

A randomized controlled trial of the impact of therapeutic horse riding on the quality of life, health, and function of children with cerebral palsy

Source: Davis E, Davies B, Wolfe R, Raadsveld R, Heine B, Thomason P, Dobson F, & Graham HK. (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), 111-9.

Purpose: This randomized controlled trial examined the effects of a 10 week structured therapeutic horseback riding program on physical functioning, health, and quality of life (QoL) of children with cerebral palsy (CP).

Design/Methods: This randomized controlled trial examined the effects of a 10 week structured therapeutic horseback riding program on physical functioning, health, and quality of life (QoL) of children with cerebral palsy (CP). Instruments used to measure these domains were the Cerebral Palsy Quality of Life Questionnaire for Children (CP-QoL-Child), KIDSCREEN (a general health related QoL index), the Gross Motor Function Measure (GMFM-66), and the Child Health Questionnaire (CHQ). Parent proxy versions of the CHQ, KIDSCREEN, and CP-QoL-Child were used for all children, and children aged from 9 to 12 also completed the CP-QoL-Child and KIDSCREEN. Following the study a life events questionnaire was used to evaluate whether there had been any significant changes in families during the study which could have affected results. *Methods:* Potential participants were invited by letter after being identified through a central registry. Children had to have a diagnosis of CP, to be between the ages of 4 and 12, and to have a level of severity of I to III on the Gross Motor Function Classification System (GMFCS), and live within a specified distance of intervention facilities. A sample size calculation suggested a sample size of 48 per arm. Assignment to control and experimental groups was done independently by the study statistician. Randomization was stratified by age and GMFCS score. GMFCS measures were confirmed by an experienced physical therapist who was masked with regard to assignment. Five children, who's GMFCS levels were found to be IV upon assessment, were offered therapeutic riding and not included in the study. GMFM-66 scores were assessed in the same manner, with families asked not to let the evaluator know the group assignment in the post-intervention evaluation. Following completion of posttest assessments, the study control group participants were offered therapeutic riding. Analysis of covariance was done to compare control and intervention groups at the end of intervention after controlling for baseline data.

Results: Eighty-five families participated in the study, which was 33% of those invited to participate and 85% of those who completed consent forms and were assigned to a study arm. By analysis, 35 participants remained in the intervention arm for analysis and 37 in the control arm reducing the total number of participants to 72. In all outcome measures described, there were no significant differences found except in the proxy score of the KIDSCREEN for global health related QoL ($P=0.04$), and in the CHQ where there were significant changes in the parent proxy scores for family cohesion score ($p=0.007$) and change in health score ($p=0.04$). The authors also reported a number of qualitative comments from primary caregivers, with those quoted being very positive about the effects of the program on aspects of quality of life functioning and physical health and performance. The authors concluded that sample size and outcome measure limitations prevented them from finding a clinically significant effect of therapeutic riding on health, physical functioning, and QoL of children with CP.

Conclusion: The authors concluded that sample size and outcome measure limitations prevented them from finding a clinically significant effect of therapeutic riding on health, physical functioning, and QoL of children with CP.

Strengths: The article is characterized by a strong and well-thought through design with controlled evaluation and assignment, clear description of protocol and delivery by qualified staff, use of a sample size calculation, and complete description of participant flow through the study. An additional ethical strength was the provision of riding to the control group and to those excluded after randomization. Their documentation of qualitative feedback was useful in suggesting further lines of research and in identifying possible lack of sensitivity of currently available outcome measures.

Limitations: Problems with the study include their inability to reach their desired sample size, difficulties with instrumentation (QoL instruments are not well established for this population), and their inability to look statistically at subgroups. Their choice of measures also meant that three children with "intellectual impairment" were excluded because of inability to complete functional measures. This limits generalizability.

Practical Application: While this study was not able to show a clinically significant effect of therapeutic riding on health or QoL with the instruments used, it did give good suggestions for future research. The sample size and limitations of the outcome measures also means that there still could be an effect that this study was unable to capture. In using therapeutic riding with children with CP similar to those in this study, it is important to consider a variety of outcome measures that may capture individual performance changes, and to document informal feedback from families about the child's functioning and any specific changes they have seen.