities, the horse was led in different patterns such as circles, figure eights, and serpentine. Gradually, she began to have less hypernasality in her speech off the horse and her intelligibility has improved. She continues in treatment.

Goal: Increase respiratory support of speech and speech loudness.

Sample activity: Client will sustain a phoneme while the horse walks. The speech-language pathologist will ask the client to count the number of steps the horse makes over ground poles. The goal is for the client to beat the number of previous steps. Another option is for the client to gradually increase the loudness of their voice with each step of the horse. The SLP can do these tasks with the client. Sustaining voice is more difficult the faster the horse walks; so, these tasks can be made difficult during the sessions merely by having the horse leader or long-liner encourage the horse to walk at a faster pace.

Case Report

A 26-year-old female with dysarthria presented following traumatic brain injury. The client demonstrated clearer articulation and greater intelligibility following once-a-week speech-language therapy sessions utilizing equine movement. The authors noted that the client demonstrated increased intelligibility following treatment sessions in which different horses



Figure 5 Lying supine on horse facilitated lung expansion during respiration exercises.

were used, but the greatest improvements in intelligibility were noted following the sessions in which the horse with dressage training was used. The dressage training appeared to result in the ability of the horse to “get in a good frame” while long-lined resulting in more symmetrical movement patterns across all three planes of movement (Fig. 5).

IV. RECEPTIVE LANGUAGE

Goal 1: Follow multistep directions.

Sample activity: The client follows directions while sitting on the horse. The directions can be such that the client has to tell the horse where to go to complete the command. For example, “Go to the blue barrel, pick up the toy flower, and bring the flower to me.” The client has to start by telling the horse to “go to the blue barrel” and after picking up the toy flower (which is on the barrel along with two other toys as spoils) tells the horse to “Go back to Dr. Beth.”

Note: One of the best activities for receptive language can be done in a group session with two or more clients on horses. The clients have to follow each directions or tell each other what to do while on the horse in the arena with options such as “walk over the pole,” “go around the barrel,” “look in the mirror,” “trot from A to C” (in a dressage arena), as well as options such as put the ring over the blue stick, walk to the blue cone then the yellow cone then the purple cone. These activities are so much fun and the client is very motivated to be successful.

Case Report

A 16-year-old with autism spectrum disorders was able to use his speech when asked with more than 80% accuracy, but his ability to follow two-step directions was less than 20%. During speech therapy sessions incorporating hippotherapy, the client was able to maintain attention to task and follow directions while on the walking horse for up to 40 minutes. At first, he would sit on the walking horse while the SLP told him what he was going to do. When the horse stopped, he was asked to do the action, e.g., close your eyes, touch the horse’s neck, give me the yellow ring, or wave to (another client). The directions were gradually increased in length and syntactic complexity and while the horse was stopped and while the horse walked. Over time his ability to follow two- and then three-step directions improved to over 60% (Fig. 6).

Goal 2: Understand basic concepts such as up, down, under, over, around, through.

Sample activity: While the client is on the horse, the horse does these actions while the SLP talks about what the client is doing “You are walking around the big orange cone,” “You are going up onto the bridge,” “You are going down off the bridge,” “You are walking under the tree.” After doing the action, e.g., “under,” the SLP shows the client two pictures and asks “which one is under?” This activity can be repeated multiple times and can incorporate errorless learning. One of my clients chose to walk on and off the bridge 14 times in a row.

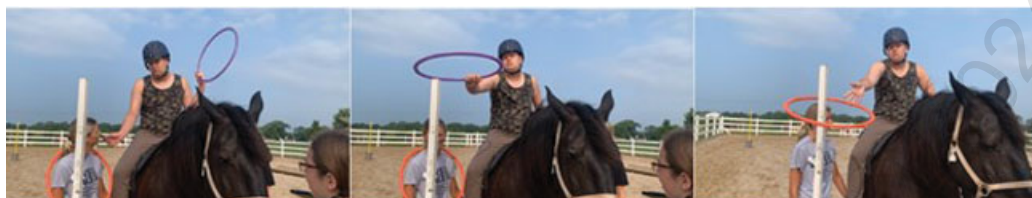


Figure 6 Following multistep directions, “Put the orange ring on Jane and the purple ring on the pole. Then put the orange ring on the pole.”

Case Report

A 4-year-old with cerebral palsy was non-ambulatory and nonverbal. He was having difficulty learning basic concepts and using his new iPad with a communication app. During his speech therapy sessions incorporating hippotherapy, his horse was led in the actions the client was learning. With each action, the client was given physical assist to push the picture on his iPad for that action while the SLP talked about what he was doing. During one session, the client pointed to the bridge from across the arena. The SLP told the horse leader to go up and down the bridge. After this activity was completed, the client verbalized and pointed to the bridge again. Suffice to say, this series of events was repeated 14 times in a row at the client’s request. However, by number 14, the client was independently reaching for the picture (up, down) on his iPad. We told his parents about his desire to go up and down multiple times, and they initiated up and down activities at home. He continues in therapy (Fig. 7).

V. EXPRESSIVE LANGUAGE

Goal: Two + word utterances.

Sample activity: The client uses a given word in a phrase while the horse is walking. The client can also use a carrier phrase such as “I am walking to _____” and put different words in the blank such as cone, pole, person, mom, or the name of another horse. Another option is for the client to walk to different pictures around the arena and use the picture in a phrase or sentence. Or the client tells the SLP what they are doing using 2+ word phrase while grooming the horse or preparing the horse’s feed, or giving the horse a bath (so much fun, but the parents must be prepared for a wet child with a change of clothes and a towel!). There are so many additional options for expressive language in the horse environments.

Case Report 1

A 3-year-old with developmental delay was seen for speech therapy incorporating horses. She preferred grooming, touching, feeding, and leading (with assistance) the miniature horse



Figure 7 Pushing “up” to show that his horse walked up on the bridge.



Figure 8 Taking a selfie at the request of the client after she maintained attention and followed directions during a brushing task with the miniature horse.

and would maintain attention to the activities for over 30 minutes. The SLP would talk to her throughout their activities with the miniature horse and ask facilitatory questions for the client to use her words. The client started repeating words from the SLP and over the next year began to put two, three, and four words together. The client's sessions were also alternated between on the ground interacting with the miniature horse and being on the "big" horse (Fig. 8).

Case Report 2

A 12-year-old with cognitive impairment was unable to participate in conversation for over 10 seconds. She would respond to what was said to her and then stop. She also had difficulty initiating conversations. The client participated in speech therapy incorporating hippotherapy for 50-minute sessions once a week. At the beginning, the SLP would walk beside the horse and ask her questions. After she responded to the question, the SLP would teach her how to ask the SLP a question to continue the conversation. This teaching activity morphed into the client carrying a card with the "wh questions" that she looked at when she was asked to continue or initiate a conversation with the SLP while the horse leader led the horse in different directions and speed at the request of the SLP. When the client was 70% successful,

the SLP had her switch to sitting backward facing while the horse walked. This immediately dropped her accuracy to below 50% and she worked her way back to over 70% over the next few sessions. Because sitting backward was physically and mentally difficult for her, she only sat backward for 10 minutes at a time and only once or twice per session. She continues in therapy and her parents reported that she is initiating more at home and likes talking about "her horse" (Fig. 9).

VI. HEARING

Goal: Differentiate words spoken at different loudness levels.

Sample activity: The client follows directions that the SLP gives in soft or loud dB and low or high pitch while sitting on the back of a walking horse. The client can sit backward on the horse with the SLP walking behind. This gives the client and the SLP eye contact and the client can watch the face of the SLP for cues.

Case Report

Four 12-year-olds from the hearing-impaired classroom at a local middle school came to speech therapy incorporating horses over one semester sponsored by a local nonprofit organization. The four middle schoolers worked together 1 hour a week for 16 weeks to create and



Figure 9 Taking turns asking “wh” questions while the horse is stopped.

learn a 5-minute drill team pattern to music. With the SLP, they helped choose the music, plan what their horses would do when in the music, and then learn the movements while they were on the horses. They had to talk to each other about who was too fast or slow, remind each other what to do next, and listen to the music. Throughout the semester, each child’s listening and communication goals were paramount. The treatment activity of creating and riding a drill pattern to music was the method by which each child worked toward their SLP goals, under the direction of the speech-language pathologist. At the end of the semester, the four middle schoolers presented their drill team pattern to their family and the rest of the class. Each child met or exceeded their specific listening and communication goals and two of the families requested continued speech therapy incorporating horses.

VII. SWALLOWING

Goal: Improved tongue coordination for mastication.

Sample activity: The client practices chewing while sitting on a moving horse. To focus on the oral movements, the client can lay supine facing the back. The client can also manipulate a lollipop and practice oral motor movements while sitting or lying supine. *Note:* The client should never practice chewing while lying prone as that is a choking hazard.

Case Report

A 64-year-old woman who was postsurgery for brain tumor removal participated in speech therapy incorporating hippotherapy to improve her ability to masticate, create a bolus in the oral cavity, and increase strength of swallow. The client was asked to practice motor movements of the tongue, jaw and face, initiate dry swallows, and practice swallowing real food of different textures while sitting forward facing on the horse that was led at a walk. The position of the client on the horse, the speed and direction of the horse, and the type of food were controlled by the speech-language pathologist. The client made good progress and was eating a regular diet after 7 months of once-a-week 45-minute sessions.

VIII. COGNITIVE ASPECTS OF COMMUNICATION

Goal: Increase functional problem-solving skills.

Sample activity: While sitting on a walking horse, the client is given pictures in which something is not right. The speech-language pathologist teaches the client what to look for and why it is wrong if the client does not get it correct. Another option is for the horse leader to lead the horse into a “problem situation” such as walking into a corner, stopping on top of the bridge, or walking under a low tree branch and the client has to tell the horse how to get out of

the situation with the help of the speech-language pathologist. A third option would be for the speech-language pathologist to talk with the client about real-life situations and how to solve them while walking around the arena. Another option would be for the client to help with off the horse activities such as mixing feed for the horses and brushing the horses. During these activities, the environment would be changed so that a needed item is missing or something is out of place. The speech-language pathologist would work with the client to solve real-life problems as they occurred.

Case Report

A 31-year-old client posttraumatic brain injury participated in speech therapy incorporating horses. The client's sessions took place either on the horse using hippotherapy as a tool or off the horse using horse-related activities. When hippotherapy was used, the client was given situations by the speech-language pathologist while she was sitting forward facing on the horse. The two of them would discuss what to do in each situation and then the client was given a similar situation to see if she was able to figure out what to do. This was done while the horse was led at the walk by the horse leader. The horse's movement and client positions were directed by the speech-language pathologist. When off the horse, the client would help with barn activities. In each case, the speech-language pathologist would create a problem that the client had to solve such as: Where was the wheelbarrow needed to bring hay to the horses? How to get through a closed door when your hands are holding buckets of grain? How can I give Major a carrot when he is not in his stall? The client's ability to solve problem improved and additional goals were targeted.

IX. SOCIAL ASPECTS OF COMMUNICATION

Goal: Identify emotions of other people through facial expressions and tone of voice.

Sample activity: The SLP teaches the client four different facial expressions while walking beside the horse. Then, as the horse walks, the SLP hands the client one of the cards

showing a person making an emotional face and asks the client to name the emotion. If the client gets four correct in a row, the horse can trot down the long side of the arena.

The client sits on the horse while the horse is led to different volunteers standing around the arena. When the client arrives, the volunteers say a sentence using an emotion. The client identifies that emotion and then the horse walks to the next volunteer.

Case Report

A 14-year-old client with complicated medical and developmental history was referred to SLP for help with the social aspects of language. Initial evaluation revealed difficulty interpreting body language and facial expressions. The client was taught four different emotions using photos and tone of voice while he was on the horse walking around in the arena. Then the two activities described earlier were used to help him differentiate between emotions. When he was 80% accurate at identifying and making the emotions, four more emotions were added. After twelve 50-minute sessions once a week, the client was over 60% correct in naming emotions and 50% correct producing emotions. He continues to receive services.

X. COMMUNICATION MODALITIES

Goal: Initiation of communication using an augmentative device.

Sample activity: The client uses an augmentative device to tell the horse to "go" because the horse suddenly stopped. Actually, the horse stopped because the professional horse handler asked him to, but the client on the horse just knows the horse stopped and they want to keep moving. Another option is for the client to tell the horse to "go fast" (fast walk), "go more fast" (jog or trot), "go over pole" or uses the device to answer "How many poles do you want to go over?" or yes/no questions such as "Do you want to go over the bridge?"

Case Report

A nonverbal, nonambulatory 7-year-old with a complicated medical and developmental history

had been discharged from speech therapy due to lack of participation and negative behaviors. The client knew three signs (please, more, all done) but did not use them spontaneously. During the client's first speech pathology session incorporating equine movement, the client cried for 20 minutes while sitting on the walking horse. After much positive reinforcement for being quiet, the client got to hold his favorite toy while on the horse. During the second and third sessions, the crying lessened and he began to establish eye contact with the speech-language pathologist. During the fourth session, the client pointed to "his horse" when he arrived at the barn. During the fifth session, he signed "more" spontaneously to tell the horse to "walk on" when the horse stopped. During the second month of speech pathology sessions incorporating hippotherapy, he was introduced to a picture-based communication app on an iPad. Three sessions later, he demonstrated understanding of how the app worked by pushing "go" "please" independently to tell the horse to "walk." Over the next 8 weeks, his phrases grew to four words — "go," "more," "fast," "please"—to tell the horse to trot. Within the same time period, he also began to use his iPad to request within the home environment. The client was discharged after 8 months of weekly 50-minute speech pathology sessions incorporating hippotherapy because he was using the iPad effectively and independently to communicate wants and needs at home and school. The speech-language pathologist at his elementary school then took over as his primary therapist (Fig. 10).

CONCLUSION

Incorporating horses is a valid treatment tool or strategy within SLP. Horses and hippotherapy can be used to target treatment goals across all nine areas of SLP clinical practice. The speech-language pathologist incorporating horses should conduct their sessions at an equestrian facility that meets or exceeds the horse facility standards of the industry as indicated by the Professional Association of Therapeutic Horsemanship, Intl (PATH, Intl.). The speech-language pathologist should also obtain knowledge about hippotherapy and its clinical



Figure 10 Using an iPad with an app to tell the horse what to do.

application. This can be done by taking educational offerings from the American Hippotherapy Association and/or be mentored by a speech-language pathologist with hippotherapy experience.

Speech-language pathologists interested in learning more about incorporating horses into their clinical practice are encouraged to join the American Hippotherapy Association, Inc.; attend an AHA, Inc., conference; use the "Find a Therapist" link on the AHA, Inc Web site; and contact, visit, and/or develop a mentoring relationship with a speech-language pathologist who is incorporating horses. The mentoring SLP does not have to be geographically close with today's technology.

Speech-language pathologists who are currently incorporating horses in their clinical practice are encouraged to obtain registered certification (AHCB hippotherapy certified) or clinical specialist certification through the American Hippotherapy Certification Board⁶² and present their clinical successes at local, state, national, and international conferences as well as write articles for *HIPPOTHERAPY*. They are also encouraged to use resources from AHA, Inc., to educate stakeholders, including parents, families, insurance companies, physicians, etc., that horses are a valid and effective

treatment tool within SLP. It is our hope that the number of speech-language pathologists incorporating horses into their clinical service will continue to grow and our clients will reap the benefit.

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