

Electronic Thesis and Dissertation Repository

---

8-12-2021 9:00 AM

## The Psychosocial and Physical effects of Therapeutic Horseback Riding for Children with Cerebral Palsy

Karen M. Pratt, *The University of Western Ontario*

Supervisor: Brunton, Laura K., *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Master of Science degree in Health and Rehabilitation Sciences

© Karen M. Pratt 2021

Follow this and additional works at: <https://ir.lib.uwo.ca/etd>



Part of the [Physical Therapy Commons](#)

---

### Recommended Citation

Pratt, Karen M., "The Psychosocial and Physical effects of Therapeutic Horseback Riding for Children with Cerebral Palsy" (2021). *Electronic Thesis and Dissertation Repository*. 8011.  
<https://ir.lib.uwo.ca/etd/8011>

This Dissertation/Thesis is brought to you for free and open access by Scholarship@Western. It has been accepted for inclusion in Electronic Thesis and Dissertation Repository by an authorized administrator of Scholarship@Western. For more information, please contact [wlsadmin@uwo.ca](mailto:wlsadmin@uwo.ca).

## Abstract

**Background:** Participation in specialized adapted activities such as therapeutic horseback riding (THR) is critical for children with cerebral palsy (CP) as they are at increased risk for lower habitual physical activity levels, social exclusion and mental health conditions. The benefits of THR for children CP are unclear despite positive anecdotal evidence.

**Purpose:** The aim of the study is to explore the effects of THR participation for children with CP across multiple domains of health (psychological, social and physical) from the perspective of the children themselves. Specifically, this study explored overall wellbeing including mental health, perceived independence, social inclusion and presence of fatigue and pain in children with CP.

**Method:** This was an embedded mixed method design with qualitative interview data being the primary data collection method and quantitative survey data being the secondary data collection method. More specifically a phenomenological inquiry was used to collect, analyze and interpret the qualitative data.

**Results:** A central overarching theme addressing the connection with the horse and six subthemes classified using the “6- F’s of childhood disability” were found. **Conclusions:** The social and emotional connection with the horse is the aspect of participation in THR that has the greatest impact across multiple domains of health for children with CP.

Clinicians can make informed PA participation recommendations for their clients with CP and help families better understand how THR can impact multiple domains of health through the connection with the horse.

**Keywords:** Children, Pediatrics, Therapeutic Horseback Riding, Participation, Cerebral Palsy, Adapted PA

## Summary For Lay Audience

Many children with physical disabilities participate in therapeutic horseback riding programs and there are reportedly many health benefits to this activity. However, there is a lack of research evidence to support these anecdotal claims, especially in psychological and social outcome areas. We studied the effects of participation in a 9 to 12 week therapeutic horseback riding program for children with cerebral palsy focussing on three aspects of health functioning; psychological, and social and physical. Specifically, looking at overall wellbeing, social inclusion, fatigue and pain levels, social inclusion and perceived independence in daily life activities. A mixture of questionnaires and interviews were used to best capture these factors, which have not been previously studied. Children aged 5 to 12 years with a primary diagnosis of cerebral palsy who were participating in a therapeutic horseback riding program in Fall 2020 were recruited from two therapeutic riding centres in Southwestern Ontario. The children completed an electronic questionnaire at two separate time points and participated in a virtual interview after the 9 to 12 week therapeutic riding program, parental input was welcomed. The interviews were analyzed for common elements and these were organized into themes. A central overarching theme addressing the connection with the horse and six subthemes classified using the “6- F’s of childhood disability” were found. The social and emotional connection with the horse is the aspect of participation in THR that has the greatest impact across multiple domains of health for children with CP. From the results of this study, clinicians can make informed PA participation recommendations for their clients with CP and help families better understand how THR can impact multiple domains of health through the connection with the horse.

## Dedication

This thesis is dedicated to all the riders I have coached, thank you for your continued inspiration, the findings of this thesis are for you.

This is also for Wyatt, the most special therapy horse. Thank you for changing our lives.

## Acknowledgments

I would like to express my gratitude to the children and their parents who made this study possible. It has been such an honor to share your experiences and use your words to further understand the impacts of this activity to help benefit many other children. Through this study, I was able to give those children who have impacted my life so much a voice, and this is my way of saying thank you for all that I have learned and continue to learn from you. Thank you to the staff at SARI and WETRA who were so willing to facilitate recruitment in our study and remained in communication with us throughout the many closures due to the pandemic. It is my hope that this study sparks future research in this area and that we can continue to further explore the magic of horses as healers and use that knowledge to help more children with disabilities across all aspects of their lives.

Many thanks to my wonderful mother who encouraged me and supported me to pursue graduate studies is always there to listen. Thank you, Mom for always supporting my endeavors and encouraging me to follow my dreams and follow in Dad's footsteps. Thank you, Garrett for all your support and for encouraging me through many late nights of reading, writing and scoring. Thank you to my beautiful horse, Pippa and my ever enthusiastic Labrador companion, Hayla for always being ready for cuddles.

Thank you to Dr. Laura Brunton for your constant guidance and support throughout this project and through a global pandemic no less! I am so thankful for the opportunity to have worked with you for the past two years, I have learned so much and feel so well prepared for my steps in the academic world. I still can't believe that I got to do my masters' thesis on horseback riding and it is because of you that this became reality! I would like to acknowledge my advisory committee, Dr. Marnie Wedlake and Dr. Jessie Wilson, your guidance and expertise is very much appreciated.

# Table of Contents

<b>Abstract</b> .....	<b><i>i</i></b>
<b>Summary For Lay Audience</b> .....	<b><i>ii</i></b>
<b>Dedication</b> .....	<b><i>iii</i></b>
<b>Acknowledgments</b> .....	<b><i>iv</i></b>
<b>Table of Contents</b> .....	<b><i>v</i></b>
<b>List of Tables</b> .....	<b><i>vii</i></b>
<b>List of Figures</b> .....	<b><i>vii</i></b>
<b>Chapter 1: Introduction</b> .....	<b><i>1</i></b>
<b>Chapter 2: Literature Review</b> .....	<b><i>2</i></b>
Cerebral Palsy & the International Classification of Functioning, Disability and Health .....	<b><i>2</i></b>
Physical Activity & Participation .....	<b><i>3</i></b>
Mental Health and Wellbeing.....	<b><i>5</i></b>
Fatigue, Pain and Independence.....	<b><i>6</i></b>
Social Exclusion .....	<b><i>8</i></b>
Therapeutic Horseback Riding .....	<b><i>8</i></b>
Qualitative Interview Methods.....	<b><i>11</i></b>
<b>Chapter 3: Methodology &amp; Methods</b> .....	<b><i>13</i></b>
Situating Myself in the Research .....	<b><i>13</i></b>
Study Design Rationale.....	<b><i>16</i></b>
Qualitative Methodology .....	<b><i>16</i></b>
Paradigm.....	<b><i>17</i></b>
Quality Criteria.....	<b><i>17</i></b>
Method .....	<b><i>19</i></b>
Research Objectives .....	<b><i>19</i></b>
Inclusion Criteria .....	<b><i>19</i></b>
Sample Size .....	<b><i>20</i></b>
Recruitment .....	<b><i>21</i></b>
Data collection methods .....	<b><i>21</i></b>
Measures .....	<b><i>23</i></b>

Horseback Riding Protocol .....	24
Data Management .....	24
Data Analyses .....	25
Modifications to Study Procedure due to COVID-19 .....	26
<b>Chapter 4: Results .....</b>	<b>28</b>
Participants.....	28
Overarching theme: Connection/ Bond with Horse .....	30
Theme 2: Fun .....	34
Theme 3: Feelings (happy, proud confidence, anticipation) .....	36
Theme 4: Function & Fitness: Subthemes of sensation, fatigue .....	40
Theme 5: Family.....	42
Theme 6: Friends (social).....	45
Theme 7: Future (independence).....	47
<b>Chapter 5: Discussion .....</b>	<b>49</b>
5.1 Connection to the Horse .....	49
5.2 Fun .....	53
5.3 Function and Fitness.....	55
5.5 Family .....	58
5.6 Friends .....	60
5.7 Future .....	61
5.8 Strengths of the Study .....	62
5.9 Limitations of the Study.....	63
5.10 Future Directions .....	64
5.11 Conclusions .....	65
<b>References .....</b>	<b>66</b>
<b>Appendices .....</b>	<b>74</b>
Appendix A: Horseback Riding Journal .....	74
Appendix B : Semi-Structured Interview Guide.....	76
Appendix C – Documentation for Verbal Consent to be Contacted .....	78
.....	78
Appendix D- Letter of Information and Consent Form (Parent).....	80
Appendix E – Letter of Information and Consent Form (Child) .....	82
Appendix F – Email Script for Recruitment.....	85

<b>Appendix G – Follow-up Email Script .....</b>	<b>86</b>
<b>Appendix H – Assent Form .....</b>	<b>87</b>
<b>Appendix I – Western Ethics Approval Letter .....</b>	<b>89</b>
<b>Appendix J – PROMIS Pediatric Profile .....</b>	<b>90</b>
<b>Appendix K – Fatigue Impact and Severity Self-Assessment.....</b>	<b>93</b>
<b>Appendix L- Youth Pain Questionnaire .....</b>	<b>96</b>
<b>Appendix M- Academic CV .....</b>	<b>97</b>

## List of Tables

Table 1- Individual Participant Characteristics .....	28
Table 2: Baseline & Follow-up Scores of Survey Data. ....	28

## List of Figures

Figure 1: The International Classification of Functioning, Disability and Health .....	3
Figure 2: Diagram of Themes, Size of the arrow corresponds to the importance of the theme .....	30
Figure 3. Noah’s journal drawing of a cheetah trot.....	34
Figure 4 Word Cloud of Most Commonly Stated Words.....	37
Figure 5. Noah's journal drawing "Happy" .....	38



## Chapter 1: Introduction

The objective of this thesis was to explore how participation in therapeutic horseback riding (THR) impacts children with cerebral palsy (CP) across multiple domains of health (psychological, social and physical). Specifically, exploring overall wellbeing including mental health, perceived independence and social inclusion as well as the presence of fatigue and pain, in children with CP. These outcomes are previously undocumented in the literature on THR for this population. Identification of which factors within these domains that have the greatest impact for children with CP may allow clinicians to make more informed recommendations for physical activity (PA) participation for their clients with CP and also allow for families to make more informed choices for their children. Furthermore, having a clear understanding of the full scope of psychosocial and physical benefits would enable service providers of THR programs to be able to better serve their clients by designing and implementing programs to better suit their clients' needs. This thesis used an embedded mixed-methods approach (Creswell & Clark, 2017) that was designed to understand the effects of participation in a THR program. The experience of THR from the children's perspectives was explored in a semi-structured interview focussing on the psychological and social aspects and analyzed using an interpretive phenomenological approach (van Manen, 1997). Physical outcomes of pain and fatigue and general wellbeing were measured with validated scales for this population at two time points. It is critical to understand how specialized adapted activities like THR can impact children with CP as it has been demonstrated that the promotion of preferred, meaningful and adapted physical and leisure activities by health care practitioners, can enrich everyday experiences and foster overall quality of life for this population (Shikako-Thomas et al., 2009 & 2012).

## Chapter 2: Literature Review

### *Cerebral Palsy & the International Classification of Functioning, Disability and Health*

“Cerebral palsy describes a group of permanent disorders of the development of movement and posture, causing activity limitations, that are attributed to non-progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of CP are often accompanied by disturbances of sensation, perception, cognition, communication, behaviour, by epilepsy and by secondary musculoskeletal problems” (Rosenbaum et al., 2007 p.9). CP is one of the most common causes of childhood disability, with a world-wide prevalence of 2.11 per 1000 live births (Oskoui et al., 2013). As indicated in the above definition, the primary disability associated with CP is motor impairment. As a result of this motor impairment, children with CP are at risk for reduced habitual PA and increased sedentary time (Verschuren et al., 2016). PA is vital for optimal physical, emotional, and psychosocial development of all children (Verschuren et al., 2016). Finding ways to increase PA participation and decrease sedentary time is critical for health promotion in this population to reduce functional loss early in life. THR is an adapted PA that can increase weekly habitual PA levels in an enjoyable way. Additionally, due to the unique environment with horses, participation in THR enables children to explore social and emotional connections with others and to build confidence which may impact overall wellbeing.

The World Health Organization’s International classification of Functioning, Disability and Health (ICF) provides a framework and standard language for the description of health and health-related states. The domains are described from the perspective of the body (classification of body functions and body structures), and the individual (classification of activities and participation) and context (classification of environmental and personal factors). The ICF provides a conceptual model (see Figure 1) that encompasses an individual’s health condition and factors related to body function and structure, daily living activities and participation in social activities and other relationships). Activities are defined as the execution of tasks or actions by an individual and participation is defined as involvement in a life situation. Activities are measured in terms of capacity when the person is in an ideal situation and is performing at their best; for example in a physiotherapy gym. Participation is measured in terms of performance

or what a person ordinarily does in their everyday life. Furthermore, one can think of activities in terms of what a person “can do” in the right set of circumstances vs. participation being what a person “actually does” in everyday life situations that are meaningful to them (WHO, 2002). The ICF encourages users to consider and evaluate these domains in relation to environmental factors and personal factors, which could have either a positive or a negative influence on the impact of the disability in question. (ICF, 2002) The ICF provides a holistic view of health that is dynamic and interconnected, drawing from the broader social ecological context rather than a traditional biomedical viewpoint where the health condition is central to the model. There is no hierarchy, all areas impact each other, meaning that a change in any of the areas may potentially have effects anywhere in the system (Rosenbaum & Gorter 2016).

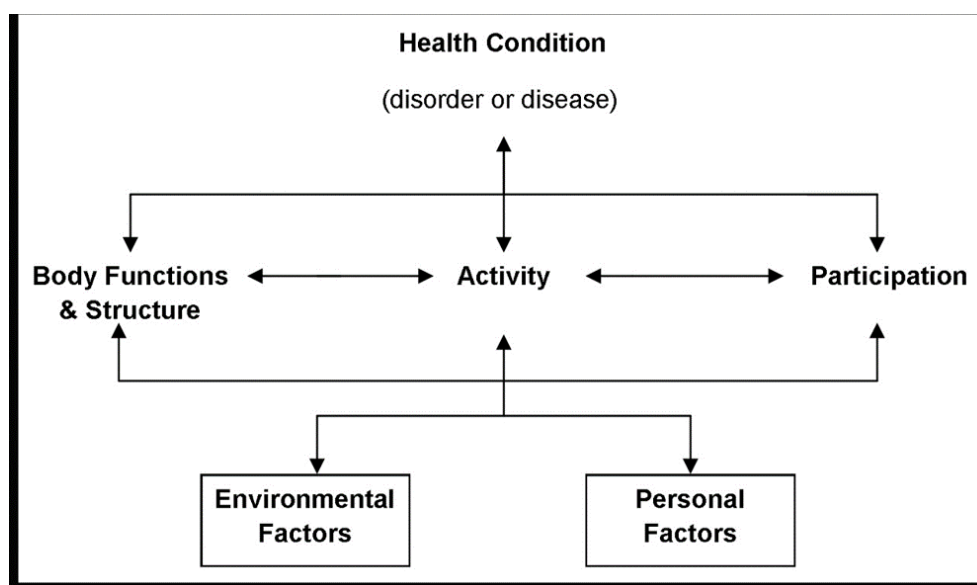


Figure 1: The International Classification of Functioning, Disability and Health

### *Physical Activity & Participation*

PA is necessary for the optimal physical, emotional and psychosocial development of all children (Vershuren et al., 2016). For children with CP, engagement in regular PA can reduce the risk of developing secondary conditions such as muscle weakness and reduced cardiovascular fitness (Fowler et al., 2007). The widely accepted biomedical definition of PA is “bodily movements resulting in energy expenditure

(Caspersen, Powell, & Christenson, 1985, p. 126). However, Ross (2016) offers a different definition that takes into account the multidimensional perspective of physical performance and subjective perception of participation for children and children with disabilities. “Childhood PA should be discussed and defined as the subjective experience of meaningful engagement in activity opportunities (e.g., school/community sports, free/recreational play) that are shared with others (e.g., family, peers, and friends)” (Ross et al., 526). Children with CP are at risk for reduced habitual PA levels, decreased cardiovascular fitness and increased sedentary time (Vershuren et al., 2016). Finding ways to increase PA participation and decrease sedentary time is critical for health promotion in this population. Choosing activities that are developmentally appropriate, enjoyable, varied (Vershuren et al., 2016) and that involve the child in the decision of what they are going to do are potential strategies to encourage overall participation in PA (Lauruschkus et al., 2015). Children with CP prefer PA that is fun and done with family, friends or animals (Lauruschkus et al., 2015). Furthermore, when PA is fun, getting tired is not seen as a negative experience as it is perceived with other types of fatigue that they experience daily (Lauruschkus et al., 2015). A multidimensional approach is needed to gain more meaningful interpretations of PA for children with disabilities. Exploring and creating a comprehensive picture of PA experiences and patterns will help to guide and support subsequent intervention strategies for increasing PA at the individual and population level (Ross et al., 2016). However, more research that assesses the impact of PA across all domains of the ICF with a particular focus on participation outcomes is needed. Furthermore, additional studies should examine whether improved physical fitness enables children with CP to increase their participation and to experience greater overall wellbeing during their daily lives (Fowler et al, 2007).

An essential part of an effective PA or rehabilitation intervention plan is for health professionals to understand the multitude of factors that are associated with successful participation (Rimmer, 2006). The ICF is a useful tool to identify key elements that affect participation for people with disabilities in various types of PA or rehabilitation programs (Rimmer, 2006). Therapy using horseback riding for children with CP has the potential to create impacts on outcomes at all levels of the ICF (Snider et al., 2009). A systematic review by Snider et al., (2009) found that no studies addressed

participation as an outcome despite how important it is to function and health. It is therefore critical to understand how specialized adapted PA like THR can impact children with CP as it has been demonstrated that the promotion of preferred, meaningful and adapted physical and leisure activities by health care practitioners, can enrich everyday experiences and may foster overall quality of life for this population (Shikako-Thomas et al., 2009 & 2012).

### *Mental Health and Wellbeing*

Children with CP have lower social participation and fewer social relationships (Michelsen et al., 2014); which may contribute to poorer mental health outcomes. Whitney et al., (2018) documented the prevalence of mental health disorders in children aged 6 to 17 years with CP. The authors found that children with CP had a higher prevalence of and risk for developing mental health disorders compared to children without CP even when accounting for PA, sleep duration and pain. Children with CP face challenges in participation in their everyday lives due to the barriers in the physical, social and institutional environments. Petrenchik et al., (2011) found that positive participatory experiences in social activities for children and youth provide an opportunity for belonging and acceptance. Positive participatory experiences provide a buffer to the effects of the challenges children with CP face in their daily lives (Petrenchik et al., 2011). Psychosocial benefits of participation in out- of- school activities are opportunities for social involvement and offer the opportunity to improve self-esteem, self-image, and enhance overall wellbeing and quality of life (Petrenchik et al., 2011). Participation in THR could be a way to provide a positive experience in the lives of these children by offering them a safe, accessible and enjoyable opportunity to engage in PA. It is important to learn about which aspects of participation are most effective for promoting mental and emotional health and providing protective or preventative factors for mental illness among various groups of children with disabilities.

Participation in leisure activities is essential for the development of skill competencies, socializing with peers, exploring personal interests and simply enjoying life. Children with CP have demonstrated a preference for leisure activities that are social and recreational (Majnemer, 2009). Additionally, promotion of preferred activities has been shown to be important for child centered practice (Majnemer, 2009). A cross-

sectional study of young people with CP found that PA participation was positively associated with overall health-related quality of life including physical, social and psychosocial functioning and happiness (Maher, Toohey & Ferguson, 2016). The Maher (2016) study was the first to show a positive relationship between PA and happiness in this young population. Although more research is needed in this area, these findings indicate that PA could be critically important for maximizing wellbeing for youth with CP.

A cross-sectional study of school aged children with CP explored the association between participation in leisure activities and QOL through parent-proxy report (Shikako-Thomas et al. 2012). Participation in leisure activities may impact mental and physical health, develop competencies and form lasting meaningful friendships and relationships. Shikako-Thomas et al., (2012) found a positive association between engagement in PA and both physical and psychosocial wellbeing. Personal and environmental factors as well as the severity of motor impairment may mediate this association between leisure time participation and quality of life; however, more research is needed in this area. In a qualitative inquiry, adolescents with CP shared that they want to have the opportunity to communicate their perspectives on quality of life and to undertake activities that they value and want to do (Shikako-Thomas et al., 2009). Finally, the promotion of meaningful and adapted leisure activities that are appropriate to the child's skills and preferences may foster quality of life of school aged children with CP (Shikako-Thomas et al. 2012).

#### *Fatigue, Pain and Independence*

There is little research available on fatigue in children with CP, which highlights the need to explore fatigue from the perspective of individuals themselves. Brunton & Bartlett (2013) used a phenomenological approach to explore the experience of pain and fatigue in adolescents and young adults with CP. The inclusion of an age range of adolescents from 15 to 24 years and varying levels of gross motor function level allowed for the multiple and varied voices of the adolescents to be heard. Self-awareness was the most essential theme that emerged in the Brunton & Bartlett (2013) analysis as well as the variability of the experience of living with CP. The participants described being able to withstand fatigue if the activity was fun and enjoyable therefore, fatigue management

needs to become part of clinical care plans as early as possible to determine individual strategies for managing fatigue to maximize participation throughout the lifespan (Brunton & Bartlett, 2013). No studies have investigated the relationship between fatigue and THR in children with CP.

Pain is the most common comorbidity in CP and negatively affects quality of life, participation and wellbeing in children and young people (Fairhurst et.al, 2018.). In children with CP, pain has been associated with social problems, school absence, reduced ambulation, more days spent in bed, low PA and depression (Tedroff, Gyllensvard and Lowing, 2019). Pain occurs across all gross motor function levels and is known to change with age in children, young adults and adults (Fairhurst et al., 2018). Tedroff et al., (2019) found that pain was a very common problem for young children with CP aged 5 to 10 years, and that children report the presence of pain and pain interference with everyday life activities. Pain appears to be both under-diagnosed and under-treated in CP and strategies to reduce pain are often absent or inadequate (Tedroff, Gyllensvard and Lowing, 2019). In the study by Lauruschkus et al., (2015) children identified that they want to be more physically active but noted that they experienced pain and fatigue as barriers to participation in PA, and therefore treating these difficulties should be prioritised. Findings from a qualitative study of adults with CP who participated in hippotherapy indicated that a benefit of participation was pain relief (Debuse, Gibb & Chandler, 2009). Efforts to prevent and treat pediatric pain-related conditions are needed (Tedroff, Gyllensvard and Lowing, 2019). To date, no studies in THR have specifically reported on pain-related outcomes for children with CP.

There is little to no research available on the impact of PA on independence in daily life activities in children and youth with CP. Independence can be measured as a functional independence construct ranging from complete independence to complete assistance across three domains: self-care (feeding, bathing, dressing, toileting), motor (transfers, locomotion, stairs) and cognition (language comprehension, social interaction, memory) (Msall et al., 1994). In a qualitative study, Laurushkus, Nordmark & Hallstrom (2017) interviewed parents on their perceptions of their child's participation in PA and the main theme was "protecting and pushing towards independence". The parents described wanting their children to become as independent as possible in life and to achieve this

they turned to participation in PA. Competent, knowledgeable adults in their children lives were seen as facilitators of independence in activities including PA (Laurushkus, Nordmark & Hallstrom, 2017). The literature on independence is very limited, especially in relation to children with CP, and there is no literature regarding independence and THR. Anecdotally, riding a horse provides a sense of freedom; perhaps participation in THR and gaining independence in riding skills could assist in the development of independence that could be translated to other areas of life.

### *Social Exclusion*

Children with CP often have fewer reciprocated friendships, lower social status and are more isolated and bullied by their peers than children without a disability (Nadeau & Tessier, 2006). Furthermore, Lindsay and McPherson (2012), identified that children with CP in a school setting often experience bullying from both peers and teachers. The presence of a minimum of one reciprocal friendship has been shown to reduce feelings of loneliness and isolation (Nadeau & Tessier, 2006). Therefore, it is of great importance to provide opportunities for friendships for children with CP as it contributes to overall wellbeing (Shikako-Thomas et al., 2012). Clinicians should encourage children with CP to participate in recreation and extracurricular activities (within their ability) to foster socially inclusive opportunities for friendships (Lindsay & McPherson, 2012).

### *Therapeutic Horseback Riding*

THR is a recreational activity designed to enhance the cognitive, social, emotional and physical wellbeing of people with disabilities through riding a horse (Stergio et al., 2017). This is different from hippotherapy which is the use of the movement of the horse as a therapy. Hippotherapy is implemented by a health professional with specialized training to address specific therapy goals for individuals with disabilities (Stergio et al., 2017). Stergio et al., (2017) provide a thorough overview of the current research in a systematic review and meta-analysis. There are a significant number of studies that discuss the positive impacts of THR especially relating to physical health outcomes such as: measures of gross motor function, fine motor function, balance, posture, gait, muscle symmetry, and pelvic movement (Stergio et al., 2017). The authors concluded that generally THR and hippotherapy have a positive impact on children with CP even though



the effects may be of small magnitude (Stergio et al., 2017). It is likely that with longer durations of intervention, more gains in gross motor function can be observed (Whalen & Smith, 2012). Most studies conducted to date have focused on a specific area of functioning (physical, social or psychological) and there are few that explored the effects of THR across all domains of functioning (Boyd & Le Roux, 2017). Furthermore, there are very few studies that have assessed the psychosocial outcomes for children with CP (Stergio et al., 2017) and none specifically addressing mental health outcomes (Boyd & Le Roux, 2017).

There is a lack of consistency in studies about THR in terms of length of program, duration, measures, age group and use of age matched control groups making it very difficult to compare results or draw conclusions from the available research. Additionally, studies have largely depended on parental proxy reports (Mackinnon et al., 1995; Davis et al., 2009; Boyd & Le Roux, 2017), and none have addressed the impact of THR from children's perspectives. Sample sizes are typically very small (n=2-19) leading to non-significant findings on certain quantitative measures, despite positive anecdotal feedback (MacKinnon et al., 1995; Stergio et al., 2017; Davis et al., 2009). Davis et al., (2009) attempted to demonstrate the benefits of THR for children with CP addressing some of these issues using a randomized control trial, with a larger sample size, defined measures, a riding programme protocol and measuring the psychosocial construct of quality of life. Unfortunately, the Davis et al., (2009) study found no effect for any of the quality of life or health measures which is inconsistent with anecdotal evidence of parents in their study and other anecdotal reports. Despite best attempts, Davis et al., (2009) still did not have an adequately powered study and had issues with attrition and adherence to the intervention further limiting the ability to draw conclusions. Rosenbaum (2009) provided an excellent commentary on the study by Davis et al., (2009) and offered an encouraging perspective on the disappointing results of that study. The authors and Rosenbaum identify that measuring changes in complex constructs like quality of life is very challenging as it may be a relatively stable phenomenon. The quality of life measures used in the Davis study were likely not sensitive to change especially in the population of children. Even with no apparent measurable benefits, Rosenbaum (2009) concluded that it does not mean that there are no benefits to THR. Any changes in

participation in these children's lives is positive and the importance of having fun while increasing participation has a value that cannot be understated. Rosenbaum suggested that a useful follow-up would be a qualitative study with both parents and young people (separately) to understand what aspects of the experience had the most impact on the youth.

Another limitation of the THR evidence is that findings have not been considered in the context of the World Health Organization's ICF model (2001) (Rosenbaum, 2009). The ICF model challenges clinicians to think beyond impairments in body function and structure as well as provides a holistic view of health that is dynamic and interconnected taking into account the broader social ecological context (Rosenbaum & Gorter, 2016) In the case of THR there might be benefits that have not been thought about and therefore have not been measured (Rosenbaum, 2009). Within the ICF model, participation is one of the goals of life and the model may provide perspective on elements of participation that are important in THR. It is therefore important to use a combination of methods, such as qualitative interviewing techniques with children and parents, along with quantitative outcome measures to provide additional insights into which aspects of THR have the most impact on children's lives (Boyd & Le Roux, 2017; Davis et al., 2009) across numerous domains. Lessons learned from a qualitative inquiry would help practitioners understand why this type of intervention seems to make a difference in the lives of children and youth with CP (Rosenbaum, 2009). For example "When he's up there, he's just happy..." was an exploratory qualitative study conducted by Boyd & Le Roux (2017) in South Africa about parents' of children with disabilities and their perceptions of their child's participation in THR. Parents reported that their children experienced benefits from THR participation in physical, psychological and social areas and they experienced no negative effects. The authors presented evidence of increased confidence, independence, walking ability, happiness, academic achievements, bonding with the horse, and more confidence for social interactions. The Boyd and Le Roux (2017) study provided preliminary qualitative evidence on the perceived benefits of THR for children with disabilities, but this needs to be expanded to include the children's voices.

### *Qualitative Interview Methods*

The UN Convention on Rights of the Child article 12 states that children not only have a right to articulate their opinions with regard to issues which affect them but have a right to have these opinions heard (Davis, 1998). A growing body of literature positions children as viable, competent, expert research participants whose perspectives on issues that affect their daily lives are important and different from their parents (Teachman & Gibson, 2013). There are a variety of children's voices across cultures, and it may be possible to attribute equal value to these voices through qualitative research methods that enable researchers to reflexively question their presence in children's worlds (Davis, 1998). It is important to always think of the ethics of working with a vulnerable population and protecting the child through processes of informed consent and confidentiality (Davis, 1998). Teachman and Gibson (2013) identified three key aspects of child-interview methodological approaches for children with disabilities: collaboration with parents, a toolkit of customizable interview techniques, and strategies to consider the power differential inherent in child-research interactions. Some suggested interview methods that can be used in interviews with children include: role play with puppets, vignettes about an imaginary child who has CP, cartoon captioning, photographs and sentence starters (Teachman & Gibson, 2013). Teachman and Gibson (2013), found that having this toolkit available facilitated dynamic interaction and rich information exchange as well as created a safe space for children to share their views and introduced a level of "fun" in the interview. Additionally, conducting the interviews at the child's home could be a way to create rapport, address power differentials, observe the child in a preferred personal space and allow them to be the "host".

Rosenbaum & Gorter (2012) proposed a shift from the traditional biomedical model of treatment of impairment to a focus on an integrated model based on the World Health Organization's ICF framework (2001) using "the F-words" - function, family, fitness, fun, friends and future - to frame how service providers and researchers should approach interventions for children with neuro-disabilities. Each F-word can represent one or more of the ICF domains of body functions and structure, activity, participation, environmental factors and personal factors. All domains in each of these models are interrelated, emphasizing that a myriad of factors can impact each area of development.

When providers shift their focus to the six F-words, they emphasize child growth and empowerment rather than “fixing” an impairment (Rosenbaum & Gorter, 2012). Ultimately, this is a positive shift for children and their families as the focus on empowerment supports a holistic and family centered approach to childhood disability.

This thesis used the ICF framework throughout the planning and analysis phases as a theoretical framework to guide interpretation and situate findings in a holistic way that encompasses all aspects of an individual’s functioning. Additionally, the “F-words in childhood disability”, (Rosenbaum & Gorter, 2012) which are a proposed way to implement the ICF framework with this population were also a central focus of the project as they were used to guide both the creation of interview questions and throughout the inductive analysis. The advantage of using the F-words as a framework provides an accessible and family-friendly interpretation of the ICF that can be easily integrated into research and rehabilitation settings, with the ultimate goal of empowering children and their families while fostering child growth.

## Chapter 3: Methodology & Methods

### *Situating Myself in the Research*

For as long as I can remember I have loved horses; there is something uniquely captivating about a large, beautiful animal trusting and accepting a person to ride on their back and being in harmony together. As soon as my family could find me a riding stable, I proceeded to spend any spare moment volunteering to clean stalls in exchange for more riding time. I not only fell in love with riding horses but spending time with them, hanging out with the herd, cleaning stalls and just being in the horsey aroma; it is the most incredible experience that I could never get enough of. Anyone who is truly “horse crazy” feels the same way. When I was in high school, I started volunteering at SARI therapeutic riding to spend more time with horses, but it turned out it was the participants with special needs that stole my heart even more. Fast forward twelve years and I am the head instructor at SARI where I not only coach many riders of all abilities but I train the instructor team and the therapy horses. Over my years at SARI, I have witnessed and been a part of so many life-changing moments that will stay with me forever. Children who cannot walk can ride a horse and feel freedom for the first time, the smiles on their faces say it all. There is an old sign in the arena at SARI that says “*SARI; A bit of Magic*” and sometimes that really is what it feels like. For example, seeing a child who rarely communicates reach up and pet the horse on the nose as they say goodbye never fails to bring tears to the eyes of those around them. I then became curious about what was it about THR that gave these children so many supposed benefits. As a kinesiologist I knew that the physical benefits of THR were clear and had been researched extensively, but what about all those other benefits that I saw as coach every week, particularly the psychological benefits? As part of my coaching training, I became certified with two regulating bodies, CanTRA and PATH, and both of these certifications provide you with a list of benefits of THR that include wonderful statements about growth of social skills, independence, communication, mood etc., but as I began to research THR more seriously none of those psychosocial benefits had ever been documented, other than anecdotally.

In addition to my years of experience as a THR instructor, I personally have experienced the power of horses in healing and coping with disability. In 2018 after suffering months of extreme pain throughout my body that was unexplained, I was

diagnosed with fibromyalgia and in a single doctors' visit I became someone with a disability. Anyone who has worked with horses understands the special bonds that can form between humans and horses and in the equestrian community we say when there is a horse that you just get/they get you it is your heart horse. These horses don't come along every day but when they do your life is forever changed. For a long time, I could not do what I loved but I could still ride my special heart horse, Wyatt. We learn more about Wyatt from the perspective of a child later in this thesis, but I cannot emphasize enough how special this horse is. Wyatt took care of me when my balance wasn't great, or when I couldn't hold the reins tightly due to pain in my wrists or keep my feet in the stirrups due to the pain in my legs. No matter what therapies I've tried, his movement is still the only thing that provides relief for my hips and lower back. Anytime I was with Wyatt I could experience brief moments without pain and the emotional support I received from him in this time is impossible to describe. Without Wyatt I am not sure I would have been able to get my life back the way I have, I owe him so much and through this research I think I have been able to thank him by sharing how these therapy horses can change lives.

I had planned to pursue a career as a physiotherapist working with the children that I had come to love so much, but with my diagnosis this was not possible. I turned to research in the physiotherapy field, and I was lucky to find Dr. Laura Brunton at Western University who researched children with CP. Naturally, I wanted to do something related to THR but I wasn't sure a supervisor would want to take it on as it is a very specific activity. She was totally on board with a study exploring what the impact of THR is on psychosocial and physical outcomes in children with CP and my project was born. The most important part of the research to me was talking to the children themselves because that was what I did every week as a coach and I loved hearing their insights. Furthermore, I thought who better to share the experience of riding than the person doing it? I had no idea that this was a novel idea at the time.

In my reviews of the literature, although there was a focus on childhood disabilities, there was a distinct lack of children's voices pertaining to childhood disability. Many of the studies rely on parental or caregiver accounts or young adults or adults providing retrospective accounts of childhood experiences (Audulv et al., 2014).

Furthermore, the insights gained from qualitative research from the perspectives of the client can help guide clinicians and service providers to improve therapy, services and supports (Brunton & Bartlett, 2013). There is an increased focus on involving children in qualitative research and various methods to increase engagement in interviews (Teachman & Gibson, 2013). Children and youth with disabilities are immersed in the world of rehabilitation and health from a very young age and have numerous experiences to draw from when they are involved in research (Teachman & Gibson, 2013). The perspectives of children and youth with disabilities are vital to understanding the impact of rehabilitation services on the lives of people with disabilities (Teachman & Gibson, 2013).

Until I took a qualitative research methods course, I didn't know there were other paradigms for research other than positivism or post-positivism and I had tried and failed to fit myself to those molds. In that course, I learned that there are other ways of thinking about the world and I realized that my world view fits well with the paradigm of constructivism. Constructivism is a research paradigm that denies the existence of an objective reality, "asserting instead that realities are social constructions of the mind, and that there exist as many such constructions as there are individuals (although clearly many constructions will be shared)" (Guba & Lincoln, 1989, p. 43). Furthermore, I felt a profound resonance with the ontology of relativism and how there are as many local and constructed realities as there are people. It was simply fascinating to me that my idea of going to the children themselves to learn about their experiences aligned so perfectly with the constructivist paradigm. Whereby the transactional and subjectivist stance of the researcher and participant have this dynamic and dialectical interaction that is the key to unearthing the lived experience.

My original plan for this study was to have a mixed-methods approach that honoured my quantitative roots as well as would allow me to explore the perspectives of the children themselves through qualitative interviewing techniques. Due to the COVID-19 pandemic we had to shift to a greater emphasis on qualitative data collection and honestly, I am happy that this is how it worked out. With the focus on qualitative analysis this really allowed the voices of the children to come through and share why this adapted PA is so special to them. I believe that I was uniquely positioned to do this research as I

have been so intimately involved with THR for so long and that my understanding of the activity was useful in the interpretation of the findings. As a constructivist I am aware of my values and how my experiences may have shaped my findings and also acknowledge that someone else may interpret them differently than I do.

### *Study Design Rationale*

Creswell & Clark (2017) provide an overview of mixed methods designs and how to implement them successfully. They highlight four main types: triangulation, embedded, exploratory and explanatory. An embedded mixed methods design is where both qualitative and quantitative data are collected with one being the primary data source and the other playing a supplemental role to the primary. Usually, in the embedded mixed methods design quantitative data is the primary data source where qualitative data plays a supplemental role (Creswell & Clark, 2017). This is often seen in experimental or correlational designs. An example of a situation where the qualitative data is primary data source is a phenomenological inquiry with a secondary quantitative research question. The strength of an embedded mixed methods study design is that is more feasible as there is only one type of data that is the priority thereby requiring less data collection. Furthermore, this type of study design can be more a manageable option for graduate students who have more than one research question and have to complete their study within a certain time frame. The current study used an embedded mixed methods design where qualitative data was the primary data collection method and quantitative data collection provided supplemental information. Specifically, this study employed a concurrent approach of the embedded mixed methods design (Creswell & Clark, 2017). The qualitative data was collected on an ongoing basis over the course of the intervention with the use of a journal and a semi-structured interview that took place at the end of the THR session. Quantitative data was collected through an online questionnaire at two time points, before and after the THR session.

### *Qualitative Methodology*

This study utilized phenomenological inquiry to collect, analyze and interpret the qualitative data. The aim of phenomenology is to construct an “evocative description of behaviours and experiences through appealing to our immediate common experience in order to conduct a structural analysis of what is most common, most familiar, most self-



evident to us” (van Manen, 1997, pg 19). Interpretive phenomenology is an ontological mode of inquiry in which the researcher seeks to understand the meaning of the phenomenon of interest through participants’ stories of lived experiences (Wright- St. Clair, 2015). van Manen’s approach to phenomenology was selected as the methodological framework for this study to ensure that the results would be clinically relevant for healthcare providers that work with children with CP. van Manen’s approach offers a hermeneutic method to phenomenology which combines elements of Husserl’s descriptive phenomenology with an emphasis on interpretation (Dowling, 2005). van Manen’s views on bracketing align with the interpretive phenomenological assumption that the researchers pre-understanding cannot be “bracketed” or set aside. It is better to make explicit our understandings, beliefs, biases, assumptions, presuppositions, and theories (van Manen, 1997, pg. 47). Therefore, I acknowledge that my preconceived notions about CP, my perspective of the experience of THR for the riders as well as my disability experience have contributed to the interpretation of the results and the study findings.

### *Paradigm*

This thesis is situated within the constructivist paradigm. Constructivism is a research paradigm that denies the existence of an objective reality, “asserting instead that realities are social constructions of the mind, and that there exist as many such constructions as there are individuals (although clearly many constructions will be shared)” (Guba & Lincoln, 1989, p. 43). Constructivism aligns with the ontology of relativism and there are as many local and constructed realities as there are people and whereby the transactional and subjectivist stance of the researcher and participant have this dynamic and dialectical interaction that is the key to unearthing the lived experience (Guba & Lincoln, 1989).

### *Quality Criteria*

“Good qualitative research is relevant, timely, significant, interesting or evocative” (Tracy, 2010, pg. 10). Tracy (2010) presents a conceptualization of eight key markers of quality in qualitative research that are flexible depending on the goals of the study. From these eight quality criteria, I focussed on six quality criteria that are: worthy topic, rich rigor, sincerity, credibility, significant contribution and ethical (conduct)

(Tracy, 2010). The remaining two quality criteria are meaningful coherence and resonance which if the study does what it purports to be about then these should be achieved for the readers.

Throughout the research process I engaged in self-reflexive field notes and engaged in reflexive conversations on a weekly basis with my supervisor, Dr. Laura Brunton. Within these weekly conversations we discussed topics related to choosing a relevant and significant topic that would contribute to the field of study, choosing frameworks, models and methodology, transparency about the research process, theoretical constructs, paradigm positionality, data collection and analysis processes, ethics, ensuring multivocality and designing the opportunity for member reflections from the participants.

A worthy topic points out surprises and challenge common practices or assumptions (Tracy, 2010). We took great care in selecting our research question and framing our study so that we could address the interesting and evocative questions about why THR seems to have an impact from the children themselves. Rich rigor refers to research that is marked by a high quality of abundance generated through attention to a variety of theoretical constructs, data sources, sample, care in data collection and analysis resulting in rich descriptions or explanations (Tracy, 2010). Rigor was achieved through attention to paradigm positionality, interpretive phenomenological principles, ethical practices regarding working with children and staying true to the theory and principles while collecting and analyzing the data. Sincerity means that the research is honest, transparent about the researcher's biases, goals and challenges of the study (Tracy, 2010). Sincerity in this study was addressed throughout the research process with self-reflexive field notes and reflexive conversations. Throughout this thesis, I have been very open about the process and how my own life experiences have impacted my interpretations and goals for conducting this study. Credibility refers to the trustworthiness and plausibility of the research findings (Tracy, 2010). Thick description is a hallmark of credibility that was achieved through going to the children themselves and focussing on their perspectives about their experience of THR participation. Throughout the analysis and interpretation ensuring multivocality of the varied voices was a priority. As well as it was important to provide opportunity for member reflections

from the participants through sharing of interview transcripts for review. The findings of this study extend knowledge and hopefully will impact practice and generate ongoing research which indicate that this study provides a significant contribution to the field of study (Tracy, 2010). Finally, ethical conduct was of utmost importance throughout all phases of the research due to the vulnerable population we were working with. Due to the involvement of children with disabilities in the research, we spent a lot of time exploring how to best approach this. A significant portion of the start of this project involved talking with each other, going back to the research and consulting with my advisory committee and ethics officers at Western University to ensure that the rights of the children were protected at all times and all interactions were conducted in an ethical manner.

### *Method*

#### *Research Objectives*

The primary objective of this study was to explore how participation in a 9 to 12 week therapeutic horseback riding (THR) impacts children with CP across multiple domains of health (psychological, social and physical) from the perspective of the children themselves. Specifically, exploring mental wellbeing, social inclusion and perceived levels of independence in daily life activities of children with CP. This was achieved through collection of a weekly riding journal and a semi-structured qualitative interview with the child. The child's parent or guardian was also asked to participate in the interview to provide further clarification as needed. The secondary objective of this study was to determine if a 9 to 12-week THR program resulted in change in fatigue, pain and overall wellbeing of children with cerebral palsy. Fatigue was measured through the Fatigue Impact Severity Self-Assessment (FISSA), pain through the youth pain questionnaire and overall wellbeing through the Patient Reported Outcomes Measurement Information System (PROMIS). These scales were administered electronically before and after the 9 to 12-week THR program.

#### *Inclusion Criteria*

Ethical approval was obtained from the Western University Health Sciences Ethical Review Board. Children were eligible for this study if they had an ongoing

clinical diagnosis of CP, were between the ages of 5 to 12 years and were currently enrolled in a THR program. Five years was selected as the minimum age for participation as this is the minimum age for which there are validated measures to capture the outcomes of interest. As well, it provides an additional year of development past the age of four which is the minimum age that the Canadian Therapeutic Riding Association (CanTRA) deems as safe for participation in THR. Twelve years was selected as the maximum age for participation as typically children are still prepubescent at this age. The effects of puberty on mood, social behaviour and mental health are well documented (Paton & Viner, 2007) and we wished to minimize these confounding effects in our sample therefore selected a younger age range. To participate in the semi-structured interview the child must have been classified as level I (can converse with unfamiliar partners effectively and efficiently) or II (can converse with unfamiliar partners but may need extra time) on the Communication Function Classification System (CFCS) (Hidecker et al., 2011). Exclusion criteria involved being younger than 5 years or older than 12 years, having a primary diagnosis other than CP and unable to speak conversationally or read in English as the measures were only available in English and the interviewer conducted all interviews in English.

### *Sample Size*

Sample size was determined for the primary data collection component, the qualitative interview. In order to be feasible, purposive sampling was used to ensure we have a representative sample across age and across levels I to IV on the Gross Motor Function Classification System (GMFCS) (Palisano, Rosenbaum, Bartlett & Livingston, 2008). However, due to the COVID-19 pandemic impacting enrollment in the THR programs each participant who completed the online survey was invited to participate in the Zoom interview at the end of their riding session, therefore a convenience sampling approach was used. The quantitative measures were considered exploratory in this study in light of there not being enough published data on these outcomes for this age group to calculate a sample size for the quantitative objectives, the study was not powered to detect differences using these quantitative measures, rather the quantitative measures were used to contextualize the sample and provide support to the qualitative experiences.

### *Recruitment*

Recruitment occurred from two THR centres in southwestern Ontario: SARI Therapeutic Riding (Arva, ON), and Windsor-Essex Therapeutic Riding Association (WETRA) (Essex, ON). Recruitment began in September 2020 and was planned to continue until March 2021 but due to the COVID-19 pandemic and ongoing lockdowns recruitment ceased in January 2021. Local site recruitment facilitators at each participating therapeutic riding centre were identified. They facilitated the participants' introduction to the study and obtained consent for the participant to be contacted by the study team to ensure that the potential participants were contacted first by someone within their circle of care. Each participant and their parent received a letter of information, consent and assent form and a THR journal (Appendix A). The local facilitator provided contact information (name, phone number and email address) of interested participants to the study team who then contacted them to discuss the study and, if interested, provided an email with the link to the online survey. During the week of the last riding lesson, the primary researcher called the parent and administered the GMFCS to confirm what was stated on the online survey as well as the CFCS. Additionally, in this call a time was set up for the virtual interview. Originally, the purpose of this call was to ensure a representative sample across all GMFCS levels and only those selected would be invited to the interview. However, due to the COVID-19 pandemic impacting enrollment in the THR programs each participant who completed the online survey was invited to participate in the Zoom interview at the end of their riding session.

### *Data collection methods*

A semi-structured interview with the child with the parent and/or guardian present was carried out via the Western Corporate Zoom platform at the end of the child's riding session. The focus of this interview was to explore the child's perspective about their horseback riding experience. The parent or guardian was present to assist the child with any questions that they might not understand and provide additional insights into the impact of THR on the family. The interview guide (Appendix B) was designed based on the 6 F-word's (Function, Fitness, Friends, Family, Fun and Future) of childhood disability framework which is a proposed way to interpret the WHO's ICF model

(Rosenbaum & Gorter, 2012). Using the child friendly language of the 6F's the social constructs of independence, inclusion and general wellbeing were explored.

Supplementary questions included asking about which areas the child and parent think that THR has had the most impact on. Example interview questions include: "What parts of horseback riding do you find fun?", "Do you feel any different now than when you first started horseback riding?", "Can you tell me how your body feels?". Probing and prompting was used throughout the interview to gain a deeper understanding of these constructs through the child's descriptions of their riding experience. Additional questions or prompts were posed by the parent/guardian to the child at times to get them to elaborate more. The primary researcher also asked questions related to the horses and specifics about their lessons were posed to the child to connect with the child and gain more insights into their lesson environment. Each interview was about thirty minutes in length and children were asked to bring their horseback riding journal to the virtual interview to share their drawings and facilitate discussion. Reflexive notes were written by the primary researcher after each interview as a way to fully capture any impressions or contextual information that might be missed in the audio transcription. All interviews were audiotaped and transcribed verbatim by the primary researcher. Verbal consent/assent was received in the screening phone call from the parent prior to the interview, at the start of the interview from the child and from the parent again. The letter of information, consent and assent forms were sent to the parent prior to the interview and asked to scan them back or complete a fillable PDF with their electronic signature.

At the time of initial contact, the local site recruiter provided the family with a horseback riding journal for them to either draw a picture or write a word/sentence about their weekly horseback riding lesson. This journal was used to facilitate discussion during the interview and provide concrete examples for the child to go back to what was important to them in their weekly horseback riding lesson.

At baseline and at a follow-up (at the completion of the THR session) participants were asked to complete an online survey that measured the physical health outcomes of fatigue and pain. The online survey was emailed to the participants after a phone call with the study team that confirmed that child's substitute decision maker wanted their child to participate in the study. Participants were directed to a landing page for the survey that

contains a letter of information indicating that submitting the survey was considered implied consent to participate in the study. Parents/guardians were asked to complete the survey with their child present and involved. Due to the young age group of the participants, the questions in the survey were likely beyond their reading capacity, but parents could ask them for input as they saw fit. The final page of the survey asked them to indicate out of four options who completed the questionnaire ranked from (I chose and completed all the answers myself to someone helped me think about all of my answers).

### *Measures*

The Fatigue Impact Severity Self-Assessment (FISSA) (Brunton & Bartlett, 2017) is the first scale to be specifically validated and tested for reliability for measuring fatigue for youth and young adults with CP. The authors believe that the FISSA is feasible for use in a younger population, though it has not yet been validated for this younger age group. Fatigue was measured using the FISSA. The FISSA is a 37- item questionnaire where the first 31 questions are scored using a five-point Likert scale from 1 (completely disagree) to 5 (completely agree), with the exception of one question that is scored on a scale from 1 to 7 to represent the number of days in a week. The remaining six questions ask participants about fatigue and fatigue management. An overall total score from responses to the first 31 questions determines the level of fatigue experienced in terms of both impact and severity. The minimum score is 31 and the maximum score is 157. A higher score indicates greater fatigue (Brunton & Bartlett, 2017). The FISSA has shown moderate test-retest reliability: intraclass correlation coefficient of 0.75 (95% confidence interval 0.54–0.87) and high internal consistency with a Cronbach’s alpha of 0.95 (Brunton & Bartlett, 2017).

Pain was measured using the Youth Pain Questionnaire where pain frequency, pain interference and intensity were measured. Neville et al. (2018) provide evidence for using the Youth Pain Questionnaire and the PROMIS for measuring pain outcomes in youth (aged 8 to 18 years) with chronic pain. The pain interference and pain intensity subscales of the PROMIS pediatric profile were used, which at this time are still exploratory for CP. The 4 items of the PROMIS pain interference subscale are rated using a 5-point Likert scale (0= “never”, 4 = “almost always) (Neville et al., 2018). The pediatric pain interference subscale has a Cronbach’s alpha of 0.92 and a level of

reliability approximates 0.90 between T-scores of 35 to 65 (Cunningham et al., 2017). The pain intensity item of the PROMIS pediatric profile is rated on an 11-point numeric rating scale (0 = “no pain”, 10 = “worst pain you can think of”) to assess average pain intensity experiences in the past 7 days (Neville et al., 2018). This is the best tool that is currently available to measure overall health and wellbeing in children and youth (Coster et al., 2016).

### *Horseback Riding Protocol*

The therapeutic riding instructor had to be a CanTRA certified instructor in order to demonstrate that each rider is receiving similar coaching standards between riding centres. Therapeutic riding lessons were typically 30 minutes in length taught with between 1 to 4 participants per lesson. Riders who participated in the study rode in tack, horse matched and had appropriate volunteers for their needs as determined by the occupational or physical therapist who assessed their intake to the program. Riding lesson content varied in what specifically is done each week; however, general lesson guidelines as per CanTRA standards were in place at both centres. These guidelines included: warmup consisting of stretches of the upper and lower body, each side as well as a rotational stretch (through the trunk). A trotting portion if the rider is able – with either sitting or posting trot. Lesson content covered basic riding skills (steering, two-point, gait changes) as well as therapeutic components that work towards the rider’s specific goals either physical, social and communication goals. Goals can be achieved through games and other fun activities with the instructor, horse and rider. Additionally, horsemanship skills such as grooming, parts of the horse, horse feelings, colours and tack could be addressed in some part of the lesson content. Since recruitment occurred from two different centres, the length of the programs was pre-determined by the centres, often a year in advance and then may have been impacted by lockdowns and closures associated with the COVID-19 pandemic.

### *Data Management*

The FISSA and PROMIS measures were converted to electronic form on “Qualtrics” an internet-based survey platform which ensures all data is hosted and stored in Ireland adding an extra level of security to the data storage. All data was collected using a study ID number to de-identify the data. A master list of study ID numbers and



corresponding participant names was kept in a password protected file separate from the data on Western OneDrive only accessible by the primary researcher's login credentials. Audiotaped recordings of the interviews were destroyed after transcription of interview data was completed and checked by the study team and participants as desired. All data that was stored electronically will be erased after 7 years from the time of collection as per institutional policy in place at that time.

### *Data Analyses*

This study used a hermeneutic interpretive approach to data analysis. There is no commonly agreed upon method for data analysis in phenomenological inquiry, but one feature that is essential is that it is “interpretive” (Wright-St. Clair, 2015). van Manen's hermeneutic approach to phenomenology involves a methodological structure which may be seen as a dynamic interplay between six research activities (van Manen, 1997). These six research activities are: turning to the nature of lived experience (a phenomenon which seriously interests us), investigating experience as we live it rather than as we conceptualize it, reflecting on the essential themes which characterize the phenomenon, describing the phenomenon through the art of writing and rewriting, maintain a strong and oriented pedagogical relation to the phenomenon and balancing the research context by considering parts and whole (van Manen, 1997). Throughout all stages of phenomenological inquiry, it is important to be constantly mindful of the original research question and true to the task of “constructing a possible interpretation of the nature of a certain human experience” (van Manen, 1997, p. 41).

The fundamental research question in this interpretive phenomenology was:

*“What is it like to be a child with CP who participates in a THR program at either SARI or WETRA?”*

Audiotapes of the semi-structured interviews were transcribed verbatim in an ongoing fashion; however, analysis was not initiated until after all interviews were completed. Transcripts were shared with the participants and their parents for accuracy. Transcripts were uploaded to NVivo 12 software and then line by line coding was

performed using an inductive, iterative process which, allowed the themes to be created from the data rather than making pre-assumptions or predictions. Within each transcript unique codes were generated in relation to the child's experiences. Once common codes were identified, they were compared, contrasted and combined across participants. Similar or recurring codes across participants were aggregated into larger themes. The larger themes that were created to represent the experiences across participants were then classified within the ICF model using "F-words in childhood disability" (Rosenbaum & Gorter, 2012) as a guide. The reason for situating the findings within the "F-words" and ICF structure was to have a family and child friendly interpretation of the ICF that could be easily shared with THR centres, care providers and families. The transcripts were then re-read and re-coded with the larger themes and then coded again one final time to check for consistency. Throughout this iterative process, the primary researcher went back to their reflexive notes that they had written at the time of the interviews for any other contextual information or impressions that might have been missed in the audio transcription. Additionally, a word cloud was created from the participants replies to the interview questions; in a word cloud the most common words get presented as the largest text and the least common words as smaller text. The word cloud served to further highlight some of the main themes and concepts from the interviews by looking at the data in a different manner. This reinforced the descriptions that the children shared by presenting it in a visual manner highlighting similarities across their unique and varied experiences.

The original plan for analyzing the quantitative survey data was to conduct a paired t-test of the pre and post-intervention scores on the pain, fatigue and overall wellbeing measures from the Qualtrics data. However, due to all the unforeseen circumstances listed below with the COVID-19 pandemic, there simply was not a large enough sample size to analyze the quantitative data using these methods; therefore, the information from the surveys was supplementary in nature only.

#### *Modifications to Study Procedure due to COVID-19*

The COVID-19 pandemic began the month recruitment was set to begin in March 2020, and all the therapeutic riding centres were closed until late summer. Originally, four centres had been approached to achieve a broad and robust sample; however, due to

the unforeseen impact of the pandemic only two centres were able to re-open (SARI & WETRA) in the Fall of 2020. From SARI and WETRA we recruited four participants who fit our inclusion criteria. Our goal was to use purposive sampling to achieve representation across GMFCS and CFCS levels however, this was simply not possible with the public health restrictions in place and decreased enrollment in the programs. The Windsor-Essex area moved into the red-control level in early December 2020, in response to rising COVID-19 cases in the area. The therapeutic riding centre WETRA; where we had 3 participants in our study had to close unexpectedly and cease all programming at that time. The participants at this centre had completed 8 weeks of riding lessons which was less than the original timeline estimate of 9 to 12 weeks of riding lessons. In order to salvage the research project, the interview and follow up survey were administered after as many weeks as possible but deviated from the original proposed timeline due to this unforeseen closure of the THR centre. Furthermore, in order to respect social distancing and public health guidelines we had to shift to using online interviews rather than in person interviews. The shift to online interviews allowed for the children to be in the comfort of their own homes and both their parents be present in some cases. The interviews took place in December 2020 and early January 2021 which, by that point in the pandemic many children were quite used to online platforms due to school closures and use of online platforms for educational content. Finally, in consultation with my supervisor and graduate advisory committee we decided to focus the analysis on the qualitative semi-structured interview data and use the survey data for descriptive purposes only. Unfortunately, due to all the unforeseen circumstances listed above there simply was not a large enough sample size to analyze the quantitative data beyond basic descriptive statistics. With the embedded mixed methods design, qualitative methods and analysis were already the focus so this was not a large deviation from the original plan.

## Chapter 4: Results

### *Participants*

Participants were four children: two boys and two girls. They were aged 5 to 8 years with a medical diagnosis of CP and participated in a fall 2020 THR program at either WETRA or SARI Therapeutic Riding. Demographic information for each participant including age, gender, GMFCS and CFCS level can be found below in Table 1. Table 2 provides the scores of the survey data at baseline and follow-up.

*Table 1- Individual Participant Characteristics*

Participant (pseudonym)	Distribution of Involvement	GMFCS Level	CFCS Level	Sex	Age
Ally	Diplegia	II	I	Female	5
Mia	Quadriplegia	IV	I	Female	6
James	Hemiplegia	II	II	Male	8
Noah	Diplegia	III	I	Male	6

*Table 2: Baseline & Follow-up Scores of Survey Data.*

	FISSA		PROMIS Physical Function Mobility		PROMIS Anxiety		PROMIS Depression		PROMIS Fatigue		PROMIS Peer Relationships		PROMIS Pain Interference	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Ally	119	103	30	30	66.9	62.2	60	59	55.6	56.6	48.03	46.71	56.6	53.7
Mia	96	90	19	21	53.8	59.9	49.1	56.8	47.9	51.3	64.4	64.4	61.4	62.4
James	84	103	24	32	64.5	61	64.1	60	47.9	44	43.12	52.6	61.4	65.4
Noah	86	96	22	21	53.8	53.8	56.8	53.3	47.9	45.4	43.2	48.02	51.7	49.5

\*Note: FISSA is reported as total score. PROMIS is reported as T-scores.

Four children participated in the interviews and each child's mother was present in the Zoom video call to help them understand the questions in phrasing that they were more comfortable with. Only one horseback riding journal was returned, and this was included as supplementary material to the interview data. The child who used the journal reported enjoying drawing after his lessons.

It became very clear both during the interviews and transcription that the primary discussion point was the bond or connection to the horse. Furthermore, during thematic analysis the experiences of the children were centered around their connection to the horse. In every question, throughout each interview, all participants mentioned something about their horse whether it was how the horse made them feel, what the horse did, how the horse moved and felt under them and how the horse became a central part of their lives as their friend. Throughout this iterative process, the primary researcher went back to their reflexive notes that they had written at the time of the interviews for any other contextual information or impressions that might have been missed in the audio transcription. In particular, the codes in relation to the connection to the horse and feelings were influenced by these notes as there was cues in the participants facial expressions, actions and manners that provided a more thorough understanding of the codes for these two themes. A visual diagram of the themes that were generated from the interviews is presented in Figure 2.

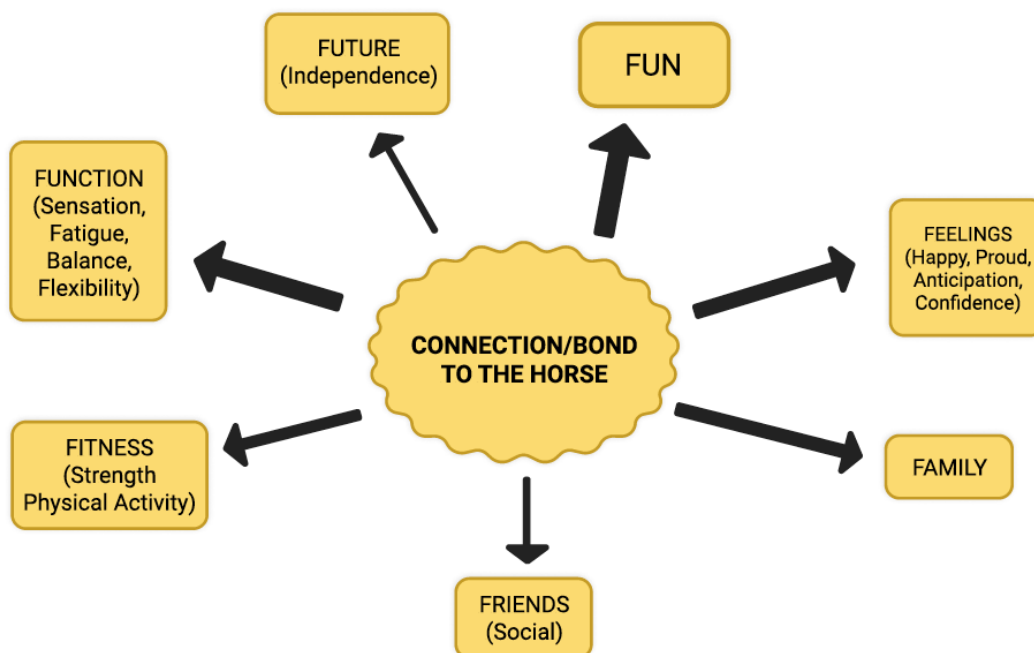


Figure 2: Diagram of Themes. Size of the arrow corresponds to the importance of the theme

#### *Overarching theme: Connection/ Bond with Horse*

The children repeatedly described their interactions with their horses in a way that showed that they viewed the horse as a friend. The horse was talked about in tones of awe, love and curiosity. Many of the children's descriptions were focussed on sensory experiences but often came back to feeling happy or good when they were on, touching or around the horse. This theme was selected as the overarching theme as the bond with the horse was integral to the experience of riding and the benefits of the activity and making it all possible for the child. Some example quotes that illustrate this theme are:

*M: It feel like (the first time on the horse)... I don't know... It feel like um, like that or this, it feels good, it feels **GOOD, IT FEELS GOOD!!** I was excited. I was so excited to meet Misty and I like her very very much.*

*A: My Legs feel relaxed because they get to feel the fur! And my legs **LOVE** feeling the fur*

*KP: How does Pixie make you feel?*

*A: Um **GOOD***

*KP: So the best part about therapeutic horseback riding is \_\_\_\_?*

*A: Um **riding the horse!***

One of the riders repeatedly expressed that they knew what the horse was feeling and throughout the lesson would share their horse's thoughts and relate them to her riding instructor and to her parents who were providing a physical support to keep her on the horse. She also brought a toy horse to the Zoom interview and would act out some of the stories that were most exciting to her.

*Mom: What do you bring for Misty after your horseback riding?*

*M: A carrot!*

*KP: Oh yes, does Misty like the carrot?*

*M: Mhmm yeah*

*Mom: She really likes them eh? She gets excited*

*M: Like this (uses her toy horse she brought with her to demonstrate what Misty does after getting the carrot) hears noise of the toy horse hitting the table*

*KP: Oh she hits the ground with her hoof, she loves it.*

*M: [Referring to the provincial shutdown] Well Misty misses me and uh I miss her*

*KP: How do you feel when you leave riding? Do you feel happy when you leave?*

*And do you also feel sad because you are leaving Misty?*

*M: No*

*KP: No because you know you will see her again?*

*M: Like Misty is sad (because I am leaving)*

The size of the horse was referred to a couple times but the riders were never scared of the horse's size and just seem to accept them as they are. The bodily functions of the horses were also a recurring topic, the horses' bowel movements were very interesting and a part of the experience that was quite memorable.

*J: I rode two horses that are different. Topaz and Louie.. uh Louie is my favourite. He is a great big horse kind of, his butt is big.*

*A: Yeah, when the horses go poop! It SMELLS!*

*A: Disgusting I wish I had like a.....???*

*Dad: Noseplug?*

*A: Yeah! A noseplug!*

*M: So like we do like trotting and stuff and um I don't know and sometimes Misty poops (laughs)*

When asked about how the riders felt when they were leaving their riding lesson, everyone said that they felt sad to be leaving the horse. Some expressed that they felt sad then happy because they knew they would see the horse again.

*A: I feel kind of sad (when I leave riding)*

*I feel like if it's the last weekend. Then I feel sad. Because it's the last week.*

*KP: Because it's the last time you will see the horse?*

*A: Mhmm*

*Mom: It makes you happy to be done riding or sad to be done riding?*

*J: Sad.*

*Mom: We are sad that we aren't going back to riding, we miss Louie right?*

*J: uh huh, yeah!*



Most of the rider's parents identified that the horse is a friend for their child. Additionally, several of the riders directly stated or agreed that their horse was a friend.

*M Mom: I just feel like overall, having the horseback riding that it's like a friendship with the horse.*

*A Dad: They've also taught her some stuff too like to do with the horse like how to act around the horse, the relationship with the horse, behavioural stuff has helped a lot.*

*M Mom : I think we all really look forward to the horseback riding activity together, we have all connected with Misty, we all give her pats. Mia will tell us what we need to say to Misty. Right?*

*KP: So it is a highlight of the week then?*

*M Mom: yeah! And we talk about what has happened in the lesson afterwards, even a few days after we are still talking things that happened in riding. Like trotting, what Misty did, games we played.*

*M: And if she pooped*

Two of the riders directly agreed that the horse was a friend or a buddy to them. Mia never directly said Misty was her friend but almost every sentence was somehow related to Misty which, I interpreted this as meaning she feels Misty is a friend to her.

*KP: Yeah, hmm do you feel like having Pixie is like having a friend?*

*E: YEAH!*

*N Mom: Is Wyatt an animal buddy to you Noah?*

*N: YEAH!*

*M: Well Misty misses me and uh I miss her*

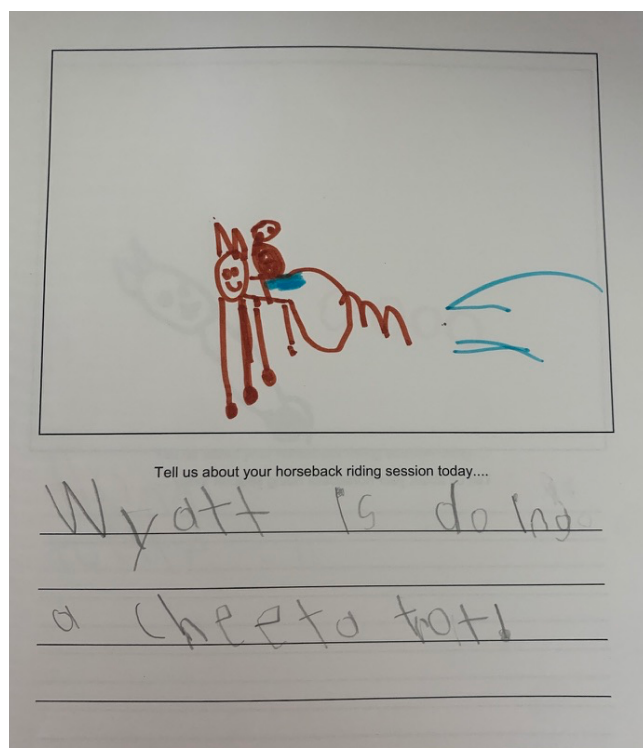
*Theme 2: Fun*

THR was an activity that was fun for all of the children who participated in this study, when asked if there was a part of horseback riding they did not find fun, most participants identified nothing, rather that they liked it all. Highlights included trotting, going fast, playing games with the instructor or other kids in the lesson and feeding or petting the horses.

*N: (It's fun) because I get to pet Wyatt! And um, the games. The Halloween game where there was pumpkins and witches that I threw (into a hoop) and Wyatt was running... and walking... and cheetah walking (whispers) and cheetah trot! (this is a fast walk that sometimes has a trot step as part of it, Noah came up with this term)*

*KP: Are there any parts of horseback that you don't find fun?*

*N: Nothing*



*Figure 3. Noah's journal drawing of a cheetah trot*

*KP: What parts of horseback riding do you find fun?*

*M: Well, the trotting of course*

*KP: Oh right, trotting is always a hit. Do you do steering ? Or do you do other things when you ride?*

*M: We do our warmups and we um we do the cones, the colour cones and we um, we um, we um do like*

*Mom: What about games? What kind of games do you play?*

*M: The beanbags (Mom you throw them) and the ball (you throw the ball) and I (breaks out in giggles)*

*KP: Are there any parts of horseback riding that you don't find fun?*

*M: Um, I don't like the um..*

*Mom: It's ok to say that you like everything about horseback riding*

*M: Yeah*

*KP: Yes that's fine if everything is fun.*

*M: I like all of them!!!*

*KP: Yeah, so um what parts of horseback riding do you find the most fun?*

*A: Um the trotting haha!*

*A: It's fun, because sometimes we get to play to games and I get to and I'm the only one gets her name first because her name is so tiny. Pixie! (spell your horses name game)*

*KP: Ok right on, are there any parts of horseback riding that you do not find fun?*

*A: NOPE!*

One rider expressed boredom with some of the skills his instructor used, namely walking around in comparison to games or activities other riders described in their lessons or that he had experienced in the past. His mother also expressed that she was bored as his side walker in the lesson and she felt her son was not receiving the same benefits from the lessons that he used too.

*J: I like riding, yup (I find it fun) and I like doing trotting. I like the games. I do not find it fun, walking around (in circles in the arena), it's too boring.*

*J's Mom: I like to go be able to walk around with Louie too however, mind you mom does find it a little boring what we do there too. They don't do a lot with them, the other girl that was before this one before did a lot more. I'm not sure if its just the person who is doing the instructing. We do a whole lots of just circles at the walk. You know its supposed to be helpful for body coordination – going left and right and steering, they don't really make him do that. This last time I am really struggling with why are spending this much money to just go in circles and just have him on top of the horse. So I've been a bit disappointed, once we start back up I'm going to ask about it.*

*Theme 3: Feelings (happy, proud confidence, anticipation)*

The children described the different feelings that they experienced while riding. In a word cloud created from the interview responses the largest (reflecting the most frequently stated) word was “Feel” followed by “Ride” followed by “Happy” see Figure 4. Predominantly participants talked about feeling happy with the horse, on the horse, before riding the horse and after riding the horse. One of the children answered “Happy” for almost every question in the interview! When they talked about being happy, often they would smile and giggle at the same time really emphasizing the amount happiness they felt when they were with the horses and how talking about their horse and the riding experience almost transported them back to that place of happiness. Although happiness was the most common feeling discussed by the children pride; anticipation and sense of confidence were also mentioned.

*J: Louie makes me feel good, but he bounces.*

*Mom: What about Happy? Sad?*

*J: Happy. Happy, **HAPPY!***



Noah drew a picture of his horse Wyatt after his riding lesson and wrote “happy”. He repeatedly told me throughout the interview that riding made him happy.

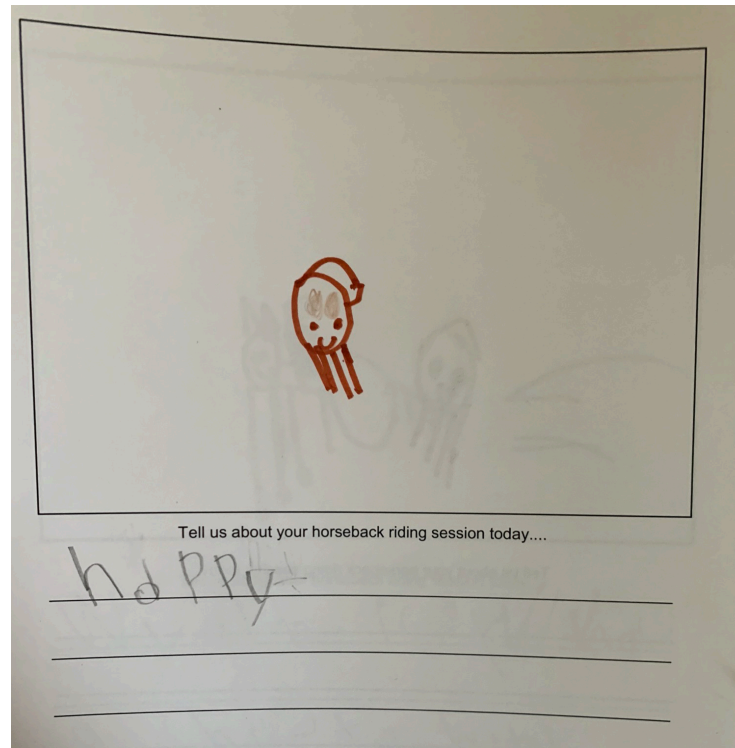


Figure 5. Noah's journal drawing "Happy"

### *Pride*

A sense of pride was evident from multiple participants and their parents in their descriptions and sense of accomplishment of doing a novel task such as riding a horse for the first time or going fast on a big horse.

*Mom: The first session she looked at her dad and said " Look dad I'm doing it, I'm really doing it!" Right, You were really on the horse, horseback riding.*

*Right?*

*M: Yeah!*

*Mom: It was pretty exciting wasn't it?*

*M: Yeah!*

*N Mom: For Noah and his siblings it is something that is his that he can talk about and be proud of and share with them*

For Ally, she started the interview by sharing a very exciting moment that she was very proud of and wanted to talk about immediately.

*A: My dad couldn't believe that I was going so fast on the horse*

*KP: Wow, Were you trotting?*

*A: Yep!*

Another example of pride was how Ally told me how she talked to her friend about riding, she has a sense of awe in her voice when she described that they wanted to ride too. She sounded very proud that her friends would some day want to do this special activity that she did.

*KP: Hmm what about do you talk to your friends about horseback riding?*

*A: Yes! I talk to my teachers and my friends about it and (gasp) they want to try it one day (giggles)*

*KP: That's awesome, so you do tell them about what you do at riding?*

*A: Yes!*

Often children are on long waitlists as there is quite a demand of THR programs with limited spaces. The anticipation that Mia felt while waiting to ride was very apparent and then her excitement and joy at finally being able to ride was extremely touching.

*Mom: How long did you have to wait to go horseback riding?*

*M: A long, long, long, long, long, LONG, LONG time*

*KP: Oh my gosh, when did you start horseback riding, how old were you?*

*M: 6!*

*KP: And you are 6 right now, that is a long time to wait*

*M: Long, long, long, long, LONG, LONG!*

*Mom: And how did you feel when mommy told you that you could go horseback riding?*

*M: I felt excited and I was so excited to meet Misty and I like her very very much*

*Mom: Yes, she had been looking forward to it for about 18 months that we were on the waiting list and she had talked about it a lot. So she was very excited when we found out that she could go!*

Now that Mia had secured a regular riding timeslot, she expressed not be able to wait to get back on her pony, Misty and counts down the days until her next riding lesson and getting back in the saddle!

*LM: And we count down the days until our next session?*

*J: 1,2,3,4,5,6,7,8 etc... (all the way to 20)*

*LM: Well usually only 7 days sweetie*

Noah's mother discussed how she feels participating in THR has benefitted him emotionally and socially and touched on confidence, excitement and anticipation that Noah feels due to riding. She described that it is an activity where he can just be himself and be accepted due to the accessible nature of the facility and the activity itself.

*N Mom: Probably um probably more like socially and emotionally being able to participate in an activity that he is able to do and feels confident in and is totally set up for him to be successful at is really great. He's excited, he's confident and it's something that he looks forward too, it doesn't feel like an activity like some of the others do which, you are trying to fit him into it, and make accommodations for him for him to fit in to it. This is just ready for him to go right in and he knows that he can do it.*

*Theme 4: Function & Fitness: Subthemes of sensation, fatigue*

Elements of THR that contributed to increasing or maintaining function and fitness were discussed by the parents.

*A Dad: It gives you another opportunity to work on your physical abilities, right? Help to improve your physical strength.*



*N Mom: Definitely yeah, his flexibility with his legs, that stretching and stuff is really really good, I notice his core is way stronger and really his whole upper body really as a whole like from the stretches and the reaching and keeping himself up on the horse definitely all helping.*

*J Mom: I think it has helped your tummy muscles stay a bit straighter.*

The children would be sharing something else about the sensory experience of riding or how riding made them feel and most of the parents would redirect them to something about feeling stronger or another physical impact of riding.

*A: What does that mean?*

*Mom overtop: Like has it made your life better, do you feel stronger?*

*A: Hmm yeah. I feel stronger!*

*Dad: One thing I can say that I say you doing all the time, is that it improves your posture a lot. Her posture when she's riding and anytime I say sit up straight when she is riding Pixie she sits up really straight and anytime she's horseback riding she sits up really straight too so its improved that for sure. And a litte bit of your balance too, and the stretches while you are on Pixie*

*A: Oh*

*Dad: Yeah you are balancing and stretching while you are on Pixie*

*A: It feels kinda weird because like....*

*Mom/ Dad: Yeah that's because it's working your muscles*

*KP: How about your body? How does it feel?*

*M: Like Um um*

*Mom: Can you sit taller now on the horse?*

*M: Yeah!*

The children's perspectives contrast the parents as they focus primarily on sensory experience of riding and how it makes their body feel in the moment rather than feeling stronger or sitting better. If parents prompted them, they did agree that they felt stronger.

*KP: What about how does your body feel when you are horseback riding?*

*A: Jiggly! Because like when you trot you get jiggly!*

*KP: Yeah? You feel happy, how does your body feel after you leave riding?*

*M: Um it feels quite better and The next day... I feel like good?*

*Mom: What part of you feels good?*

*M: My whole legs feel good.*

*Mom: Do you like you exercised; do you feel good or stronger?*

*A: I feel good... because now my legs are stronger.*

Most of the riders shared that they felt tired after their riding lesson, especially if there was a really big stretch that day or lots of trotting.

*A: SWEATY! And sometimes tired*

*J: Good but also not good because I want to stretch for longer and sometimes, I feel tired. Sometimes my leg hurts after (up here, groin area).*

*M: Yeah (my body feels tired after riding). My legs after getting in the stirrups (get more tired)*

### *Theme 5: Family*

Horseback riding was important for all the families, it was talked about as a highlight of their week and often the excitement about riding was brought home and shared with parents and siblings. Due to the COVID-19 pandemic many of the parents were actually participating in the lessons providing physical support to their kids, which

is not typical practice, but the parents described also feeling a connection to the horse as well as enjoying the experience as a family. Having the opportunity to share this activity and bond with the horse within the family is incredibly powerful and provided the opportunity to create lasting memories for all involved.

*KP: Has horseback riding changed anything for you and your family?*

*Mom: Do you think it has changed us?*

*J: Nope*

*Mom: Well it makes me happy to go, it makes me happy to go and see Louie*

*J: Well **yeah** me too*

*N Mom: Yeah, I think for us like for my husband and I, it makes us feel really good that he has something that is just for him that he enjoys to do and we know that he loves and is getting so many benefits out of.*

*KP: Do you think there is a change having his parents as the sidewalkers vs. having volunteers?*

*N Mom: I mean probably a little bit... I think it is good when he is just doing it on his own, of course I'm thrilled that we have the opportunity to be able to do it just so that he can keep doing it um but yeah I think it's good when it is just him doing his own thing At the same time like for Noah he is so easy going that he has fun whatever it is, if it is someone new the other sidewalker he will chat, listen to them and have fun but he thinks its kind of a novelty to have his grandpa and me and his dad get to come and get to be the sidewalkers too but yeah he still listens and does everything but I think it is good for him to have the experience of like following instructions and listening to people who aren't his parents (laughs)*

*KP: Would you say that horseback riding has changed anything for you and your family?*

*M: Well my mom she goes on the left side and daddy goes on the right side*

*Mom: You are right hunny, so we do it all together as a family but you are the one who is really doing it but we get to experience it all together as a family*

*Mom: Yeah, Misty is a good girl!*

*KP: That's nice that you get to do it all together as a family*

*Mom: I think we all really look forward to the horseback riding activity together, we have all connected with Misty, we all give her pats. Mia will tell us what we need to say to Misty.*

Horseback riding provided a shared experience for the riders to have new conversations with some of their siblings or have an activity their siblings wanted to watch. It provided a unique opportunity to share an activity and as one of the mothers' described this has provided a special bonding experience between brother and sister. Another rider's sister comes to watch the lessons and really wants to ride too. THR is providing an opportunity for a sense of belonging within the family context.

*N Mom: And for Noah and his siblings it is something that is his that he can talk about and be proud of and his older sister does horseback riding somewhere else so that has been really cute that they kind of bond about it and he comes home (from riding) and tell her all about it and she has been doing it for a while like maybe a year and half and she asks him questions about it like did you do this or do that and they talk about the horses they rode and its really really cute*

*KP: What do you talk to your sister about?*

*N: Riding!*

*KP: Oh wow that's pretty fun, is that because she rides horses too?*

*N: Yeah*

*Mom: Do you remember the main horse that Molly rides? What is his name?*

*N: I forget... Hershey!*

*KP: Hershey and Wyatt that's fun!*

*N: They are both brown*

*Mom: What about your sister? She likes to watch you too*

*A: She really really wants to go horseback riding, she's begging mom and dad*

*Mom: Yeah you know when the horse camps re-open in the summer she can go  
A: Yaaaay! Then we can ride together (woot/ squeals)*

*Theme 6: Friends (social)*

Overall, social interactions with other riders in the lessons were significantly lacking. For some of the rider's horseback riding was a very social experience with their riding instructor, and volunteers/ family members. Others shared that there was no interaction with the other kids in the riding lesson.

*A: Fun, because sometimes we get to play to games*

*KP: So what kind of games you play?*

*A: Spell your horses name and like try to do something with a pumpkin and different other games I don't remember what they were called.*

*KP: Oh that's okay, is there other kids in you riding lesson or is it just you?*

*A: There is one girl and one boy and me*

*KP: Do you get to play the games with them?*

*A: No we play them separate, because you don't want to mix up the horse*

*KP: Okay gotcha, do you get to talk to the other riders in your lesson?*

*A: Uh nope, NO because we have to listen to the instructions, and you don't want to miss out on the instructions, so you don't know what to do.*

*KP: Is there anyone else riding at the same time?*

*Mom: Yep 2 others.*

*J: I don't ride by myself. I don't know their names*

*KP: Ok, and do you ever play games with them or do anything with them?*

*Mom: No (surprised), well we do play a game but it is played individually*

*KP: oh ok,*

*Mom: We all have the same game but it is not played together. But yeah there is zero interaction with the other riders on like playing games with each other and stuff. Which is disappointing, I would like to see him be able to have more interaction cause he is very social.*

*KP: What about your riding instructor?*

*M: Michelle!*

*KP: Do you talk to her when you are riding?*

*M: (Giggles) Uh-huh! Yeah!*

*Mom: (Overtop) Mhmm! Laughs*

Mia and her mother talked about how she was in a private lesson but there was another lesson going on at the same time and a couple times they played a game together. Playing a game with the other “bigger kids” was a really memorable experience for her not only because it was fun but because it was a social event with someone she looks up to.

*Mom: They aren't part of her lesson, they are doing their own lesson on the other side of the ring. What about them, did you ride with them a couple of times?*

*M: Yeah*

*KP: Did you do games with them?*

*M: It was kind of fun, because we get, we get to do the same things that they do!*

*Mom: You get to do the same things as the other two kids, they are bigger so that's kind of cool isn't it.*

*M: Yeah!!*

The riders had divided experiences about if they talked to their friends at school or teachers about horseback riding.

*KP: Hmm what about do you talk to your friends about horseback riding?*

*A: Yes I talk to my teachers and my friends about it and (gasp) they want to try it one day (giggles)*

*KP: Ok awesome so you do tell them about what you do at riding?*

*A: Yes!*

*KP: Do you talk to your friends at school about horseback riding?*

*M: I want too but it's not going to happen*

*KP: Haha how come it's not going to happen?*

*M: I would but....*

*Mom: But you have to focus on school and save your stories for another time, right?*

*KP: Do you ever talk to your friends about horseback riding?*

*J: Shakes head no*

*Mom: Oh yes you do.*

*J: Well I only ask Miss A*

*Mom: That's okay, Miss A can be a friend. She's someone you talk to at school.*

*J: She's not really my friend, she's my support worker*

*Mom: That's ok but do you talk about horseback riding with her*

*J: Well um sometimes. She asks me about it and then I say yes*

#### *Theme 7: Future (independence)*

All of the riders enthusiastically said that they wanted to keep horseback riding, indicating that future participation in this adapted activity was something they wanted to do. Independence fits well within the theme of future as independence is a key part of development and growing up. Two of the parents felt that THR gave their children the opportunity to do something on their own that was uniquely theirs. A more specific example of gaining independence in the lesson was shared by Ally who no longer needed a sidewalker, she really likes being more “on her own”.

*KP: Do you want to keep horseback riding? Why?*

*J: Yeah! Because the horses are cute and I love it*

*M: Yeah, because I love it. And I think it do really well for me.*

*A: YESSS! Because it is so fun*

*N: Yes. Because I get to pet Wyatt and play games.*

*M Mom: So I feel like she has her own unique activity to do that is all her own that neither dad or mom are actually like participating in. She's doing it on her own. I feel like the independence is the greatest impact.*

*N Mom: This is just ready for him to go right in and he knows that he can do it. yeah I think it's good when it is just him doing his own thing. Doing it without a parent especially with me being a sidewalker right now I'm always doing everything with him, every therapy session, every appointment, helping him with all his daily things so its really nice for him to have something where he just goes and I'm not involved.*

*A: Yeah, I just have the one helper and*

*Mom: Your dad used to walk with you but now he doesn't have to, right?*

*A: Mhmm*

*Mom: Now you don't have to have anyone walking with you just the helper (with the horse)*

*KP: Do you like that, being more on your own?*

*A: YEP!*



## Chapter 5: Discussion

Through learning about the experience of THR from the children themselves it is clear that the bond with the horse is central to understanding the any of the impacts of participation in this activity; both in the activity itself and beyond in other life situations. The children described a connection or bond with the horse which was identified as an overarching theme that was interwoven throughout the other seven identified themes. Themes were classified according the “F-word’s framework” which, is a proposed way to implement the ICF model into research and rehabilitation settings. A 7<sup>th</sup> “F-word”, feelings was added as this was a recurring element expressed by the children, specifically relating their experience of THR with feelings of happiness or excitement. As well as, in the complexity of the children’s feelings relating to the sensory aspects of horseback riding in regards to fitness and function that differed greatly from those of their parents. In the current study, the themes/f-words were ordered from greatest importance to least importance as follows: Fun, Feelings, Function, Fitness, Family, Friends and Future. This is the first study that we know of in this population that has elucidated the importance of the connection to the horse as a reason why participation in this adapted PA has a significant impact on the lives of these children.

### *5.1 Connection to the Horse*

The children repeatedly described their interactions with their horses in a way that showed how they viewed the horse as a friend. The horse was talked about with notes of awe, love and curiosity. Many of the children’s descriptions were very sensory in nature but always came back to feeling happy or feeling good when they were on, touching, or around the horse and even the anticipation of going to see the horse. Some of the children shared that they felt sad when they left the horse at the end of their lesson or if there was a period of time where they wouldn’t see the horse. The interviews took place during one of the provincial lockdowns due to COVID-19 and the children were sad that they wouldn’t be back at the riding centre for quite some time as they missed their horse. One of the riders even said that she was sure her horse missed her too!

Throughout the interviews and analysis of the transcripts I felt a profound sense of resonance with the children’s perspectives both with my memories of being a child and

experiencing the intense wonder and attachment to various horses I rode in lessons to how the bonds I feel with certain horses as adult. As a THR coach, the participants words also resonated with many of the comments some of my students had shared with me over the years about their ponies or horses and I now see their comments about their horses in a very different light.

The horse human connection can be traced back thousands of years and the physical benefits of horseback riding were described by Hippocrates between 460 and 270 BC. Throughout history the incomparable bond between the horse and his rider has been explored from Greek warriors 2000 years ago to elite equestrian athletes, coaches and trainers in the present day. It doesn't matter who is riding the horse, if there is mutual understanding and kindness between the horse and rider, a partnership is formed (Tufton & Jawott, 2021). Human animal interactions is a growing field of study in developmental psychology with the goal of understanding the potential role pets and animals have on children's development and wellbeing (Eposito et al., 2011). Animal assisted interventions are becoming more common and there seem to be beneficial results, but the field is in its infancy. There is limited understanding of how the unique human-animal relationships impact typically developing children, but it seems to be seen as greatly beneficial particularly through impacts on physical and psychosocial outcomes and a source of emotional support.

Furthermore, the healing and life changing power of horses has been known and explored for centuries in the equestrian community; however, it was not until the 1952 Olympic games when a rider with paralysis won a silver medal in dressage that attention shifted to how the horses movement could positively impact individuals with disabilities (Berg and Causey, 2014). The bulk of research in this area for individuals with CP has focussed on the benefits of THR and HT on physical outcomes that correlate with the ICF categories of function and activity. Participation outcomes in THR are not documented in this population (Snider et al., 2007); even though CP has the potential to impact all domains of health (Whitney et al., 2018). Every person with CP experiences different levels of impairments, limitations, and restrictions in motor, cognitive and social domains, meaning that participation outcomes should be a goal of adapted activities.

THR appears to have the potential to positively impact emotional, social and physical domains of functioning, perhaps through the bond with the horse.

It has been postulated that the bond formed between the horse and participant is very likely a powerful motivating factor for individuals engaging in equine assisted activities; however, no studies could be found that wholly supported that assumption. (Berg and Causey, 2014). A recent qualitative study of parents' of children with disabilities perspectives of THR, briefly mentioned that the bond between the horses and children was perceived as aiding the children in obtaining more benefits from the activity (Boyd and Le Roux, 2017). No further detail was provided and the children in their sample had a variety of diagnoses (Boyd and Le Roux, 2017). In the current study the focus of understanding the experiences of participation in THR from the perspective of the children themselves is novel, as is the finding that the essence or the most meaningful aspect of participation in THR for children with CP is the bond with the horse.

There is broader support to this finding in pediatric rehabilitation with recent studies that indicating positive healing, emotional and social impacts of horse-related therapies for individuals with autism spectrum disorders (Borgi, 2016) as well as some psychiatric disorders (Bizub, 2003) and survivors of trauma (Yorke et al., 2008). A characteristic feature of autism spectrum disorder is a persistent deficit in social communication and social interaction. There is growing evidence for the efficacy of animal assisted interventions in this population. In animal assisted interventions, the intervention is focussed around utilizing the emotional aspects of the human-animal relationship for specific therapeutic goals. For children with autism spectrum disorder who participate in THR or equine assisted programs, the most commonly reported outcome is an increase in their ability to interact socially compared to control participants who receive no treatment (Borgi, 2016). Horses provide a unique opportunity for positive social engagement for these children that seems to translate to improved social interactions between humans and promotes social development (Borgi, 2016).

In the exploratory research in the area of equine-human bonds for people who have experienced trauma, the deep emotional connections that are formed with the horse had immense therapeutic value for the healing process (Yorke et al., 2008). Some of the main features of the equine-human bond that is different from other relationships with

animals or humans is the accepting and non-judgemental nature of the horse. Horses are prey animals that are extremely perceptive and have complex communication themselves (Williams, 2004). Horses communicate with each other through vocalizations and body language that includes signals with their tails, facial expressions and ears (Williams, 2004). Through non-verbal communication the horse reacts to situations and if the rider is tuned in to the horse, clear communication between species can occur which contribute to a partnership or bond like the ones described in the current study. Furthermore, the fact that you can ride a horse provides a completely unique physical experience and connection that is not possible with other animal relationships, this physical proximity leads to a sense of deep physical connection (Yorke et al., 2008). Many of the activities with the horse also emphasize this component of physicality, such as grooming the horse where the rider is constantly touching the horse's hair and body. Horses are herd animals and will groom their friends in the herd (Williams, 2004), making this routine riding activity very intimate to not only the rider but also to the horse as it shows that the animal trusts the human. Some of the children in this study described that one of their favourite parts of riding lessons was petting the horse or touching the horse during their riding time. This exchange of physical affection is something that strengthens the emotional connection between the child and the horse. This physical closeness and affection may be different from touch experienced in typical therapeutic settings; this unique experience and may be a very positive and distinctly different use of physical touch for therapeutic gain (Yorke et al., 2008).

One of the younger riders repeatedly described how her horse and her feelings were the same or linked and regularly used terms of love and affection when talking about her horse. It appears that the deep emotional bonds that contributed to the healing process for people who experienced trauma are also being experienced by the children with CP in this study through the lens of friendship. Children with CP often have fewer reciprocated friendships, lower social status and are more isolated and bullied by their peers than children without a disability (Nadeau & Tessier, 2006). Furthermore, (Lindsay and McPherson, 2012) identified that children with CP in a school setting often experience bullying from peers and teachers. The accepting non-judgemental nature of the horse makes them the perfect friend for a child who is likely experiencing social

exclusion and isolation in school settings because of their disability. The horse does not see the disability that is often the focus in these children's lives, the activity of horseback riding provides an opportunity to focus on the child's abilities in a safe setting with an accepting animal friend. Providing opportunities for friendships is very important for children with CP as it contributes to overall wellbeing (Shikako-Thomas et al., 2012). For children who struggle to connect with peers a horse might be the ideal way to provide an opportunity for a safe non-judgemental friendship. Perhaps as it is for children with autism spectrum disorder, the relationship with the horse might translate to greater social development in other settings. Furthermore, having a special horse friend may provide children a topic for discussion with their peers and the confidence to broach social situations differently.

THR is unique in that it is an adapted PA with the opportunity to work on emotional and social skills. This combination is particularly powerful as children with CP are at risk for social exclusion and typically experience lower habitual PA levels. THR may be an opportunity to maximize the benefits of PA while incorporating other aspects that are essential for overall wellbeing. Finally, all efforts should be made by care providers to promote horse-human interactions in the lesson environment as the opportunity to positively impact to the children's overall wellbeing and health related quality of life at a young age are critically important (Maher, Toohey & Ferguson, 2016 and Shikako-Thomas et al. 2012).

## *5.2 Fun*

The fun "f-word" can fit the ICF element of personal factors (What does this particular child enjoy doing?) and/or participation (involvement in meaningful life situations), and fun is really what childhood should be about (Rosenbaum and Gorter, 2012). All of the children in this study identified that they found all aspects THR fun, citing elements such as trotting on the horse, petting the horse, playing games on the horse with their instructor and feeding the horse treats. Children prefer PA that they find fun, being with family or friends is a strong facilitator for fun PA experiences (Lauruschkus et al., 2015). Positive PA behaviours are able to be encouraged when the child likes the activity they are doing (Vershuren et al., 2016). THR has the potential to

increase habitual PA levels in children with CP because it is an activity that they enjoy and perceive as fun. Health care practitioners should endeavor to find out what children want to do and to find ways to adapt the identified preferred activities as needed to promote increased participation in life situations (Rosenbaum and Gorter, 2012 & Shikako-Thomas, 2008). Children with disabilities have lower rates of social participation (Michelsen et al., 2014) and are at risk for lower habitual PA levels than their able-bodied peers (Vershuren et al., 2016). Finding out what activities the children enjoy and using these identified activities to build children's confidence, competence, sense of achievement and capacity through fun is what makes things meaningful to most children (Rosenbaum and Gorter, 2012). Further, increasing opportunities for participation in physical and leisure activities may translate to increased HRQOL and happiness across life situations (Maher, Toohey & Ferguson, 2016; Petrenchik et al., 2011).

For the children in this study, THR was an identified activity that they found fun. Finding ways to continually enhance the fun aspects of the THR to encourage long-term engagement in the activity should be emphasized to THR centres and instructors. James and his mom shared that although they love working with their horse, Louie, they find the lessons very boring with their current instructor who does not provide opportunities for growth of riding skills, games or activities with the horse. This was disappointing to hear because it was clear that he really enjoyed riding, found it fun as well had made a connection to his horse. It is important that children like James, who has hemiplegia and uses a wheelchair, find activities that encourage them to move are important for maintaining and improving physical function but also for building self-confidence and increasing enjoyment of life. All the instructors in this study were required to be CanTRA certified, which is a certification process that is focused on rider safety, disability education and equestrian training. From this study's findings, we propose that ongoing training needs to be offered to teach instructors how incorporate fun into their lessons utilizing the greatest tool at their disposal, the horse. In addition to the efforts needed to promote the bond with the horse mentioned previously, more opportunities for trotting or fast walks, grooming or bathing the horse, giving the horse treats, learning about horsemanship skills in the form of a game should be integrated into all lessons. These are

activities that are easy to implement with appropriate training and are adaptable so that there are options that are possible and fun for all riders of any skill level. It was identified that some of the children and parents found that a focus in the components of the lesson were about addressing their disability rather than a focus on engagement in fun and meaningful activities. Since participation is one of the goals in life, the emphasis in a lesson environment should always be on making the experience fun and meaningful. One of the riders described that his favourite parts of his riding experience were going fast, petting the horse and playing games. It is recommended that instructors focus on the ability in the child and focus on creating opportunities to foster fun and social interactions in the lesson environment that involve the horses. As Allie said “The best part of therapeutic horseback riding is RIDING the horse!” With this mantra in mind, and more focus on fun with the horse, experiences like the one James had will become a thing of the past. The clear message to THR instructors from the children themselves is to just treat them like kids and let them have fun on the horse!

### *5.3 Function and Fitness*

Function and fitness as they relate to THR had considerable overlap and it was difficult to separate from each other in the analysis. In the ICF model these represent multiple domains including body functions and structures, activity and participation. In the biomedical model focuses on fixing impairments, now it is accepted that any aspect of health such as function, is influenced by a myriad of factors that are all interconnected in a dynamic fashion (Rosenbaum & Gorter, 2012).

In this study, the areas of function and fitness were of greatest importance to the parents of the children, and not at all to the children. When prompted the children would agree with their parents about physical gains they were experiencing but their stories were usually focussed on the sensory or fun aspects of the activity rather than the physical benefits. The parent’s perspectives are in alignment with the previous literature in THR where physical outcomes are the focus, perhaps because they are more easily defined and measurable. As well because in the literature the parents’ voices were the only voices heard, the childrens perspectives have not been included. Physical outcomes such as improvements in gross motor function, posture, balance, muscle symmetry and

gait have been demonstrated to improve following THR for individuals with disabilities including children with CP (Stergio et al. 2016). Overall, the parents reported that their children were stronger than when they first started riding, with noticeable gains in their core strength. Balance, posture, stretching and the opportunity to work on physical strength were discussed by the parents of the children. Parents viewed participation in THR a way to increase engagement in PA, promote healthy behaviours and decrease sedentary time in children with CP, which may reduce the risk of the development of secondary conditions and enhance quality of life (Fowler et al., 2007).

In contrast, the children didn't care to talk about improvements in their physical strength they told stories about how riding made them **feel**, "jiggly", "wobbly", "sweaty", "tired", "good", "happy" and "relaxed". The children's focus was on the sensory experiences of riding the horse and how this felt to them in their bodies. Often their parents would interrupt these descriptions with prompts such as "yeah but, what about do you feel strong? Or do you sit taller?" The children would agree with these prompts but then often continue back into their own descriptors that revealed more about the sensory experience of riding the horse. This discrepancy was very interesting to observe and has not been discussed in the THR literature, potentially because no other studies have talked to the children themselves.

A possible explanation for the focus of the parents on physical outcomes could be that this is an outlet for coping with the grief and chronic sorrow associated with the parental experience of having a child with a disability. In a qualitative inquiry, parents of children with CP shared experiences of recurring periods of grief after their child's diagnosis particularly when their child failed to meet a developmental milestone or at times of specific transition (Whittingham et al., 2013). Parents described coping mechanisms such as having an individual action plan formulated with a health care practitioner as an external grief management strategy (Whittingham et al., 2013). To be eligible for participation in THR at the centres we recruited from, children had to be referred by a physician that felt that THR would benefit the child. Therefore, it is possible that the parents attached some hope that THR would impact their child in a positive way or to cope with the ongoing emotional challenges of having a child with a disability. Furthermore, changes in physical function are more tangible, observable, and measurable



compared to participation outcomes. Parents may have researched or spoken with other parents and learned or heard about the documented or anecdotal positive impact of THR on physical outcomes. This could be another reason why the parents chose to focus on changes in physical outcomes. Parents who want their child to “catch up” developmentally to their peers may focus on the modifiable aspects of the activity in order to rationalize that it is having some benefit for their child, but might be overlooking the psychosocial and participation benefits perceived by the children themselves.

A further possible explanation is that traditionally healthcare practitioners focused on clinical treatment of impairments at a biomedical level (Rosenbaum & Gorter, 2012). There has been a significant shift in pediatric rehabilitation away from this biomedical model to the more holistic approach based in the ICF framework with a focus on participation outcomes. However, it is possible that some practitioners still practice within the biomedical model and try to “fix” impairments which could influence parents focus on the measurable effects of THR on the body rather than psychosocial or participation impacts.

Our secondary objectives were to look at how THR impacted fatigue and pain in the participants. Pain and fatigue are barriers to participation in PA for children (Laurushkus, 2014) therefore, it should be a priority to understand how these secondary conditions impact participation in different adapted physical activities such as THR. Additionally, adults with CP who participated in hippotherapy felt that a benefit of the HT was pain relief (Debusse, Gibb & Chandler, 2009) but no studies have demonstrated this effect in children with CP. In this study these were measured quantitatively but due to the smaller sample than anticipated this data was not able to be analyzed as planned. In the semi-structured interviews, fatigue and pain were not mentioned, either long-term experiences or if riding helped these pre-existing secondary conditions. The children did all share that sometimes after a riding lesson where they spent more time “going fast” (trotting) or keeping their legs in the stirrups longer than they felt tired. This was not every time they rode, rather more on the days where they felt they exercised more. The only mention of pain was that James said sometimes he felt too much of a stretch in his groin area but not always, usually he thought the stretch felt good. Future research should further explore how THR impacts pre-existing fatigue and pain, if the short-term

experience of feeling tired after the lesson decreases with greater fitness and if THR provides pain relief in a younger population.

### *5.5 Family*

Family is an essential environmental context that all children live in, and parents are the central contextual factor in their children's lives (Rosenbaum & Gorter, 2013). Having a child with CP may lead to parents perceiving restrictions in family participation that begin early in life and can increase over time (Rentinck et al., 2009). Parents play a crucial role in providing their child with opportunities for participation (Rentinck et al., 2009) and if parents experience or perceive restrictions when undertaking family activities as a result of their child's disability, then opportunities where restrictions can be overcome to facilitate family participation are extremely valuable.

THR was important to all the families, with riding described as a highlight of the week and often the excitement about riding was brought home and shared with parents and siblings. The COVID-19 pandemic introduced a very unique element where due to public health restrictions regarding physical closeness and touch, parents or family members were integrated in the lessons to provide physical support to their child on the horse. This is not typical practice in THR, usually it is a trained volunteer, and the parent has a period of respite while they watch the lesson with other parents. As well, having parents out of the arena allows for the instructor to focus on skills such as independence and social connections with the other riders and volunteers. As described in Boyd and Le Roux (2017), the opportunity for parents to talk to other parents who are in a similar situation can be uplifting and a "safe haven" in their week. This was not reported in our study because the parents were in the lessons with their child which, provided a different and unique opportunity for shared family participation in a leisure activity.

Parents reported satisfaction due to the fact that THR was enriching their children's lives that they perceived their child was benefitting from. Parents appeared to be happy and comforted that they could provide experiences for their children in places they could just be themselves. This sentiment was also expressed by parents in the Boyd and Le Roux (2017) study where the authors reported that participation in THR brought satisfaction and happiness to the parent due to seeing their child happy in the activity.

Parents also discussed experiencing emotional and social benefits of being in the lessons with their children, described feeling a connection to the horse themselves, looked forward to the activity and seeing the horse every week made them happy too.

For Mia, both her parents got to be her side walkers and they discussed how they enjoyed the experience as a family and often talked about her horse Misty for days after the riding lesson. Her mother described how the whole family would give Misty pats and they brought her carrot every week, it was fun for all of them and Mia loves riding so much, having her parents be a part of her lesson made it even more special. Jasmine's description of her first ride involved a clear sense of pride when she called to her dad "*Look dad, I'm doing it! I'm really doing it!*" It is really amazing that her parents could be a part of such a life-altering moment for her in such an intimate way. Furthermore, the value of having the opportunity to share this activity and bond with the horse as a family cannot be understated as it creates positive memories for the family that are not focussed on their child's disability and what they can't do but rather what on what they can do.

Additionally, horseback riding provided a shared experience for the riders to have new conversations with some of their siblings or have an activity their siblings wanted to watch and even try themselves. A shared experience for the siblings with and without a disability provides a connection and a special bonding opportunity that is often not possible in other recreational or physical activities. Both the children and parents recognized and valued the shared experience opportunity THR provided to facilitate new conversations as well as a sense of belonging within the family context. There is a distinct lack of research on the area of shared recreation in families that include children with disabilities and none including children with CP. For families without a child with a disability, shared family recreation experiences lead to healthy and happy family lives (Mactavish, Schleien & Tabourne, 1997). There was a lack of literature about shared family recreation for families that include a child with a disability. The COVID-19 pandemic may have had positive impact on children participating in THR in that it required parental involvement that allowed for the shared experience of physical and recreational activity contributing to overall happiness and providing a bonding with the horse and the family as a whole. It will be interesting to see if after the COVID-19 pandemic resolves, whether parents will continue to be a part of their child's lessons or return to being a spectator.

However, based on this new finding of the benefits to the family, THR centres could offer horse experiences geared for the entire family. A suggestion could be to offer a grooming program or other horsemanship focussed program for the family as a way that families could continue to experience all the positive emotional benefits that the horse provides in a way that is family centered, has greater longevity but still allows the child to work towards independence around the horses as well as explore new social connections with other families in a safe environment.

### *5.6 Friends*

Friends and friendships span the same ICF domains as “fun” including personal factors and participation (Rosenbaum & Gorter, 2012). Children with CP often have lower social participation and challenged relationships (Michelsen et al., 2014). Participation in recreation and leisure activities can provide opportunities for social involvement and foster socially inclusive opportunities for friendships (Shikako-Thomas et al., 2012, Lindsay & McPherson, 2012). Overall, social interactions with other riders in THR lessons was absent. For some of the rider’s horseback riding was a very social experience with their riding instructor, and volunteers/family members. Others shared that there was no interaction with the other riders in the lesson highlighting the need to educate the instructors on the importance of fostering peer connections as an essential component of child development. Perhaps there needs to be more education and awareness to instructors that children with CP can experience lower social participation and relationships. Meaning that if a child is riding with another child in the lesson, fostering social interactions between them should be a priority. Mia and her mom talked about how she was in a private lesson but there was another lesson going on at the same time with some older kids but a couple times they played a game together. Playing a game with the older kids was a memorable experience for her not only because it was fun but because it was a social event with older kids which was perceived as being “cool”. Introducing more games in the lesson that involve the horse and the other riders is the perfect opportunity for facilitated and safe social interactions that could lead to friendships between participants to increase social relationships. These sorts of social

connections should be fostered as much as possible in lesson environments to create positive impacts on overall wellbeing.

THR provides an opportunity for children to have a special and exciting activity experience to share with their peers, that could promote inclusion from peers. However, the riders had divided experiences about if they talked to their friends at school or teachers about horseback riding, it was unclear if this was due lack of opportunities to do so (i.e. unscripted social time) or if they did not have the friends to share this with. For some it seemed that there were other more pressing topics to discuss in the classroom or that the teacher had strict rules about telling stories in class time. In contrast to one of the riders who was very outspoken about how she told her friends and teachers about horseback riding at school, and they were all very interested and even wanted to try it themselves one day! It is possible that with the transition to virtual schooling, there has been a decrease in the amount of unstructured conversation time and the number of opportunities for children to share extracurricular activity experiences.

One experience was difficult to hear, and my interpretation was that this participant did not have friends to share the horseback riding experience other than his support worker. In his interview he didn't discuss friends at all, he was hesitant to answer questions about talking to his friends about horses and when his mother mentioned his support worker was his friend he very adamantly stated that she wasn't a friend she was his support worker. This participant also did not have any social interactions in his riding lesson, which was very disappointing to learn. Often, even a single reciprocal friendship is enough to be protective to the child against bullying and it is the quality of friendships rather than the number is what is important (Nadeau & Tessier, 2006, Rosenbaum & Gorter, 2012). THR instructors have the very important role of facilitating opportunities for all children in the THR setting to have positive social experiences and foster friendships in the safe space that is created alongside their horse friends.

### *5.7 Future*

Future is ultimately, what development and growing up is all about, and it is important to think about the future in a positive way and to address child/family dreams and goals for what their future might look like (Rosenbaum & Gorter, 2012). For this

study, the interpretation of ‘future’ focussed on independence as it is a key part of development and “growing up”, as well as understanding if THR was something they wanted to continue and be involved with long-term, which could encourage promotion of healthy behaviours across the lifespan.

Two of the parents felt that THR gave their children the opportunity to do something on their own that was uniquely theirs. One mother felt that the greatest impact of THR participation for her daughter was independence, because she could participate in an activity on her own with her parents playing more of a supplementary role rather than participating with her. A more specific example of gaining independence in the lesson was shared by a participant who no longer needed a side walker, and how much she enjoyed being more “on her own” on the horse. Future research could include a more in-depth exploration of the independence the riders experience while riding and if these gains translate to other parts of their lives.

All of the riders enthusiastically wanted to keep horseback riding and their responses echoed previous themes of fun and the connection to the horse. Lauruschkus et al., (2015) documented that children with CP preferred PA when it was fun, and with family, friends or animals. Promoting PA and healthy behaviours over the lifespan is a challenge for health care providers, this unique blend of features that promote participation in PA seem to have an impact on the desire to participate long term in THR. The insights gained from this qualitative inquiry may help providers make more informed recommendations (e.g. make it fun, do it with friends and family) to families on the reasons behind why this activity makes a difference in the lives of children of CP.

### *5.8 Strengths of the Study*

A strength of this study is how it addressed the quality criteria of: worthy topic, rich rigor, sincerity, credibility, significant contribution and ethical (conduct) (Tracy, 2010). Throughout the research process this was achieved through: writing reflexive field notes and engaging in reflexive conversations on a weekly basis with my supervisor, Dr. Laura Brunton. Within these weekly conversations we discussed topics related to choosing a relevant and significant topic that would contribute to the field of study, choosing frameworks, models and methodology, transparency about the research process,

theoretical constructs, paradigm positionality, data collection and analysis processes, ethics, ensuring multivocality and the designing opportunity for member reflections from the participants. The findings of this study extend current knowledge and hopefully will impact practice and generate ongoing research (Tracy, 2010). This indicates that this study provides a significant contribution to the field of study.

### *5.9 Limitations of the Study*

The present study aimed to explore how the experience of participation in THR impacts children with CP across multiple health domains (psychological, social and physical). Originally, this study was designed to be a mixed-methods study with concurrent approach where qualitative data was the focus and quantitative data would be supplementary in nature. Due to the COVID-19 pandemic, the shift was made to emphasize the qualitative analysis and use the quantitative data descriptively which, although well suited for exploration of the primary research question, did pose some limitations. This study was conducted using a constructivist perspective; therefore, all the children shared their experiences of their own distinct realities that were different from each other and other children who were not included in the study. This means that the findings of this study are not generalizable to all children with CP who participated in THR however, from a constructivist paradigm this is expected. The findings from this phenomenology lay the groundwork for future research in this area and begin to articulate potential common elements across the distinct realities. Recruitment was limited by the closure of the riding centres due to the COVID-19 restrictions which required a shift from the proposed purposive sampling techniques to a convenience sampling approach, which limited the ability to get a representative sample across ages and GMFCS levels. However, we did have equal representation from each sex, age range from ages 5-8 and GMFCS levels II-IV which considering the circumstances is quite remarkable. In post-pandemic life, future studies should recruit from multiple centres across the province to be able to fully employ purposive sampling techniques and gain additional child and family perspectives on THR. Unfortunately, only one horseback riding journal was returned to us and used for prompting during the interview. It is possible that due to having to mail the journals they were not returned and without actually seeing the

families it was not possible to remind them to use it through the study. For the participant who used the journal, it was a very useful tool in the interview as well, the participant stated that they liked it and wanted to draw more. Another participant brought a toy horse to the interview which, was another method of engagement that was unplanned but was very useful throughout the interview. Furthermore, it is important to note that all the children in this study were already participating in THR meaning their parents had likely identified that this was an activity they enjoyed and wanted to participate in. Children who do not like horses would probably not be enrolled in the activity eliminating those who would not find the activity fun or helpful. Finally, I acknowledge that my past experiences of THR, my previous preconceptions about CP and my own disability experience may have shaped my interpretations of the study findings and that others may interpret the study findings differently than I did. However, I believe that due to my extensive knowledge of these components I was uniquely positioned to do this research and my interpretations of the results may lead to new avenues of future study.

#### *5.10 Future Directions*

Human-animal interaction research is a growing field and there is much to still be learned about how animals can impact humans. Future research should further explore the meaning of the bond between the child and the horse and how this bond can be fostered in the THR setting. It would also be interesting to determine if having a horse as a friend can translate into improved social skills in other situations and if the horse friend can help the child bridge that social gap. Another area that this study showed was the positive impact of shared activity of THR for the whole family, this area warrants more research and discussions with centres to determine if family-centered programs involving horses are an option and provide objective measurable benefits to all family members. Finally, a deeper exploration of how THR impacts happiness and overall wellbeing, including pain and fatigue, in the long-term would be a great next step to the emerging evidence.



### *5.11 Conclusions*

This embedded mixed methods study is the first study that we know of that shows that the connection with the horse is the aspect of participation in THR that has the greatest impact across multiple domains of health for children with CP. Although we cannot definitively say that this will be true for all children with CP who participate in THR, this finding sets the groundwork for future research in this area.

Recommendations for THR providers and instructors are to focus on fostering the bond between the horse and the child as much as possible in the lesson as this is the most important factor and impact for all health domains. Activities that involve grooming the horse, petting the horse, learning about what the horse eats, horsemanship games, going fast and having fun should all be emphasized in the lesson environment as much as possible. Furthermore, social interactions and friendships between children in the riding lesson need to be encouraged, using those horsemanship games give children the opportunity to play with each other as well as their horse. Ultimately, this should be a fun experience for the child and from what the children in our study had to say almost anything that they are doing with the horse is fun. Due to COVID-19 most of the children's families in this study were involved in the activity and the family felt the positive impacts of activity as well. Finding ways to continue family involvement in THR-related activities could be a novel area way for centres to make even more of a difference in lives of children with disabilities. From this study's findings, recommendations for health care providers of children with CP would be to let families know that participation in THR can impact multiple domains of health (psychological, social and physical) through the connection to the horse, fun, feelings, fitness, function, family, friendships and future.

## References

- 1) Auduly, Å., Packer, T., & Versnel, J. (2014, September 1). Identifying gaps in knowledge: A map of the qualitative literature concerning life with a neurological condition. *Chronic Illness*. SAGE Publications Ltd.
- 2) Berg, E. L., & Causey, A. (2014). The life-changing power of the horse: Equine-assisted activities and therapies in the U.S. *Animal Frontiers*, 4(3), 72–75.
- 3) Bizub, A.L., A. Joy and L. Davidson. 2003. “It’s like being in another world”: demonstrating the benefits of therapeutic horseback riding for individuals with psychiatric disability. *Psychiatr. Rehabil. J.* 26:377-84.
- 4) Borgi, M., Loliva, D., Cerino, S., Chiarotti, F., Venerosi, A., Bramini, M., ... Cirulli, F. (2016). Effectiveness of a Standardized Equine-Assisted Therapy Program for Children with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 46(1), 1–9.
- 5) Boyd, L., & Le Roux, M. (2017). ‘When he’s up there he’s just happy and content’: Parents’ perceptions of therapeutic horseback riding. *African Journal of Disability*, 6(0).
- 6) Brunton, L. K., & Bartlett, D. J. (2013). The bodily experience of cerebral palsy: A journey to self-awareness. *Disability and Rehabilitation*, 35(23), 1981–1990
- 7) Brunton, L. K., & Bartlett, D. J. (2017). Construction and validation of the fatigue impact and severity self-assessment for youth and young adults with cerebral palsy. *Developmental Neurorehabilitation*, 20(5), 274-279

- 8) Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). PA, exercise, and physical fitness: definitions and distinctions for health-related research. *Public health reports (Washington, D.C. : 1974)*, *100*(2), 126–131.
- 9) Coster, W. J., Ni, P., Slavin, M. D., Kisala, P. A., Nandakumar, R., Mulcahey, M. J., ... Jette, A. M. (2016). Differential item functioning in the Patient Reported Outcomes Measurement Information System Pediatric Short Forms in a sample of children and adolescents with cerebral palsy. *Developmental Medicine and Child Neurology*, *58*(11), 1132–1138.
- 10) Creswell, J. Clark, V. (2007). *Designing and Conducting Mixed Methods Research* Third Edition. Sage Publications
- 11) Davis, E., Davies, B., Wolfe, R., Raadsveld, R., Heine, B., Thomason, P., ... Graham, H. K. (2009). A randomized controlled trial of the impact of therapeutic horse riding on the quality of life, health, and function of children with cerebral palsy. *Developmental Medicine and Child Neurology*, *51*(2), 111–119.
- 12) Davis, J. M. (1998). Understanding the meanings of children: A reflexive process. *Children and Society*, *12*(5), 325–335.
- 13) Debusse, D., Gibb, C., & Chandler, C. (2009). Effects of hippotherapy on people with cerebral palsy from the users' perspective: a qualitative study. *Physiotherapy theory and practice*, *25*(3), 174–192.
- 14) Esposito, L., Mccune, S., Griffin, J. A., & Maholmes, V. (2011). Directions in human-animal interaction research: Child development, health, and therapeutic interventions. *Child Development Perspectives*, *5*(3), 205–211.
- 15) Fairhurst C, Shortland A, Chandler S, et al. Factors associated with pain in adolescents with bilateral cerebral palsy. *Dev Med Child Neurol*. 2018;61(8):929–936.

- 16) Fowler, E. G., Kolobe, T. H. A., Damiano, D. L., Thorpe, D. E., Morgan, D. W., Brunstrom, J. E., ... Valvano, J. (2007, November). Promotion of physical fitness and prevention of secondary conditions for children with cerebral palsy: Section on pediatrics research summit proceedings. *Physical Therapy*.
- 17) Gadamer, H.-G. (1975/2004). Truth and method (J. Weinsheimer & D. G. Marshall, Trans., 2nd, Rev ed.). London, UK: Continuum.
- 18) Guba, E., & Lincoln, Y. (1989). Fourth generation evaluation. Newbury Park, CA: Sage.
- 19) Hidecker, M. J. C., Paneth, N., Rosenbaum, P. L., Kent, R. D., Lillie, J., Eulenberg, J. B., ... Taylor, K. (2011). Developing and validating the Communication Function Classification System for individuals with cerebral palsy. *Developmental Medicine and Child Neurology*, 53(8), 704–710.
- 20) Lauruschkus, K., Nordmark, E., & Hallström, I. (2015). “It’s fun, but...” Children with cerebral palsy and their experiences of participation in physical activities. *Disability and Rehabilitation*, 37(4), 283–289.
- 21) Lauruschkus, K., Nordmark, E., & Hallström, I. (2017). Parents’ experiences of participation in physical activities for children with cerebral palsy—protecting and pushing towards independence. *Disability and Rehabilitation*, 39(8), 771–778.
- 22) Lindsay, S., & McPherson, A. C. (2012). Experiences of social exclusion and bullying at school among children and youth with cerebral palsy. *Disability and Rehabilitation*, 34(2), 101–109.

- 23) MacKinnon, J., Noh, S., Lariviere, J., MacPhail, A., Allan, D., Laliberte, D. (1995). A Study of the therapeutic Effects of Horseback Riding for Children with Cerebral Palsy. *Physical and Occupational Therapy in Pediatric* 15 (1), 17-34.
- 24) Mactavish, J., Schleien, S., & Tabourne, C. (1997). Patterns of family recreation in families that include children with a developmental disability. *Journal of Leisure Research*, 29(1), 21–46.
- 25) Maher, C. A., Toohey, M., & Ferguson, M. (2016). PA predicts quality of life and happiness in children and adolescents with cerebral palsy. *Disability and rehabilitation*, 38(9), 865–869.
- 26) Majnemer, A., Shikako-Thomas, K., Chokron, N., Law, M., Shevell, M., Chilingaryan, G., Poulin, C., & Rosenbaum, P. (2010). Leisure activity preferences for 6- to 12-year-old children with cerebral palsy. *Developmental medicine and child neurology*, 52(2), 167–173.
- 27) Michelsen SI, Flachs EM, Damsgaard MT, et al. (2014) European study of frequency of participation of adolescents with and without cerebral palsy. *Eur J Paediatr Neurol* 2014; 18: 282–94.
- 28) Msall ME, DiGuadio KM, Duffy L, LaForest S, Braun S, Granger CV. WeeFIM: normative sample of an instrument for tracking functional independence in children. *Clin Pediatr*.1994;**33** :431– 43.
- 29) Neville, A., Soltani, S., Pavlova, M., & Noel, M. (2018). Unravelling the Relationship Between Parent and Child PTSD and Pediatric Chronic Pain: the Mediating Role of Pain Catastrophizing. *Journal of Pain*, 19(2), 196–206.
- 30) Oskoui, M., Coutinho, F., Dykeman, J., Jetté, N., & Pringsheim, T. (2013, June). An update on the prevalence of cerebral palsy: A systematic review and meta-analysis. *Developmental Medicine and Child Neurology*.

- 31) Palisano, R. J., Rosenbaum, P. L., Bartlett, D. J. & Livingston, M. H. (2008). Content validity of the expanded and revised gross motor function classification system. *Developmental Medicine and Child Neurology*, 50, 744-750.
- 32) Patton, G.C., & Viner, R. (2007). Pubertal transitions in health. *Lancet*.
- 33) Petrenchik, T. M., King, G. A., & Batorowicz, B. (2011). Children and youth with disabilities: Enhancing mental health through positive experiences of doing and belonging. In S. Bazyk (Ed.), *Mental Health Promotion, Prevention, and Intervention with Children and Youth: A Guiding Framework for Occupational Therapy* (1st ed., pp. 189–205). Bethesda, Maryland: AOTA Press.
- 34) Rentinck, I. C. M., Gorter, J. W., Ketelaar, M., Lindeman, E., & Jongmans, M. J. (2009). Perceptions of family participation among parents of children with cerebral palsy followed from infancy to toddler hood. *Disability and Rehabilitation*, 31(22), 1828–1834.
- 35) Rimmer, J. H. (2006). Use of the ICF in identifying factors that impact participation in PA/rehabilitation among people with disabilities. *Disability and Rehabilitation*, 28(17), 1087–1095.
- 36) Rosenbaum, P. (2009). A randomized controlled trial of the impact of therapeutic horse riding on the quality of life, health, and function of children with cerebral palsy (Commentary). *Developmental Medicine & Child Neurology* 51: 88–91.
- 37) Rosenbaum, P., & Gorter, J. W. (2012). The “F-words” in childhood disability: I swear this is how we should think. *Child: Care, Health and Development*.
- 38) Rosenbaum, P., Paneth, N., Leviton, A., Goldstein, M., Bax, M., Damiano, D., Dan, B., & Jacobsson, B. (2007). A report: the definition and classification of cerebral

- palsy April 2006. *Developmental medicine and child neurology. Supplement*, 109, 8–14.
- 39) Ross, S. M., Case, L., & Leung, W. (2016). Aligning PA Measures With the International Classification of Functioning, Disability and Health Framework for Childhood Disability. *Quest*, 68(4), 521–535.
- 40) Shikako-Thomas, K., Dahan-Oliel, N., Shevell, M., Law, M., Birnbaum, R., Rosenbaum, P., ... Majnemer, A. (2012). Play and Be Happy? Leisure Participation and Quality of Life in School-Aged Children with Cerebral Palsy. *International Journal of Pediatrics*, 2012, 1–7.
- 41) Shikako-Thomas, K., Lach, L., Majnemer, A., Nimigon, J., Cameron, K., & Shevell, M. (2009). Quality of life from the perspective of adolescents with cerebral palsy: “I just think I’m a normal kid, I just happen to have a disability.” *Quality of Life Research*, 18(7), 825–832.
- 42) Snider, L., Korner-Bitensky, N., Kammann, C., Warner, S., & Saleh, M. (2007). Horseback Riding as Therapy for Children with Cerebral Palsy. *Physical & Occupational Therapy In Pediatrics*, 27(2), 5–23.
- 43) Stergiou, A., Tzoufi, M., Ntzani, E., Varvarousis, D., Beris, A., & Ploumis, A. (2017). Therapeutic Effects of Horseback Riding Interventions: A Systematic Review and Meta-analysis. *American Journal of Physical Medicine and Rehabilitation*, 96(10), 717–725.
- 44) Teachman, G., & Gibson, B. E. (2013, February). Children and youth with disabilities: Innovative methods for single qualitative interviews. *Qualitative Health Research*.

- 45) Tedroff, K., Gyllensvärd, M., & Löwing, K. (2019). Prevalence, identification, and interference of pain in young children with cerebral palsy: a population-based study. *Disability and Rehabilitation*.
- 46) Tracy, S. J. (2010). Qualitative Quality: Eight “Big-Tent” Criteria for Excellent Qualitative Research. *Qualitative Inquiry*, 16(10), 837–851.
- 47) Tufton, L. R., & Jowett, S. (2021). The Elusive “Feel”: Exploring the Quality of the Rider–Horse Relationship. *Anthrozoos*, 34(2), 233–250.
- 48) van Manen, M. (1997). Researching lived experience: Human science for an action
- 49) Verschuren, O., Peterson, M. D., Balemans, A. C. J., & Hurvitz, E. A. (2016, August 1). Exercise and PA recommendations for people with cerebral palsy. *Developmental Medicine and Child Neurology*. Blackwell Publishing Ltd.
- 50) Whalen, C. N., & Case-Smith, J. (2012, August). Therapeutic effects of horseback riding therapy on gross motor function in children with cerebral palsy: A systematic review. *Physical and Occupational Therapy in Pediatrics*.
- 51) Whitney, D. G., Warschausky, S. A., & Peterson, M. D. (2018). Mental health disorders and physical risk factors in children with cerebral palsy: a cross-sectional study. *Developmental Medicine and Child Neurology*, 61(5), 579–585.
- 52) Whittingham, K., Wee, D., Sanders, M. R., & Boyd, R. (2013). Sorrow, coping and resiliency: Parents of children with cerebral palsy share their experiences. *Disability and Rehabilitation*, 35(17), 1447–1452.
- 53) Willams , C. A. (2004). *The Basics of Equine Behavior*. Equine Science Center.  
[https://esc.rutgers.edu/fact\\_sheet/the-basics-of-equine-behavior/](https://esc.rutgers.edu/fact_sheet/the-basics-of-equine-behavior/).



- 54) World Health Organization (WHO). International Classification of Functioning, Disability and Health (ICF). Geneva: World Health Organization, 2001.
- 55) Wright-St.Clair, V. (2015). Doing (interpretive) phenomenology. In S. Nayar & M. Stanley (eds.), *Qualitative research methodologies for occupational science and occupational therapy* (pp.37-52). New York: Routledge.
- 56) Yorke, J., C. Adams and N. Coady. 2008. Therapeutic value of equine-human bonding in recovery from trauma. *Anthrozoos*. 21:17-30.

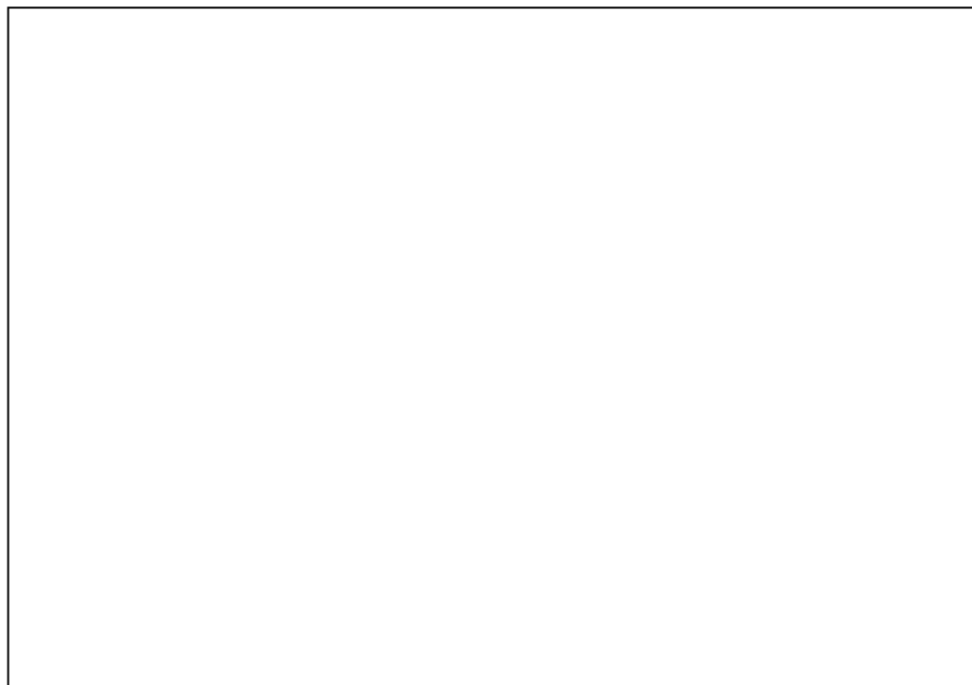
## Appendices

### *Appendix A: Horseback Riding Journal*

## **My Horseback Riding Journal**



**Study: The Physical and Psychosocial effects of  
Therapeutic Horseback riding for Children with  
Cerebral Palsy**



Tell us about your horseback riding session today....

---

---

---

---

---

---

---

*Appendix B : Semi-Structured Interview Guide*

Thank you for agreeing to participate in this study. Today we'll be discussing your experience of your therapeutic horseback riding participation. I will be recording this interview so I can focus on the conversation and type it out later. I just want to remind you that you can choose not to respond to any question without any problem and your parent(s) or caregiver can help you answer at any point. Are you ready to begin?

- 1) Tell me about your experience with horseback riding at (name of specific centre)?

Prompting/Probing questions:

- i. Was horseback riding fun?
  - ii. What parts of horseback riding do you find fun?
  - iii. What parts of horseback do you not find fun?
- 
- 2) Do you feel any different now than when you first started horseback riding?  
(Probe positive or negative feelings to get more understanding)
    - i. Do you feel.... Happy? Sad? Scared? Upset?
    - ii. Can you tell me how your body feels?
- 
- 3) How does the horse make you feel?
- 
- 4) How do you feel when you are leaving horseback riding?
    - i. How does your body feel after riding?
    - ii. How do you feel? Are you happy? Sad?
- 
- 5) How does horseback riding make you feel during the activity?
    - i. Before the activity? After the activity?
    - ii. The next day? The next week?
- 
- 6) How has horseback riding changed your relationships with friends?

- 7) Is there an area of your life that you think horseback riding has had the greatest impact on?
  - i. Ask parent if they think there is an area of their child's life that has been impacted by participation in therapeutic horseback riding.
  
- 8) Has horseback riding changed anything for you and your family?
  - i. Ask this same question to parent
  
- 9) Do you want to keep doing horseback riding?
  - i. Why? Or Why not?

Note: Further questions may be added or questions may be removed and adapted as necessary to the individual being interviewed. Probing will occur to gain a deeper understanding of the topics arising from these questions. If a child is unable to communicate a parent proxy will answer the interview questions on their behalf and wording will be adapted as needed in this case.

*Appendix C – Documentation for Verbal Consent to be Contacted*



**DOCUMENTATION FOR VERBAL CONSENT TO BE CONTACTED FOR RESEARCH PURPOSES**

**TITLE:** The Physical and Psychosocial Effects of Therapeutic Horseback Riding for Children with Cerebral Palsy

**INVESTIGATORS:**

Principal Investigators: Dr. Laura Brunton, PT PhD, Western University, London ON Canada  
 Co-Investigators: Karen Pratt, R.Kin, Western University, London ON Canada,  
 Dr. Marnie Wedlake, RP PhD, Western University, London ON Canada,  
 Dr. Jessie Wilson, OT PhD, Western University, London ON Canada

*Staff member to read to potential participant or their guardian during telephone conversation:*

“You are being invited to give consent for Dr. Laura Brunton, or a qualified member of her study team to contact you at some time in the future to invite you to participate in a research study.”

“The Physical and Psychosocial Effects of Therapeutic Horseback Riding for Children with Cerebral Palsy?”

*If yes, staff member to read the following:*

“Many children with physical disabilities participate in therapeutic horseback riding programs and there are reportedly many health benefits to this activity. However, there is a lack of research evidence to back up these anecdotal claims especially in psychological and social outcome areas. We will study the effects of a 9-12 week therapeutic horseback riding program for children with cerebral palsy focussing on three aspects of health functioning: physical, psychological, and social. Specifically, looking at fatigue and pain levels, mental wellbeing, social inclusion and perceived independence in daily life roles. A mixture of questionnaires and interviews will be used to best capture these factors, which have not been previously studied. Children ages 5-12 with a primary diagnosis of cerebral palsy who are currently participating in a therapeutic horseback riding program will be recruited from four therapeutic riding centres across Southwestern Ontario. The children will complete an electronic questionnaire at two separate time points and participate in an interview (as able) after the 9-12 week therapeutic riding program, parental input is welcomed and may be necessary for some children.

The research team is looking for youth with physical disabilities aged 5 to 12 years to participate in this study. Would you be willing to receive more information about the study from the investigators? If you agree, you will be contacted by telephone at a later date.”

*(Staff member to circle answer to document consent to be contacted)*

YES            NO

*Please document the preferred email address for this contact below.*

**Preferred Email Address:** \_\_\_\_\_

**Preferred Telephone Number** \_\_\_\_\_

*Staff member to read to potential participant or their guardian after documenting successful consent to be contacted:*

“You authorize the designed staff member to disclose your name, age, phone number and email address to the research team for the purpose of being contacted to learn more about the research study, The Physical and Psychosocial Effects of Therapeutic Horseback Riding for Children with Cerebral Palsy”

Every effort will be made to safeguard your contact information. Although access to this information will be limited, there is a small chance that this information could be inadvertently disclosed or inappropriately accessed.

You have been made aware of the reasons why the contact information is needed and the risks and benefits of consenting or refusing to consent.

This consent is effective immediately. Your consent to be contacted can be revoked by you at any time.”

**Date:** \_\_\_\_\_

**Staff Member Name:** \_\_\_\_\_

**Staff Member Signature:**

*Appendix D- Letter of Information and Consent Form (Parent)*



**Letter of Information & Consent**  
(Parent or guardian)

**Title of Study:** The Physical and Psychosocial Effects of Therapeutic Horseback Riding for Children with Cerebral Palsy

**Investigators:** Laura Brunton, PT, PhD, Assistant Professor, School of Physical Therapy, Faculty of Health Sciences, Western University

Karen Pratt, R.Kin, BA(hons), MSc Candidate Health and Rehabilitation Sciences Graduate Program, Western University

Marnie Wedlake, RP, PhD, Assistant Professor, School of Health Studies, Faculty of Health Sciences, Western University

Jessie Wilson, OT, PhD, Assistant Professor, School of Occupational Therapy, Faculty of Health Sciences, Western University

The pronouns “you” and “your” in this letter should be read as referring to the parent of the participant in the study.

You are being invited to participate in the interview portion of a research study exploring how therapeutic horseback riding participation impacts feelings of fatigue, pain, mental well-being, independence and social inclusion in children with cerebral palsy. Currently there is very limited to no information other than anecdotal reports, that show how therapeutic horseback riding effects physical and psychosocial functioning in young children with cerebral palsy. Since your child is a rider in a therapeutic riding program, we are interested in your perspectives on the changes that riding may have had on your child’s life and how it may have impacted your family. In addition to providing support as needed to your child’s responses in the interview, there a couple of questions that will be directed towards the parent’s perspective. This interview session will take up to two hours of your time. The interview will be audio-taped and transcribed at a later date so the researcher can be focused on the interview and to ensure the transcript will be accurate. This session will occur at your therapeutic riding centre.

You will not experience any direct benefits from this study, however, this knowledge may help healthcare providers when providing information on physical activity participation to make fully informed recommendations regarding the benefits of this activity. This information will also help therapeutic riding service providers tailor their programs to better suit their participants if they know more about how it can impact their riders’ lives. There are no known risks associated with your participation in this study.

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions, ask to have some components of the interview excluded or withdraw from the study at any time.





Your confidentiality will be respected. Your research records will be stored in a locked cabinet in a secure office in Elborn College at Western University in London, ON and will be destroyed after 7 years. Audio-tapes will be erased after you have reviewed and approved the transcripts. Only those individuals listed as investigators will be able to access your information. When the results of this study are published, neither your name nor any identifying information will be used.

Representatives from the Western University Health Sciences Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

If you have any questions about this study, please contact Dr. Laura Brunton at [redacted] extension 81501 or by email at [redacted]

If you have any questions about your rights as a research participant or the conduct of the study, you may contact The Office of Research Ethics at [redacted]

You do not waive any legal rights by signing this consent form.

This letter is for you to keep.



#### Consent Form (Parent/ Guardian)

**Title of Study:** The Physical & Psychosocial Effects of Therapeutic Horseback Riding for Children with Cerebral Palsy

**Investigators:** Laura Brunton, PT, PhD, Assistant Professor, School of Physical Therapy, Faculty of Health Sciences, Western University

Karen Pratt, R.Kin, BA(hons), MSc Candidate Health and Rehabilitation Sciences Graduate Program, Western University

Marnie Wedlake, RP, PhD, Assistant Professor, School of Health Studies, Faculty of Health Sciences, Western University

Jessie Wilson, OT, PhD, Assistant Professor, School of Occupational Therapy, Faculty of Health Sciences, Western University

**I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.**

\_\_\_\_\_  
Name of Parent/Guardian (Please Print)

\_\_\_\_\_  
Signature of Parent/Guardian

**I confirm that I have explained the nature of the research study to the participant and their parent/guardian. The participant and parent/guardian were given an opportunity to ask questions about the study. All questions asked have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.**

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date

*Appendix E – Letter of Information and Consent Form (Child)*



**Letter of Information & Consent**  
(Child)

**Title of Study:** The Physical and Psychosocial Effects of Therapeutic Horseback Riding for Children with Cerebral Palsy

**Investigators:** Laura Brunton, PT, PhD, Assistant Professor, School of Physical Therapy, Faculty of Health Sciences, Western University

Karen Pratt, R. Kin, BA(hons)., MSc Candidate Health and Rehabilitation Sciences Graduate Program, Western University

Marnie Wedlake, RP, PhD, Assistant Professor, School of Health Studies, Faculty of Health Sciences, Western University

Jessie Wilson, OT, PhD, Assistant Professor, School of Occupational Therapy, Faculty of Health Sciences, Western University

The pronouns “you” and “your” in this letter should be read as referring to the participant and not the parent and/or guardian who is signing the consent form for the participant.

You are being invited to participate in a research study exploring how therapeutic horseback riding participation impacts feelings of fatigue, pain, mental well-being, independence and social inclusion in children with cerebral palsy. Currently there is very limited to no information other than anecdotal reports, that show how therapeutic horseback riding effects physical and psychosocial functioning in young children with cerebral palsy. Since you are a rider in a therapeutic riding program, we are interested in your perspectives on the changes that riding may have on your life. This study will use information from an online questionnaire taken before and after your participation in therapeutic horseback riding to help us see if there are any changes in the factors that we are looking at. You may be invited to participate in an interview after your riding session where we will ask questions to help find out more about what areas of your life are most impacted by your participation in therapeutic horseback riding. You will be given a riding journal where you can choose to draw a picture or write a word or sentence about your riding lesson each week. This will give us some concrete examples from your riding experience to go back and talk about in the interview.

If you agree to participate in this study, you will be sent a link to the online questionnaire at the beginning and at the end of your 9-12-week riding session. The questionnaire should take approximately one hour to complete each time and you can have your parent or guardian help you with completing this. We will call your parent/ guardian around 2 weeks before the end of your riding session where we will go through some questions about how you move, talk and your age. We want to have a range of movement and age levels in our study so that it is representative of the children with CP who ride horses. Based on the information from these questions you may be invited to participate in a virtual interview around the time of your last riding lesson. This interview session will take up to one hour of your time. Your parent/ caregiver will be present at the interview. This session will occur virtually through the Western Corporate Zoom platform.



The interview will be both audio and video recorded but the video will be immediately destroyed after the interview. Only the audio recording will be saved and transcribed at a later date. This will be so that the researcher can be focused on the interview and to ensure the transcript will be accurate.

You will not experience any direct benefits from this study, however, this knowledge may help healthcare providers when providing information on physical activity participation to make fully informed recommendations regarding the benefits of this activity. This information will also help therapeutic riding service providers tailor their programs to better suit their participants if they know more about how it can impact their riders' lives.

There are no known risks associated with your participation in this study. We are collecting personal identifiers such as your name, demographic information, and contact information. As such, there is a risk of privacy breach. However, we will implement best practices to mitigate this risk.

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions, ask to have some components of the interview excluded or withdraw from the study at any time.

Your confidentiality will be respected. Your research records will be stored in a locked cabinet in a secure office in Elborn College at Western University in London, ON and will be destroyed after 7 years. The transcript of the interview will be shared with you by secure file transfer through Microsoft one-drive. The audio-tapes will be erased after you have reviewed and approved the transcripts. Survey data will be erased from the online platform at the end of the study. Only those individuals listed as investigators will be able to access your information. When the results of this study are published, neither your name nor any identifying information will be used.

Representatives from the Western University Health Sciences Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.



### Consent Form

**Title of Study:** The Physical & Psychosocial Effects of Therapeutic Horseback Riding for Children with Cerebral Palsy

**Investigators:** Laura Brunton, PT, PhD, Assistant Professor, School of Physical Therapy, Faculty of Health Sciences, Western University

Karen Pratt, R.Kin, BA(hons)., MSc Candidate Health and Rehabilitation Sciences Graduate Program, Western University

Marnie Wedlake, RP, PhD, Assistant Professor, School of Health Studies, Faculty of Health Sciences, Western University

Jessie Wilson, OT, PhD, Assistant Professor, School of Occupational Therapy, Faculty of Health Sciences, Western University

**I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.**

\_\_\_\_\_  
Name of Participant (Please Print)

\_\_\_\_\_  
Name of Parent/Guardian (Please Print)

\_\_\_\_\_  
Signature of Parent/Guardian

**I confirm that I have explained the nature of the research study to the participant and their parent/guardian. The participant and parent/guardian were given an opportunity to ask questions about the study. All questions asked have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.**

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date

## *Appendix F – Email Script for Recruitment*

### **Email Script for Recruitment**

**Subject Line: Invitation to Participate in Research about Therapeutic Horseback Riding**

Hello **[Insert Participant Name]**,

We have received your email address from **[insert local site recruiter's name, insert therapeutic riding centre's name]**. You are being invited to participate in a study that we, **Dr. Laura Brunton and Karen Pratt** are conducting. Briefly, the study involves answering an online questionnaire about any fatigue you may or may not experience, any pain you may or may not experience related to cerebral palsy and some general questions about your overall well-being. This should take around 1 hour to complete. Your parent(s) or caregiver can assist you with taking this questionnaire.

You will be invited to complete the online survey again in 9-12 weeks from now when your therapeutic horseback riding session is over. This is so we can see if anything has changed over the course of your therapeutic horseback riding session.

You will receive a reminder email if you have not participated in this study within two (2) weeks of receiving this email.

If you would like to participate in this study, please click on the link below to access the letter of information (also attached to this email) and survey link.

[https://uwo.eu.qualtrics.com/jfe/form/SV\\_5pguUolwRy7sYPb](https://uwo.eu.qualtrics.com/jfe/form/SV_5pguUolwRy7sYPb)

You will be asked to enter a study ID number on the first page, your study ID number is

**[insert study ID number]**

Thank you,

**Laura Brunton, PT PhD**

## *Appendix G – Follow-up Email Script*

### **Follow-up Email Script**

#### **Subject Line: Invitation to Participate in Follow-Up Research about Therapeutic Horseback Riding**

Hello **[Insert Participant Name]**,

You have previously participated in a study that we, **Dr. Laura Brunton and Karen Pratt** are conducting that involves answering an online questionnaire about therapeutic horseback riding and any fatigue or pain you may or may not experience, related to cerebral palsy and some general questions about your overall well-being

You completed the first online survey 9-12 weeks ago when you started your riding program. You are now being asked to complete the follow up survey since you have completed your riding session. This should take around 1 hour to complete. Your parent(s) or caregiver can assist you with taking this questionnaire.

You will receive a reminder email if you have not participated in this study within two (2) weeks of receiving this email.

[https://uwo.eu.qualtrics.com/jfe/form/SV\\_ereZP8aYtITnb9j](https://uwo.eu.qualtrics.com/jfe/form/SV_ereZP8aYtITnb9j)

You will be asked to enter a study ID number on the first page, your study ID number is

**[insert study ID number]**

Thank you,

**Laura Brunton, PT PhD**

Assistant Professor, School of Physical Therapy, Faculty of Health Sciences, Western University

*Appendix H – Assent Form*



**Letter of Information & Assent Form**  
(Children ages 5 to 12)

**Title of Study:** The Physical and Psychosocial Effects of Therapeutic Horseback Riding for Children with Cerebral Palsy

**Investigators:** Laura Brunton, PT, PhD, Assistant Professor, School of Physical Therapy, Faculty of Health Sciences, Western University

Karen Pratt, R.Kin, BA(hons), MSc Candidate Health and Rehabilitation Sciences Graduate Program, Western University

Marnie Wedlake, RP, PhD, Assistant Professor, School of Health Studies, Faculty of Health Sciences, Western University

Jessie Wilson, OT, PhD, Assistant Professor, School of Occupational Therapy, Faculty of Health Sciences, Western University

**Why you are here:**

We would like to tell you about a study about children with cerebral palsy who are participating in a therapeutic horseback riding program. We want to ask if you would like to be in the study.

**Why are we doing this study?**

We want to know how participation in a therapeutic horseback riding program impacts aspects of your life outside of riding particularly about how you feel about fatigue, pain, and how riding makes you feel.

**What will happen to you?**

If you agree to be in the study: You will be given a riding journal where you can choose to draw a picture or write something about your riding lesson each week. This will give us some examples from your riding experience to go back and talk about in the interview. We will also have a talk with you and your parent(s) where we ask you some questions about how you think therapeutic horseback riding changed you. We will tape this interview so that we can focus on talking.

**Will the study hurt?**

The study will not hurt, it is only asking you questions, and you can choose not to answer a question if it makes you uncomfortable.

**Will you get better if you are in the study?**

This study will not help you feel better, but it will help us better understand why & how therapeutic horseback riding may be a helpful activity for children like you.

**What if you have any questions?**

You can ask any questions you have at any time. You can talk to your family, your friends or someone else.

**Do you have to be in the study?**

You do not have to be in this study. No one will be mad at you if you choose not to do this. If you do not want to be in the study just say so. You will still be able to ride the horses even if you are not in this study. If you say yes, you can change your mind and say no later. It is up to you.

**This letter is yours to keep for future reference.**

**Assent Form**

**Title of Study:** The Psychosocial Effects of Therapeutic Horseback Riding for Children with Cerebral Palsy

**Investigators:** Laura Brunton, PT, PhD, Assistant Professor, School of Physical Therapy, Faculty of Health Sciences, Western University

Karen Pratt, R.Kin., BA(hons), MSc Candidate Health and Rehabilitation Sciences Graduate Program, Western University

Mamie Wedlake, RP, PhD, Assistant Professor, School of Health Studies, Faculty of Health Sciences, Western University

Jessie Wilson, OT, PhD, Assistant Professor, School of Occupational Therapy, Faculty of Health Sciences, Western University

I want to participate in this study.

\_\_\_\_\_  
Print name of Youth

\_\_\_\_\_  
Signature of Youth

\_\_\_\_\_  
Age

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date



*Appendix I – Western Ethics Approval Letter*



**Date:** 13 April 2020

**To:** Dr. Laura Brunton

**Project ID:** 114986

**Study Title:** The Physical and Psychosocial Effects of Therapeutic Horseback Riding for Children with Cerebral Palsy

**Application Type:** HSREB Initial Application

**Review Type:** Delegated

**Full Board Reporting Date:** 05May2020

**Date Approval Issued:** 13/Apr/2020 10:18

**REB Approval Expiry Date:** 13/Apr/2021

Dear Dr. Laura Brunton

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above mentioned study as described in the WREM application form, as of the HSREB Initial Approval Date noted above. This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

**Documents Approved:**

Document Name	Document Type	Document Date	Document Version
Assent Form	Assent Form	29/Mar/2020	2
CFCS	Other Data Collection Instruments	29/Mar/2020	
Consent form for child	Written Consent/Assent	03/Apr/2020	3
Consent form for parent V2	Written Consent/Assent	04/Apr/2020	2
Consent to be Contacted Script and Documentation	Written Consent/Assent	22/Jan/2020	1
Email Script for Recruitment	Email Script	30/Mar/2020	2
Follow-Up Email Script	Email Script	30/Mar/2020	1
Horseback Riding Journal Full	Other Data Collection Instruments	20/Jan/2020	1
Pratt THR Interview Guide	Interview Guide	20/Jan/2020	1
Protocol V3	Protocol	04/Apr/2020	3
Qualtrics Follow Up Survey 2	Online Survey	02/Apr/2020	2
Qualtrics Survey Baseline	Online Survey	29/Mar/2020	2
Telephone Consent to be Contacted Form	Telephone Script	20/Jan/2020	1
Telephone Script for Interview Selection	Email Script	04/Apr/2020	1

## Appendix J – PROMIS Pediatric Profile

PROMIS® Pediatric Profile v2.0 – Profile-49

## Pediatric Profile – 49

Please respond to each question or statement by marking one box per row.

<b>Physical Function Mobility</b>						
<b>In the past 7 days...</b>		<b>With no trouble</b>	<b>With a little trouble</b>	<b>With some trouble</b>	<b>With a lot of trouble</b>	<b>Not able to do</b>
235R1r	I could do sports and exercise that other kids my age could do .....	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
4124R1r	I could get up from the floor.....	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
2707R2r	I could walk up stairs without holding on to anything.....	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
5023R1r	I have been physically able to do the activities I enjoy most.....	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
236R1r	I could keep up when I played with other kids .....	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
4185R1r	I could stand up on my tiptoes.....	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
3892R1r	I could move my legs .....	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
2646R1r	I could stand up by myself.....	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
<b>Anxiety</b>						
<b>In the past 7 days...</b>		<b>Never</b>	<b>Almost Never</b>	<b>Sometimes</b>	<b>Often</b>	<b>Almost Always</b>
2220R2r	I felt like something awful might happen..	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
713R1r	I felt nervous.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
5044R1r	I felt worried.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2230R1r	I got scared really easy.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
227bR1r	I felt scared.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3150bR2r	I worried when I went to bed at night.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3459bR1r	I worried when I was at home .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
231R1r	I worried about what could happen to me .	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

## PROMIS® Pediatric Profile v2.0 – Profile-49

<b>Depressive Symptoms</b>						
<b>In the past 7 days...</b>		<b>Never</b>	<b>Almost Never</b>	<b>Sometimes</b>	<b>Often</b>	<b>Almost Always</b>
5041R1r	I felt everything in my life went wrong.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
711R1r	I felt lonely .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
228R1r	I felt sad.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3952aR2r	It was hard for me to have fun.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
488R1r	I could not stop feeling sad .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
5035R1r	I felt like I couldn't do anything right.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
461R1r	I felt alone.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
712R1r	I felt unhappy .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
<b>Fatigue</b>						
<b>In the past 7 days...</b>		<b>Never</b>	<b>Almost Never</b>	<b>Sometimes</b>	<b>Often</b>	<b>Almost Always</b>
4239aR2r	Being tired made it hard for me to keep up with my schoolwork.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2876R1r	I got tired easily.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4241R2r	I was too tired to do sports or exercise.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4196R1r	I was too tired to enjoy the things I like to do.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4213R1r	I felt weak.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4221R1r	I had trouble finishing things because I was too tired .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4220R1r	I had trouble starting things because I was too tired .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4210R2r	I was so tired it was hard for me to pay attention.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

PROMIS® Pediatric Profile v2.0 – Profile-49

<b>Peer Relationships</b>												
<b>In the past 7 days...</b>		Never	Almost Never	Sometimes	Often	Almost Always						
5018R1r	I felt accepted by other kids my age.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
5058R1r	I was able to count on my friends .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
5055R1r	My friends and I helped each other out .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
233R2r	Other kids wanted to be my friend .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
1147R1r	I was good at making friends .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
210R1r	Other kids wanted to be with me.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
5056R1r	I was able to talk about everything with my friends.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
9020R1r	Other kids wanted to talk to me .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
<b>Pain Interference</b>												
<b>In the past 7 days...</b>		Never	Almost Never	Sometimes	Often	Almost Always						
3793R1r	I had trouble sleeping when I had pain.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
9004r	It was hard for me to pay attention when I had pain.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
2045R1r	It was hard for me to run when I had pain .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
2049R1r	It was hard for me to walk one block when I had pain .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
1703R1r	It was hard to have fun when I had pain.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
2180R1r	It was hard to stay standing when I had pain .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
1698bR1r	I felt angry when I had pain .....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
2035R1r	I had trouble doing schoolwork when I had pain.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5						
<b>Pain Intensity</b>												
<b>In the past 7 days...</b>												
9033R1	How bad was your pain on average?....	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
		No pain <span style="float: right;">Worst pain you can think of</span>										

*Appendix K – Fatigue Impact and Severity Self-Assessment*

Study ID Number: \_\_\_\_\_

**Fatigue Impact and Severity Self-Assessment (FISSA)**

Please answer the following questions about your experience with fatigue. For the purposes of this questionnaire we would like you to think about fatigue in terms of:

- physical tiredness
- muscle soreness
- exhaustion of your muscles and body
- or any related feeling

When answering the questions, please try to focus on fatigue as it is defined above and not pain you may experience that is different from muscle soreness.

**Impact Scale**

Completely Disagree 1	Somewhat Disagree 2	Neither Agree nor Disagree 3	Somewhat Agree 4	Completely Agree 5
-----------------------------	---------------------------	------------------------------------	------------------------	--------------------------

Using the scale above and thinking about a **typical week** (7 days), to what extent do you agree with the following statements?

**Fatigue interferes with ...**

1. my general everyday activities	1	2	3	4	5
2. my ability to move around indoors	1	2	3	4	5
3. my ability to do things on my own	1	2	3	4	5
4. my ability to move around in my community	1	2	3	4	5
5. my ability to get outside of my house	1	2	3	4	5
6. my ability to finish things	1	2	3	4	5
7. my participation in social activities	1	2	3	4	5
8. my ability to start things	1	2	3	4	5
9. my ability to take care of myself (examples: dressing, eating, bathing, brushing my teeth/hair, toileting etc.)	1	2	3	4	5

**In addition,**

10. I use adaptive equipment to manage my fatigue (examples: a walker, manual wheelchair, power wheelchair etc.)	1	2	3	4	5
11. I have had to reduce my work responsibilities outside of my home because of fatigue (examples: school work, job-related work, volunteering etc.)	1	2	3	4	5
12. I have had to reduce my responsibilities at home because of fatigue	1	2	3	4	5

© Brunton, 2014. "Copy Freely – Do NOT Change"

Version Date 13/03/2018

Study ID Number: \_\_\_\_\_

Using the scale given with each question, please think about the **last seven (7) days** and answer the following statements or questions.

13. Rate your level of fatigue on the day within the last week that you felt the **most** fatigued:

No Fatigue		Moderate Fatigue		Severe Fatigue
1	2	3	4	5

14. Rate your level of fatigue on the day within the last week that you felt the **least** fatigued:

No Fatigue		Moderate Fatigue		Severe Fatigue
1	2	3	4	5

15. Rate your **average** level of fatigue for the past week:

No Fatigue		Moderate Fatigue		Severe Fatigue
1	2	3	4	5

16. On average, how much of the day do you feel fatigued?

None	A Quarter of the Day	Half the Day	Three Quarters of the Day	All Day
1	2	3	4	5

17. For how many days **last week** did you feel fatigued at least part of the day?

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Study ID Number: \_\_\_\_\_

**Additional Questions:**

32. Does your level of fatigue change depending on the time of day?

Yes (If yes, please answer question 32b) No

32b. What time of day is your fatigue the worst?

Early Morning	Mid-morning	Noon	Late afternoon	Evening
1	2	3	4	5

33. Does your level of fatigue change depending on the day of the week?

Yes (If yes, please answer question 33b) No

33b. On which day of the week are you most fatigued?

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	7

34. What factors are responsible for or contribute to your fatigue?

35. What do you do to reduce or manage your fatigue?

36. What else could you do to reduce or manage your fatigue?

37. What could other people do to help reduce your fatigue?

### Appendix L- Youth Pain Questionnaire

1. In the past 7 days, how often have you had aches or pains?
  - Not at all
  - 1 time per week
  - 2 to 3 times per week
  - 4 to 6 times per week
  - Daily
  
2. In which part of your body did you experience the most aches and pains? (Select all that apply)
  - Stomach
  - Head
  - Muscles and joints
  - Legs
  - Chest
  - Other (please specify): \_\_\_\_\_
  
3. How long do your aches and pains usually last?
  - Less than 1 hour
  - A few hours
  - Half of the day
  - All day

4. When you have aches or pain, how much hurt so you usually have?
 

0											10
no pain	1	2	3	4	5	6	7	8	9	10	worst pain possible
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. How much do aches and pains bother or upset you?

Not at all	A little	Between a little and a lot	A lot	Very Much
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### In the Past 7 days...

- |  | Never                 | Almost<br>Never       | Sometimes             | Often                 | Almost<br>Always      |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 6. I had trouble sleeping when I had pain              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 7. It was hard for me to pay attention when I had pain | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 8. It was hard for me to run when I had pain           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

#### Now think about the past several months.

10. Have you had pain for at least 3 months in a row?
  - Yes
  - No

I have had this pain for...

\_\_\_\_\_ years and \_\_\_\_\_ months.

---



## **Curriculum Vitae**

### **Karen Pratt (R. Kin)**

---

**Education**

2019 – Present

Masters' of Science in Health and Rehabilitation Sciences Candidate  
 University of Western Ontario  
 Supervisor: Dr. Laura Brunton

2016

Honors Bachelors of Arts in Kinesiology  
 University of Western Ontario

**Professional Associations**

2018 – Present

College of Kinesiologists of Ontario  
 Registered Kinesiologist

2018 – Present

Ontario Kinesiology Association  
 Professional Member

**Related Work Experience**

Research Assistant, ChEAR Lab (2019- 2021)  
 Western University – School of Physical Therapy  
 Supervisor: Dr. Laura Brunton

Teaching Assistant (Fall 2016 and 2019-2021)  
 Western University  
 School of Physical Therapy & Health Sciences

**Publications**

In review: Mental health benefits of physical activity in youth with cerebral palsy (2020)  
 Jessica Starowicz, Laura Brunton, Carly McMorris, Karen Pratt

**Conferences**

May 2021 Child Health Symposium presented by TVCC

- Oral presentation “The Psychosocial and Physical effects of Therapeutic Horseback Riding for Children with Cerebral Palsy

May 2020 Child Health Research Day hosted by the Schulich School of Medicine and Dentistry

- Poster Presentation “The Psychosocial and Physical effects of Therapeutic Horseback Riding for Children with Cerebral Palsy (proposal)