

CLINICAL TRIAL PROTOCOL

Effects of Hippotherapy on Physical Fitness and Attention in Cerebral Palsy

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The purpose of this study

This research analyzes whether hippotherapy improves the physical activity, cardiopulmonary fitness, and attention in children with cerebral palsy and whether this enhances their general health and quality of life.

Background

This research aims to promote hippotherapy by scientifically proving its therapeutic effects and mechanism to contribute to improving the health and quality of life of the patients^{1,2} as well as reducing their global burden of disease by shifting the current passive “therapy-oriented” paradigm to a more proactive “participation-oriented” paradigm³.

Ever since physical activity and physical fitness have been reported to have an inverse relationship with the mortality rate, especially deaths due to cardiovascular disease, various efforts have been made to optimize physical activity and physical fitness among children with cerebral palsy⁴. ADHD is one of the most common coexisting conditions of cerebral palsy. More participation in engaging sports activities like therapeutic riding is anticipated to improve patient health and their quality of life⁵.

Hippotherapy is expected to improve clinical symptom of ADHD in children with cerebral palsy while preventing possible ensuing psychiatric disorders, thereby bringing significant improvement in their health and quality of life.

PARTICIPANTS

Forty-six children with CP (24 boys and 22 girls) participated in this study. Inclusion criteria were (a) diagnosis of CP, (b) classified at Gross Motor Function Classification System (GMFCS) level I -III, (c) body weight under 35kg, (d) ability to walk independently with or without an assistive device, (e) ability to comply with the study protocol and follow verbal directions. Exclusion criteria were (a) injected a botulinum

toxin within 3 months, (b) a selective dorsal rhizotomy or orthopedic surgery within 1 year, (c) moderate to severe intellectual disability(difficulty performing one step instructions), (d) uncontrolled seizures, (e) poor visual or acuity hearing impairment, (f) patients who weigh more than 35 kg, (g) hip dislocation, (h) scoliosis cobb angle > 30 degrees, (i) musculoskeletal surgery within 1 year.

INTERVENTION

Children allocated in the Hippotherapy group participated the Hippotherapy program in indoor riding arena. 23 children participated in the Hippotherapy program for 40 minutes per lesson twice a week for 16 weeks (total of 32 sessions). The sessions were conducted by three therapeutic riding instructors. One leader and two side walkers walked with a horse, and all participants wore helmets. Three participants were grouped together for each session. The Hippotherapy program sessions consisted of exercises to facilitate correct posture and balance, including lower extremity strengthening, and basic riding skills while walking and trotting. The intensity of the exercises and degree of assistance were individualized according to the participants' ability to control their body and horse. The horse/ponies had a height of 110-125-cm and weight of 250-400kg; all animals were very experienced in the Hippotherapy settings.

Statistical Analysis

Analyses were performed with SPSS version 20.0 (SPSS Inc, Chicago, IL, USA), using a .05 level of significance for all statistical tests. All continuous variables were tested for normality using the Shapiro–Wilk descriptive test. Means and standard deviations are presented for each continuous variable. After certification of the normality by the Shapiro Wilks test, the independent t-tests or Mann Whitney U-test were performed to examine the differences between the groups.

RERERENCE

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