

EDU WORLD 2018
The 8th International Conference

**THE HIPPO THERAPY EFFECTS ON CHILDREN DIAGNOSED
WITH DISORDERS FROM AUTISTIC SPECTRUM**

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Abstract

For children diagnosed with autism, an outdoor therapeutic scenery, in nature, represents an environment full of auditory, olfactory, tactile stimuli, and because it takes place on horseback, we can also introduce the kinesthetic; the child interaction with all these elements helps to desensitize it, and may favor an easier integration into everyday life, which is not deprived of any of the above-described stimuli, but on the contrary, they are everywhere. Working with the horse not only produces physical benefits but also has many psychosocial influences. The simple fact that the therapy takes place on a farm in a natural environment and outside the typical therapeutic centers provokes additional stimulation. The greatest attribute of the horse during therapy is that it produces motivation and a tolerant environment. Assisted activities and therapies are not seen by the client as therapy, but also as time spent with the horse. Research hypotheses 1. It is assumed that hippotherapy, adopted as complementary therapy, helps to develop empathy. (in children diagnosed with TSA empathy is much deficient, nonexistent). 2. It is assumed that engaging the child in various tasks closely related to the horse leads to an increase in the level of independence. Conclusions The research results have shown that hippotherapy can have beneficial effects on children diagnosed with TSA. Hippotherapy should not be considered as a single therapy, but its integration into the therapy programs of children diagnosed with TSA leads to great benefits for them.

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Keywords: Hippotherapy, autism, children.



1. Introduction

Hippotherapy represents any form of therapy that uses the horse as therapeutic element. The goals and activities are the same as any other therapies. The client does exercises on horse but doesn't direct the horse. In USA, the hippotherapy is offered by an occupational therapist, a kinesiotherapist or a logopedist. The THR (Therapeutic Horseback Riding) originated in Denmark in 1952, when Lis Hartel, dependent on wheelchair because of poliomyelitis, she rehabilitated and later won the Olympic medal with her horse.

In the 1960s, the idea of using horseback riding for therapeutic purposes spread to Denmark, Norway, England, U.S.A and Canada. Since then, people in the United States with a variety of disabilities have used THR to enhance physical, psychosocial and cognitive functioning (Snider et al, 2007).

To standardize this growing industry, in 1969, it was established The North American Riding for the Handicapped Association (NARHA) to develop national accreditation standards to ensure safe practices and effective training programs and instructors (Afanasiev, 2016).

Also, the therapeutic benefits of the animal have been recognized since the 1700s, when farm and domestic animals were used in psychiatric treatment units. Archaeologists suggest that the mutual relationship between dogs and humans has expanded over 140,000 years. Today, dogs have a well-established role in society, not only as a pet, but also in police and military forces and health domain. The scientific basis of Animal-Assisted Therapy (AAT) comes from the field of anthrozoology, also known as "human-animal interaction" (HAI). HAI implicates researches that explore the human-animal relationship in a mutual manner, and how it influences the physical and psychosocial well-being. The theory behind HAI is that: the animals represent a source of support that doesn't judge, and which can facilitate social interaction. Most of the literature available at TAA for cerebral palsy and autism spectrum disorders shows alongside horse therapy, also known as hippotherapy, accompanied by other studies of dog and dolphin assisted therapies.

Equine Assisted Activities and Therapies (EAAT), by translation, equine-assisted activities and therapies, encompasses all the activities that uses the horse in order to contribute positively to cognitive, physical, emotional and social well-being of people with disabilities. It includes therapies, recreations, and even high level sports competitions.

1.1. Psychotherapy equestrian facilities

Therapy sessions can be performed on horse or near horse. The equestrian learning facilitates the use of experiential learning also known as "learning by doing" to promote the development and growth of participants. During the sessions, participants interact with the environment: people, animals etc. and are involved in different scenarios.

Each participant has different goals, for example, to improve his / her social skills, managing the behavior and self-care abilities. During the sessions, participants learn about them, about horses, about the environment, and they build abilities that can be transferred to everyday life.

1.2. Therapeutic horseback riding

It is a form of equine-assisted activities and therapies that involve activities in the saddle. During horse therapy, participants learn how to ride a horse in a safe and supervised manner. Depending on their

situation they can ride independently or fully supervised. The lessons can be individual or in group, depending on the needs of the participants.

The purpose of the horseback riding therapy is to allow the participants to acquire as many abilities as possible to ride independently and at the same time to acquire the therapeutic targets that can be useful in other aspects of life (Gabriels et al, 2012).

1.3. Psychosocial aspects of equine-assisted activities and therapies

Working with the horse not only produces physical benefits but also has many psychosocial influences. The simple fact that the therapy takes place on a farm in a natural environment and outside the typical therapeutic centers causes additional stimulation.

The greatest attribute of the horse during therapy is that it produces motivation and a tolerant environment. Equine-assisted activities and therapies are not seen by the client as therapy, but as time spent with the horse.

The first thing that all the clients need to teach when starting their hippotherapy is that there are rules that need to be followed. The most common rules in the horse stud are: to wear the equestrian helmet when riding the horse, not to run or scream in the stable, do not approach the horse on the back. By learning to understand and follow the rules in the stable, it helps the client to follow the rules of everyday life and to understand the consequences of the violations.

Another aspect of social development is the understanding of the body language and spatial relationships. The horses can be very good teachers for that. Learning to read the non-verbal clues from a horse and its manner of communication can help clients, especially autistic clients, to pay more attention to non-verbal language in everyday life.

1.4. Psychotherapy elements during the equine-assisted activities and therapies

Even if one of the goals of equestrian assisted activities and therapies is psychotherapy, its elements can be found along any horse activity. "Personal experience and experiential freedom are essential in the person's genuine growth process" (Grigore, 2016, p. 14).

The starting sessions of equine-assisted activities and therapies usually involves stepping into a whole new and unknown world of the horse and its surrounding elements. The horse, if treated properly, will never criticize and judge his client. Regardless of the client's shortcomings, she or him will always feel welcome and accepted, which it may influence their self-perception and self-acceptance.

Being able to control a large animal and having the opportunity to choose from different horse activities, it can have many influences on the control of our customers. Being on the horse and guiding his movements or controlling him from the ground, it can empower his clients and it can place the control internally. It gives them power and teaches them how to take decisions. It can also have benefits for self-esteem.

1.5. The movement influence on the brain

To make any kind of new movement, we have to coordinate the sensorial information that comes from the environment with proprioceptors and with the ability to perform movements. Szop mentions that

we all have motor predispositions that can be divided into structural, energetic, coordination, and psychological.

Raczek (2002) proposes a simplified scheme which shows the structures of the central nervous system and their connections and the role they play in adjusting the movement. This scheme includes 4 areas of the brain, which often, in people with autism doesn't work properly.

1.6. The most popular therapeutic approaches in autism and how the horse can be used in each

1.6.1. Sensorial integration in EAAT activities

The two main ways to apply sensorial integration through EAAT would be hippotherapy and horse riding therapy. In both situations, riding the horse generates vestibular stimulation. The skin, the saddle, the blanket, the mane, all generates different levels of tactile stimulation and different temperaments (Lanning et al, 2014).

The use of toys and therapeutic equipment can also generate different sources for tactical experiences. The surrounding sounds and hoof noises stimulate the hearing. It is very important to keep in mind that a position that can be very calming for a client may also be stimulating or neutral to another.

1.6.2. ABA (Applied Behavior Analysis)

ABA analyzes the three dimensions of behavior:

- Behavior antecedents: analyzes what happened before the behavior occurred, the surroundings, the various stimuli, it helps discovering the elements that generated a behavior. If we know why a person behaves in a certain way, we can predict and eliminate or consolidate a behavior.

- Behavior itself: What role does it play? What does it mean?

- Behavior consequences: What happens after a behavior occurs? Does the environment support behavior? Does the child receive something desirable after the way he behaved at some point? Applied Behavior Analysis (ABA), 2018).

1.7. The Implementation of ABA in EAAT

EAAT can be integrated into the ABA Dashboard. An important part of ABA represents a reward for the right answer. The reward can have various forms, it can be: a token, a favorite exercise, a sensorial stimulation that the child likes it or the ability to choose a future game.

The negative behaviors or incorrect responses should be ignored, unless a behavior creates a danger to participants, to the horse or staff. Negative attention is also a type of attention and can actually strengthen a reaction; by simply repeating the exercise and not paying attention to the negative side represents a way to evolve.

DIR - Individualized and differentiated relationship development

DIR is about focusing on strengthening and building the emotional bond between the child and the social assistant. This approach works with the entire family not only with the child.

DIR encourages the children to go through 6 hierarchies of functional development:

- Self-regulation and interest towards the world; refers to the ability to stay calm and to share the attention

- Privacy; at this level we want to make the child to focus on us

- Dialogue; the beginning of communication is represented by gestures that can be used either to initiate communication or to respond

- The complex communication; the child begins to communicate his desires and intentions by combining gestures. The child begins to appreciate the power of communication

- Emotional abilities; at this stage, it begins to appear the abstract thinking; the child begins to use words and ideas in a creative and useful way

- The emotional thinking; is the stage in which we build logical connections between the ideas that appear; the child develops a good understanding of self and those around him, and how the actions of a person can influence one another.

1.8. Involving EAAT in DIR

It is important to find out at what level of development the child is before creating the intervention plan; depending on the level, the structure of the session will be different; for example, the child from the first-level will probably require more sensorial integration in exercises and one-to-one contact; activities may include discussions about various objects or horses.

The interaction with the horse is an extremely emotional experience for the vast majority of customers. It is a natural way to improve your personal episodic memory and a simple way to build motivation. Our customer doesn't view the sessions as some therapy sessions. They perceive most of the activities as "time spent with the horse" or "time at the stable". The motivation to repeat experiences is, in most cases, extraordinary (Anderson, & Meints, 2016).

2. Problem Statement

The aim of the research is to identify the effects of hippotherapy in children diagnosed with autism.

3. Research Questions

1. It is assumed that hippotherapy, adopted as complementary therapy, helps to develop empathy. (In children diagnosed with TSA, empathy is more deficient, thru nonexistent).

2. It is assumed that engaging the child in various tasks, related closely to the horse, leads to an increase in the independence level.

4. Purpose of the Study

- identifying the effects of constant interaction with the horse on empathy
- identifying the degree of child's independence in various tasks closely related to the horse
- identifying the effects that constant interaction has with the horse on safety and caution level

5. Research Methods

5.1. The participant's description

Our research was based on a special group of 11 children diagnosed with Autistic Spectrum Disorder, 9 boys and 2 girls, from similar environments, aged 7-11 years old, coming from normal families.

The research took place between 12.02.2018 - 23.04.2018. The hippotherapy sessions took place weekly, 1 hour a week for 10 weeks at the Hippolite Oituz Equestrian Center, and were held together with the therapist, volunteers / auxiliary staff and Karina - the disrespectful therapist-.

5.2. The work instruments:

For the collection of data on empathy and independence level, I applied two questionnaires:

- ✓ ABAS (adaptive behavior assessment system), 2nd edition, for ages 5-21;

ABAS provides a comprehensive assessment of adaptive abilities of individuals, based on gathered rules. This tool has a wide utility area, ranging from infants up to the age of 89; it can be used for:

- To evaluate the adaptive habits of a person and their ability to live independently,
- To diagnose and classify certain disabilities or disorders,
- To identifying strengths and limits,
- To help documenting and monitoring progress

The ABAS test was applied in those two variants: the one completed by the instructor (teacher) and the one completed by the parent, in form for 5-21 years; it also was applied before and after the 10 hours of hippotherapy. Parents were explained how to fill in, and also the therapist expressed his availability for any other questions. The questionnaires were completed by both the therapist and the parent, based on direct observation of the participants, both in the therapy sessions and within the family / schooling environment (where possible).

- ✓ **Toronto for empathy**

TEQ contains 16 questions that include a wide range of attributes associated with the theoretical aspects of empathy. The affective aspect of the empathic response is considered to be related to phenomena such as emotional contagion (Eisenberg & Miller, 1987); emotional comprehension (Haxby, Hoffman, & Gobbini, 2002), sympathy development (Levenson, Ruef, & Anna, 1992) and con-specific altruism; all of these are represented in TEQ articles.

Two elements specifically target the perception of an emotional state besides stimulating the general emotion (points 1 and 4). An article evaluates the comprehension of emotions in others. (paragraph 8). Other elements relate to emotional evaluation, which is stated in others by indexing the frequency of behaviors that demonstrate adequate sensitivity (Articles 2, 7, 10, 12, and 15).

The TEQ also contains elements that reach a development of sympathy (paragraphs 3, 6, 9 and 11) and altruism (points 5, 14 and 16). Finally, an element detects the frequency of behaviors involving higher-order empathic reactions, such as pro-socialist behavior of help (see paragraph 13). Eight elements are negatively marked (2, 4, 7, 10, 11, 12, 14, 15), reflecting the frequency of indifference of the situation to another individual over the parameters described above. Taken together, these elements represent a wide variety of empathy-related behaviors in the current literature that surrounds this process.

6. Findings

1. It is assumed that hippotherapy, adopted as complementary therapy, helps to develop empathy. (On children diagnosed with TSA, empathy is more deficient thru nonexistent) (Sandu, 2012).

To test the hypothesis, we applied the Toronto empathic test before and after hippotherapy. (Table 01).

Table 01. Paired Samples Test

	Paired Differences						T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1 emp1 - emp2	-3,000	,894	,270	-3,601	-2,399	-11,124	10	,000	

Analyzing the t test data for sampling pairs regarding empathy on children with TSA, before and after the program of hippotherapy, we notice that there are significant differences, $t = -11,124$, at $p = 0.000$, meaning that, the mean of the previous empathy variable before the beginning of the therapy was 12,91 and after the therapy it increased to 15,91. Children with TSA become more empathetic because during the course of their therapy they establish a special relationship with the animal, which allows them to empathize easily in their everyday life.

Hippotherapy assumes and is based on the interaction of consistency with the animal; during therapy the child is encouraged to comfort the horse, to kiss it both through the words and the copying behavior. Also during hippotherapy, the emotional identification of both the child and the therapist, the volunteer and the animal is worked out, with the help of questions such as: "How do you feel? What do you feel?"

In the case of children with language, we also use directed imagery, a method that allows for a deeper analysis of feelings, senses and sounds: "What's that sound? How does fur feel?" All of these elements contribute to the development of the child's empathy with TSA, all the more so, as everything is done in a context lacking the word "no", lacking in criticism and rigidity.

2. It is assumed that engaging the child in various tasks related closely to the horse leads to an increase in the independence level.

In order to verify the hypothesis, we applied the ABAS test before and after the hippotherapy, the resource use scale.

Table 02. Paired Samples Test

	Paired Differences						T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1 the use of resources - R the use of resources	-2,955	1,759	,375	-3,734	-2,175	-7,880	21	,000	

Analyzing t test data for paired samples with regarding the use of resources in TSA children before and after the program of hippotherapy, we note that there are significant differences, $t = -7.880$, at $p = 0.000$, meaning that the mean of the variable use of resources the beginning of the therapy was 4.59 and after therapy it increased to 7.55. (Table 02).

Regarding the use of resources, hippotherapy was aimed in independence development. To this end, the children have been taught and encouraged to brush the horses on their own, to put them water (just to let go of the tap), to give them apples and carrots alone, and to the highest ones even to help horse preparation (equipping). All these activities were done under the care of the therapist and volunteers, and even the smallest gestures were supported by social rewards (good job, very good, you are doing fine). It has been worked with the motto "I don't ask much, but I reward a lot."

It is also noted that is a difference in both the pre-test and post-test, namely: children are mobilized more in the absence of parents, this can be explained by the fact that parents often tend to exaggerate in protecting the child or to compensate for certain elements / situations by offering help that is not required by the child, which makes the child to be served and to mobilize as little

7. Conclusion

The research results have shown that hippotherapy can have beneficial effects on children diagnosed with TSA. Hippotherapy shouldn't be considered as a unique therapy; however, its integration into the therapy programs of children diagnosed with TSA leads to great benefits for them. A therapeutic scenery, in nature, represents an environment full of auditory, olfactory, tactile stimuli, and because it takes place on horseback, we can also introduce the kinesthetic; the child interaction with all these elements helps to desensitize it, and may favor easier integration into everyday life, which is not deprived of any of the above-described stimuli, and on the contrary, they are everywhere. Working with the horse not only produces physical benefits but also has many psychosocial influences. The simple fact that the therapy takes place on a farm in a natural environment and outside the typical therapeutic centers causes additional stimulation. The greatest horse attribute during therapy is that it produces motivation and a tolerant environment. Assisted activities and therapies are not seen by the client as therapy, but also as time spent with the horse.

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