
Utilizing Equine Assisted Therapy and Hippotherapy Potentials on Motor Function of Child With Physical Disability

ANNE MARIE MAKILAN

University of Perpetual Help System-DALTA
Las Piñas City, Philippines

DR. PURITA T. AGCAOILI

University of Perpetual Help System-DALTA
Las Piñas City, Philippines

DR. BENJAMIN C. SIY JR.

ORCID # 0009-0007-0017-3648
University of Perpetual Help System-DALTA,
Las Piñas City, Philippines

Abstract —Three (3) children with cerebral palsy are the participants of this study, which investigated the effects of equine assisted therapy and hippotherapy on the development of motor function in children with cerebral palsy. The study evaluated motor skills, specifically lying and rolling, sitting, crawling and kneeling, standing, walking, running, and jumping, before and after a structured equine-based therapeutic program using a quasi-experimental research approach. Under the supervision of certified therapists and experienced horse handler, the intervention comprised consistent sessions of equine therapy and hippotherapy over a predetermined time frame. Three children with cerebral palsy motor function slightly improved, according to pre- and post-intervention evaluations. Improved lower limb strength, balance, posture, and coordination were noted, indicating that rhythmic and multifaceted horse movement had a beneficial effect on neuromuscular activation and sensory integration, highlighting the necessity of tailored pacing according to the severity of the disease. Based on the findings of the study, the researcher developed the RISE Program. The RISE Program offers a methodical, child-centered approach to using equine therapy and hippotherapy to promote motor development in children with cerebral palsy. To guarantee growth and responsiveness to the child's needs, it places a strong emphasis on goal-setting, therapeutic engagement, and routine assessment. Equine-assisted

therapy and hippotherapy should be incorporated into pediatric rehabilitation programs as supplemental interventions, according to the study. It also emphasizes how beneficial it is to use quasi-experimental study methodologies in therapeutic settings when complete control and randomization might not be possible. In order to give children with cerebral palsy accessible, inspiring, and successful motor therapies, the RISE Program should be implemented in school-based and clinical therapy settings.

Keywords: cerebral palsy, equine therapy, hippotherapy, motor function, therapy

I. INTRODUCTION

A collection of disorders known as cerebral palsy impacts posture and movement. According to the Mayo Clinic, cerebral palsy (CP) is a collection of neurological conditions that manifest in infancy or early childhood and permanently impair muscle coordination and bodily movement. It is brought on by injury to the developing brain, which usually happens before birth. Damage to or anomalies in the developing brain impair the brain's capacity to regulate movement, maintain posture, and maintain balance, which results in cerebral palsy (CP). (National Institute of Neurological Disorders and Stroke) Our children with cerebral palsy have the trait of spasticity. Weakened muscles and poor control over posture.

Children with cerebral palsy (CP) face a wide range of intricate motor and neurological difficulties that influence their posture, balance, coordination, and general level of functional independence. Although conventional therapies are the mainstay of managing cerebral palsy, supplementary approaches have surfaced, providing special advantages and encouraging a comprehensive approach to recovery. Using the tremendous therapeutic potential of the horse's movement and the human-animal link, hippotherapy and the larger range of equine-assisted therapies have become highly recognized, opening up new avenues for children with cerebral palsy to advance.

The horse's unique gait, which functions as a dynamic and multifaceted therapeutic tool, is at the core of many approaches. The rider's pelvis and trunk naturally receive the rhythmic,

repeating, three-dimensional movements of the horse as it walks. Children with cerebral palsy benefit greatly from this motion, which closely resembles the biomechanics of a normal human walk and offers a continuous, graded sensory and motor input. Particularly in hippotherapy, a certified physical, occupational, or speech therapist skillfully guides the horse's motions, modifying the rider's position as well as the horse's pace and direction, in order to produce certain therapeutic effects.

For those with cerebral palsy, horseback riding can be a useful kind of physical rehabilitation in addition to being a pleasurable pastime. Equine treatment or hippotherapy is an additional name for therapeutic horseback riding. The researcher was searching for other ways for her son to be able to walk, and the researcher observed that the imitating skills of his other children were fast. Even though his son could not walk independently, he has balance while riding a horse, which gives the researcher hope.

Although "equine-assisted therapy" and "hippotherapy" are occasionally used synonymously, it's important to understand their different meanings. The main therapeutic modality in hippotherapy is the horse's movement, which is guided by a qualified therapist to accomplish particular functional objectives. It is more about using the horse as a dynamic platform than it is about teaching riding techniques. On the other hand, equine-assisted therapy is a broad term that includes a variety of therapeutic activities involving horses, such as hippotherapy, therapeutic riding, and equine-assisted psychotherapy (using horse interaction for mental and emotional well-being). Both strategies have significant benefits for kids with cerebral palsy; the decision is based on the individual needs of the child and the objectives of the therapist.

Theoretical Framework

A number of related theories from the fields of neuroscience, motor learning, and sensory integration form the foundation of hippotherapy. These theories help explain why and how horseback riding treatment can improve mobility, posture, and functional capacity in children with cerebral palsy (CP), a disorder marked by motor deficits owing to brain injury.

Hippotherapy utilizes the concepts from neuroplasticity, motor learning, sensory integration, and dynamic systems theory. Hippocampal treatment helps kids with cerebral palsy. It offers a dynamic, stimulating experience that promotes the growth of vital motor skills like trunk control, balance, and coordination—areas that are frequently impaired in kids with cerebral palsy.

When it comes to children with cerebral palsy, hippocampal therapy is based on a number of important theoretical pillars. First and foremost, the Neuroplasticity Theory backs up the notion that repeated motor and sensory experiences, like those offered by horseback riding, can help the brain create new neural pathways. Through constant repetition and sensory feedback, the rhythmic and repetitive movements of the horse help children with cerebral palsy improve their posture, balance, and coordination, according to the Motor Learning Theory.

Furthermore, the Sensory Integration Theory introduced by Jean Ayres highlights how hippotherapy aids in the organization and regulation of sensory input, enabling kids to develop their motor skills and body awareness. Last but not least, the Dynamic Systems Theory emphasizes how the child's engagement with the moving horse—a dynamic environment—improves strength, flexibility, and functional movement. These theories work together to explain how hippotherapy helps children with cerebral palsy develop their motor skills and enhance their general functioning.

Statement of the Problem

This study focused on the effects of hippotherapy and equine assisted therapy on individuals with cerebral palsy (CP). Aside from individuals, this study also identified the effects of hippotherapy on the motor skills, balance, and overall quality of life of children with cerebral palsy.

Specifically, it answered to the following questions:

1. What is the score of motor function of the participants prior to the application of the hippotherapy and equine assisted therapy in terms of:

- 1.1 Lying and rolling,

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- 1.2 sitting,
 - 1.3 crawling and kneeling,
 - 1.4 standing, and
 - 1.5 walking, running, and jumping?
2. What is the score of motor function of the participants after the application of the hippotherapy and equine assisted therapy in terms of:
 - 2.1 Lying and rolling,
 - 2.2 sitting,
 - 2.3 crawling and kneeling,
 - 2.4 standing, and
 - 2.5 walking, running, and jumping?
3. Is there a significant difference in the score of motor function of the participants after the application the hippotherapy and equine assisted therapy in terms of:
 - 3.1 Lying and rolling.
 - 3.2 sitting,
 - 3.3 crawling and kneeling,
 - 3.4 standing, and
 - 3.5 walking, running, and jumping?
4. What proposal can be created based on the results on the application of hippotherapy and equine therapy among children with cerebral palsy?
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II. METHODOLOGY

The researcher used the Gross Motor Function Measure (GMFM) is an observational clinical tool designed to evaluate change in gross motor function in children with cerebral palsy. The research design utilized was the quasi-experimental. The purpose of the quasi-experimental research was to evaluate the intervention. The study evaluated the effects of the independent variable, if any, on the dependent variable. Given that the researcher examined what, who, and how much of the issue, it was reasonable to employ a quantitative approach, which also gives the researcher access to distinct predictors and outcome variables. The researcher was able to determine the current state of the previously discussed topic thanks to the descriptive study approach. As such, quantitative research is also well-suited for comparison between participants and results may explain a dependency relationship among the perception respondents of information-based teaching resources and the factors influencing factors of information-based teaching. In a quantitative study, the researcher emphasized the objective measurements, and quantitative studies consist of a numerical analysis of the data to predict behavior (Castellan, 2010). Quantitative research is the key method for establishing empirical links, as stated by Stockemer (2017). In addition, McCombes (2019), opined that descriptive research aims to accurately and methodically describe a population, circumstance, or phenomena. It can tell you what, where, when, and how things are done, but not why. The problem at hand is well-suited to the rigor and objectivity of a descriptive research approach, which is what this study employs. This approach tended to emphasize the "what" of the research topic more than the "why" of the topic. Data tabulation is only the beginning of the descriptive research process.

Population and Sampling Technique

The researcher utilized the purposive sampling technique in determining the sample size of the population. The respondents were three (3) students who were diagnosed with cerebral palsy. In accordance with the inclusion criteria, the participants were selected, enrolled at Happy Beginners School of Learning Inc., students must be between 4.8 to 15 years old and students must

be diagnosed with cerebral palsy. Participants were assessed using both standardized and non-standardized tests.

Respondents of the Study

This study was limited to three (3) selected students enrolled at Happy Beginners School of Learning Inc. Three (3) of the students were diagnosed with cerebral palsy. The participants were chosen based on the inclusion criteria, namely: (a) enrolled at Happy Beginners School of Learning Inc. (b) students must be between 4.8 to 15 years old and (c) students must be diagnosed with cerebral palsy. Participants were assessed using both standardized and non-standardized tests. The participants were assessed depending on their time and availability.

Data Gathering Procedure

The data collection process for the study on determining the effect of Equine Assisted Therapy and Hippotherapy on Postural Awareness, Motor Planning, Vestibular Function and Concentration in Individual with Special Needs among the students of Happy Beginners School of Learning Inc. commences with composing and presenting a formal letter requesting authorization to carry out the research to the School Directress. This step guaranteed compliance with administrative norms and obtains the required authorizations to proceed with the study in the school environment. After obtaining approval, the subsequent stage entails seeking informed consent from the parents of the prospective child participants, which is very essential because it upholds their independence and recognizes their voluntary involvement in the study, thereby ensuring the maintenance of ethical standards. After obtaining consent, the process of collecting data begins by conducting Pre-test to the identified participants. The pre-test is conducted by the occupational therapist and physical therapist using a standardized assessment tool. The gathered data is methodically collected and compiled. This entails the arrangement of the responses and their preparation for analysis, with the aim of guaranteeing precision and dependability in the succeeding phases of the research. The last phase in the process of collecting data involves the examination

and comprehension of the data. By employing statistical methods and descriptive analytic methodologies, the data is scrutinized to derive significant insights and conclusions on the effect of Hippotherapy on the postural awareness, vestibular function, motor planning and concentration of children with special needs enrolled at Happy Beginners School of Learning Inc. This stage serves the purpose of not only emphasizing important discoveries but also pinpointing possible areas where action may be taken, thereby providing direction for enhancement of Hippotherapy. During the final stage, the researchers utilized the integrated analysis to develop significant conclusions. The conclusions led to specific recommendations for improving Hippotherapy. This thorough data collection process, including ethical considerations, collaborative conversations, and integrated analysis, provided vital insights to the wider discussion on the effect of Hippotherapy on the postural awareness, vestibular function, motor planning and concentration of children with special needs enrolled.

Summary of Findings

1. Majority of the three (3) children with cerebral palsy have a very low score in terms of motor function Lying and rolling, sitting, crawling and kneeling, standing, and walking, running, and jumping prior to the application of hippotherapy and equine therapy.
2. Majority of the children with cerebral palsy who has undergone hippotherapy and equine therapy has none to slight improvement in their motor function as to lying and rolling, sitting, crawling and kneeling, standing, and walking, running, and jumping.
3. There is a slight difference in the score of motor function on the children who had undergone hippotherapy and equine therapy for at least 3 consecutive sessions.
4. The researcher was able to propose the RISE program intended to help improve the motor function of a child with cerebral palsy.

III. CONCLUSIONS

Based on the findings of the study the following conclusions were made.

1. Prior to receiving hippotherapy and equine therapy, the baseline assessment shows that most of the three children with cerebral palsy had very low scores in core areas of motor function, lying and rolling, sitting, crawling and kneeling, standing, and walking, running, and jumping. This points to a significant delay in the development of gross motor abilities, which are necessary for autonomous mobility and productive engagement in day-to-day activities. The poor performance suggests that these children with cerebral palsy will probably continue to struggle with balance, postural control, and physical coordination in the absence of suitable and specialized assistance. The importance of treatment programs like equine therapy and hippocampal stimulation, which aim to improve motor planning, strength, and balance, is highlighted by this preliminary finding.
2. After receiving hippotherapy and equine therapy, most of the children with cerebral palsy showed no improvement or only minor improvements in their motor skills, particularly in the areas of sitting, crawling and kneeling, standing, walking, running, and jumping, as well as lying and rolling. Even though there was no change, it is possible that not all children may benefit from these therapies' short-term exposure in terms of gross motor development. The results could have been affected by variables like the severity of the ailment, the length and frequency of therapy sessions, and the individual's receptiveness to intervention. This suggests that in order to optimize the potential advantages of hippotherapy and equine therapy for children with cerebral palsy, a more thorough, prolonged, or customized therapeutic strategy is required.
3. Children with cerebral palsy who received at least three consecutive sessions of hippotherapy and equine therapy showed a modest difference in their motor function scores, indicating that although some beneficial changes took place, the short-term effects were negligible. Although this modest increase suggests that these interventions have the potential to improve motor abilities, it also shows that more sustained and regular intervention may be necessary to achieve significant gain. The results highlight the need for long-term therapy, customized plans, and continuous monitoring to fully realize the therapeutic benefits of hippotherapy

and equine therapy, suggesting that three sessions may not be enough to produce significant motor function gains in children with cerebral palsy.

4. Based on the study's results, the researcher created the RISE program, an intervention created especially to help children with cerebral palsy improve their motor skills. In order to improve fundamental motor abilities like posture, balance, coordination, and movement, the RISE program incorporates focused exercises and therapy approaches. Its creation represents a major advancement in the direction of a more thorough, long-term, and scientifically supported method of meeting the physical requirements of kids with cerebral palsy.

IV. RECOMMENDATIONS

1. In order to improve fundamental motor abilities like posture, balance, coordination, and movement, the RISE program incorporates focused exercises and therapy approaches. Its creation represents a major advancement in the direction of a more thorough, long-term, and scientifically supported method of meeting the physical requirements of kids with cerebral palsy.
2. The RISE Program is encouraged to be implemented by educational institutions, therapy centers, and rehabilitation clinics as an additional intervention, particularly for kids who do not make much progress with conventional therapy alone.
3. Physical therapists, occupational therapists, and qualified horse therapy specialists must be considered to be part of the multidisciplinary team that delivers the program. To evaluate results and modify techniques appropriately, the program should have regular assessments and progress tracking.
4. In order to establish a stable and encouraging environment that supports the child's development outside of therapy sessions, parental involvement and community support should also be encouraged.
5. Establishing collaborations with licensed horse therapy institutes must be encourage to be funded and supported by stakeholders, such as schools, NGOs, and local government

entities. To keep the program running for a long time, grant writing and fundraising initiatives can also be undertaken.

6. Results from brief exposure (two to three sessions, for example) can be modest. Consequently, it is advised to attend 8–12 regular sessions spread out over a few weeks in order to attain quantifiable gains in postural stability and gross motor abilities.

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