HORSE THERAPY:

A LIFE-CHANGING TREATMENT

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Abstract

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Therapeutic horseback riding and hippotherapy are designed to benefit disabled individuals and can be referred to as horse therapy. The purpose of this paper is to answer the question: **How and to what extent does horse therapy benefit disabled children?** Many different articles were examined and personal volunteer experience was used to determine the physical and mental benefits of horse therapy. This paper shows that **through movement and interactions with the animal, horse therapy improves disabled children's physical function, emotional stability, and social interactions.** Challenging activities on the horse improve the child's balance, muscle control, coordination, and posture. The horse serves as a motivator and children benefit in many areas including self-esteem, self-confidence, emotional stability, and self-image. This paper also looks at the other applications of horse therapy, including therapy for veterans, elders, foster care children and children with heart disease. This paper discusses the limitations in the studies that have been done, and the reasons that horse therapy is not yet a mainstream treatment. Despite some limitations in the research, there is ample evidence to conclude that horse therapy is an effective treatment for children with disabilities.

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Introduction

The short paperback, A Leg Up for Lucinda, tells the moving story of a paralyzed teenage girl. When Lucinda was in fourth grade, the car she was in was smashed from behind, leaving her legs completely paralyzed. For the next year, her life was full of misery as she dealt with the hardships of being paralyzed. Lucinda was stuck in grueling therapy, lost all of her friends, and was forced to attend school in a wheelchair where everyone looked down at her. Lucinda's mom got her involved in a therapeutic horseback riding program where she was able to get on a horse and sit up high above other people. Her life was turned around and she fell in love with her horse and all the amazing volunteers. A few months later, Lucinda came to the barn on her special crutches instead of in her wheelchair. The story ended with her winning a blue ribbon, an award that meant everything to a young girl whose life had been forever altered. This story encourages us to look at the question, **how and to what extent does horse therapy benefit disabled children?** Children all over the world participate in riding programs created to improve physical and social function. Hundreds of studies have been done that show positive improvement from therapeutic horseback riding. The progress that these children are able to make changes their lives for the better. Aided by the horse, children have been able to walk or talk for the first time. Using scholarly and medical articles, interviews, and personal volunteer experience, I have concluded that therapeutic horseback riding has a positive effect on disabled children. **Through movement and interactions with the animal, horse therapy improves disabled children's physical function, emotional stability, and social interactions.**

Background

Hippos is the Greek word for horse, and hippotherapy refers to therapy using a horse (Shurtleff). Hippotherapy is performed by rehabilitation medical professionals (physical, occupational, and speech therapists). "In hippotherapy, the client does not control the movement or direction of the horse" (Silkwood-Sherer). Therapeutic riding, taught by trained instructors or rehabilitation therapists, also incorporates riding skills into the therapy session. The terms hippotherapy and therapeutic horseback riding cannot be used interchangeably, although the benefits are similar. When talking about the overall results of using a horse for therapy, this paper uses the general term horse therapy. For research studies specific to a particular type of therapy, the terms hippotherapy or therapeutic horseback riding are used.

Hippotherapy and therapeutic horseback riding began in Scandinavia when Liz Hartel won a silver medal for dressage in the 1952 Olympic Games. Hartel was handicapped by polio and her amazing achievement inspired individuals all over the world. Soon after, Hartel and her physical therapist established the first riding group for children with disabilities, and in the1960s the first therapeutic riding centers were formed in Europe. By the 1970s, there were therapeutic riding centers in America and Canada. In the United States alone, almost 38,000 people with different disabilities benefit from hippotherapy every year. Hippotherapy and therapeutic riding are designed to help people with a variety of disabilities including autism, cerebral palsy, paralysis, Down syndrome, amputation, multiple sclerosis, and attention-deficit disorder. This paper will focus mainly on autism and cerebral palsy, as there is an abundance of research in this area. Autism affects children and adults of all races and classes, it is defined as "…a developmental disorder characterized by deficits in social, communication, and motor skill functioning" (Bass1). Cerebral palsy is a neurological disease, which is described by poor

muscle function and impaired muscle coordination. In most cases it is a chronic disability that requires children to be involved in therapy for many years.

A typical horse therapy lesson runs from thirty to sixty minutes. The activities depend on the objectives of the session, and can range from simply having the child sit on the horse and stretch to playing games or actually riding. Most riders are assisted by "side-walkers," volunteers who walk alongside the horse and give support when needed.

Why Horse Therapy?

There are many forms of therapy that address the needs of disabled children. Horse therapy provides many benefits that are not found in a traditional therapy setting. The warmth of a horse joined with its rhythmical movements creates a unique stimulus for the rider. Horses are amazing, powerful animals that have the perception to sense the rider's feelings and act based on their intentions. When a horse moves, its back shifts in a smooth and three-dimensional way. As the horse's pelvis rotates, it makes a motion that is very similar to the pelvic movement created during ambulation of individuals without disability. For a child with cerebral palsy, muscle spasticity and paralysis can make walking extremely difficult or even impossible. When these children ride a horse, they experience normal pelvic movement, often for the first time (Gatty). Studies show that the rhythmical movements made by the horse improve muscle tone, joint stability, gross motor function and trunk control (Burton 1).

Keeping a child's interest and enthusiasm for multiple years of therapy is one of the most challenging tasks of a physical therapist, especially when dealing with autistic children. Therapeutic horseback riding is a creative way to address this issue. In most physical therapy settings, a therapy ball is used to simulate a walking motion. Horseback riding is more effective

because the ball is not as rhythmical as the gait of a horse, nor is it able to move in three dimensions at the same time. Therapy balls are also unable to transfer heat or form any type of connection with the client (Bertoti). Another advantage of horseback riding over the therapy ball is the amount of time a client can spend on a horse. Most children are content, if not thrilled, to sit on a horse for forty-five minutes because the experience is fun, challenging and exciting. However, almost no child would be content to sit on a therapy ball for even ten minutes, much less forty-five (Shurtleff). When a child is on a horse he or she is "…able to experience a sensation of moving forward through space, which is difficult to reproduce in the clinic" (Violette 3).

Both hippotherapy and therapeutic riding have another benefit over clinical therapy, which is that the riding takes place outdoors. Most riding facilities offer natural lighting, different sounds, scenery, interesting new smells, and fresh air. The riders' activities are in context with their surroundings, and the children have the chance to interact with the external environment in a way they're not familiar with (McPail). This interaction expands their knowledge of the world around them and their brains are challenged to process the new information. However, some people argue that the outdoor environment might not always be the best thing. In some cases the sounds and smells may be more of a distraction than a benefit. There is also the unpredictability of the weather for barns that don't have a covered riding space. Some therapists also believe that the client should remain solely focused on the task at hand rather than challenged by outside distractions. Despite this belief, most people agree that the effects from an outdoor horseback riding session are positive (McPail).

In a clinical setting, a client may sit on a stationary saddle and perform passive stretch activities. In horse therapy, the client performs these activities while sitting on a moving horse.

Research has found significant improvements in muscle activity in children with cerebral palsy after only eight minutes of hippotherapy. This suggests that the reason for improvement is due to the smooth movement of the horse rather than the stretching (Violette 4). The rider will often use a soft pad instead of a saddle. The rider is then better able to feel the warmth and the movement of the horse. It appears that the warmth provided by the horse's body decreases muscle spasticity (Silkwood-Sherer).

Interactions between humans and horses provide many lasting benefits. The positive effects of horse therapy continue beyond the weekly sessions. Tim Shurtleff is an occupational therapist as well as a lead researcher for the Humans and Horses Research Foundation (HHRF). Shurtleff said in a 2008 article regarding a recent yearlong study, “We have shown that hippotherapy is a therapeutic tool that makes a measurable and visible difference in basic skills that form the foundation of most functional activities of everyday life." The study showed improved trunk and head stability and upper extremity reaching and targeting in children with cerebral palsy. Molly Sweeney, President of the Horses & Humans Research Foundation was impressed by the results which showed that improvements often continued for months after the intervention was over. Sweeney said, “The subjects were incorporating improvements from hippotherapy into their daily life." All of the researchers involved in this study were able to observe the positive effects of the therapy. The benefits were tangible to the researchers, the parents, and school teachers. One mother said, “My five year old son no longer hangs out at the edge of the playground watching…after (the) twelve week hippotherapy intervention he…climbs up the slide and plays...Without any urging from anyone, he just started doing it" (Shurtleff).

Physical

Children involved in therapeutic riding benefit physically in their balance, coordination, strength, muscle control, posture, gross motor function and more. During a therapeutic riding session, the rider goes through a number of exercises intended to benefit him or her in many ways. One activity is called "Around the World". The rider first turns and sits sideways on the horse. By doing this, they have less support, forcing them to work harder in order to remain in an upright position. The rider then turns backwards on the horse, increasing postural reactions and giving them the ability to place weight on their arms by laying them on the horse's hindquarters. The rider may also lie down on the horse, which is good for improving muscle tone and helps to support an overall relaxed feeling. Another exercise involves the rider reaching forward toward the horse's ears or reaching behind to the horse's tail. This challenges the rider's balance, trunk control and range of motion (Violette 2).

The students at Soaring Spirit Therapeutic Equestrian Center in Creswell, Oregon often play games that involve picking up stuffed animals from different barrels and throwing balls into basketball hoops. These games are fun and keep the riders interested, but they also require more weight shifting, stability and gross motor control. Watching the children complete these activities, one can see that they are enjoying every minute of it. At the beginning of each lesson, the children complete a set of stretching maneuvers including forward and backward arm circles, trunk twisting, and touching of the toes. These movements help warm them up and condition them for the physical demands of riding. Games like "red light, green light" and "Simon says" are often incorporated in the lesson. The children are challenged to follow the teacher's instructions, maintain balance, and instruct their horse to stop or go (Bass 4). Often times they

don't even realize they are working because they are having so much fun with the horse and the volunteers.

A study was conducted with eleven children who had cerebral palsy but no other medical conditions. The subjects had their posture assessed by looking at the alignment of different body parts. A scale was developed that allowed the assessor to measure the symmetry of different areas of the body. The study was summarized by Dolores B. Bertoti. Five areas of the body were assessed for posture: 1) head and neck 2) shoulder and scapula 3) trunk 4) spine 5) pelvis. The composite score was taken from three different testing intervals. The first test, called Pretest 1, was followed by a 10-week period of no riding. The second test, Pretest 2, was followed by a 10-week therapeutic riding intervention. The third test was conducted after the riding intervention, called a Post Test. The numerical results of this test can be seen in Appendix I, Table 1. Because the subjects were tested before and after a period of no intervention, the subjects acted as their own control. The results of this test showed that the posture in nine of eleven subjects significantly improved during the ten weeks of therapeutic horseback riding. Many other case studies provide anecdotal support to the theory that therapeutic horseback riding is beneficial for children with cerebral palsy. These studies suggest that therapeutic horseback riding contributes to decreased spasticity, improvements in weight shift, balance, rotational skills, and postural control (Bertoti).

Despite many case studies, it is challenging to conduct medical research on therapeutic horseback riding because every horse and rider is different. Parents as well as doctors see improvements but it is very difficult to prove that these benefits are a direct link to the riding (Caliendo). Many of the studies that have been done on children have not included a control group. This is due to the limited number of available participants and the fact that researchers do

not wish to hinder the benefits children get from regular physical therapy activities. “Most research in the past has used small sample sizes that lacked standardized objective measures” (Silkwood-Sherer). An added difficulty is that therapeutic horseback riding is not a mainstream therapy. This is mostly because therapists and doctors simply don’t know enough about it. Many of the journal articles about the effectiveness of this treatment are not translated into English. Compared to Europe, the United States has been very slow to recognize therapeutic horseback riding as a mainstream treatment. However, HHRF is currently in the process of conducting new research. In the beginning of September 2010, they were awarded $55,000 for further research efforts. HHRF funds investigations that look at the influence of horses on humans in areas like mental health, emotional and physical rehabilitation, and learning. Molly Sweeney said, “If research continues to show the outstanding results we have seen, the doors it will open are limitless.” This money will be used in the coming years to conduct new studies and educate the public about the benefits of horses and horse-related activities. (Research Showing Impact...1).

Behavioral

The movement of the horse and the specially-designed activities benefit the rider, not only physically, but also mentally and emotionally. Through therapeutic riding, children gain social skills, speech improvements, self esteem, self control, and respect for others. An extremely important part of therapeutic horseback riding is the role of the horse as the motivator. Every week, students are eager to go to the stable in order to see their horse and the many different volunteers. It is not uncommon for students to form strong bonds that last years, if not a lifetime. The stronger the connection of the horse and rider, the more effective therapeutic riding is (Bertoti).

There have been a number of studies done on the physical benefits of therapeutic riding, but not many that support the positive effect it can have on a child's emotional well-being. A pilot study, inspired by four occupational therapists in Pennsylvania was done to examine the impact therapeutic horseback riding had on five riders' self-esteem. The study found a significant "positive increase in (the) self-esteem" of the riders (Gatty). Barbara Christan, the founder of a therapeutic riding center said, "The confidence and self-esteem that comes from being able to control a powerful, 1,000 pound animal is just immeasurable". Some people believe that exercising the spirit can be just as important as exercising the body. The presence of the horse provides an emotional boost for children with disabilities (Gatty).

An article published in the NARHA (North American Riding for the Handicapped Association) magazine told the story of a young girl who was unable to speak or walk. After two months of weekly therapeutic riding, the girl was able to command her horse to walk, making the first understandable sound of her life! Many students have experiences like this. They are able to verbally communicate what they want from the horse and get an immediate result. Students are able to get on a horse and direct it to stop, go, and turn. They are able to be in charge, often for the first time in their life (Bender). This builds self-confidence, especially for children who have never had the ability to make anyone or anything do what they ask.

Sitting on the back of a horse puts a child in an ideal position for improving control of the diaphragm and trunk muscles which are essential for speech production. The rhythm of the horse's walk creates a calm environment for practicing easy fluent speech. The horse is captivating and can be an inspiration for using speech in children with delayed language abilities. While on a horse, children are encouraged to use language in three main ways. The first is using riding-related words and motor commands to direct the horse. The results are immediately

rewarding, and because the words are so directly related to the activity, the language becomes more meaningful to the child. The second use of speech is in games that are meant to strengthen fundamental skills. These include counting, recognizing letters and colors, animal noises, and spelling. The third method of improving language is encouraging social integration. The instructor may ask about the rider's day, or what they like to do. When the child answers these questions they are often having fun on the horse and the conversation feels more natural than in a speech therapist's office (Borton).

The smooth rhythmical movement of the horse is beneficial for almost every rider whether they want to be on the horse or not. Most physical and emotional benefits of horse therapy, however, are only possible for students who actively participate. If the child is depressed to the point that they refuse to do anything except sit on the horse, they reduce the potential gains of horse therapy. The same is true for any child who is petrified with fear. If this fear overtakes them, they are unable to participate actively. When a child is not participating, they are often sitting with poor posture and not trying. This decreases the opportunity to improve muscle control, balance, posture, and gross motor control. When a child does not engage, they are unable to steer their horse, pick up rings, or have an enjoyable experience—all of which contribute to increased confidence and self-esteem (Bertoti). If a child is able to overcome this fear, he or she gains a double benefit from the horse therapy. Not only would he or she be able to benefit in the ways described above, but would gain the feeling of empowerment. Many students are terrified of the horse during their first lesson. This initial fear often goes away when the children realize that the horse is trying to help them, not hurt them. Overcoming this fear would be beneficial not only during therapy but also in the child's everyday life.

Further Applications

There are many other applications for therapeutic horseback riding that have developed in recent years. New research is being conducted to show that therapeutic horseback riding can be helpful for people with many different kinds of disabilities. In 2006, a small group of U.S. soldiers with leg amputations was part of a therapeutic riding program for wounded veterans (Violette 1). They experienced relief of pain, better balance, core strength, and improved social integration. Amputees are able to gain a sense of freedom and mimic the motion of walking while on horseback. Work can also be done off the horse, including grooming and tacking. Participants build basic horsemanship skills that help them in other areas of their lives. Grooming a horse with the correct tools in a specific order helps to reinforce personal hygiene as well as other daily skills (Bender). Studies in Germany in the last ten years show that hippotherapy can be a successful treatment for orthopedic impairments. It can also be effectively used to improve core stability for people after lumbar disc surgery (Violette).

Many foster care children have experienced abuse or abandonment, and as a result they struggle with trusting others, have very low self-esteem, and find it challenging to form quality relationships. Case studies show that after therapeutic riding, foster care children showed signs of improved self acceptance, behavior, and socialization (Kesner).

Other studies show that horse therapy has positive influences on blood pressure, heart rate, and anxiety levels (Bass). Many children with congenital heart disease are involved in little or no physical activity. This is mostly due to the fact that physicians are not sure about these children's physical capacity. Because of this, therapeutic riding can be a beneficial alternative, giving them a way to increase balance and strength (Anderson).

There is also evidence that horses can be used to assist psychotherapy for patients suffering from depression and anxiety. Often the goal is to bring clinical issues to the surface so that the horse can help the client work through these issues. There are a number of different techniques to do this including; role playing, grooming, lunging, and riding. The therapist attempts to surface the issues that prohibit the client from functioning normally. This treatment has also been used effectively with the elderly and others with mental health issues (Klontz).

Conclusion

All over the world there are thousands of children with some kind of disability. Therapeutic horseback riding is one of the most effective therapies for children with both mental and physical disabilities. Studies by the American Hippotherapy Association, HHRF, private therapists, and other organizations show the positive effects of therapeutic riding. The rhythmic movement of the horse improves the riders' balance, muscle control, and posture. They are able to complete challenging therapeutic activities while having fun in a stimulating environment. Riders also benefit emotionally and socially by gaining confidence, self-control and self-esteem. Although some of the studies are lacking proper sample size, duration, and/or adequate assessment there is enough evidence to conclude that horse therapy definitely has a positive effect on disabled children.

Appendix I

TABLE 1 Posture Assessment of Interval Composite Scores

N	Pretest 1	Pretest 2	Post test
1	32	25	28
2	14	16	26
3	17	22	31
4	30	27	39
5	20	26	27
6	20	22	29
7	18	18	27
8	21	11	22
9	22	16	22
10	31	26	33
11	28	23	36

This table shows the composite scores of each subject for three different trials where N represents the person. From these results we can see that seven of the subjects improved significantly. Subjects eight and ten had improved posture by a small factor. Subject nine had no change between the first and last test, and subject one had a decrease in postural measurements.

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Individualized Research Addendum

Two years ago, I started volunteering at Soaring Spirit Therapeutic Equestrian Center in Creswell, Oregon. Soaring Spirit provides therapeutic horseback riding for disabled or mentally challenged children and adults. I love working with horses and children, and this opportunity has been amazing. The instructor at Soaring Spirit is Kate Sutton, and she has been teaching therapeutic horseback riding for many years. After the first year with Kate, I became more and more interested in the reasons behind all of the different exercises. Some of the parents were also asking, and Kate was unable to give me an adequate answer. In the early spring of my junior year, I decided to write my senior paper about the effects of horse therapy on disabled children. Through my research I have been able to find the scientific basis for the therapy activities.

Volunteering at Soaring Spirit has given me firsthand experience for my topic. I have helped many different children brush, tack, and ride horses. The smiles on the children's faces are extremely moving and it is one of the most rewarding volunteer activities around. Through this experience I have gained inside knowledge about therapeutic horseback riding and I have seen the results for myself. The children became more confident and physically stronger each week. Kate Sutton was my technical advisor and she was extremely helpful. Working alongside Kate in her field of expertise has expanded my knowledge of therapeutic riding and has given me a personal perspective on the research I was conducting.

Over my junior summer I spent over fifty hours volunteering at Soaring Spirit. Some of this time was spent working with horses, but most of it was side-walking with the children. The same children came every week and I formed relationships with them that I will always treasure. Through the hands-on experience, talking to Kate, the children, and the parents I increased my understanding of therapeutic riding, which helped me immensely in my detailed research.