

The Benefits Behind Equine Assisted Therapy

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Equine-assisted therapy (EAT) is a broad category of a kind of sports therapy that encompasses a variety of activities, exercises, and treatments that are used to improve and promote better physical and mental health. Sports therapy itself can be thought of as the participation and enjoyment of a sport through which individuals with neurological disorders or developmental disabilities experience improvements in gross motor function. Dating back for decades now, equine assisted therapy has been found to improve the quality of life in all kinds of individuals ranging from those diagnosed with PTSD to patients with cerebral palsy. Consequently, this kind of therapy is often overlooked or not considered for a variety of reasons. However, when viewed in comparison to several other treatments and/or therapies that take place in a doctor's office, equine assisted therapy has proven to produce the same if not better results.

Cerebral Palsy:

Cerebral palsy is a group of disorders caused by damage that occurs to the immature brain, often before birth, that affect movement, muscle tone, and posture. Those with the disorder display signs and symptoms early on during infancy or toddler years. The disorder is mainly associated with abnormal reflexes, abnormal posture, involuntary movements, and unsteady walking. As a result of the movement disorders affecting the patients' muscles, stability, and posture, any kind of sports therapy would appear to be problematic and out of reach.

Equine-assisted therapy is used as a treatment for a wide variety of conditions directly affecting an individual's muscle or motor function including their balance and/or posture such as cerebral palsy. Focusing solely on cerebral palsy in this instance, the primary variable seeking improvement is an individual's gross motor function. To assess the gross motor function of patients such as those with this condition, the Gross Motor Function Classification System

(GMFCS) is used. This classification system is broken down into five different levels and looks at movements including sitting, walking, and using mobility devices.

Examining a study conducted on the effects of horseback riding on gross motor function in children with cerebral palsy, there is an evident improvement in the gross motor function of all participants involved (Sterba et al, 2002). In this study of seventeen participants, each child served as their own control with individual baseline measurements (Sterba et al, 2002). Throughout the course of an 18-week program, each child's GMFM was measured once every six weeks producing a study total of a 7.6% GMFM total increase across all participants at the conclusion of the 18-week period (Sterba et al, 2002). However, this increase demonstrated by the participants in their total GMFM would return to their baseline measurement six weeks after the end of the 18-week program (Sterba et al, 2002). A particular area of interest and significant improvement was GMFM Dimension E, relating to walking, running, and jumping, which continued to remain elevated by 1.8% when measured six weeks after the conclusion of the study (Sterba et al, 2002). This continued elevation exhibited in Dimension E of the participants' GMFM suggests that EAT may in fact improve gross motor function in children with cerebral palsy as it demonstrates its ability to reduce an individual's degree of motor disability (Sterba et al, 2002).

Looking at another study now examining the effects of EAT on postural control and gross motor development in children, yet again there is evidence of improvement in both areas through the intervention of EAT. Six children were observed throughout the course of an 18-week program and were evaluated on an individual basis three times each at six-week intervals (Angsupaisal et al, 2015). All six children scored higher than the minimum required to be clinically significant on the GMFM-88 while five of these children also demonstrated a decrease

in stereotyped top-down recruitment between a baseline measurement (T1) and a measurement conducted during the program (T2) (Angsupaisal et al, 2015). As this study had also aimed to examine the effects on postural control, it consisted of a more hands-off approach that favored self-practice (Angsupaisal et al, 2015). By the conclusion of this study, the children's postural control was noticeably improved through their increased levels of independence without the presence of a side walker as well as their ability to perform more challenging postural exercises (Angsupaisal et al, 2015). Overall, this study suggests that EAT is a valid sports therapy that does in fact produce results in individuals in relation to enhanced gross motor function as well as postural adjustments (Angsupaisal et al, 2015).

Autism:

Autism is a developmental disorder that affects communication and behavior. Autism spectrum disorders, or ASDs, are noticed in the first few years of life and affect more than 3.5 million people in the United States alone. Characteristics of this disorder include but are not limited to difficulty with communication and interaction with other people, restrictive interests and repetitive behaviors, symptoms that hurt the person's ability to function properly in school, work, and other areas of life (National Institute of Mental Health). Children with an autism spectrum disorder are high risk for disturbances in behavior that can affect their quality of life as well as produce stress and worry on behalf of their caregivers (Gabriels et al, 2012). Currently, the ASD population is a critical public health issue due to high rates, stress, and costs (Gabriels et al, 2012).

Equine-assisted therapy has often been used as a kind of intervention for individuals diagnosed with autism to help improve their quality of life as well as their corresponding behaviors. Studies involving the effects of EAT in individuals with autism generally aim to study

behaviors and factors including irritability, lethargy, stereotypic behaviors, and hyperactivity. Several studies have also exhibited evidence of prolonged improvement in behaviors up to six months after the conclusion of the therapy program.

With the various issues many individual's encounter in relation to autism spectrum disorders, families and caretakers continuously find themselves searching for the perfect therapy or even combination of therapies to help improve the quality of life of individuals diagnosed with and ASD. A study conducted with 42 participants examined the effects of EAT on school-aged children and adolescents with autism spectrum disorders (Gabriels et al, 2012). All participants were screened more than once before the start of a 10-week ETA program involving the measurements of areas such as self-regulation, adaptive living skills, and motor skills (Gabriels et al, 2012). By the end of this study, when comparing baseline measurements and evaluations conducted at the conclusion of the study, the participants exhibited significant improvements in irritability ($p < 0.001$), lethargy ($p < 0.001$), stereotypic behavior ($p < 0.001$), hyperactivity ($p < 0.001$), as well as inappropriate speech ($p = 0.05$) (Gabriels et al, 2012). Participants also demonstrated significant improvements in their motor skills as well. This study provided evidence towards the fact that EAT can generally improve the overall quality of life of individuals with ASD with the idea in mind that the inclusion of a horse into therapy may help to organize and provide input to the sensory system of a child with ASD (Gabriels et al, 2012).

The continued results of a study conducted previously were further examined sometime later as a way to measure and observe what, if any, continued effects does EAT have on children with ASD after the completion of a successful program. When the study had originally taken place there were 127 participants split up into two groups: a control that would not experience any exposure to horses and an experimental group that would undergo a 10 week EAT program

(Gabriels et al, 2018). While not all participants returned for this follow up study, those that returned that had been a part of the experimental group with EAT continued to demonstrate considerable improvements in the areas of irritability ($p = 0.016$), hyperactivity (nonsignificant), social cognition ($p < 0.01$), and communication ($p < 0.01$) in comparison to that of the control group (Gabriels et al, 2018). These continued positive results sometime after the conclusion of the program as an intervention suggests that EAT may be an effective intervention to help enhance and improve social and verbal core symptoms of ASD as well as to reduce irritability behaviors (Gabriels et al, 2018).

PTSD:

Post-traumatic stress disorder (PTSD) is a disorder resulting from a traumatic event that can cause individuals to feel intense feelings of guilt, depression, and/or anxiety. In order to be diagnosed with PTSD, a patient must experience all of the following within the timespan of a month: at least one re-experiencing symptom (flashbacks, bad dreams), at least one avoidance symptom (avoiding places, thoughts, or feelings), at least two arousal and reactivity symptoms (being easily startled, being tense or on edge, angry outbursts, difficulty sleeping), and at least two cognition and mood symptoms (negative thoughts about themselves or the world, trouble remembering parts of the traumatic event, distorted feelings like guilt or blame, loss of interest in activities) (National Institute of Mental Health). Many individuals diagnosed with PTSD that take part in EAT are veterans who have experienced traumatic events during their service.

Many studies examining the effects of this therapy on patients with PTSD look closely at areas including emotion regulation, self-efficacy, and social and emotional loneliness. These studies also displayed statistical evidence that showed a decrease in PTSD and corresponding symptoms that continually decreased the longer the riding program went on. The goal of most of

these studies specifically, especially those examining veterans, is to aid the participants in returning to normal life without the burden of PTSD symptoms preventing them from participating in general social interactions.

Within a study conducted with the inclusion of solely veterans experiencing PTSD, 29 participants were enrolled in a six week EAT program created to test the effects of the therapy in relation to the varying levels of PTSD symptoms experienced. Each participant's symptoms were measured using the PTSD Checklist-Military Version (PCL-M) which is a self-report measure of the 17 DSM-IV symptoms of PTSD (Johnson et al 2018). The participants had one session a week for six weeks that incorporated a positive interaction with a horse while learning the basics of horsemanship skills (Johnson et al 2018). By the end of this six-week program, the veterans involved were found to have experienced a significant decrease in their PTSD symptoms between baseline and week three ($p = 0.005$) as well as between week three and week six ($p = 0.009$) (Johnson et al 2018). The resulting data of this study demonstrated that overall participants had an 81.8% likelihood of improvement in their PTSD levels (Johnson et al 2018). Alongside the statistical data of this study, the emotional impact of the horse-rider bond was also believed to have resulted in reduced anxiety, a central component of PTSD, in many if not all the participants (Johnson et al 2018). Consequently, one issue that had arisen by the end of this study was the fact that many of the veterans were sad that the program was ending because of the positive interactions they had experienced with the people there and their horses (Johnson et al 2018). However, even with this the overall results of the study demonstrated a positive improvement in relation to the reduction of PTSD symptoms experienced by the veterans (Johnson et al 2018).

Looking at a similar study of the effects of EAT on PTSD symptoms in active-duty service members and veterans, participants were enrolled in an eight-week program with measurements of their symptoms and quality of life following that of the ICF model. The ICF model, short for the International Classification of Functioning, Disability, and Health, is a useful framework as it can link the various components of functioning and disability and can serve as a connecting framework between interventions and outcome measures (Lanning et al, 2017). Concluding this study, the resulting data exhibited a reduction of PTSD symptoms across the eight weeks, demonstrating a large, calculated effect size, with moderate improvement seen two months after the program had ended as well (Lanning et al, 2017). This study, like that of the previous one, also demonstrated an improvement of emotional health as the veterans reported a reduction of interference of emotions in everyday life as well as an overall improvement in mental health (Lanning et al, 2017). Alongside this reported improvement in mental health came improved confidence, trust, acceptance of self and others, and increased participation (Lanning et al, 2017). This study further suggests the various emotional and mental health benefits an individual can experience using EAT as an intervention.

Hippotherapy:

Hippotherapy is the use of horseback riding and more specifically the use of the rhythmic movements created through a horse's gait as a therapeutic and rehabilitative treatment for the improvement of coordination, balance, strength, as well as other areas. Incorporating hippotherapy into a patient's medical plan opens the opportunity to use key neuromotor systems that support function (American Hippotherapy Association). Through the patients' experiences with the different gaits of the horse, they are given the opportunity for complex motor learning that they would not otherwise have access to in a doctor's office. Improvements using

hippotherapy have been proven and demonstrated amongst a wide variety of patients in the areas of strength, muscle coordination, and sensory processing used for walking, talking, and the use of fine motor skills (American Hippotherapy Association). Alongside the physical benefits, many patients also experienced neurological and mood improvements in areas such as increased motivation and improvements in their social emotional states. There are hardly any differences between that of hippotherapy and EAT other than the fact that patients participating in hippotherapy are generally doing so alongside a psychologist or other medical professional of some sort while EAT generally includes the help of certified therapeutic instructors and other associated professionals. Hippotherapy is also found in combination with other forms of therapy as there are many patients who require a variety of support depending on their diagnosis and/or disorders. However, both EAT and hippotherapy have the same goal with the use of a horse as a therapeutic intervention to help improve the quality of life of patients with a variety of conditions.

Purpose of the Horse and Why This Works:

Throughout the course of many studies, there are likely many who do not see the importance behind this kind of therapy. The idea of using such a large animal for the physical and neurological therapy of a patient may seem dangerous and completely unpredictable. There are many patients and families that would most likely be more comfortable in a doctor's office in what they perceive to be a controlled environment whereas a horse has a mind of its own. While some of this may be somewhat true, these perceptions fail to see the bigger picture of how just experiencing the movements of a horse for a short period of time accomplish the same goal as up to hours of physical therapy. As explained by the American Hippotherapy Association, on average a horse walks about 100 steps a minute. Each step is representative of one neuro motor

input in a patient's brain. Therefore, five minutes of walking would be the equivalent of 500 neuro motor inputs. With just a 25-30 minute EAT session, a patient would experience 2500-3000 neuro motor inputs, much more than any patient would be likely to experience sitting in a doctor's office for 30 minutes (American Hippotherapy Association). Furthermore, EAT helps to improve an individual's ability to receive and process body-wide sensory information through the rhythmical gait of the horse that can directly impact the rider in many ways such as improved circulation, joint stability, postural responses, and even promotes relaxation (Sterba et al, 2002).

There are several hypotheses behind the true mechanisms of EAT, however, they all generally surround the same variables and ideas as explained in *Horseback riding in children with cerebral palsy: effect on gross motor function* (Sterba et al, 2002). The movements and gaits of the horse are believed to cause passive and active stretching and stimulation of the rider's balance and postural control (Sterba et al, 2002). The way in which an individual's pelvis experiences movement while riding a horse has proved to be like that of the natural human gait seen when walking as a horse's gait moves the rider forward and backward which results in the anterior and posterior tilt of the individual's pelvis (Sterba et al, 2002). Studies have shown, and researchers believe that this is an imperative factor behind how EAT demonstrates vast and widespread improvements in the gait related functions of individuals diagnosed with various disorders relating to muscle tone, balance, and posture (Sterba et al, 2002).

Economic and Emotional Benefit:

Along with all the evidence supporting the validity of equine assisted therapy, it also provides an alternative to therapies in a doctor's office that is emotionally beneficial as well as a cheaper alternative. From an emotional perspective, equine assisted therapy gives patients the chance to escape a doctor's office. Many individuals, after consistent time spent in doctors'

offices or hospitals, develop white coat syndrome. White coat syndrome is when blood pressure rises in response to being around doctors. Equine assisted therapy gives patients the chance to escape, develop a bond with an animal, and even spend time with family. This kind of experience in turn lowers stress levels which could potentially lead to better results in relation to improving their condition. Furthermore, the bond that is formed between a horse and its rider is not something that can be artificially simulated in any kind of doctor's office or clinic (Sterba et al, 2002). It has been shown through study that this kind of positive interaction with a horse can produce unexpected positive results in the areas of expressive communication in patients with ASD who generally exhibit a lack of human social understanding (Gabriels et al, 2012). This topic of the emotional importance of this therapy was further touched upon as veterans with PTSD were speculated to have reduced anxiety because of the bond and emotional affiliation they formed with their horse (Johnson et al 2018). This kind of emotional impact, as seen across many different studies, is not something that can be overlooked as it most likely plays an integral role in the positive results and improvements found within almost every study examining the effects of equine-assisted therapy.

Economically speaking, a single riding/therapy session a week would prove to be much less expensive than the treatments and medications prescribed in a doctor's office. This is in part because EAT incorporates several different variables and techniques into one therapy session, touching upon physical, neurological, and even emotional aspects. To get the same benefits out of a doctor's office, one would most likely have to undergo a combination of therapies opposed to just the one. A single lesson a week would generally reap the same if not better results seen in a doctor's office costing a few hundred dollars opposed to a thousand or more. Alongside this, the waiting lists for many therapeutic programs found in doctor's offices have waiting lists or

minimal openings. Equine-assisted therapy is a kind of therapy that one will not need to sit on a waiting list for to participate in.

Future Outlooks:

After decades of studies, there is so much evidence pointing to the various benefits of EAT, however, up until recently did studies and researchers truly have a means to measuring and in turn statistically proving the presence of clinically significant data. Future research on the topic of EAT effects on a variety of individuals with different disorders is likely to continue to take place, maybe even more than in the past, as this therapy has been shown on several occasions to result in improvements. These improvements have been displayed through the motor skills of cerebral palsy patients to the social skills of children with ASD and even the improvement of symptoms in veterans with PTSD. Alongside the obvious potential research of continuing to examine the results of EAT in relation to motor skills, social skills, and reduction of certain behaviors, there is also potential for the study of how the amount of time an individual rides a horse in each session or for how long a program lasts effects the overall improvements seen. There have been many studies already that show a difference in results depending upon how long an individual rode a horse or the difference in results between that of a six-week program and a twelve-week program. This kind of research may be able to further contribute to elongate the period after the end of an EAT program that significant improvements are sustained by an individual.

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