

Annotated Bibliography of Equine Assisted Psychotherapy and Hippotherapy Psychotherapy Research from 2008-2017



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Purpose of the Nine Year Annotated Literature Review

The purpose of this review is to annotate recent literature (2008-2017) on Equine Assisted-Psychotherapy (EAP) and Hippotherapy (HT). At the end of the review, I will compare and organize elements of therapy of both groups EAP and HT—specifically their focus, approach, and results that summarizes the decade of research.

These points of consideration will then be catalogued for easy reference. A template¹ will be used so that researchers can quickly find content and outcomes. The review may validate a need for further study of incidental evidences, not yet fully explored, concerning EAP and HT findings. Thus far, anecdotal evidence supports the idea that those afflicted with Post Traumatic Stress Disorder (PTSD) respond positively to EAP and HT.²

As part of the annotation of the research, the year in which the study was conducted or published, whether it focuses on EAP or HT, and the population treated will be the main criteria for categorization. This will then provide an overview of what recent research is conveys pertaining to the studies in each field. Following this, critical elements that have not yet been examined may be apparent.

One such area of under-studied quality is that of direct, physical response a rider has to the motion provided by the horse. Some studies do look at the physiological

reaction of major musculoskeletal areas³ or the psychosocial responses in working with animals.⁴ None have yet gone beyond these two areas and investigate the potential, kinesthetic response that can treat specific symptoms of isolated psychological issues, for example, elements of PTSD.

Definition of Terms

To help understand the terms used throughout this work, the following definitions are examined:

Post-Traumatic Stress Disorder (PTSD): is classified as a cognitive disorder consisting of a stressor, an intrusion symptom, an element of avoidance, negative alterations in cognition and mood, changes in arousal and reactivity, duration of at least one-month, functional impairment to everyday life, and is not caused by medication.⁵

Equine Therapy: is typically classified as a methodology to provide metaphoric experiences in order to promote emotional growth.⁶ For the purposes of this work, equine therapy is defined as an overarching term to also include all other equine-assisted activities that are not Equine Assisted Psychotherapy or Hippotherapy. Such elements include (but are not limited to) Equine Assisted Therapy, Equine Assisted Learning, Equine Assisted

3. Miroslav Janura, et al., "The Variability of a Horse's Movement at Walk in Hippotherapy," *Kinesiology*, 44, no. 2 (2012): 148

4. Julie Earles, "Equine-Assisted Therapy for Anxiety and Posttraumatic Stress Symptoms," *Journal of Traumatic Stress*, no. 28, (April 2015): 149.

5. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. (Arlington, VA: American Psychiatric Association, 2013) 272-274.

6. "What is Equine Therapy?" Equine Psychotherapy, accessed January 25, 2019. www.equine-psychotherapy.com/equine.html.

Experiential Therapy, Equine Facilitated Psychotherapy.⁷ While the wording is quite similar for several of these terms, the meaning and goals of each are distinct.

Equine Assisted Psychotherapy (EAP): provides interventions that would not be possible by human providers.⁸ Horses, as they are larger than a human, can provide a surreal experience for the individual. Particularly with horses — who have a unique capacity to read even the subtlest changes of human body language, emotions, and energy levels — the mirroring of the client's psychological state in the animal forces them to face their personal condition.⁹

Hippotherapy (HT): is the purposeful manipulation of horse movement by occupational, physical, or speech-language therapists.¹⁰ Other specialists are also often participants in this evidence-based treatment which focuses on engaging sensory, neuromotor, and cognitive systems to promote functional outcomes.¹¹

Gait: is a horse's locomotion. Generally discussed in terms of natural or artificial, gait is related to the expression of the horse in terms of excitement, comfort, athleticism, or purposeful speed.¹² Common gaits are known as walk, trot, canter, gallop, and back.

7. "Learn about EAAT." PATH Intl, accessed January 25, 2019. www.pathintl.org/resources-education/resources/eat/27-resources/general/193-eat-definition.

8. Nancy Masters, *Equine Assisted Psychotherapy for Combat Veterans with PTSD* (master's thesis, Washington State University-Vancouver, 2010), 5.

9. Ibid.

10. "What is Hippotherapy?" American Hippotherapy Association, accessed April 12, 2019, americanhippotherapyassociation.org.

11. Ibid.

12. "Natural and Artificial Gaits of the Horse," My Horse University, accessed April 12, 2019, <https://www.myhorseuniversity.com/single-post/2017/09/25/Natural-and-Artificial-Gaits-of-the-Horse>.

Horse Physical Therapy (HPT): is a new dimension of analyzing therapeutic interactions with horses. Where most forms currently study the musculoskeletal-skeletal interactions or the psycho-social implications, this novel approach seeks to determine if there is a fundamental adjustment, perhaps at the neuro-chemical level, for riders.¹³

How to Use Annotated Bibliography

The purpose of the annotated bibliography is to help the casual learner in recognizing the direction in which the research is taking in the fields of EAP and HT. This can be surmised when there is a surface-level analysis of summaries from the included studies. With the summaries present in the literature review, the appendix then becomes the more all-encompassing element. Not every study was included in the literature review because many began to repeat previous experiments. These repeats made only minor adjustments to either treatment population or focus of study and had similar results. Such outcomes did not warrant attention beyond what they will receive in the appendix.

The annotated bibliography gives a more academic, precise, and easy view of information found in the literature review. It states the name of the study, the researchers, the journal from which it was taken, the date associated with its publishing, and a brief explanation of treated population and results. Each summary is then categorized by year and treatment population – starting with adults, then adolescents, and finally children. This

13. These metrics are being researched at this time by Boatright, Clegg, et. al at the Clegg Family riding facilities.

order of ages is to conform with the most likely populations with whom chaplains would consult or suggest such treatment.

It should be noted that this review is focused more in qualitative results, the summary of information for each studied omitted much of the quantitative data in favor of this qualitative dimension. The qualitative is often easier to digest, in large numbers, as a casual reader.

Articles for the literature review were searched for using the following data bases: PSYINFO, ERIC, JSTOR, PROQUEST, and Social Science Citation Index. In addition, scholarly articles and journals were surveyed in the field of hippotherapy and equine therapy. The basic format provided below allows the researcher to review literature according to year, and offers information on the next page:

Title:

Author:

Source:

Date:

Subjects	Results

Information from Annotated Literature Review

There is a thin line separating the differences between EAP and HT studies. The point of differentiation really lies in whether the results of a study are measured as qualitative or quantitative. The qualitative is most represented in EAP research and the quantitative in the HT studies. While this is not a hard-fast rule, it is a basic characteristic worth stating as the general discussion of research trends and their findings are reported in this review.

A likely factor for this difference is the field that is examined by the research. Psychological factors examined in EAP studies are inherently more measured by qualitative means. These tend to consist of practices like surveys and subjective observations. HT studies favor physiological examination. This style of research is more likely to be measured in the quantitative realms of experimental design and objective reporting. While there is the occasional report for each field that crosses over into the other's general guideline, it is the experience of this author that recognizing the tendency to favor one form of reporting over the other gives greater rationale for why each subgroup helps in identifying and summarizing data gathered by the initial researchers.

Review—2008

The timeline for this literature review is remarkably appropriate. The year of 2008 saw little research in EAP or HT. From the ProQuest and Web of Science databases, there were

only three studies that met the criteria¹⁴ which dealt in HT, and no studies matching for EAP. This is a trend that will continue for a clear majority of the predetermined timeframe, suggesting that either HT studies are more easily conducted or yield results that are simpler to record for academic purposes.

The HT studies vary widely during 2008. One provides a general history concerning the nature of HT.¹⁵ It mentions ancient thinkers such as Hippocrates and Socrates who noted that there were physiological responses which the human body exhibited after riding horses for a period. It then transitions to providing a clearer picture of this tradition in more contemporary Scandinavian culture. Furthermore, it gives an in-depth portrayal of the difference which horse temperaments and even horse gaits have on therapeutic riding.

Another study talks about several forms of physiotherapy for children with Down's syndrome who also suffer from a congenital heart defect that requires cardiovascular surgery.¹⁶ Here, though, HT is only mentioned as one mode of treatment to help with spinal, postural needs of the children. HT was recognized as a reasonable, supplemental therapy in another study done years before, and prescribed by the researchers of this report.

14. Criteria for studies to be used in literature review: From ProQuest or Web of Science, from the years of 2008 to 2018, study is written or translated into English, and full write-up is available online

15. Daria Sawaryn, et. al. "Features of a Horse and Mechanisms of Therapeutic Effects." *Physiotherapy* 16, no. 1 (2008): 104-111

16. Dorota Wojtowicz, et al. "The Methods of Physiotherapy, which are used by Children with Down Syndrome and Congenital Heart Disease which Require Cardiosurgical Intervention," *Physiotherapy* 16, no. 1, (2008): 46-51.

The final study for 2008 deals with the therapy of children with spastic diplegia cerebral palsy.¹⁷ As will become more characteristic of studies to come in the examination of HT, these researchers began to detail the biomechanical activities which the body undertakes as the rider responds to the movement of the horse. Additionally, they tested to see how much of a difference is made when a member of the HT team is close or distant from the horse and rider. They determined that the best circumstance for the rider was to have the HT team member walking on the left side of the horse as the child was riding.

Review—2009

Just like with the previous year, 2009 carries no notable research concerning EAP and only a handful of studies delving into the science of HT. The research for this year, however, does begin to indicate some form of curative relation between HT and certain disorders. There is a slight deepening in the study of treating issues related to Cerebral Palsy (CP) and autism. Emphasis is added to the idea that in treating issues related to these conditions, no study provides grounds of assuming a cure to either CP or autism. Nevertheless, there is ample evidence in multiple studies from 2009 which suggests a capacity for certain debilitating effects of CP or autism to be ameliorated, or improved by the perspective of the parents, under specific HT protocols.

17. Monika Malachowska-Sobieska, et al. "The Clinical Picture of A Child with Spastic Diplegia on a Horse, Depending on the Position of the Hippotherapeutic Team." *Physiotherapy* 16, no. 4 (2008): 56-67.

The research of Bass, Duchowny and Llabre uncovered interesting results in working with children from the ages of 5 to 10 who were diagnosed with autism spectrum disorder (ASD).¹⁸ After a 12-week study, they saw statistically significant improvement in social adaptations as well as some motor skills. They measured these by means of questionnaires answered by the parents of the participants. The formula for HT they implemented include riding and grooming interactions. Riding included verbal cues and hand signals for the horses and even group-coordinated games. While very simplistic in nature, the games were seen by the researchers as a means for modeling some principles of communication. The control group for the study consisted of those that were “wait-listed” for this form of HT. Although they were surprised by the significant improvement of pre and post intervention data, they recognized limitations that included small sample size of only 34 participants and no recorded information of medication that could have likewise affected the improvements seen in the experimental group.

Davis et al. performed a randomized controlled trial to examine the effects of HT on the lives of children suffering from CP.¹⁹ They tested for changes in gross motor function, health status and quality of life. With a similar measurement procedure of the above study by Bass et al., the responses to the questionnaires for the

18. Margaret Bass, Catherine Duchowny, and Maria Llabre, “The Effect of Therapeutic Horseback Riding on Social Functioning in Children with Autism,” *Journal of Autism Development Disorder* 39, (2009): 1262.

19. E. Davis, et al., H.K. Graham, “A Randomized Controlled Trial of The Impact of Therapeutic Riding on The Quality of Life, Health, And Function Of Children With Cerebral Palsy,” *Developmental Medicine & Child Neurology* 51, (2009): 112.

family yielded no significant changes after a 10-week riding program. The most notable change came from the perceptions of the family in relating to the child who has complications from CP. However, after a more in-depth questioning of the adults concerning their responses during the pre-intervention screening, the supposed significant increase in scoring became a very small difference when compared to the regular, post-screening interview.²⁰ There was some anticipation expressed by the parents in the expectations for positive results. Ultimately, these researchers did not feel satisfied in saying that there was positive effect. In general, this was due to multiple, untested aspects of the CP diagnosis of the children. These included, but were not limited to, outside forms of therapy which could contribute to treatment as well as biased reporting by parents who wanted to see change.

Typically, the block of researchers in 2009 saw HT as a form of complementary or alternative therapy. Oppenheim, in his review of studies, addressed that in conjunction with treatments such as acupuncture, CP affected children exhibited distinctive changes in muscle tone and gross motor functions improvement.²¹ He also noted multiple studies which support that a byproduct of the social nature of HT adds a component that tends to develop some communication skills that are temporary, conditioned upon the continuance of involvement in that environment.

20. Ibid, 116.

21. William Oppenheim, "Complementary and Alternative Methods in Cerebral Palsy," *Development Medicine & Child Neurology* 51, 4 (2009): 122.

While it was not the direct area of study²² for Tosi et al., their results did promote the findings of others. They recognized that childhood treatment, continued into adulthood, can help sufferers of CP retain some developed capacities in muscular control.²³ These developments are of course very specific to each person, but the critical element is that improvements are more likely to be maintained through continuation of therapies, including HT.

The last study for 2009 that qualifies for consideration in this work is the first one to depart from studying the effect HT carries for those with CP or ASD. Brazilian researchers tested how HT affects the gaits of hemiparetic, post-stroke patients.²⁴ This refers to those who have some motor-impairment in the lower limbs, resulting in dysfunctional ambulation. They discovered that HT positively affects the alleviation of motor impairment symptoms (i.e. pain, stiffness, spasticity) and balance for the riders, but no discernable change in speed, cadence, or stride-length in the subjects' walking patterns. Another observable response they witness with some participants was an improvement in posture, which is also another point of difficulty in a recovering patient's gait.

Review—2010

The first two-years of the specified decade for this work saw a dominant presence of HT studies and an absence of EAP research that would fit into the open-access guideline constraint of this literature review. The year 2010 changes that in a significant way. The first EAP studies appear for this predetermined time and are fairly varied in their presentation. They come from counseling journals, psychological nursing magazines, and even an Eastern European article reviewing current studies throughout parts of the world.

Researchers in Eastern Europe, specifically in Sarajevo, Bosnia, and Herzegovina, observed the effects of short-term EAP treatments on children with autism. They utilized the Autism Treatment Evaluation Checklist as developed by Dr. Bernard Rimland and S.M. Edelson.²⁵ It takes in to account four basic subsets for measuring the ASD severity: Speech/Language communication, sociability, Sensory/cognitive awareness, and health/physical behavior. The results were mixed showing a positive effect for two of the participants in three out of the four evaluation points, and one participant who actually degenerated in the markers. Their final decision was that EAP worked as a potential complement for other, more conventional methods of treatment.

Smith-Osbourne and Selby sought out to examine the benefits of EAP for children and adolescents who suf-

fer from mental, physical, or familial challenges.²⁶ They utilized the term equine facilitated psychotherapy (EFP) as a means to include HT elements with the overall ethos of EAP. The results of their research recognized that EAP carries the potential for improving all the above-mentioned dimensions but not guaranteeing positive results. It does, however, strongly reinforce their assertion that continued research into the field is warranted for expansion into social work practices.

For a change of pace, Risley-Curtiss performed a survey to determine the knowledge background of social workers as it deals with the human-companion animal bond (HCAB).²⁷ While not explicit in its description of EAP, it is worthwhile to note that Risley-Curtiss identified most social workers are aware of the positive and negative findings associated with human and animal interactions, like EAP. However, she noted that only twelve-percent of the population of her study recognized the importance of asking about any violent events that a client or patient may have had with animals. While this observation may not be directly critical to the literature for this project, it is an important point that shows negative interactions with horses could result in or be the result of severe mental disturbances. Such actions convey an indifference to the ameliorative effects of EAP.

The article by Masini approaches the field of EAP

26. Alexa Smith-Oborne, Selby, Alison, "Implications of the Literature on Equine-Assisted Activities for Use as a Complementary Intervention in Social Work Practice with Children and Adolescents," *Journal of Child and Adolescent Social Work* 27, (2010): 291.

27. Christina Risley-Curtiss, "Social Work Practitioners and the Human-Companion Animal Bond: A National Study," *Social Work* 55, (January 2010): 55

with great optimism and realism. Her work is not a typical study like the rest. She writes with the intent of informing the readers for continuing education purposes.²⁸ She explores the formats in which EAP is conducted. There is also a reasonable treatment on how research needs to be expanded into properly designed studies to give more solidity to the observational findings of current work. This article stands as a solid piece to give a brief state of the field for that point in time.

Chandler and her fellow researchers developed a theoretical foundation for how EAP can be integrated with traditional counseling techniques.²⁹ Much like the Masini article, the focus is more general to various animals rather than specifically horses. Nevertheless, the principle remains that EAP can be utilized with several major forms of counseling. Chandler et al. supports this idea with their work, including the caveat that EAP may not be appropriate for all clients.

A study from Spain headed by Herrero investigated the effects of advanced HT via a simulator.³⁰ For the specified dates of this literature review, it appears this was the first time that someone tried to recreate the effects of HT without the complicating factor of working with a large and (to some people) intimidating animal. They setup

28. Angela Masini, "Equine-Assisted Psychotherapy in Clinical Practice," *Journal of Psychological Nursing* 48, no. 10 (2010): 30

29. Cynthia Chandler, Torey Portrie-Bethke, Casey A Barrio Minton, Delini M. Fernando, and Dana M. O'Callghan, "Matching Animal-Assisted Therapy Techniques and Intentions with Counseling Guiding Theories," *Journal of Mental Health Counseling* 32, no. 4, October (2010): 354

30. Pablo Herrero, et al., "Study of The Therapeutic Effects of an Advanced Hip-psychotherapy Simulator in Children with Cerebral Palsy: A Randomized Controlled Trial," *BioMedCentral Musculoskeletal Disorders* 11, (2010): 71.

their HT experiment as a randomized controlled trial using a self-reporting questionnaire. The information was distributed and collected using a triple-blind methodology so that no one would unwittingly corrupt the obtainment of the data. The main variable for manipulation was whether or not the individual received a rhythmic form of the treatment, or if they were simply placed on the simulator. The results appear to support other work that has already stated the beneficial nature of HT for children that had been previously diagnosed with CP.

Friesen performs a review on the pros and cons of animal-assisted therapies. Although the main focus of the article is with therapy dogs, she does reference programs which work with horses.³¹ There is a mention of dogs being a cultural sensitivity depending on the demographic breakdown of the student population. It is, however, inferred that such an issue is not a condition of the HT programs she refers to as being an area needed for further study and scrutiny.

The next study concerning HT, examines an interesting question; whether horses can discriminate between the faces of multiple people.³² Sherril Stone researched this by following a multi-step training program. First. She had to sort out which of her horses could qualify. This part of the experiment yielded only a half-dozen horses that could be reasonably considered as capable in discriminating human faces. The next step was to track

31. Lori Friesen, "Exploring Animal-Assisted Programs with Children in School and Therapeutic Contexts," *Early Childhood Education Journal* 37, (2010): 263.

32. Sherril M. Stone, "Human Facial Discrimination in Horses" Can They Tell Us Apart?" *Animal Cognition* 13, (2010): 57-58.

the horses' feeding patterns. She positioned the faces of employees who were either known or unknown to each horse, near the food. In her findings, she discovered that the horses who qualified, were likely to spend more time near the individual with whom they were unfamiliar, before taking the food associated with their picture. When it was the picture of a worker with whom they were familiar, they immediately began to eat. The familiar faces were more well-trusted with a food source. Additionally, she stipulates that horses are reasonably unphased by pictures of identical twins, interpreting them to be the same person. This suggests that horses retain information about the people with whom they come in contact, and store that information for future use. In the purposes of HT, the horses may act different for each client.

Review—2011

Following the slight ramping-up of EAP study found in 2010, this next year saw some old and some new. Researchers continued to study the effects of EAP on children with ASD, but also specialized into more specified groups, like the First Nations and Innu population in North America. Studies, once more, abounded in the potential benefits of HT by examining the noticeable and measurable effects on the balance and posture of the very young and the elderly. The most intriguing study from the year of 2011, comes from a group that wanted to test the effects of HT on schizophrenic patients.

A Canadian research group of Dell, Chalmers, Brette, Swain, Rankin, and Hopkins wanted to understand

the relationship of human and animal. Specifically, they sought to know more about the sacred space or balance between any two objects who carry a relationship to each other, a term they recognized as “Va”.³³ They noted three categories in which there was a self-reported change by the youth who participated in the study. First, spiritual exchange is most easily described as the developed relationship between the youth and the horses. Second, complementary communication is seen as the means by which the horse and youth communicated to each other, namely intuition or assumed-verbal understanding. Finally, authentic occurrence is a sort of catch-all phrase that summarizes major differences in behavior that were detected during the therapeutic treatment that was not present before (i.e. male physical affection toward horse, female intuitive mothering, etc.). They concluded that this practice within EAP gave the youth an opportunity to see physical changes for the spiritual evolution they experience as their relationships with the horses grew. This was a way for them to delve into the cultural significance of VA.

The team of Kern et al. carried out a study that measured clinically evaluated changes in the Childhood Autism Rating Scale, Timberlawn Parent-Child Interaction scales, and two forms of parental survey that measured interactions and satisfaction of the family. They tested children with ASD, from the ages of 3 to 12, on each of these measures first, 3 months before the riding treatment, second, at the time that they began riding, third, after 3 months of riding, and finally, after 6 months

33. Colleen Anne Dell, et al., “A Healing Space: The Experiences of First Nations and Innuitt Youth with Equine-Assisted Learning,” *Child Youth Care Forum* 40, (2011): 322.

of riding. They concluded that there was a statistically significant improvement in nearly all metrics, the one exclusion being the regard which the parents hold for their children. It can be easily assumed that the parents would not hate their children while the symptoms improved, but it is telling of the love of the parents that they did not necessarily hold higher regard for their children when there was subjective improvement.

Clayton, Kaiser, de Pue, and Kaiser wished to measure the riders' responses to movement changes during HT or regular equestrian activities.³⁴ They utilized a specialized pressure mat, placed between the horse's back and the saddle, that detects what was deemed in the study as the center of pressure. They saw reasonable fluctuations of front-to-back and side-to-side movements for the control group of non-CP effected individuals, but noted very little movement in either direction from the CP-effected population. They drew the conclusion that those with CP have a greater difficulty in adjusting their center of pressure, therefore less movement is seen throughout the ride. A rigidity in the core muscles prevents the flexibility that is seen in the non-CP group.

The Slovenian researchers Zadnikar and Kastrin reviewed studies about the effects of HT on children with CP. While this is not a new area for research, it is a notable to include reviews which fit into the timeframe of this literature review, while giving yet more depth into past research. They concluded, while there appears to be

34. Hilary M. Clayton, LeeAnn J. Kaiser, Bonnie de Pue, and Lana Kaiser, "Center-of-Pressure Movements During Equine-Assisted Activities," *The American Journal of Occupational Therapy* 65, no. 2 (March/Apr 2011): 212.

some correlative positivity in the studies examined, the population groups are too small and the potential expressions of CP too varied for there to be any reasonable expectation of stating a curative and guaranteed treating measure for those suffering the physical effects of CP.³⁵

Further identifying HT as an alternative or complementary treatment for CP, Feferman, Harro, Patel, and Merrick examined various treatments that have been tested.³⁶ They include physiotherapy, occupational therapy, electrical stimulation, and even stem cell therapy. Their review stands as a validation that any of the alternatives they spoke of can be beneficial for ameliorating the circumstances for someone with CP. They saw physiotherapy, occupational therapy and electrical stimulation as all well-defined methods. The stem cell therapy is still somewhat experimental and does not have as strong a track record as the other three. A team of Brazilian researchers tested for the effect of HT on the postural balance of elderly individuals.³⁷ Araujo et al. measured the center of pressure changes for elderly persons in their normal gait. Their desire was to test the chances that a person of advanced age was likely to fall. They found that HT treatment had no significant difference in the walk of the elderly, but did improve their scores in another metric, known as TUG, which measured their time to arise

35. Monika Zadnikar, and Adrej Kastrin, "Effects of Hippotherapy and Therapeutic Horseback Riding on Postural Control or Balance in Children with Cerebral Palsy: A Meta-Analysis," *Developmental Medicine and Child Neurology* 53, no. 8 (Aug 2011): 690.

36. Helayne Feferman, Janell Harro, Dilip R. Patel, and Joav Merrick, "Therapeutic Interventions in Cerebral Palsy," *International Journal of Child and Adolescent Health* 4, no. 4 (2011): 333.

37. Thais B. Araujo, et al., "Effect of Equine-Assisted Therapy on the Postural Balance of the Elderly," *Journal of Brazilian Physiotherapy* 15, no. 5 (2011): 415.

from a seated position. TUG is a previously tested measurement that does have some correlation with falling risk, where an improved score (shortened time to stand up) means a decreased risk of falling.

Finally, there is the article by Cerino, Cirulli, Chiarotti, and Seripa, where they tested for improvement in symptomology of schizophrenic patients.³⁸ In the late 1970's, Italy passed legislation that invested significant resources to the study of mental health issues. They divided the treatment groups into two parties: those with early psychotic symptoms (recently appearing) and those with chronic symptoms. Following the year-long treatment of HT, the researchers felt confident in saying that there was statistically significant improvement of negative symptoms, notable remission of disease in early-onset and chronic patients – while in treatment, and a reduced rate of hospitalization.

Review—2012

While 2011 saw a reasonable increase in studies looking at the effectiveness of EAP, 2012 continues with a similar pattern. It will also be the last year where the studies which qualified for examination in this review greatly favor HT over EAP in their scope. Most notable is the approach that researchers have begun to widely push for EAP to be seen as Complementary or Alternative Medicine (CAM) to the traditional forms of medical treatment.

38. Stefania Cerino, Francesca Cirulli, Flavia Chiarotti, and Stefano Seripa, "Non Conventional Psychiatric Rehabilitation in Schizophrenia Using Therapeutic Riding: the FISE Multicenter Pindar Project," *Animal Assisted Interventions in Mental Health* 47, no. 4 (2011): 409.

A review article by Chinese researchers Pan, Gao, Zhou, Tang, Yu, and Ko explores a huge host of CAMs.³⁹ They examine the interplay between the various forms of therapy and treatment as well as draw some parallels between how traditional medicine treats the body by science and CAM tends to treat ailment by focusing on meta-physical challenges. It is seen by them that just treating the body, without the mind, only does half of the needed job. They address animal assisted therapy as a means to help with the non-physical element of illness. Specifically, they endorse how large animals like horses have been used to help with children with autism.

Larsson, Miller, Liljedahl, and Gard brought a slightly different ethos to their study of EAP in the treatment of CP among children. They believed that the therapy of an individual should reflect tasks that would help them operate in normal, every-day life.⁴⁰ With that in mind, they saw that it was the responsibility of the therapist to work with the family and develop a plan with them. The role of EAP is to be determined by this newly formed council for treatment. They do not go into depth about any one experiment, but list EAP as a means to work with relationships as well as HT for an option of physiotherapy.

HT studies for this year continue along a similar

39. Si-Yuan Pan, et al., "New Perspectives on Complementary and Alternative Medicine: An Overview and Alternative Therapy," *Alternative Therapies* 18, no. 4 (2012): 20.

40. Ingali Larsson, Michael Miller, Kerstin Liljedahl, and Gunvor Gard, "Physiotherapists' Experiences of Physiotherapy Interventions in Scientific Physiotherapy Publications Focusing on Interventions for Children with Cerebral Palsy: A Qualitative Phenomenographic Approach," *BMC Pediatrics* 12, (2012): 90.

path of previous years. Silkwood-Sherer et al. studied the effectiveness of HT in treating or correcting postural and balance problems in children.⁴¹ They were broader than most other research groups in that they took a child with a mild to moderate deficit in average balance. Their findings supported the same theory that others have proposed and tested – HT is a viable means to treat basic issues in balance or posture, even among children who do not suffer from CP.

Research then beings to dial-in on target issues. El-Meniawy and Thabet focused their work on treatment of children with a specific form of CP - spastic diplegic.⁴² It is a form of CP where the muscles are locked in a state rigor, causing tightness and rigidity of the joints. This was done because this form gives an obvious showing of asymmetrical back geometry. They concluded that the body's response to the horse's movement in HT is a viable, companion treatment for such an issue dealing with CP.

Chang et al. performed a similar study with a relatively like population. Their investigation into HT treatments for bilateral spastic CP was not to investigate back geometry, but to look at gross motor functions and childhood balance.⁴³ They worked with about thirty children

41. Debbie J. Silkwood-Sherer, Clyde B. Killian, Toby M. Long, and Kathy S. Martin, "Hippotherapy – An Intervention to Habilitate Balance Deficits in Children with Movement Disorders: A Clinical Trial," *Physical Therapy*, 92, no. 5 (2012): 707.

42. Gehan H El-Meniawy, and Nahed S. Thabet, "Modulation of Back Geometry in Children with Spastic Diplegic Cerebral Palsy via Hippotherapy Training," *The Egyptian Journal of Medical Human Genetics*, 13 (2012): 64

43. Hyun Jung Chang, Jeong-T+Yi Kwon, Ji-Young Lee, and Yun-Hee Kim, "The Effects of Hippotherapy on the Motor Function of Children with Spastic Bilateral Cerebral Palsy," *Journal of Physiotherapeutic Science*, 24 (2012): 1277.

at an average age of six years old for eight weeks. They discovered that the greatest improvements in balance and movement for the children came in relation to their ability to stand as well as walk/run/jump. The other measured characteristics (lying/rolling, sitting, and crawling/kneeling) were each recognized as having some change but not quite statistically significant like the first two measured-activities mentioned.

Following in spirit of the above report, Kang, Jung, and Yu studied how HT affects the sitting balance of children with CP. They recognized that the pelvic movements of horses are similar to what humans experience and designed a randomized control trial to study how that may assist this population of children in developing proper motion and stabilization.⁴⁴ They affirmed that HT has a significant impact on the sitting stability of the children, and when paired with traditional physical therapy, has a greatly increased capacity to help children with their sitting balance.

The research team headed by Janura investigated the effect of varying horse movement during the HT process.⁴⁵ This was a study that focused much more on the horse than on the riders. In the experiments, they recognized that a variable most studies considered to be “noise” was the motor variability in the structure and coordination of the horses. In turn, they saw that to make this “noise” useful, it only had to be stable. Thus, it is not

44. Hyungkyu Kang, Jinhwa Jung, and Jaeho Yu, “Effects of Hippotherapy on the Sitting Balance of Children with Cerebral Palsy: A Randomized Control Trial,” *Journal of Physiotherapeutic Science*, 24 (2012): 833.

45. Miroslav Janura, et al., “The Variability of a Horse’s Movement at Walk in Hippotherapy,” *Kinesiology*, 44, no. 2 (2012): 148.

a variable to be altered or manipulated but one to be set in control while testing other parameters.

One more study during this year also focused on the more mechanical aspects of HT. Encheff et al. performed the first study to measure the gait of individuals using 3D technology once participants completed a 10-week HT-training regimen.⁴⁶ They recorded significant improvement in hip positioning of participants as well sizeable differences in trunk and pelvic positions, but the latter two did not meet the minimum criteria to be considered statistically significant. It was, however, a significant change and positive result for those that participated in the riding.

Review—2013

The next year of research deepens in a few areas but broadens to look at applications in several other fields. There are a couple of studies that revisited ASD and even EAP treatments for schizophrenia. The surprises come from groups researching whether EAP can help with eating disorders, combat PTSD, and healing after trauma like a school shooting or sexual abuse.

Equine Assisted Psychotherapy (EAP)

O'Haire carried out a systematic literature review concerning animal-assisted intervention research that affected children with ASD. Her aim was to give a comprehensive database of how animals can be of assistance

46. Jenna L. Encheff, et al., "Hippotherapy Effects on Trunk, Pelvic, and Hip Motion During Ambulation in Children with Neurological Impairments," *Pediatric Physical Therapy* 24 (2012): 243.

in helping children dealing with certain stressors and exhibiting problem behaviors.⁴⁷ Horses were of course an element she reviewed reinforcing some of the benefits others have already tested. She was not the only one to target the subject that year. Holm et al. also sought to identify benefits for children with ASD, resulting from EAP practices.⁴⁸ They designed a questionnaire for parents to register behavioral changes and the researchers tracked their own metrics for observable differences (i.e. ticks, behavioral interruptions, etc.). They realized that the overall number of changes was relatively similar for the three participants of their study, but the depth of the changes was the truly telling aspect. While the behavioral modifications were similar, a greater dosage of riding time likely resulted in the modifications being more profound or pronounced – more-often-than-not for the betterment of the child.

Parenti, Foreman, Meade, and Wirth worked to find some commonalities in vocabulary and terminology to keep animal-assisted therapies relatively cohesive.⁴⁹ While not directly addressing EAP as the focus of their work, they admitted that their design can be reasonably adapted to include various forms of animal therapies, including horses.

47. Marguerite O'Haire, "Animal-Assisted Intervention for Autism Spectrum Disorder: A Systematic Literature Review," *Journal of Autism Developmental Disorders* 43 (2013): 1615.

48. Margo B. Holm, et al., "Therapeutic Horseback Riding Outcomes of Parent-Identified Goals for Children with Autism Spectrum Disorder: An ABA' Multiple Case Design Examining Dosing and Generalization to the Home and Community," *Journal for Autism Developmental Disorders* 44 (October 2013): 937.

49. Lindsay Parenti, Annew Foreman, B. Jean Meade, and Oliver Wirth, "A Revised Taxonomy of Assistance Animals," *Journal of Rehabilitative Research and Development* 50, no. 6 (2013): 745.

They created a framework that shows relations between the different potential uses of assistance animals, namely if they are personal service, public or military service, therapeutic services, activity assisting animals, sport or recreational or agricultural animals, and finally physical or emotional support. Their grave concern was the chance that inadequate training results in extreme difficulties for owner and/or animal because either the growth of the field creates a hard-to-satisfy demand or the attempt to train an animal for multiple purposes results in poor training in any of them.

Some researchers began reaching far into the realm of possibilities and combining EAP with other forms of therapeutic treatment. Ford investigated the results of introducing dance movement therapy into EAP practice.⁵⁰ In addition to typical EAP procedures, the participants were expected to dance in front of the horse they would ride. The horses watched and often reacted to the expressions of the riders. While not directly affecting the participants, the integration of these two therapies did result in a higher degree of connection between the riders and their EAP team. She assumes that this must deal with the openness that occurs as one has to do something as freeing and self-expressionistic as dancing.

Joyce DeZutti took EAP to a whole other dimension. She recognized the difficulty in treating someone with an eating disorder, because it often takes professionals in multiple fields of study to achieve positive results.

50. Candice Ford, "Dancing with Horses: Combining Fance/Movement Therapy and Equine Facilitated Psychotherapy," *American Journal of Dance Therapy* 35, (2013): 108.

Her research and stated findings suggest that individuals and groups of adults or adolescents who engage actively in working with their horses after riding, begin to see improvement in certain characteristics, such as communication, cohesiveness, sense of accomplishment, and self-confidence.⁵¹ Each of these are generally recognized as key-areas for treatment with those that suffer from eating disorders.

In a study lead by Kemp, researchers looked at the efficacy of adding EAP to treatments for children and adolescents who had suffered sexual abuse. Their theory posited that learning to adapt to the needs and training of a very large animal would result in a sense of satisfaction and growth in confidence.⁵² The results confirmed this, with an addition that the adolescents also improved in participation and reception of professional counseling. Signal et al. would also perform a study this year, examining multiple age groups (adult, adolescent, and child) of those who suffered sexual abuse while in childhood. They confirmed the previous studies results that there was, with time, significant improvements, bringing each age group to near normal results in testing of Children's Depression Inventory for the child age group or Beck's Depression Inventory for adolescent and adult childhood sexual abuse is less likely to increase chances that depression will negatively affect their lives.

51. Joyce E. DeZutti, "Eating Disorders and Equine: A Nurse's Perspective on Connection Through the Recovery Process," *Journal of Psychosocial Nursing* 51, no. 9 (2013): 31

52. Kathleen Kemp, Tania Signal, Helena Botros, Nik Taylor, Kathy Prentice, "Equine Facilitated Therapy with Children and Adolescents Who Have Been Sexually Abused: A Program Evaluation Study," *Journal of Child and Family Studies*, no. 23 (January 2013): 558.

Lanning and Krenek submitted a guest editorial of their study where they tested EAP on a group of combat veterans. With minimal experimental design, specifically a lack of contrastable control variables, they recorded some base level improvement from subjective questionnaires. While the researchers admit that the setup for their experiment does not necessarily provide an environment where wise inferences can be made, they do suggest that the subjective interjection of study participants' stating they felt more hope,⁵³ as at least some rationale for further study to be pursued. It may not have been obvious in their work, but with several other groups, there is evidence of some positive effect.

Facilitators at Healing Through Healing®, worked with Cameron and Robey to treat individuals who suffer from a wide array of issues. This therapy program lined up very well with treatment goals from Cameron and Robey because they saw Natural Horsemanship as being analogous with choice-therapy.⁵⁴ This specific form of intervention entails opening as many choices as possible by limiting restrictions to represent the most natural of boundaries. Another distinctive characteristic from this study was that there was no riding on the horses; everything was based on the interaction between human and animal as the participants cared for needs of the horses.

53. Beth A. Lanning, and Nancy Krenek, "Examining Effects of Equine-Assisted Activities to Help Combat Veterans Improve Quality of Life," *Journal of Rehabilitative Research and Development* 50, no. 8 (2013): x.

54. Janet Cameron, and Patricia A. Robey, "Healing through Healing: The Horse Power of Choice Theory," *International Journal of Choice Theory and Reality Therapy* 33, no. 1 (2013): 87.

Norton and Tucker surveyed the practices of hundreds of clinical social workers to examine the use of adventure therapy in prescribed treatments. They were surprised to discover that the average age of respondents was in the late 50s, and that there was a distinct lack of participation and training concerning the efficacy of such experiential interventions.⁵⁵ Of course, one of the forms to be considered in this idea of adventure therapy is EAP where the individual is permitted to challenge themselves to attempt something new.

As a more anecdotal piece, the offer for EAP was extended to survivors and the directly affected population of the Sandy hook school shooting. This was presented as an advertisement in the Journal for Psychological Nursing.⁵⁶ The specific form of EAP promoted was one that dealt in the relationship building with the animal more than the therapeutic riding practices of other models. Generally, this focus promotes healing in relationships rather than healing in self.

Hippotherapy (HT)

Ajzenman, Standeven, and Shurtleff sought out to examine the effects of HT on motor control, adaptive behaviors, and engagement in children with ASD. Fol-

55. Anita R. Tucker, and Christine Lynn Norton, "The Use of Adventure Therapy Techniques by Clinical Social Workers: Implications for Practice and Training," *Journal of Clinical Social Work* 42, (2013): 333.

56. "Zoar Ridge Stables to Create Embrace Hope-Sandy Hook Equine Assisted Therapy Foundation Providing Healing to Those Affected by the Newton, Connecticut Tragedy," accessed April 12, 2019, <http://www.prnewswire.com/news-release/zoar-ridge-stables-to-create-embrace-hope----sandy-hook-equine-assisted-therapy-foundation-providing-healing-to-those-affected-by-the-newtown-connecticut-tragedy-189227381.html>, <http://doi.10.3928/02793695-20130206-98>.

lowing a 12-week study, they recognized positive change in each of these areas. With the constant, mechanical adjustments that must be made while riding, the postural balance was quite pronounced to them.⁵⁷ They hypothesized that the improved adaptive behaviors and increased levels in participation may have resulted because this physical change provided a much desired, but not-communicated, need for the children.

The research team headed by Dziuba sought to measure the reactivity of the circulatory system in children with CP. They recognized that this population had decreased temperature in their lower limbs due to compromised vasculature from CP.⁵⁸ They found that in only one session of HT, there was a significant increase in the temperature of the portions of the lower limbs which directly contact the horses, particularly in the posterior aspect of the rider's lower limbs.

Two similar studies came out of Korea at this time, each using a riding simulator but on different populations. Kim, Yuk, and Gak looked at the effects of a horse-riding simulator and ball exercises on the balance of elderly persons.⁵⁹ They determined that there may be a greater likelihood for HT on a simulator to improve

57. Heather F. Ajzenman, John W. Standeven, and Tim L. Shurtleff, "Effect of Hippotherapy on Motor Control, Adaptive Behaviors, and Participation in Children with Autism Spectrum Disorder: A Pilot Study," *The American Journal of Occupational Therapy* 67, no. 6 (November/December 2013): 653-660.

58. Alicja Dziuba, et al., "Thermovision Techniques for Evaluation of the Effect of Hippotherapy in Changes in Lower Limb Temperature in Children with Cerebral Palsy (CP) – A Pilot Study," *Fizjoterapia* 21, no. 1 (2013): 21.

59. SeongGil Kim, Goon-Chang Yuk, and Hwangbo Gak, "Effects of the Horse Riding Simulator and Ball Exercises on Balance of the Elderly," *Journal of Physical Therapy Science* 25, no. 11 (2013): 1425.

both balance and gait in the elderly than intervention on an exercise ball. The other study, headed by Park, looked at how a riding simulator could help rehabilitate the postural balance of stroke victims.⁶⁰ They discovered that there was a significant increase in measured postural balance after riding three times per week for 8-weeks, instead of performing traditional rehabilitative therapies on an exercise mat.

Review—2014

With a drastic increase in parameter-fitting research for this literature review, only studies that present a novel dimension in EAP or HT will now be addressed here. This will include any study that may repeat a similar focus, but the findings of it represent new or contradictory information. The appendix will have the comprehensive annotated bibliography, but from here on this chapter will only cover those studies that contain new elements of discovery so as to avoid monotony and repetition in the reading.

EAP

Vincent, Kropp, and Byrne, wrote a proposal for further study addressing the potential benefits of EAP with treatment of fetal alcohol syndrome (FASD).⁶¹ More generally, they spoke of the effectiveness of animal-assisted therapy in treating other disorders which exhibit

60. Jungseo Park, Sangyong Lee, Jiyeun Lee, and Daehee Lee, "The Effects of Horseback Riding Simulator Exercise on Postural Balance of Chronic Stroke Patients," *Journal of Physical Therapy Science* 25, no.9 (2013): 1169.

61. Brooke Vincent, Caley Kropp, Andrew M. Byrne, "Animal-Assisted Therapy for Fetal Alcohol Spectrum Disorder," *Journal of Applied Rehabilitation Counseling* 45, no. 3 (Fall 2014): 6-8,

similar symptoms or problems that share a comorbidity pattern with FASD. They mention that right now, the best treatments surround keeping a child afflicted with FASD in a positive home environment that fosters brain plasticity. Their hope is to see others with more training and resources to investigate the possibility of some comorbid issues being treated with some therapy like EAP.

Although animal-assisted therapy has been researched in several studies already mentioned, a study from India places a nuanced approach by labeling the animals as pets, not just another therapy animal. With this degree of terminology, there is also an implicit designation of relationship that extends beyond a typical rehabilitation or therapeutic timeline. While the article written by Chandramouleeswaran and Russel does not provide any new information to overall research, it does draw attention and invite further examination into the study of pets who are well-trained and capable of helping people who suffer from ASD, ADHD, dementia, grief, child abuse, and chronic physical disability.⁶²

Sarris et al. performed a review of adaptive behaviors which can alleviate negative symptoms associated with depression.⁶³ They addressed several behavioral and pharmaceutical interventions, including a mention of EAP. There was a reference to a single study that recognized the positive benefit of pet therapy for elderly individuals suffering from depression. They also correlated

62. Susmita Chandramouleeswaran, and Paul Swamidhas Sudhakar Russell, "Complementary Psychosocial Interventions in Child and Adolescent Psychiatry: Pet Assisted Therapy," *Indian Journal of Psychological Medicine* 36, vol. 1 (Jan-Mar 2014): 3-7

63. Jerome Sarris, et al., "Lifestyle Medicine for Depression," *BMC Psychiatry* 14, (2014): 106.

a study that showed the activity levels on a farm with people suffering from various psychiatric disorders and pointed out that the interactions with large animals and regulated time for activities had a positive effect.

Coming out of Norway, Kern-Godal, Arnevik, Walderhaug, Ravndal looked at the use of EAP as a complementary intervention. They compared the completion rates of participants in an 18-month long, drug rehabilitation program. The individuals who chose not to participate in the EAP program stood as the control sample. They discovered that those who participated in the EAP were nearly four times more likely to stay in the rehab center for at least 90 days and tended to remain in the rehab center for more necessary time.⁶⁴ They also make a point of reminding readers that correlation does not mean causation, therefore they merely suggested additional research should be conducted, but what they saw was a surprisingly good means to help adolescents in drug treatment.

HT

In a call for more interdisciplinary work for social workers, Walbam wrote about the difficulties faced by children who suffer from Sensory Processing Disorder.⁶⁵ She acknowledges the struggles faced by the families, the complexity for a social worker to diagnose, and the strain for all to treat. She included HT as a complement to other

64. Ann Kern-Godal, Espen Ajo Arnevik, Espen Walderhaug, and Edle Ravndal, "Substance Use Disorder Treatment Retention and Completion: A Prospective Study of Horse-Assisted Therapy (HAT) for Young Adults," *Addiction Science and Clinical Practice* 10, (2015): 21.

65. Katherine M. Walbam, "The Relevance of Sensory Processing Disorder to Social Work Practice: An Interdisciplinary Approach," *Journal of Child and Adolescent Social Work* 31, (2014): 66, 68-69.

forms of occupational therapy. While HT was not the specific focus of her work, it is still valuable to collect the opinions of professionals from various fields of study.

Lee, Lee, and Park, from Korea, looked at HT and virtual reality exercises on the dynamic balance of normal and healthy adults.⁶⁶ In general, most studies in this project have avoided testing on healthy adults, so this one stood out. They discovered that those participants who exercised via HT had a statistically significant improvement in their overall, forward-backward, and side-to-side balancing measurements. Additionally, their counterparts whose exercises came from a specific regimen on Nintendo's Wii Fit, saw similar results, to the point that there was no statistical difference.

From a close-to-home study, researchers from Provo and Salt Lake City, Utah looked at the effects of HT on children with Spinal Muscular atrophy. Symptoms of this disorder may include scoliosis, joint stiffness in the trunk, and respiratory muscle weakness that then leads to pneumonia, poor weight gain, paralysis, or even death. Lemke et al. looked at children from ages 4 to 15 and interviewed their parents and then the children with parents about their individual experiences with HT. This qualitative study resulted in an enriched understanding of the complex interactions of emotional, social, and physical reactions associated with HT programs.⁶⁷

66. Daehee Lee, Sangyong Lee, and Jungseo Park, "Effects of Indoor Horseback Riding and Virtual Reality Exercises on the Dynamic Balance Ability of Normal Healthy Adults," *Journal of Physical Therapy Science* 26, no. 12 (2014): 1903-1905

67. Danielle Lemke, Erin Rothwell, Tara M. Newcomb, and Kathryn J. Swodoba, "Perceptions of Equine-Assisted Activities and Therapies by Parents and Children with Spinal Muscular Atrophy," *Pediatric Physical Therapy* 26, (2014): 237, 241-242.

Baek and Kim did a comparison study of post-stroke patients who either performed exercises targeting their core abdominal muscles or participated in HT via a mechanical simulator. The rehabilitation was focused on the thickness of the abdominal walls and their basic balance.⁶⁸ Abdominal thickness is an intriguing metric for post-stroke patients, since this complication of the core of the body could result in issues radiating from there. Their results showed a statistical significance of symmetrical growth over the control group who performed traditional exercises.

Review—2015

After the first year of interesting expansion of EAP and HT potential, 2015 represents a year of even more refined and nuanced research. EAP research ranged anywhere from studying the budding role that large mammals play in a more interconnected anthropology to the potential of horses helping the depressed to hope. For HT, teams looked at improving biomechanics in healthy children, hormone levels in elderly persons, and the results of performing HT on different surfaces.

EAP

As an entry in the 16th International Congress of European Society for Child and Adolescent Psychiatry, the team headed by Oh submitted a study that looked at the effect of EAP on children with ADHD. They recognized that 10-30% of patients do not respond adequately

68. Il-Hun Baek, and Byeong Jo Kim, "The Effects of Horse Riding Simulation Training on Stroke Patients' Balance Ability and Abdominal Muscle Thickness Changes," *Journal of Physical Therapy Science* 26, (2014): 1293

to pharmaceutical treatments, so they wanted to look for another means to treat the disorder.⁶⁹ They checked for improvements to targeted behaviors like impulsiveness and inattentive levels, as well as brain changes via functional magnetic resonance imagery (fMRI). They noted that there was a significant improvement in the key, behavioral areas and in the fMRI scans of the frontal and parietal regions of the brain.

Gibson and Venkateswar performed a large, system review where they studied the macrosystems of human-animal interactions and how those affect the global climate. While this is a wildly expansive topic, they briefly cover the under-studied dimension of EAP that horses seem to be able to cross species lines of communication. It is their contention that this could be a key factor in humans developing a greater ecological awareness.⁷⁰

Testing for hope is a creative dimension taken by Frederick et al. as they look for a way to help those suffering from depression.⁷¹ They looked at middle and high school students from Texas who qualified as at-risk because of poor academic performance and social complications. Over the five-week intervention timeframe, the treatment group exhibited a statistical increase of hope according to their multi-variate measurement and

69. Y. Oh, et al., "Therapeutic Effect of 12 Weeks Equine Assisted Activities and Therapies (EAA/T) in Children with Attention Deficit Hyperactivity Disorder," *European Child and Adolescent Psychiatry* 24, (2015): S171-S172.

70. Hannah Gibson, and Sita Venkateswar, "Anthropological Engagement with the Anthropocene: A Critical Review," *Environment and Society: Advances in Research* 6, (2015): 15, <http://doi:10.3167/ares.2015.060102>

71. Karen Frederick, Julie Ivey Hatz, and Beth Lanning, "Not Just Horsing Around: The Impact of Equine-Assisted Learning on Levels of Hope and Depression in At-Risk Adolescents," *Community of Mental Health Journal* 51, (2015): 809, 815

decrease in the depression symptoms.

HT

Rigby and his team looked at the cardiorespiratory and biomechanical responses in healthy children who participated in simulated HT. The control for their experiment were simply healthy children walking on a treadmill. They found that HT was not a proper substitute for typical exercise. Instead, it can be an appropriate supplement to go with recommended daily activity for children.⁷² Since the testing was on healthy children, there was no expectation for therapeutic adjustment, only to check if simulated HT could also be a viable substitution for traditional exercise levels.

Kim et al. looked at the changes of an electroencephalogram reading for elderly people after and 8-week HT riding treatment. They measured for activity changes in a wide range of brain waves and neuron stimulation. Essentially, they found that the activated brain waves are similar to those which typically represent emotional stability and relaxation.⁷³ However, the researchers fully acknowledge that such change could have come about by other means within the lives of participants, but believe their findings merit more research.

Continuing in the vain of looking at elderly popula-

72. Brandon R. Rigby, Zacharias Papadakis, Annie A. Bane, Jin K. Park, and Peter W. Grandjean, "Cardiorespiratory and Biomechanical Responses to Simulated Recreational Horseback Riding in Healthy Children," *Research Quarterly for Exercise and Sport* 86, (2015): 63, 67-69, <http://doi.org/10.1080/02701367.2014.977432>

73. Seon-Rye Kim, Sung-Hyoun Cho, Jin-Woo Kim, Hyo-Cheol Lee, Marten Brienens, and Byung-Jun Choo, "Effects of Horseback Riding Exercise Therapy on Background Electroencephalograms of Elderly People," *Journal of Physical Therapy Science* 27, (2015): 2373-2375

tions, Cho, Kim, Kim, and Cho examined the hormone levels of geriatric subjects. After an 8-week treatment plan, they measured an increase in serotonin and cortisol of the treatment group as well as the control group.⁷⁴ The only difference was that the treatment group measured the change at a statistically significant level. This has special importance for the potential of treating PTSD as these are two hormones which contribute to positive changes in those who suffer from it.

Lee, Kim, and An looked for a way to help treat obese women that suffered from decreased mobility. They tested 24 women for eight weeks, having one group as HT participants and the other as a walking control. The riding group showed a significant increase in stride length over the control group improvement, and significant decrease in body mass index (BMI) and width of the walkers' base.⁷⁵ It is possible, according to their study, that HT could help those who are challenged in their mobility to become more active. Flores et al. looked at the response felt by the rider when HT horses were ridden on different surfaces. They used professionals and trainees of HT to measure amplitude and velocity from where the pressure is transferred from horse to rider, in order to get the best and most consistent measurements possible. They discovered that there was a gradual increase in amplitude as the riders went from asphalt, to grass, to sand and

74. Sung-Hyun Cho, Jin-Woo Kim, Seon-Rye Kim, and Byung-Jun Cho, "Effects of Horseback Riding Exercise Therapy on Hormone Levels in Elderly Persons," *Journal of Physical Therapy Science* 27, (2015): 2271-2272

75. Chae-Woo Lee, Seong-Gil Kim, and Byung-Wok An, "The Effects of Horseback Riding on Body Mass Index and Gait in Obese Women," *Journal of Physical Science* 27, (2015): 1169-70

then no significant change in the velocity.⁷⁶ Essentially this means that certain riders will fare better on each surface, depending on how much force they need to have transferred to them for their therapeutic needs.

Review—2016

Even though the previous year was the most numerous by sheer number of studies, many were repetitive in nature. The few that ventured from convention gave way to other researchers wanting to test the limits, and often finding out new, viable uses for EAP and HT. The year of 2016 saw several studies reproduce similar tests and findings as previous years, but also a few novel implications and dimensions which continue to test the bounds of both EAP and HT.

An Italian research team lead by Guidi utilized a wearable system for humans and horses, with the intent to measure heart-rate variability. The goal was to measure if there were spikes in similar moments of interaction between any of the 24 human participants and the one horse. It was rigged to a system that measured certain autonomic nervous system processes that are perceived to be like human heart events of excitement and positive recognition.⁷⁷ They discovered that the new, wearable technology outperformed traditional mechanisms for measuring heart rate by reducing extraneous

76. Fabiana M. Flores, Frederico Dagnese, Carlos B. Mota, and Fernando Copetti, "Parameters of the Center of Pressure Displacements on the Saddle During Hip-otherapy on Different Surfaces," *Brazilian Journal of Physical Therapy* 3, (May-June 2015): 211, <http://dx.doi.org/10.1590/bjot-rbf.2014.0090>

77. Andrea Guidi, Antonio Lanata, Paolo Baragli, Gaetano Valenza, and Enzo Pasquale Scilingo, "A Wearable System for the Evaluation of the Human-Horse Interaction: A Preliminary Study," *Electronics* 5, no. 63 (2016): 1.

stimuli which triggered false positives, and that the grooming stage of events resulted in the strongest correlation of positive heart rate variability. This means that, outside of riding, human and horse are most likely to connect during the process of grooming which typically happens a little before and then significantly more after riding.

Kern-Godal et. al carried out another important study, this time looking at the relationship of the rider and horse in the treatment of Substance Use Disorder (SUD). While both elements (SUD treatment and relationship dynamic) have been studied, this report delivered a different aspect to previous research – an emotional support coupled with mastery of a skill.⁷⁸ Although it could be inferred from several studies looking at the human-animal bond that the emotional element was previously addressed, these researchers tie that to the idea that participants of a substance abuse rehabilitation center receive a greater emotional support and regulation from horses, as they develop a positive skill that has them reflecting about the condition of another being. It is then in the emotional intelligence and reflection exhibited by horses that realistic attachment can be established.

Another challenge for social workers comes from Blinka and Harris who wrote on moral injury in warriors and combat veterans. They defined moral injury as consisting of three necessary parts: (1) a betrayal of what

78. Ann Kern-Godal, Ida H. Brenna, Norunn Kogstad, Espen A. Arnevik, and Edle Ravndal, "Contribution of the Patient-Horse Relationship to Substance Use Disorder Treatment: Patients' Experiences," *International Journal of Qualitative Studies on Health and Well-Being* 11, (2016): 1, <http://dx.doi.org/10.3402/qhw.v11.31636>

is right (2) by someone who has legitimate authority (3) in a high stakes authority.⁷⁹ With combat veterans being a difficult group to work with in conventional, speaking therapy, they prescribe EAP as an alternative treatment for the affected individual. They also attempt to sparse out the commonalties and differences between moral injury, PTSD, and dissociation from war-time actions. While they separate moral injury and PTSD from each other, they do reason that if dissociation is present with moral injury, then it is likely that PTSD is present. Such a combination would be extremely difficult to treat with any intervention.

Kern-Godal, with a slightly different team from the most recent study, investigated another dimension of EAP in the treatment of SUD: they looked at the environment in which the treatment is given. They sought to examine what caused so many participants in SUD rehabilitation centers to lose interest or motivation and leave before the planned end.⁸⁰ They discovered that with EAP, patients tended to complete more treatment because they found a positive sense of self. This specific term has been used in another study, mentioned earlier in this chapter, however, this team added that the positive-self came because of a stable environment where participants saw themselves as useful, responsible, and accepted. This, in turn, changed their experience (as compared with other rehab patients) by giving them a change of

79. Dee Blinka, and Helen Wilson Harris, "Moral Injury in Warriors and Veterans: The Challenge to Social Work," *Social Work and Christianity* 43, no. 3 (2016): 8-10, 21-23

80. Ann Kern-Godal, Ida Halvorsen Brenna, Espen Ajo Arnevik, and Edle Ravndal, "More Than Just a Break from Treatment: How Substance Use Disorder Patients Experience the Stable Environment in Horse-Assisted Therapy," *Substance Abuse: Research and Treatment* 10, (2016): 99, <http://doi.org/10.4137/SART.S40475>

focus, different activity, new identity, and renewed motivation.

The team of Wiens, Kyngäs, and Pölkki studied the ways in which Finland's nature affected adolescent girls from the ages of thirteen to sixteen.⁸¹ They recognized the likelihood that the winter season in Finland carries with it a propensity toward depression and lethargy. In their qualitative surveys from the girls, they learned that additional focus placed on interacting with nature in general, and animals specifically, helped the young women adapt to the seasonal change, and feel a restorative effect on their emotional state. EAP was listed as one of several ways to trigger this positive response, even if done in a very informal manner.

Lee, Dakin, and McClure performed a review of research concerning quantitative and qualitative studies. They recognized from the empirically quantitative studies of EAP that there are statistically significant changes in emotional, social, and behavioral functioning of adolescents who were tested. From their analysis of qualitative studies, EAP helped teens improve communication and relationship skills.⁸² They also acknowledged that none of this is seen as definitive in nature due to glaring limitations in the experimental designs for all of the research.

81. Varpu Wiens, Helvi Kyngas, and Tarja Polkki, "The Meaning of Seasonal Changes, Nature, and Animals for Adolescent Girls' Wellbeing in Northern Finland: A Qualitative Descriptive Study," *International Journal of Qualitative Studies on Health and Well-Being* 11, (2016): 1, 9-11, <http://dx.doi.org/10.3402/qhw.v11.30160>

82. Ping Tzu Lee, Emily Dakin, and Merinda McLure, "Narrative Synthesis of Equine-Assisted Psychotherapy Literature: Current Knowledge and Future Research Directions," *Health and Social Care in the Community* 24, no. 3 (2016): 225, <http://doi.org/10.1111/hsc.12201>

HT

Although a study from this year already measured heart rate variability in an EAP study, Nqwena and Naidoo studied how this information could be of benefit for children riding in HT who have various disabilities. These disabilities included CP, ASD, Down's syndrome, spina bifida, and developmental delay (the last one being the only specific condition not yet addressed in this project). Their determination was that HT does cause a significant change in heart rate variability, but that they are unable to identify if there was increased sympathetic or parasympathetic activity.⁸³ The hope for these researchers is that their work can help encourage others to examine ways that might increase a parasympathetic response that can then alleviate some challenges for the children with disabilities.

Rankins et al. recognized slight differences in how certain horses adapted in HT sessions, namely that they moved differently for different riders. They tested each of the four horses available to them. They measured stride length, stance width, and swing and stance durations of each hoof. When compared to riders with a trainer walking the horse and riders on their own, there was a significant change in each measurement except swing duration, specific to each rider. Essentially, this means that each horse adapted all variables except their pace

83. Zingisa Nqwena, and Rowena Naidoo, "The Effect of Therapeutic Horseback Riding on Heart Rate Variability of Children with Disabilities," *African Journal of Disability* 5, no. 1 (2016): 1, <http://dx.doi.org/10.4102/ajod.v5i1.248>

for everyone that rode them.⁸⁴ However, they recognize that no conclusive argument can be made because of the small sample size of riders and horses.

Review—2017

The last year of the predetermined decade sees a radical reduction in novel research. Most groups have repeated previous experiments that treat conditions like CP, ASD, and even SUD, in similar populations as previous years. In general, these did not yield any new insight or contradict results that have been recorded, so most studies will not be included in this review. Nevertheless, they will be present in the annotated bibliography with a brief description of their treated groups and findings.

EAP

Artz and Davis focused their attention on a package of therapies known as Green Care. This grouping of interventions typically includes any form of farm-animal-assisted therapies, agricultural/horticultural therapy, and general, farm-based treatments.⁸⁵ Their hope was to bring enough attention to the whole field, that more research would help qualify some of the practices for reimbursement status within the health insurance programs found in the United States. The inclusion of this

84. E. M. Rankins, E. L. Wagner, and W. H. Weimar, "The Influence of a Rider with a Disability on the Equine Walk," <http://doi.org/10.2527/ssasas2015-134>

85. Brianna Artz, and Doris Bitler Davis, "Green Care: A Review of the Benefits and Potential of Animal-Assisted Care Farming Globally and in Rural America," *Animals* 7, no. 31 (2017): 1, <http://doi.org/10.3390/ani7040031>

article is based on the argument they promote of EAP and HT making positive strides in treating symptoms of specific disorders in Europe and they need to be more readily available in the US. They make the distinction between the feasibility in rural versus urban communities because it is significantly easier to implement Green Care programs in rural areas than urban ones.

The study from Graham and Lindsey out of Bridgewater State university analyzed how animal-assisted therapy, including EAP, help children grow. Their review covered how EAP could help pre-adolescent-aged kids develop introspection, self-monitoring, self-efficacy, self-esteem, and overcoming angst common to their age. Some of the dimensions involved with the final description of angst include overcoming social stigmas, coping with diabetes, and adapting to anxiety.⁸⁶ Their pooling of research also supports their desire to see more work done in how EAP helps in the development of specific, normal stages in childhood.

Carlsson examined the effects of EAP on the therapeutic relationship with self-harming teens. This is the first time that the descriptor of “self-harm” is used with any of the studies that fall within the parameters of this project. In general, a social worker utilizing EAP would look for a triadic relationship to form for the teen as the adolescent bonds with the animal and the designated, therapeutic partner assisting with the horse.⁸⁷ Her me-

86. Louise B. Graham, and Allison Lindsey, “Horses Helping Children Grow,” *Journal of Instructional Pedagogies* 19, (2017): 1-7

87. Catherina Carlsson, “Triads in Equine-Assisted Social Work Enhance Therapeutic Relationships with Self-Harming Adolescents,” *Journal of Clinical Social Work* 45, (2017): 320, <http://doi.org/10.1007/s10615-016-0613-2>

ta-analysis developed three triads that would produce beneficial results for a teen that tends toward the actions of self-harm: the client develops trust with the assistant and therefore the horse; the client extends trust to both the horse and assistant at the same time; or the client extends trust to the animal, which eventually includes the assistant because the horse bridges that trust. Their conclusion was that the assistant in EAP should be completely open to the possibility that a teen who suffers from self-harming tendencies would try to attach to them. This trust is not always guaranteed and should not be dismissed because it is not an absolute that the teen would attach or trust the horse.

HT

Weisman-Miller, Miller, and Shotwell employed a dynamic form of statistics called semiparametric ratio estimator (SPRE) which helped them to estimate an approximate point from where adaptation to a treatment is predictable for a given participant. As this is not a project focused in statistical analysis, let it suffice that there is reasonable math and science to back-up the claim that they can nearly detect the point in an intervention where the subject begins to respond positively to whatever stimuli is implemented. A major benefit for this form of analysis is that comorbidity complications can be mitigated since each symptom that is treated can be approximately defined for when treatments spur on a positive adaptation. Essentially, their greatest contribution was not in a way to treat someone utilizing HT, but rather that with their methods, fellow researchers can better utilize data to target specific points in a condition and craft a

treatment for that.⁸⁸ It could help decrease the “educated guessing” that happens in most studies.

Peansukmanee’s research team from Thailand recognized small abnormalities in the gait of horse that participated in HT. They measured basic kinematic motions in their average walk to see if an inertial sensor could be placed on the animal. This would further test if the horses adapt themselves to each human rider so much that they begin to harm their own, normal ambulation.⁸⁹ They learned that the best place to test for such motion change is on the front limbs where the most drastic acceleration and deceleration takes place in a normal, horse gait, as it adapts for each rider.

Ohtani et al. examined the potential engagement of the sympathetic nervous system by means of testing children in situations where they had to decide to appropriately act or use self-control and wait. They chose two ways to test this possible excitation of the sympathetic nervous system: a reactionary tap of a space-bar with a visual prompt and a simple single-digit to single-digit addition. They found that there was no statistical improvement in the mathematic test after riding a HT horse, believing it highly likely that the children remembered the general outline of the problems and so they gained the system there. However, the reaction time test did show

88. Deborah Wesimann-Miller, Rosalie J. Miller, and Mary P. Shotwell, “Translational Research for Occupational Therapy: Using SPRE in Hippotherapy for Children with Developmental Disabilities,” *Occupational Therapy International*, (2017): 1, <http://dx.doi.org/10.1155/2017/2305402>

89. Siriporn Peansukmanee, Nuanlaor Thawinchai, Prakaykul Khanproa, and Prayanee Khaminluang, “Feasibility Study of Inertial Sensor Technology on Ponies for Equine-Assisted Therapy (EAT),” *Kafka Univ Vet Fak Derg* 23, no. 6 (2017), 871.

a statistically significant improvement over their pre-HT selves.⁹⁰ While it cannot be stated as proof that HT can assist children in developing the understanding of when to appropriately act and when to engage self-control, they do have compelling results that encourage the need for more investigation into the possibility.

Conclusion

After the lengthy immersion into numerous studies concerning EAP and HT, a few trends have become clear: interesting findings spur new research, new research brings on new methods, and new methods result in new, interesting findings. As long as groups were discovering positive uses for EAP or HT, more time and energy was expended to see what can be treated.

This literature Review is instrumental in illustrating that equine studies regarding PTSD remediation through therapeutic movement and gait of the Missouri Fox trotter and Carthusian Andalusian horse breeds, do not exist. The review does examine EAP and HT from 2008 to 2017, to discern the field of equine therapy in general and see where further studies might touch on the topic of therapeutic movement and gait for the two breeds mentioned above. So far, in more than one-hundred studies summarized and examined here, there are no such references.

Suggestions for further study include: therapeutic

90. Nobuyo Ohtani, et al., "Horseback Riding Improves the Ability to Cause the Appropriate Action (Go Reaction) and the Appropriate (No-Go Reaction) in Children," *Frontiers in Public Health* 5, no. 8 (February 2017): 1.

differences from normal gaited versus over-step gaited horses, emotional development between rider and horse when there is a measurable improvement of rider's physical condition, comparison studies for various breeds in HT or EAP, effectiveness of a horse who can adapt to rider versus switching horses to fit rider's needs, and an fMRI study of activity for mid-brain maladies just before and directly after EAP and HT treatments measuring connectivity from mid-brain to pre-frontal cortex.

There is a clear need to clinically explore the work of Clegg and Lamb to establish the therapeutic value of the Fox trotter and Carthusian Andalusian breeds of horse. While there may be some investigation into how the body reacts to the movement of horses, none have yet looked at the effect of the movement itself. Several explored the use of a simulator to help with the muscular strength in those where it might be deficient, but no one has looked at just the inertial changes caused by the movement itself. It is always focused on the rider's musculoskeletal or emotional response to the experience.

The mentioned Clegg/Lamb study with Missouri fox trotter and Carthusian Andalusian breeds of horses could lead to a neuroscience and mechanical engineering study of horse and rider movement, with the intent of creating a mechanical saddle that would mimic the movement of the horses. Such a machine could be placed in any clinical setting world-wide, similar to what is already being done in many of the studies found in this review. Naturally the creation and use of such a mechanical saddle would invite a series of its own studies. This

review of the literature in EAP and HT is a prelude to studies in that direction.

Annotated Bibliography Review as to Hippotherapy and Equine Assistance Psychotherapy

2008 HT

Title: Engaging Students with Service Learning Within an Animal Science Curriculum at Texas Tech University: A Ten-Year Perspective

Authors: H. Brady

Source: Journal of Animal Science 86, no. 2

Date: 2008

Subjects	Results
Children	Children, student therapists affected by involvement in riding therapy

Title: The Clinical Picture of a Child with Spastic Diplegia on a Horse, Depending on the Position of the Hippotherapeutic Team

Authors: Monika Malachowska-Sobieska, Ewwa Demczuk-Wiodarczyk, Krzysztof Wronecki, Tadeusz Skilimowski, Karolina Szpyt, Dorota Wojna, Dominika Zawadzka

Source: Fizjoterapia 16, no. 1

Date: 2008

Subjects	Results
Children	Postural changes in riding children were of benefit for them

Title: The Methods of Physiotherapy, which are used by Children with Down's syndrome and Congenital Heart Disease Which Require Cardiosurgical Intervention

Authors: Dorota Wojtowicz, Lundwika Sadowska, Monika Myslek, Anna Skrzek, Piotr Dominiak, Krzysztof Wronecki, Katarzyna Prasal

Source: Fizjoterapia 16, no. 1

Date: 2008

Subjects	Results
Children	Help with postural/muscle control difficulties

Title: Features of a Horse and Mechanisms of Therapeutics Effects

Author: Daria Sawaryn

Source: Fizjoterapia 16, no. 1

Date: 2008

Subjects	Results
Horse	Examining basic elements of equine therapy

2009 HT

Title: The Effect of Therapeutic Horseback Riding on Social Functioning in Children with Autism

Author: Margaret M. Bass, Catherine A. Duchowny, Maria M. Llabre

Source: Journal of Autism Developmental Disorders 39

Date: 2009

Subjects	Results
Children	Riding and grooming resulted in improved social interactions

Title: A Randomized Controlled Trial of the Impact of Therapeutic Horse Riding on the Quality of Life, Health, and Function of Children with Cerebral Palsy

Authors: E. Davis, B. Davies, R. Wolfe, R. Raadsveld, B Heine, P. Thomason, Fiona Dobson, and H. K. Graham

Source: Developmental Medicine & Child Neurology

Date: 2009

Subjects	Results
Children	Increase in Gross Motor Function; Noted change by parents' perspectives

Title: Complementary and Alternative Methods in Cerebral Palsy

Authors: William L Oppenheim

Source: Developmental Medicine & Child Neurology 51, no. 4

Date: 2009

Subjects	Results
Adults	Improved gross motor function; exercises increase effectiveness

Title: Adults with Cerebral Palsy: A Workshop to Define the Challenges of Treating and Preventing Secondary Musculoskeletal and Neuromuscular Complications

Authors: Laura L. Tosi, Nancy Maher, D. Winslow Moore, Murray Goldstein, and Mindy L. Aisen

Source: Developmental Medicine & Child Neurology 51, no. 4

Date: 2009

Subjects	Results
Adults	Treatment as a child and going to adult, results in better muscle control

2010 EAP

Title: The Effects of Equine-Assisted Therapy in Improving the Psychosocial Functioning of Children with Autism

Authors: Haris Memishevikj and Saudin Hodzhikl

Source: Journal of Special Education and Rehabilitation 11

Date: 2010

Subjects	Results
Children	Works as a complementary therapy, not the main treatment

Title: Implications of Literature on Edquine-Assisted Activities for Use as a Complementary Intervention in Social Work Practice with Children and Adolescents

Authors: Alexa Smith-Osborne and Alison Selby

Source: Journal of Child and Adolescent Social Work

Date: 2010

Subjects	Results
Children, Adolescents	May see improved mental, physical; decrease in familial challenges

Title: Social Work Practitioners and Human-Companion Animal Bond: A National Study

Authors: Christina Risley-Curtiss

Source: Social Work 55, no. 1

Date: 2010

Subjects	Results
Adults	Most social workers know about equine therapies, don't utilize them

Title: Matching Animal-Assisted Therapy Techniques and Intentions with Counseling Guiding Theories

Authors: Cynthia K. Chandler, Torey L. Portrie-Bethke, Casey A. Barrio Minton, Delini M. Fernando, Dana M. O'Callaghan

Source: Journal of Mental Health Counseling 32, no. 4

Date: 2010

Subjects	Results
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General Population	Equine therapies can work with almost all counseling forms
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Title: Equine Assisted Psychotherapy in Clinical Practice

Authors: Angela Masini

Source: Journal of Psychological Nursing 48, no. 10

Date: 2010

Subjects	Results
General Population	Informational article about the processes and benefits

2010 HT

Title: Exploring Animal-Assisted Programs with Children in School and Therapeutic Contexts

Authors: Lori Friesen

Source: Journal of Early Childhood Education 37

Date: 2010

Subjects	Results
Children	Pet therapy is successful with dogs, ought to be expanded to horses

Title: Study of the Therapeutic Effects of a Hippotherapy Simulator in Children with Cerebral Palsy: A Stratified Single-Blind Randomized Controlled Trial

Authors: Pablo Herrero, Eva M Gomez-Trullen, Angel Asensio, Elena Garcia, Roberto Casas, Esther Monserrat and Anand Pandyan

Source: Journal of Clinical Rehabilitation 26, no. 12

Date: 2010

Subjects	Results
Children	Simulator with traditional therapy achieves desired outcome

Title: Use of Hippotherapy in Gait Training for Hemiparetic Post-Stroke

Authors: Fernanda Beinotti, Nilzete Correia, Gustavo Christofolletti, Guilherme Borges

Source: Arq Neuropsiquiatr 68, no. 6

Date: 2010

Subjects	Results
Adults	When coupled with typical therapy, brings patient's gait near normal

Title: Human Facial Discrimination in Horses: Can They Tell Us Apart?

Authors: Sherril M. Stone

Source: Animal Cognition 13

Date: 2010

Subjects	Results
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Horses	Horses can discern someone that they know from a stranger
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2011 EAP

Title: Prospective Trial of Equine-Assisted Activities in Autism Spectrum Disorder

Authors: Janet K. Kern, Charles L. Fletcher, Carolyn R. Garver, Jyutika A. Mehta, Bruce D. Grannemann, Kandice R. Knox, Theresia A. Richardson, and Madhukar H. Trivedi

Source: Alternative Therapies 17, no. 3

Date: 2011

Subjects	Results
Children	Significant improvements in mood and tone of child

Title: A Healing Space: The Experiences of First Nations and Inuit Youth with Equine-Assisted Learning (EAL)

Authors: Colleen Anne Dell, Darlene Chalmers, Nora Bresette, Sue Swain, Deb Rankin, and Carol Hopkins

Source: Child and Youth Care Forum 40

Date: 2011

Subjects	Results
Adolescents	Improved spiritual exchange, communication, authentic occurrence

2011 HT

Title: Therapeutic Interventions in Cerebral Palsy

Authors: Helayne Feferman, Janell Harro, Joav Merrick

Source: International Journal of Child and Adolescent Health

Date: 2011

Subjects	Results
Children	Stresses positive effects of complementary therapies

Title: Effects of Hippotherapy and Therapeutic Horseback Riding on Postural Control or Balance in Children with Cerebral Palsy: A Meta-Analysis

Authors: Monika Zadnikar and Andrej Kastrin

Source: Developmental Medicine & Child Neurology 53

Date: 2011

Subjects	Results
Children	More research needed to confirm valid treatment potential

Title: Center-of-Pressure Movements During Equine-Assisted Activities

Authors: Hilary M. Clayton, LeeAnn J. Kaiser, Bonnie de Pue, Lana Kaiser

Source: The American Journal of Occupational Therapy 65

Date: 2011

Subjects	Results
Adults	Affected by cerebral palsy don't move much on horse; rigid torso muscles

Title: Non Conventional Psychiatric Rehabilitation in Schizophrenia Using Therapeutic Riding: The FISE Multicentre Pindar Project

Authors: Stefania Cerino, Francesca Cirulli, Flavia Chiarotti and Stefano Seripa

Source: Animal-Assisted Interventions in Mental Health 47, no. 4

Date: 2011

Subjects	Results
Adults	Remission of disease chronic patients; reduced rate of hospitalization

Title: Effects of Equine-Assisted Therapy on the Postural Balance of the Elderly

Authors: Thais B. Araujo, Nelida A. Silva, Juliana N. Costa, Marcio M. Pereira, Marisete P. Safons

Source: Journal of Brazilian Physiotherapy

Date: 2011

Subjects	Results
Adults - Elderly	No effect on gait; positive effect in arising from seat, reduced fall risk

2012 EAP

Title: Physiotherapists' Experiences...Focusing on Interventions for Children with Cerebral Palsy: A Qualitative Phenomenographic Approach

Authors: Ingalill Larsson, Michael Miller, Kerstin Liljedahl and Gun-over Gard

Source: BMC Pediatrics 12

Date: 2012

Subjects	Results
Children	Treatment developed by whole family; relationships most important

Title: New Perspectives on Complementary and Alternative Medicine: An Overview and Alternative Therapy

Authors: Si-Yuan Pan, Si-Hua Gao, Shu-Feng Zhou, Min-Ke Tang, Zhi-Ling Yu, and Kam-Ming Ko

Source: Alternative Therapies 18, no. 4

Date: 2012

Subjects	Results
General Population	Equine therapies are a means to heal mind and then body

2012 HT

Title: Modulation of Back Geometry in Children with Spastic Diplegic Cerebral Palsy via Hippotherapy Training

Authors: Gehan H. El-Meniawy and Nahed S. Thabet

Source: The Egyptian Journal of Medical Human Genetics 13

Date: 2012

Subjects	Results
Children	Equine therapies is a viable companion intervention

Title: Hippotherapy Effects on Trunk, Pelvic, and Hip Motion During Ambulation in Children with Neurological Impairments

Authors: Jenna L. Encheff, Charles Armstrong, Michelle Materson, Christine Fox, Phillip Gribble

Source: Pediatric Physical Therapy 24

Date: 2012

Subjects	Results
Children	Significant improvement in hip; notable improvement in trunk, pelvis

Title: Effects of Hippotherapy on the Sitting Balance of Children with Cerebral Palsy: A Randomized Control Trial

Authors: Hyungkyu Kang, Jinhwa Jung, Jaeho Yu

Source: Journal of Physical Therapy Science 24, no. 9

Date: 2012

Subjects	Results
Children	Significantly improved sitting balance when added to traditional treatment

Title: The Effects of Hippotherapy on the Motor Function of Children with Spastic Bilateral Cerebral Palsy

Authors: Hyun Jung Chang, Jeong-Yi Kwon, Ji-Young Lee, Yun-Hee Kim

Source: Journal of Physical Therapy Science 24, no. 12

Date: 2012

Subjects	Results
Children	Improve gross motor function, balance; no adverse effects

Title: Hippotherapy-An Intervention to Habilitate Balance Deficits in Children with Movement Disorders: A Clinical Trial

Authors: Debbie J. Silkwood-Sherer, Clyde B. Kilian, Toby M. Long, Kathy S. Martin

Source: Physical Therapy 92, no. 5

Date: 2012

Subjects	Results
Children, Adolescents	Reduces balance deficits, improves performance of daily life skills

Title: The Variability of a Horse's Movement At Walk in Hippotherapy

Authors: Miroslav Janura, Zdenek Svodoba, Tereza Dvorkova, Lee Cabell, Milan Elfmark, and Eva Janurova

Source: Kinesiology 44, no. 2

Date: 2012

Subjects	Results
Horses	Varying horse motion is confounding variable, needs to be controlled for

2013 EAP

Title: Therapeutic Horseback Riding Outcomes of Parent Identified Goals for Children with Autism Spectrum Disorder... Dosing and Generalization

Authors: Margo B. Holm, Joanne M. Baird, Young Joo Kim, Kuwat B. Rajora, Delma D'Silva, Lin Podolinsky, Carla Mazefsky, and Nancy Minshew

Source: Journal for Autism Developmental Disorders 44

Date: 2013

Subjects	Results
Children - Parents interviewed	Riding resulted in more profound changes, not number of changes seen

Title: Equine Facilitated Therapy with Children and Adolescents Who Have Been Sexually Abused: A Program Evaluation Study

Authors: Kathleen Kemp, Tania Signal, Helena Botros, Nik Taylor, and Kathy Prentice

Source: Journal of Child and Family Studies 23

Date 2013

Subjects	Results
Children, Adolescents	Decreased effects of depression later in life, if related to the abuse

Title: The Use of Adventure Therapy Techniques by Clinical Social Workers: Implications for Practice and Training

Authors: Anita R. Tucker and Christine Lynn Norton

Source: Journal of Clinical Social Work 41

Date 2013

Subjects	Results
Children, Adolescents	Activity and completing competency exercises increase self-esteem

Title: Eating Disorders and Equine: A Nurse's Perspective on Connecting Through the Process of Recovery

Authors: Joyce E. DeZutti

Source: Journal of Psychosocial Nursing 51, no. 9

Date 2013

Subjects	Results
Adolescents, Adults	Better communication/cohesiveness, senses of accomplishment and self

Title: Examining Effects of Equine-assisted Activities to Help Combat Veterans Improve Quality of Life

Authors: Beth A. Lanning and Nancy Krenek

Source: Journal of Rehabilitative Research and Development 50, no. 8

Date 2013

Subjects	Results
Adults	Participants felt more hope enter into their lives

Title: Therapeutic Horseback Riding for ACT Patients with Schizophrenia

Authors: Deborah Corring, Erica Lundberg, and Abraham Rudnick

Source: Journal of Community of Men Health 49

Date 2013

Subjects	Results
Adults	Seen as fun; bond with animal; positive change in relationships

Title: Dancing with Horses: Combining Dance/Movement Therapy and Equine Facilitated Psychotherapy

Authors: Candice Ford

Source: American Journal of Dance Therapy 35
Date: 2013

Subjects	Results
Adults	Horse acted as dance therapists; openness with assistant and horse

Title: A Revised Taxonomy of Assistance Animals

Authors: Lindsay Parenti, Anne Formena, B. Jean Meade and Oliver Wirth

Source: Journal of Rehabilitative Research and Development 50, no. 6

Date: 2013

Subjects	Results
General Population	Provides a classification for assistance animals

Title: Connecticut Stable Offers Free-Equine Assisted Psychotherapy in Response to Newtown

Authors: N/A

Source: prnewswire.com

Date: 2013

Subjects	Results
General Population	Expectation for wide support in equine therapies

Title: Animal-Assisted Intervention for Autism Spectrum Disorder: A Systematic Literature Review

Authors: Marguerite E. O'Haire

Source: Journal of Autism Developmental Disorders 43

Date 2013

Subjects	Results
General Population	Increased social interactions; communication improved

Title: Healing through Healing©: The Horse Power of Choice Theory

Authors: Janet Cameron and Patricia A. Robey

Source: International Journal of Choice Theory and Reality Therapy 33, no. 1

Date 2013

Subjects	Results
General Population	Observed positive results in treatment, affirming other studies

Title: Whispering to Horses: Childhood Sexual Abuse, Depression and the Efficacy of Equine Facilitated Therapy

Authors: Tania Signal, Nik Taylor, Helena Botros, Kathryn Prentics, and Kathryn Lazarus

Source: Sexual Abuse in Australia and New Zealand 5, no. 1

Date: 2013

Subjects	Results
General Population - Victims of sexual abuse as a child	Decreased chance subject would self-harm, act out

2013 HT

Title: Effect of Hippotherapy on Motor Control, Adaptive Behaviors, and Participation in Children with Autism Spectrum Disorder: A Pilot Study

Authors: Heather F. Ajzenman, John W. Standeven, and TimL. Shurtleff

Source: American Journal of Occupational Therapy 67

Date: 2013

Subjects	Results
Children	Positive body control, adaptive behaviors, relationships/bonding

Title: Thermovision Techniques for Evaluation of the Effect of Hippotherapy on Changes in Lower Limb Temperature in Children with Cerebral Palsy - A Pilot Study

Authors: Alicja Dziuba, Krzysztof Dudek, Krystyna Kobel-Buys, Gregorz Żurek, and Ewa Smajda

Source: Fizjoterapia 21, no. 1

Date: 2013

Subjects	Results
Children	Increased thermal activity in riders, increased circulation in legs, pelvis

Title: The Effects of Horseback Riding Simulator Exercise on Postural Balance of Chronic Stroke Patients

Authors: Jungseo Park, Sangyong Lee, Jiyeun Lee, and Daehee Lee

Source: Journal of Physical Therapy Science 25, no. 9

Date: 2013

Subjects	Results
Adults	Balance with open or closed eyes remained same, Dynamic improved

Title: Effects of Horse Riding Simulator and Ball Exercises on Balance of the Elderly

Authors: SeongGil Kim, Goon-Chang Yuk, Hwangbo Gak

Source: Journal of Physical Therapy Science 25, no. 11

Date: 2013

Subjects	Results
Adults - Elderly	Significantly improved balance from simulator than ball exercises

2014 EAP

Title: Animal-Assisted Therapy for Fetal Alcohol Spectrum Disorder (FASD)

Authors: Brooke Vincent, Caley Kropp, and Andrew M. Byrne

Source: Journal of Applied Rehabilitation Counseling 45, no. 3

Date: 2014

Subjects	Results
Children	Environment is most impactful; Treats symptoms similar to FASD

Title: Effects of Equine Assisted Activities on Autism Spectrum Disorder

Authors: Beth A. Lanning, Margaret E. Matyastik Baier, Julie Ivey-Hatz, Nancy Krennek, and Jack D. Tubbs

Source: Journal of Autism Developmental Disorders 44

Date: 2014

Subjects	Results
Children - Parents interviewed	Improved physical, emotional, and social functioning

Title: Complementary Psychosocial Interventions in Child and Adolescent Psychiatry: Pet Assisted Therapy

Authors: Susmita Chanrdamouleeswaran, Paul Swamidhas Sudhakar Russell

Source: Indian Journal of Psychological Medicine 36, no. 1

Date: 2014

Subjects	Results
Children, Adolescents	Encourage additional research; pet therapy helps with many conditions

Title: Nonprofit Charity Impacts Wounded Combat Veterans and Children Facing Adversity

Authors: Barbara O'Brien

Source: Nursing Economics 32, no. 5

Date: 2014

Subjects	Results
Children, Adults	Lays out plan for nonprofit who helps people cope with PTSD

Title: Substance Use Disorder Treatment Retention and Completion: A Prospective Study of Horse-Assisted Therapy (HAT) for Young Adults

Authors: Ann Kern-Godal, Espen Ajo Arnevik, Espen Walderhaug, and Edle Ravndal

Source: Addiction Science and Clinical Practice 31

Date: 2014

Subjects	Results
Adolescents	Doing equine therapy increases likelihood of completing treatment

Title: Lifestyle Medicine for Depression

Authors: Jerome Sarris, Adrienne O'Neil, Carolyn E. Coulson, Isaac Schweitzer, and Michael Berk

Source: BMC Psychiatry 14

Date: 2014

Subjects	Results
Adults - Elderly	Interact with large animals daily activities; positive effect with depression

Title: The Human Animal Bond: Applications for Rehabilitation Professionals

Authors: Denise Silcox, Yuleinys A. Castillo, and Bruce J. Reed

Source: Journal of Applied Rehabilitation Counseling 45, no. 3

Date: 2014

Subjects	Results
General Population	Different needs are often met with different animals/therapies

Title: Cultural Interventions to Treat Addictions in Indigenous Populations: Findings from a Scoping Study

Authors: Margo Rowan, Nancy Poole, Beverly Shea, Joseph P. Gone, David Mykote, Marwa Farag, Carol Hopkins, Laura Hall, Christopher Mushquash, and Colleen Dell

Source: Substance Abuse Treatment, Prevention, and Policy 9

Date: 2014

Subjects	Results
General Population - Indigenous people of US and Canada	Survey; culturally-relevant therapy helps treat substance use disorders

2014 HT

Title: The Relevance of Sensory Processing Disorder to Social Work Practice: An Interdisciplinary Approach

Authors: Katherine Walbam

Source: Journal of Child and Adolescent Social Work 31

Date: 2014

Subjects	Results
Children	Info brief to social workers on treatments for sensory processing disorder

Title: Effect of Hippotherapy on Gross Motor Function and Functional Performance of Children with Cerebral Palsy

Authors: Eun Soo Park, Dong-Wook Rha, Jung Soon Shin, Soohyeon Kim, and Soojin Jung

Source: Yonsei Medical Journal 55, no. 6

Date: 2014

Subjects	Results
Children	May maximize function/performance of children with spastic cerebral palsy

Title: The Effects of Hippotherapy and a Horse Riding Simulator on the Balance of Children with Cerebral Palsy

Authors: Chae-woo Lee, Seong Gil Kim, Sang Su Na

Source: Journal of Physical Therapy Science 26, no. 3

Date: 2014

Subjects	Results
Children	Simulator and riding, both significant improvements for the children

Title: Perceptions of Equine-Assisted Activities and Therapies by Parents and Children with Spinal Muscular Atrophy

Authors: Danielle Lemke, Erin Rothwell, Tara M. Necomb, and Kathryn J. Swoboda

Source: Pediatric Physical Therapy 26

Date: 2014

Subjects	Results
Children	Provided enjoyment, self-confidence, and normalcy for the children

Title: Evaluation of the Efficacy of Neurofeedback Training Compared with Traditional Approaches for Children with Autism
Piotr Sobaniec, Milena Żochowska, and Magdalena Cholewa

Source: Abstracts Presented at 17th Annual Meeting of Biofeedback Federation of Europe

Date: 2014

Subjects	Results
Children, Adolescents	Ongoing research into Neurofeedback for equine treatments of Autism

Title: The Effects of Horse Riding Simulation Training on Stroke Patients' Balance Ability and Abdominal Muscle Thickness Changes

Authors: Il-Hun Baek and Byeong Jo Kim

Source: Journal of Physical Therapy Science 26, no. 8

Date 2014

Subjects	Results
Adults	Significant improvement in balance and abdominal wall thickness

Title: Effect of Horseback Riding Simulation Machine Training on Trunk Balance and Gait of Chronic Stroke Patients

Authors: Hyunguen Kim, Jin Gang Her, and Jooyeon Ko

Source: Journal of Physical Therapy Science 26, no. 1

Date 2014

Subjects	Results
Adults	Significantly improved balance and gait after riding, over normal exercise

Title: Effects of Indoor Horseback Riding and Virtual Reality Exercises on the Dynamic Balance Ability of Normal Healthy Adults

Authors: Dahee Lee, Sanyong Lee, and Jungseo Park

Source: Journal of Physical Therapy Science 26, no. 12

Date: 2014

Subjects	Results
Adults	Both treatments studied were effective in improving balance of normal adults

Title: Effect of Hippotherapy on Recovery of Gait and Balance Ability in Patients with Stroke

Authors: Chae-Woo Lee, Seong Gil Kim, and Min Sik Yong

Source: Journal of Physical Therapy Science 26, no. 2

Date: 2014

Subjects	Results
Adults	Gait velocity, step length asymmetry significantly better by equine therapy

Title: The Effects of Hippotherapy on Elderly Persons' Static Balance and Gait

Authors: Seong Gil Kim and Chae-Woo Lee

Source: Journal of Physical Therapy Sciences 26, no. 1

Date: 2014

Subjects	Results
Adults - Elderly	Decrease chance of fall while walking after treatment

2015 EAP

Title: Therapeutic Effect of 12 Weeks Equine Assisted Activities and Therapies (EAA/T) in Children with Attention Deficit Hyperactivity Disorder

Authors: Y. Oh, H. Seo, B. Jang, J. Song, J. Lee, B. Jeong, Y. Kim, J. Kwon, and Y. Joung

Source: European Child and Adolescent Psychiatry 24

Date 2015

Subjects	Results
Children	Improved behaviors, potentially from change fronto-parietal region of brain

Title: Animal Assisted Interventions for Children with Autism Spectrum Disorder: A Systematic Review

Authors: Tonya Davis, Rachel Scalzo, Erin Butler, Megan Stauffer, Yara Farah, Scott Perez, Kristen Mainor, Cathryn Clark, Stacy Miller, Alicia Kobylecky, Laura Coviello

Source: Education and Training in Autism and Developmental Disabilities 50, no. 3

Date 2015

Subjects	Results
Children	Review found positive (40%), mixed results (60%), none negative

Title: Not Just Horsing Around: The Impact of Equine-Assisted Learning on Level of Hope and Depression in At-Risk Adolescents

Authors: Karen E. Frederick, Julie Ivey Hatz, and Beth Lanning

Source: Communities of Mental Health Journal 51

Date: 2015

Subjects	Results
Adolescents	Increased sense of hope, decreased sense of depression after treatment

Title: Substance Use Disorder Treatment Retention and Completion: A Prospective Study of Horse-Assisted Therapy (HAT) for Young Adults

Authors: Ann Kern-Godal, Espen Ajo Arnevik, Espen Walderhaug, and Edle Ravndal

Source: Addiction Science and Clinical Practice

Date: 2015

Subjects	Results
Adolescents, Adults	Those who did HAT are more likely to complete full rehab treatment

Title: Complementary and Alternative Therapies for Autism Spectrum Disorder

Authors: Natascia Brondino, Laura Fusar-Poli, Matteo Rocchetti, Umberto Provenzani, Francesco Barale, and Pierluigi Politi

Source: Evidence-Based Complementary and Alternative Medicine

Date: 2015

Subjects	Results
General Population	No clear evidence that autism is treated by these therapies

Title: Anthropological Engagement with the Anthropocene: A Critical Review

Authors: Hannah Gibson and Sita Venkateswar

Source: Environment and Society: Advances in Research 6

Date 2015

Subjects	Results
General Population	Relationship with horses cross specie lines, humans connect with them

2015 HT

Title: Cardiorespiratory and Biomechanical Response to Simulated Recreational Horseback Riding in Healthy Children

Authors: Brandon R. Rigby, Zacharias Papadakis, Annie A. Bane, Jin K. Park, and Peter W. Grandjean

Source: Research Quarterly for Exercise and Sport 86

Date 2015

Subjects	Results
Children	Treadmill walking better; horseback riding is good supplement to exercise

Title: Therapist-Designed Adaptive Riding in Children with Cerebral Palsy: Results of a Feasibility Study

Authors: Mattan Angsupaisal, Baudina Visser, Anne Alkema, Marja Meinsma-va der Tuin, Carel G.B. Maathuis, Heleen Reinders-Messelink, and Mijna Hadders-Algra

Source: Physical Therapy Journal 95, no. 8

Date: 2015

Subjects	Results
Children	May improve gross motor function, reduce typical posture adjustments

Title: Effect of Horseback Riding Versus a Dynamic and Static Horse Riding Simulator on Sitting Ability of Children with Cerebral Palsy: A Randomized Controlled Trial

Authors: Peeraya Temcharoensuk, Raweevan Lekskulchai, Chanut Akamanon, Pattama Rittruechai, and Sureekak Sutcharit-pongsa

Source: Journal of Physical Therapy Science 27, no. 1

Date: 2015

Subjects	Results
Children	Improvement each group; less in static riding, more in horse vs simulator

Title: Exercise Interventions Improve Postural Control in Children with Cerebral Palsy: A Systematic Review

Authors: Rosalee Dewar, Sarah Lee, and Leanne Marie Johnston

Source: Developmental Medicine & Child Neurology 57

Date: 2015

Subjects	Results
Children	Review showed equine therapy as means to achieve some improvement

Title: The Benefit of Hippotherapy for Improvement of Attention and Memory in Children with Cerebral Palsy: A Pilot Study

Authors: Eva Krejčí, Miroslav Janura, and Zdeněk Svoboda

Source: Acta Gymnica 45, no. 1

Date: 2015

Subjects	Results
Children	When used a complementary therapy, improvement is likely

Title: Impacts if Hippotherapy in Children with Cerebral Palsy from Parents' Perspective: A Qualitative Research

Authors: Athanasia Laiou, Anna Christakou, and Vaios Kaminiotis

Source: International Journal of Physiotherapy 2, no. 6

Date: 2015

Subjects	Results
Children - Parents interviewed	Improved child's' daily activities, independence; no negative results

Title: The Effect of Horseback Riding on Body Mass Index and Gait in Obese Women

Authors: Chae-Woo Lee, Seong-Gil Kim, and Byung Wook An

Source: Journal of Physical Therapy Science 27, no. 4

Date: 2015

Subjects	Results
Adults	Improvement in gait ability of the obese, specifically in stride length

Title: Hippotherapy as a Treatment for Socialization After Sexual Abuse and Emotional Stress

Authors: Marcelo R. Guerino, Alysson F. Briel, and Maria das Graças Rodrigues Araújo

Source: Journal of Physical Therapy Science 27, no. 3

Date: 2015

Subjects	Results
Adults	Improved patient's self-esteem following serious emotional distress

Title: Effects of Horse-Riding Exercise on Balance, Gait, and Activities of Daily Living in Stroke Patients

Authors: Yong-Nam Kim and Dong-Kyu Lee

Source: Journal of Physical Therapy Science 27, no. 3

Date: 2015

Subjects	Results
Adults	Enhances gait, balance, and capacity for daily tasks

Title: The Influence of Horseback Riding Training on the Physical Function and Psychological Problems of Stroke Patients

Authors: Dong-Kyu Lee and Eun-Kyung Kim

Source: Journal of Physical Therapy Science 27, no. 9

Date: 2015

Subjects	Results
Adults	Significant improvement of physical, psychological functioning

Title: Parameters for the Center of Pressure Displacement on the Saddle During Hippotherapy on Different Surfaces

Authors: Fabianna M. Flores, Frederico Dagnese, Carlos B. Mota, and Fernando Copetti

Source: Brazilian Journal of Physical Therapy 3

Date: 2015

Subjects	Results
Adults	Force-transferred to rider from horse increases from sand to grass to asphalt

Title: Effects of Horseback Riding Exercise Therapy on Background Electroencephalograms of Elderly People

Authors: Seon-Rye Kim, Sung-Hyoun Cho, Jin-Woo Kim, Hyp-Cheol Lee, Martin Brienan, and Byung-Jun Choo

Source: Journal of Physical Therapy Science 27, no. 7

Date: 2015

Subjects	Results
Adults - Elderly	Increased activity during/ after treatment

Title: Effects of Horseback Riding Exercise Therapy on Hormone Levels in Elderly Persons

Authors: Sung-Hyoun Cho, Jin-Woo Kim, Seon-Rue Kim, and Byung-Jun Cho

Source: Journal of Physical Therapy Science 27, no. 7

Date: 2015

Subjects	Results
Adults - Elderly	Significant increases in serotonin and cortisol post treatment

Title: Effect of Physiotherapy and Hippotherapy on Kinematics of Lower Limbs During Walking in Patients with Chronic Low Back Pain: A Pilot Study

Authors: Miroslav Janura, Jiří Gallo, Zdenk Svoboda, Dagmar Švídernochová, and Jarmila Kristiníková

Source: Journal of Physical Education and Sport 15, no. 4

Date: 2015

Subjects	Results
General Population	Significantly improved knee-joint measurement, reduced pain overall

Title: What is Hippotherapy? The Indications and Effectiveness of Hippotherapy

Authors: Tuba Tulay Koca and Hilma Ataseven

Source: North Clin Istanbul 2, no. 3

Date: 2015

Subjects	Results
General Population	Review affirms value of treatment for wide variety of disorders, diseases

2016 EAP

Title: Equine-Assisted Therapy for Children with Autism Spectrum Disorder: A Comprehensive Literature Review

Authors: Ayla R. Mapes and Lee A. Rosén

Source: Review Journal of Autism Developmental Disorder 3

Date: 2016

Subjects	Results
Children	Review showed overwhelming numbers of studies with positive treatment goals

Title: Brief Report: The Effects of Equine-Assisted Activities on the Social Functioning in Children and Adolescents with Autism Spectrum Disorder

Authors: Sophie Anderson and Kerstin Meints

Source: Journal of Autism Developmental Disorders 46

Date: 2016

Subjects	Results
Children, Adolescents	Improvement in certain social aspects, decrease in some mal-adaptive behaviors

Title: The Meaning of Seasonal Changes, Nature, and Animals for Adolescent Girls' Wellbeing in Northern Finland: A Qualitative Descriptive Study

Authors: Varpu Wiens, Helvi Kyngäs, and Tarja Pölkki

Source: International Journal of Qualitative Studies on Health and Well-Being 11

Date: 2016

Subjects	Results
Adolescents	Being in nature and working with animals improves mood of Finnish girls in winter

Title: Narrative Synthesis of Equine-Assisted Psychotherapy Literature: Current Knowledge and Future Research Directions

Authors: Ping-Tzu Lee, Emily Dakin, and Merinda McLure

Source: Health and Social Care in the Community 24, no. 3

Date: 2016

Subjects	Results
Adolescents	Significant changes in emotional, social and behavioral function

Title: A Wearable System for the Evaluation of the Human-Horse Interaction: A Preliminary Study

Authors: Andrea Guidi, Antonio Lanata, Paolo Baragli, Gaetano Valenza, and Enzo Pasquale Scilingo

Source: Electronics 5

Date: 2016

Subjects	Results
Adults	New system has better tracking of heart rates during horse riding

Title: Contribution of the Patient-Horse Relationship to Substance Use Disorder Treatment: Patients' Experiences

Authors: Ann Kern-Godal, Ida H. Brenna, Norunn, Kogstad, Espen A. Arnevik, and Edle Ravndal

Source: International Journal of Qualitative Studies on Health and Well-Being 11

Date: 2016

Subjects	Results

Adults	Horses were a system of support for patients during treatment
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Title: Contribution of the Patient-Horse Relationship to Substance Use Disorder Treatment: Patients' Experiences

Authors: Ann Kern-Godal, Ida H. Brenna, Norunn Kogstad, Espen A. Arnevik, and Edle Ravndal

Source: International Journal of Qualitative Studies on Health and Well-Being 11

Date: 2016

Subjects	Results
Adults	Positive attachment, emotional regulation, reflective functions

Title: More Than Just a Break from Treatment: How Substance Use Disorder Patients Experience the Stable Environment in Horse-Assisted Therapy

Authors: Ann Kern-Godal, Ida Halvorsen Brenna, Espen Ajo Arnevik, and Edle Ravndal

Source: Substance Abuse: Research and Treatment 10

Date: 2016

Subjects	Results
Adults	Stable environment led to positive self, led to more completed treatments

Title: Helping War Veterans with Posttraumatic Stress Disorder: Incarcerated Individuals' Role in the Therapeutic Animal Programs

Authors: Gennifer Furst

Source: Journal of Psychosocial Nursing 54, no. 5

Date: 2016

Subjects	Results
Adults	Prisoners train animals for therapy, animals used to treat veteran PTSD

Title: Moral Injury in Warriors and Veteran: The Challenge to Social Work

Authors: Dee Blinka and Helen Wilson Harris

Source: Social Work & Christianity 43, no. 3

Date: 2016

Subjects	Results
Adults	Strong possibility to help veterans who are typically difficult to treat

2016 HT

Title: Equine-Assisted Occupational Therapy: Increasing Engagement for Children with Autism Spectrum Disorder

Authors: Cecilia Llambias, Joyce Magill-Evans, Veronica Smith, and Sharon Warren

Source: The American Journal of Occupational Therapy 70

Date: 2016

Subjects	Results
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Children	May contribute the increase of engagement seen in the children
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Title: The Effect of Therapeutic Horseback Riding on Heart Rate Variability of Children with Disabilities

Authors: Zingisa Nqwena and Rowena Naidoo

Source: African Journal of Disability 5

Date: 2016

Subjects	Results
Children	Heart rate change evident, Indeterminable to what innervation caused it

Title: Treatment of Spasticity in Cerebral Palsy

Authors: Gül Mete Civelek and Ayçe Atalay

Source: Journal of Current Pediatrics 14

Date: 2016

Subjects	Results
Children	Can help achieve optimal muscle tone

Title: Long-Term Effects of Robotic Hippotherapy on Dynamic Postural Stability in Cerebral Palsy

Authors: Young Joo Cha, Megan Stanley, Tim Shurtleff, and Joshua (Sung) H. You

Source: Computer Assisted Surgery 21, no. 1

Date 2016

Subjects	Results
Children	Improved posture control and sitting balance; reduces risk of falling

Title: Study of the Effectiveness of Hippotherapy on the Symptoms of Multiple Sclerosis - Outline of a Randomised Controlled Multicentre Study (MS-HIPPO)

Authors: Vanessa Wollenweber, Marion Drache, Sabine Schickendantz, Andreas Gerber-Grote, Petra Schiller, and Dieter Pöhlau

Source: Contemporary Clinical Trials 3

Date 2016

Subjects	Results
Adults	Yet to be completed; Expectation for this to follow patterns of other studies

Title: Effects of Hippotherapy on Well-Being of Patients with Schizophrenia

Authors: Miroslava Seredova, Andrea Maskova, Martina Mrstinova, and Ladislav Volicer

Source: Arch Neuroscience 3, no. 4

Date 2016

Subjects	Results
Adults	All qualitative measures improved, with exception of tension in one group

Title: The Influence of a Rider with a Disability on the Equine Walk

Authors: E.M. Rankin, E.L. Wagner, and W.H. Weimar

Source: DOI: 10.2527/ssasas2015-134

Date: 2016

Subjects	Results
General Population	All variables adapted for benefit of rider, except pace (stayed constant)

2017 EAP

Title: Horses Helping Children Grow

Authors: Louise B. Graham and Allison Lindsey

Source: Journal of Instructional Pedagogies 19

Date: 2017

Subjects	Results
Children	Helping children develop self-governance and esteem

Title: The Impact of a Horse Riding Intervention on the Social Functioning of Children with Autism Spectrum Disorder

Authors: Androulla Harris and Joanne M. Williams

Source: International Journal of Environmental Research and Public Health 14

Date: 2017

Subjects	Results
Children	Reduction in severe autism symptoms and hyperactivity behavior

Title: Effects of Equine-Facilitated Psychotherapy on Post-Traumatic Stress Symptoms in Youth

Authors: Megan Kiely Mueller and Leslie McCullough

Source: Journal of Child and Family Studies 26

Date: 2017

Subjects	Results
Children, Adolescents	No significant decrease in symptoms normal therapy, but both decreased

Title: Animal-Assisted Therapies for Youth With or At-Risk for Mental Health Problems: A Systematic Review

Authors: Kimberly Eaton Hoagwood, Mary Acri, Meghan Morrissey, and Robin Peth-Pierce

Source: Applied Developmental Science 21, no. 1

Date: 2017

Subjects	Results
Children, Adolescents	Review finds that equine therapies very likely to help with autism

Title: Triads in Equine-Assisted Social Work Enhance Therapeutic Relationships with Self-Harming Adolescents

Authors: Catharina Carlsson

Source: Journal of Clinical Social Work 45

Date 2017

Subjects	Results
Adolescents, Adults	Triad between youth, therapist, horse; attachment then reduces self-harm

Title: Green Care: A Review of the Benefits and Potential of Animal-Assisted Care Farming Globally and in Rural America

Authors: Brianna Artz and Doris Bitler Davis

Source: Animals 7, no. 31

Date 2017

Subjects	Results
General Population	Raise attention to equine therapy fields, report known benefits

2017 HT

Title: Complementary and Alternative Medicine Use in Children with Autistic Spectrum Disorder in Mauritius

Authors: Shafeeq Mahomed and Fawzi Mahomoodally

Source: Journal of Intercultural Ethnopharmacology 6, no. 4

Date: 2017

Subjects	Results
Children	One of the most common alternative therapies in treating autism symptoms

Title: “When He’s Up There He’s Just Happy and Content”: Parents’ Perceptions of the Therapeutic Horseback Riding

Authors: Lauren Boyd and Marieanna le Roux

Source: African Journal of Disability 6

Date: 2017

Subjects	Results
Children	Parents report improvement in the children’s conditions

Title: Horseback Riding Improves the Ability to Cause the Appropriate Action (Go Reaction) and the Appropriate Self-Control (No-Go Reaction) in Children

Authors: Nobuyo Ohtani, Kenji Kitagawa, Kinuyo Mikami, Kasumi Kitawaki, Junko Akiyama, Maho Fuchikami, Hidehiko Uchiyama, and Mitsuaki Ohta

Source: Frontiers in Public Health 5, no. 8

Date: 2017

	<table border="1"> <tr> <th>Subjects</th><th>Results</th></tr> <tr> <td>Children</td><td>Symp/Parasymp engagement increase by riding horses; more self-control</td></tr> </table>	Subjects	Results	Children	Symp/Parasymp engagement increase by riding horses; more self-control
Subjects	Results				
Children	Symp/Parasymp engagement increase by riding horses; more self-control				
Title:	Effectiveness of Robot-Assisted Gait Training in Children with Cerebral Palsy: A Bicenter, Pragmatic, Randomized, Cross-Over Trial (PeLoGAIT)				
Authors:	C. Ammann-Reiffer, C.H.G. Bastiaenen, A.D. Meyer-Heim, and H.J.A. van Hedel				
Source:	BMC Pediatrics				
Date	2017				

	<table border="1"> <tr> <th>Subjects</th><th>Results</th></tr> <tr> <td>Children, Adolescents</td><td>10-year period is ending, results to match other positive ending studies</td></tr> </table>	Subjects	Results	Children, Adolescents	10-year period is ending, results to match other positive ending studies
Subjects	Results				
Children, Adolescents	10-year period is ending, results to match other positive ending studies				

HT

Title:	Translational Research for Occupational Therapy: Using SPRE in Hippotherapy for Children with Developmental Disabilities
Authors:	Deborah Weissman-Miller, Rosalie J. Miller, and Mary P Shotwell
Source:	Occupational Therapy International
Date	2017

	<table border="1"> <tr> <th>Subjects</th><th>Results</th></tr> <tr> <td>Children, Adolescents</td><td>SPRE reduces statistical “noise” from comorbid symptoms untreated</td></tr> </table>	Subjects	Results	Children, Adolescents	SPRE reduces statistical “noise” from comorbid symptoms untreated
Subjects	Results				
Children, Adolescents	SPRE reduces statistical “noise” from comorbid symptoms untreated				

Title: Electromyographic Evaluation of the Lower Limbs of Patients with Down Syndrome in Hippotherapy

Authors: Mariane Fernandes Ribeiro, Ana Paula Espindula, Alex Abadio Ferreira, Luciane Aparecida, Pascucci Sande de Souze, and Vicente de Paula Antunes Teixeira

Source: Maringá 39, no. 1

Date: 2017

Subjects	Results
Adults	Major leg muscles had significant development during treatment

Title: Feasibility Study of Inertial Sensor Technology on Ponies for Equine-Assisted Therapy (EAT)

Authors: Siriporn Peansukmanee, Prakaykul Khanproa, Nuanlaor Thawunchai, and Prayanee Khaminluang

Source: Kafkas Univ Vet Fak Drrg 23, no. 6

Date: 2017

Subjects	Results
Horses	Front limbs of therapy horses experience most force

References

- “Learn about EAAT.” PATH Intl. Accessed January 25, 2019. www.pathintl.org/resources-education/resources/eat/27-resources/general/193-eat-definition.
- “What is Equine Therapy?” Equine Psychotherapy. Accessed January 25, 2019. www.equine-psychotherapy.com/equine.html.
- “What is Hippotherapy?” American Hippotherapy Association. Accessed January 25, 2019. americanhippotherapyassociation.org.
- “Zoar Ridge Stables to Create Embrace Hope-Sandy Hook Equine Assisted Therapy Foundation Providing Healing To Those Affected by the Newton, Connecticut Tragedy.” (January 2013). <http://www.prnewswire.com/news-release/zoar-ridge-stables-to-create-embrace-hope----sandy-hook-equine-assisted-therapy-foundation-providing-healing-to-those-affected-by-the-newtown-connecticut-tragedy-189227381.html>, <http://doi.10.3928/02793695-20130206-98>.
- Ajzenman, Heather F., John W. Standeven, and Tim L. Shurtleff. “Effect of Hippotherapy on Motor Control, Adaptive Behaviors, and Participation in Children with Autism Spectrum Disorder: A Pilot Study.” *The American Journal of Occupational Therapy* 67, no. 6 (November/December 2013): 653, 660. <http://dx.doi.org/10.5014/ajot.2013.008383>.
- American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. (Arlington, VA: American Psychiatric Association, 2013) 272-274.
- Araujo, Thais B., Nelida A. Silva, Juliana N. Costa, Marcio M. Pererira, and Marisete P. Safons. “Effect of Equine-Assisted Therapy on the Postural Balance of the Elderly.” *Journal of Brazilian Physiotherapy* 15, no. 5 (2011): 415.
- Artz, Brianna, and Doris Bitler Davis. “Green Care: A Review of the Benefits and Potential of Animal-Assisted Care Farming Globally and in Rural America.” *Animals* 7, no. 31 (2017): 1. <http://doi.org/10.3390/ani7040031>.
- Baek, Il-Hun, and Byeong Jo Kim. “The Effects of Horse Riding Simulation Training on Stroke Patients’ Balance Ability and Abdominal

- Muscle Thickness Changes.” *Journal of Physical Therapy Science* 26, (2014): 1293.
- Bass, Margaret, Catherine Duchowny, and Maria Llabre. “the Effect of Therapeutic Horseback riding on Social Functioning in Children with Autism.” *Journal of Autism Development Disorder* 39, (2009): 1262.
- Beinotti, Fernanda, Nilzete Correia, Gustavo Christofoletti, Guilherme Borges. “Use of hippotherapy in gait training for hemiparetic post-stroke.” *Neuropsychiatr* 68, no. 6 (2009): 910-911.
- Blinka, Dee, and Helen Wilson Harris. “Moral Injury in Warriors and Veterans: The Challenge to Social Work.” *Social Work and Christianity* 43, no. 3 (2016): 8-10, 21-23.
- Cameron, Janet, and Patricia A. Robey. “Healing through Healing©: The Horse Power of Choice Theory.” *International Journal of Choice Theory and Reality Therapy* 33, no. 1 (2013): 87.
- Carlsson, Catherina. “Triads in Equine-Assisted Social Work Enhance Therapeutic Relationships with Self-Harming Adolescents.” *Journal of Clinical Social Work* 45, (2017): 320. <http://doi.org/10.1007/s10615-016-0613-2>.
- Cerino, Stefania, Francesca Cirulli, Flavia Chiarotti, and Stefano Seripa. “Non-Conventional Psychiatric Rehabilitation in Schizophrenia Using Therapeutic Riding: the FISE Multicenter Pindar Project.” *Animal Assisted Interventions in Mental Health* 47, no. 4 (2011): 409.
- Chandler, Cynthia, Torey Portrie-Bethke, Casey A Barrio Minton, Delini M. Fernando, and Dana M. O’Callghan. “Matching Animal-Assisted Therapy Techniques and Intentions with Counseling Guiding Theories.” *Journal of Mental Health Counseling* 32, no. 4, October (2010): 354.
- Chandramouleeswaran, Susmita, and Paul Swamidhas Sudhakar Russell. “Complementary Psychosocial Interventions in Child and Adolescent Psychiatry: Pet Assisted Therapy.” *Indian Journal of Psychological Medicine* 36, vol. 1 (Jan-Mar 2014): 3-7.
- Chang, Hyun Jung, Jeong-T+Yi Kwon, Ji-Young Lee, Yun-Hee Kim. “The

- Effects of Hippotherapy on the Motor Function of Children with Spastic Bilateral Cerebral Palsy.” *Journal of Physiotherapeutic Science* 24, (2012): 1277.
- Cho, Sung-Hyun, Jin-Woo Kim, Seon-Rye Kim, and Byung-Jun Cho. “Effects of Horseback Riding Exercise Therapy on Hormone Levels in Elderly Persons.” *Journal of Physical Therapy Science* 27, (2015): 2271-2272.
- Clayton, Hilary M., LeeAnn J. Kaiser, Bonnie de Pue, and Lana Kaiser, “Center-of-Pressure Movements During Equine-Assisted Activities,” *The American Journal of Occupational Therapy* 65, no. 2 (March/Apr 2011): 212.
- Davis, E., B. Davies, R. Wolfe, R. Raadsveld, B. Heine, P. Thomason, Fiona Dobson, H.K. Graham. “A randomized controlled trial of the impact of therapeutic riding on the quality of life, health, and function of children with cerebral palsy.” *Developmental Medicine & Child Neurology* 51, (2009): 112.
- Dell, Colleen Anne, Darlene Chalmers, Nore Brisette, Sue Swain, Deb Rankin, Carol Hopkins. “A Healing Space: The Experiences of First Nations and Innuity Youth with Equine-Assisted Learning.” *Child Youth Care Forum* 40, (2011): 322.
- DeZutti, Joyce E.. “Eating Disorders and Equine: A Nurse’s Perspective on Connection Through the Recovery Process.” *Journal of Psychosocial Nursing* 51, no. 9 (2013): 31.
- Dziuba, Alicja, Krzysztof Dudek, Krystyna Kobel-Buys, Gregorz Żurek, and Ewa Smajda. “Thermovision Techniques for Evaluation of the Effect of Hippotherapy in Changes in Lower Limb Temperature in Children with Cerebral Palsy (CP) – A Pilot Study.” *Fizjoterapia* 21, no. 1 (2013): 21.
- Earles, Julie. “Equine-Assisted Therapy for Anxiety and Posttraumatic Stress Symptoms.” *Journal of Traumatic Stress* 28, (April 2015): 149.
- El-Meniawy, Gehan H., Nahed S. Thabet. “Modulation of Back Geometry in Children with Spastic Diplegic Cerebral Palsy via Hippotherapy Training.” *The Egyptian Journal of Medical Human Genetics* 13, (2012): 64.

- Encheff, Jenna L., Charles Armstrong, Michelle Masterson, Christine Fox, and Phillip Gribble. "Hippotherapy Effects on Trunk, Pelvic, and Hip Motion During Ambulation in Children with Neurological Impairments." *Pediatric Physical Therapy* 24 (2012): 243. <http://doi.10.1097/PEP/0b013e31825c1dc3>.
- Feferman, Helayne, Janell Harro, Dilip R. Patel, and Joav Merrick. "Therapeutic Interventions in Cerebral Palsy." *International Journal of Child and Adolescent Health* 4, no. 4 (2011): 333.
- Flores, Fabiana M., Frederico Dagnese, Carlos B. Mota, and Fernando Copetti. "Parameters of the Center of Pressure Displacements on the Saddle During Hippotherapy on Different Surfaces." *Brazilian Journal of Physical Therapy* 3, (May-June 2015): 211. <http://dx.doi.org/10.1590/bjot-rbf.2014.0090>.
- Ford, Candice. "Dancing with Horses: Combining Dance/Movement Therapy and Equine Facilitated Psychotherapy." *American Journal of Dance Therapy* 35, (2013): 108. <https://doi.10.1007/s10465-013-9156-z>.
- Frederick, Karen, Julie Ivey Hatz, and Beth Lanning. "Not Just Horsing Around: The Impact of Equine-Assisted Learning on Levels of Hope and Depression in At-Risk Adolescents." *Journal of Community of Mental Health* 51, (2015): 809, 815.
- Friesen, Lori. "Exploring Animal-Assisted Programs with Children in School and Therapeutic Contexts." *Early Childhood Education Journal* 37, (2010): 263.
- Gibson, Hannah, and Sita Venkateswar. "Anthropological Engagement with the Anthropocene: A Critical Review." *Environment and Society: Advances in Research* 6, (2015): 15, <http://doi:10.3167/ares.2015.060102>.
- Graham, Louise B., and Allison Lindsey. "Horses Helping Children Grow." *Journal of Instructional Pedagogies* 19, (2017): 1-7.
- Guidi, Andrea, Antonio Lanata, Paolo Baragli, Gaetano Valenza, and Enzo Pasquale Scilingo. "A Wearable System for the Evaluation of the Human-Horse Interaction: A Preliminary Study." *Electronics* 5, no. 63 (2016): 1. <http://doi.org/10.3390/electronics5040063>.

- Herrero, Pablo, Angel Assensio, Elena Garcia, Alvaro Marco, Barbara Olivan, Alejandro Ibarz, Eva M. Gomez-Trullen, and Roberto Casas. "Study of the therapeutic effects of an advanced hippotherapy simulator in children with cerebral palsy: a randomized controlled trial." *BioMedCentral Musculoskeletal Disorders* 11, (2010): 71.
- Holm, Margo B., Joanne M. Baird, Young Joo Kim, Kuwar B. Rajora, Delma D'Silva, Lin Podolinsky, Carla Mazefsky, and Nancy Minshew. "Therapeutic Horseback Riding Outcomes of Parent-Identified Goals for Children with Autism Spectrum Disorder: An ABA' Multiple Case Design Examining Dosing and Generalization to the Home and Community." *Journal for Autism Developmental Disorders* 44 (October 2013): 937. <http://doi.10.1007/s10803-013-1949-x>.
- Janura, Miroslav, Zdenek Svodoba, Tereza Dvorakova, Lee Cabell, Milan Elfmark, and Eva Janurova. "The Variability of a Horse's Movement at Walk in Hippotherapy." *Kinesiology* 44, no. 2 (2012): 148.
- Janura, Miroslav, Zdenek Svodoba, Tereza Dvorakova, Lee Cabell, Milan Elfmark, and Eva Janurova, "The Variability of a Horse's Movement at Walk in Hippotherapy," *Kinesiology* 44, no. 2 (2012): 148.
- Kang, Hyungkyu, Jinhwa Jung, Jaeho Yu. "Effects of Hippotherapy on the Sitting Balance of Children with Cerebral Palsy: A Randomized Control Trial." *Journal of Physiotherapeutic Science* 24 (2012): 833.
- Kemp, Kathleen, Tania Signal, Helena Botros, Nik Taylor, Kathy Prentice. "Equine Facilitated Therapy with Children and Adolescents Who Have Been Sexually Abused: A Program Evaluation Study." *Journal of Child and Family Studies*, no. 23 (January 2013): 558. <http://doi.10.1007/s10826-013-9718-1>.
- Kern-Godal, Ann, Espen Ajo Arnevik, Espen Walderhaug, and Edle Ravnald. "Substance Use Disorder Treatment Retention and Completion: A Prospective Study of Horse-Assisted Therapy (HAT) for Young Adults." *Addiction Science and Clinical Practice* 10, (2015): 21, <http://doi.org/10.1186/s137722-015-0043-4>.
- Kern-Godal, Ann, Ida H. Brenna, Norunn Kogstad, Espen A. Arnevik, and Edle Ravnald. "Contribution of the Patient-Horse Relationship to

- Substance Use Disorder Treatment: Patients' Experiences." *International Journal of Qualitative Studies on Health and Well-Being* 11, (2016): 1. <http://dx.doi.org/10.3402/qhw.v11.31636>.
- Kern-Godal, Ann, Ida Halvorsen Brenna, Espen Ajo Arnevik, and Edle Ravndal. "More Than Just a Break from Treatment: How Substance Use Disorder Patients Experience the Stable Environment in Horse-Assisted Therapy." *Substance Abuse: Research and Treatment* 10, (2016): 99. <http://doi.org/10.4137/SART.S40475>.
- Kim, SeongGil, Goon-Chang Yuk, and Hwangbo Gak. "Effects of the Horse Riding Simulator and Ball Exercises on Balance of the Elderly." *Journal of Physical Therapy Science* 25, no. 11 (2013): 1425.
- Kim, Seon-Rye, Sung-Hyoun Cho, Jin-Woo Kim, Hyo-Cheol Lee, Marten Brienen, and Byung-Jun Choo. "Effects of Horseback Riding Exercise Therapy on Background Electroencephalograms of Elderly People." *Journal of Physical Therapy Science* 27, (2015): 2373-2375.
- Lanning, Beth A., and Nancy Krennek. "Examining Effects of Equine-Assisted Activities to Help Combat Veterans Improve Quality of Life." *Journal of Rehabilitative Research and Development* 50, no. 8 (2013): x. <https://dx.doi.org/10.1682/JRRD.2013.07.0159>.
- Larsson, Ingallil, Michael Miller, Kerstin Liljedahl, and Gunvor Gard. "Physiotherapists' Experiences of Physiotherapy Interventions in Scientific Physiotherapy Publications Focusing on Interventions for Children with Cerebral Palsy: A Qualitative Phenomenographic Approach." *BMC Pediatrics* 12, (2012): 90. <http://www.biodmed-central.com/1471-2431/12/90>
- Lee, Chae-Woo, Seong-Gil Kim, and Byung-Wok An. "The Effects of Horseback Riding on Body Mass Index and Gait in Obese Women." *Journal of Physical Science* 27, (2015): 1169-70.
- Lee, Daehee, Sangyong Lee, and Jungseo Park. "Effects of Indoor Horseback Riding and Virtual Reality Exercises on the Dynamic Balance Ability of Normal Healthy Adults." *Journal of Physical Therapy Science* 26, no. 12 (2014): 1903-1905.
- Lee, Ping Tzu, Emily Dakin, and Merinda McLure. "Narrative Synthesis of Equine-Assisted Psychotherapy Literature: Current Knowledge and

- Future Research Directions.” *Health and Social Care in the Community* 24, no. 3 (2016): 225. <http://doi.org/10.1111/hsc.12201>.
- Lemke, Danielle, Erin Rothwell, Tara M. Newcomb, and Kathryn J. Swodoba. “Perceptions of Equine-Assisted Activities and Therapies by Parents and Children with Spinal Muscular Atrophy.” *Pediatric Physical Therapy* 26, (2014): 237, 241-242. <http://doi.org/10.1097/PEP.0000000000000027>
- Malachowska-Sobieska, Monika, Ewa Demczuk-Wlodarczyk, Krzysztof Wronecki, Tadeusz Skolimowski, Karolona Szpyt, Dorota Wojna, and Dominika Zawadzka “The clinical picture of a child with spastic diplegia on a horse, depending on the position of the hippotherapeutic team.” *Physiotherapy* 16, no. 4 (2008): 56-67.
- Masini, Angela. “Equine-Assisted Psychotherapy in Clinical Practice.” *Journal of Psychological Nursing* 48, no. 10 (2010): 30.
- Masters, Nancy. *Equine Assisted Psychotherapy for Combat Veterans with PTSD*. p.5.
- Memishevijk, Haris, Saudin Hodzhikj. “The effects of equine-assisted therapy in improving the psychosocial functioning of children with autism.” *Journal of Special Education and Rehabilitation* 11, no. 3 (2010): 59-60.
- My Horse University. “Natural and Artificial Gaits of the Horse.” Accessed January 25, 2019. Myhorseuniversity.com
- Nqwena, Zingisa, and Rowena Naidoo. “The Effect of Therapeutic Horseback Riding on Heart Rate Variability of Children with Disabilities.” *African Journal of Disability* 5, no. 1 (2016): 1. <http://dx.doi.org/10.4102/ajod.v5i1.248>.
- O’Haire, Marguerite. “Animal-Assisted Intervention for Autism Spectrum Disorder: A Systematic Literature Review.” *Journal of Autism Developmental Disorders* 43, (2013): 1615. <http://doi.10.1007/s10803-012-1707-5>.
- Oh, Y., H. Seo, B. Jang, J. Song, J. Lee, B. Jeong, Y. Kim, J. Kwon, and Y. Joung. “Therapeutic Effect of 12 Weeks Equine Assisted Activities and Therapies (EAA/T) in Children with Attention Deficit Hyperactivity Disorder.” *European Child and Adolescent Psychiatry* 24,

(2015): S171-S172.

- Ohtani, Nobuyo, Kenji Kitagawa, Kinuyo Mikami, Kasumi Kitawaki, Junko Akiyama, Maho Fuchikami, Hidehiko Uchiyama, and Mitsuaki Ohta. "Horseback Riding Improves the Ability to Cause the Appropriate Action (Go Reaction) and the Appropriate (No-Go Reaction) in Children." *Frontiers in Public Health* 5, no. 8 (February 2017): 1. <http://doi.org/10.3389/fpubh.2017.00008>
- Oppenheim, William. "Complementary and Alternative Methods in Cerebral Palsy." *Development Medicine & Child Neurology* 51, 4 (2009): 122.
- Pan, Si-Yuan, Si Hua Gao, Shu-feng Zhou, Min-Ke Tang, Zhi-Ling Yu, and Kam-Ming Ko. "New Perspectives on Complementary and Alternative Medicine: An Overview and Alternative Therapy." *Alternative Therapies* 18, no. 4 (2012): 20.
- Parenti, Lindsay, Annew Foreman, B. Jean Meade, and Oliver Wirth. "A Revised Taxonomy of Assistance Animals." *Journal of Rehabilitation Research and Development* 50, no. 6 (2013): 745. <http://dx.doi.org/10.1682/JRRD.2012.11.0216>.
- Park, Jungseo, Sangyong Lee, Jiyeun Lee, and Daehye Lee. "The Effects of Horseback Riding Simulator Exercise on Postural Balance of Chronic Stroke Patients." *Journal of Physical Therapy Science* 25, no.9 (2013): 1169.
- Peansukmanee, Siriporn, Nuanlaor Thawinchai, Prakaykul Khanproa, and Prayanee Khaminluang. "Feasibility Study of Inertial Sensor Technology on Ponies for Equine-Assisted Therapy (EAT)." *Kafka Univ Vet Fak Derg* 23, no. 6 (2017), 871. <http://doi.org/10.9775/kvfd.2017.17833>
- Rankins, E. M., E. L. Wagner, and W. H. Weimar. "The Influence of a Rider with a Disability on the Equine Walk." <http://doi.org/10.2527/ssa-sas2015-134>.
- Rigby, Brandon R., Zacharias Papadakis, Annie A. Bane, Jin K. Park, and Peter W. Grandjean. "Cardiorespiratory and Biomechanical Responses to Simulated Recreational Horseback Riding in Healthy Children." *Research Quarterly for Exercise and Sport* 86, (2015): 63, 67-69. <http://doi.org/10.1080/02701367.2014.977432>.

- Risley-Curtiss, Christina. "Social Work Practitioners and the Human-Companion Animal Bond: A National Study." *Social Work* 55, (January 2010): 55.
- Sarris, Jerome, Adrienne O'Neil, Carolyn e. Coulson, Isaac Schweitzer, and Michael Berk. "Lifestyle Medicine for Depression." *BMC Psychiatry* 14, (2014): 106.
- Sawaryn, Daria. "Features of a horse and mechanisms of therapeutic effects." *Physiotherapy* 16, no. 1 (2008): 104-111.
- Signal, Tania, Nik Taylor, Helena Botros, Kathryn Prentice, Kathryn Lazarus. "Whispering to Horses: Childhood Sexual Abuse, Depression and the Efficacy of Equine Facilitated Therapy." *Sexual Abuse in Australia and New Zealand* 5, no. 1 (May 2013): 24.
- Silkwood-Sherer, Debbie J., Clyde B. Killian, Toby M. Long, and Kathy S. Martin. "Hippotherapy – An Intervention to Habilitate Balance Deficits in Children with Movement Disorders: A Clinical Trial." *Physical Therapy* 92, no. 5 (2012): 707.
- Smith-Oberne, Alexa, Alison Selby, . "Implications of the Literature on Equine-Assisted Activities for Use as a Complementary Intervention in Social Work Practice with Children and Adolescents." *Journal of Child and Adolescent Social Work* 27, (2010): 291.
- Stone, Sherril M.. "Human Facial Discrimination in Horses: Can They Tell Us Apart?" *Animal Cognition* 13, (2010): 57-58.
- Tosi, Laura L., Nancy Maher, D. Winslow Moore, Murray Goldstein, Mindy L. Aisen. "Adults with cerebral palsy: a workshop to define the challenge of treating and preventing secondary musculoskeletal and neuromuscular complication in this rapidly growing population." *Development Medicine & Child Neurology* 51, 4 (2009): 8.
- Tucker, Anita R., and Christine Lynn Norton. "The Use of Adventure Therapy Techniques by Clinical Social Workers: Implications for Practice and Training." *Journal of Clinical Social Work* 42, (2013): 333, <http://doi.10.1007/s10615-012-0411-4>.
- Vincent, Brooke, Caley Kropp, Andrew M. Byrne. "Animal-Assisted Therapy for Fetal Alcohol Spectrum Disorder." *Journal of Applied Rehabilitation Counseling* 45, no. 3 (Fall 2014): 6-8.

- Walbam, Katherine M.. "The Relevance of Sensory Processing Disorder to Social Work Practice: An Interdisciplinary Approach." *Journal of Child and Adolescent Social Work* 31, (2014): 6, 68-69, <http://doi.org/10.1007/s10560-013-0308-2>.
- Wesimann-Miller, Deborah, Rosalie J. Miller, and Mary P. Shotwell. "Translational Research for Occupational Therapy: Using SPRE in Hippotherapy for Children with Developmental Disabilities." *Occupational Therapy International*, (2017): 1. <http://dx.doi.org/10.1155/2017/2305402>.
- Wiens, Varpu, Helvi Kyngas, and Tarja Polkki. "The Meaning of Seasonal Changes, Nature, and Animals for Adolescent Girls' Wellbeing in Northern Finland: A Qualitative Descriptive Study." *International Journal of Qualitative Studies on Health and Well-Being* 11, (2016): 1, 9-11. <http://dx.doi.org/10.3402/qhw.v11.30160>.
- Wojtowicz, Dorota, Ludwika Sadowska, Monica Myslek, Anna Skrzek, Piotr Dominiak, Krzysztof Wronecki, and Katarzyna Prasal. "The methods of physiotherapy, which are used by children with Down syndrome and congenital heart disease which require cardiosurgical intervention," *Physiotherapy* 16, no. 1, (2008): 46-51.
- Zadnikar, Monika, and Adrej Kastrin. "Effects of Hippotherapy and Therapeutic horseback riding on Postural control or balance in children with Cerebral Palsy: A Meta-Analysis." *Developmental Medicine and Child Neurology* 53, no. 8 (Aug 2011): 690.

