

1. Títol article: Kinesiological Description of Hippotherapy as a Treatment Modality

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Abstract

INTRODUCTION:

Hippotherapy as a treatment modality relies on patient-equine dynamic interaction to enhance physical abilities in a range of neuromuscular diseases. The modality takes advantage of external stimulations in the form of kinetic and kinematic inputs to patient's upper body.

METHODS:

Current practices and procedures could be greatly enhanced by an objective approach to session planning based on a predictive neuromuscular model. Individualization of the treatment program is both subject-specific and equine-specific.

RESULTS:

To this effect, kinesiological aspects of the three main upper body flexor-extensor muscles which are directly affected by this treatment modality are presented in a biomechanical model. Events and phases of this dynamic interaction are identified and described using a phase plane analysis. Physical interpretations of coefficients in the movement differential equation illustrates that the proposed approach and mathematical modeling have the potential to be tailored for various musculoskeletal or neuromuscular disorders. Validation results show that the model has the ability to simulate kinematic response and muscle forces of the patient upper body during a hippotherapy session.

CONCLUSION:

This predictive ability could provide the therapist with a tool to estimate the effects prior to therapy sessions and choose the most suitable combination of horse and exercises.

2. **Títol article:** Multi-body sensor data fusion to evaluate the hippotherapy for motor ability improvement in children with cerebral palsy

Autors: Jie Li, Zhelong Wang, Sen Qiu, Hongyu Zhao, Jiaxin Wang, Xin Shi, Bing Liang, Giancarlo Fortino

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Abstract

INTRODUCTION:

Hippotherapy is a new rehabilitation therapy for children with cerebral palsy (CP). Although it has been proved to be effective in clinical research, a quantitative evaluation of such results is still lacking in previous studies. In this research, one method for evaluating the effectiveness of hippotherapy based on body sensor network (BSN)

METHODS:

Is proposed. The method adopts distributed magnetic, angular rate, and gravity (MARG) sensors to evaluate the gross motor function of cp children by multi-sensor data fusion algorithm, the comparison results with the golden standard optical capture system demonstrate the robustness of sensor fusion algorithm. Moreover, via tracking one-year's hippotherapy projects, a pilot study was conducted for measuring and evaluating the motor coordination function and gait parameters of cp children. Finally, the rehabilitation of gross motor function for the chosen subjects under different treatment periods was evaluated through kinematic analysis.

RESULTS:

The results of our method show that some children's symptoms, such as limb stiffness, poor joint range of motion, scissors gait, knee flexion gait, have been relieved.

CONCLUSION:

It provides an empirical basis for hippotherapy in the rehabilitation of motor function corresponding to cp children.

3. Títol article: Equine assisted activities and therapies in children with autism spectrum disorder: A systematic review and a meta-analysis

Autors: Tomasz Trzmiela, Barbara Purandarea, Michał Michalakb, Ewa Zasadzkaa, Mariola Pawlaczyka

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Abstract

INTRODUCTION:

The multifactorial nature of autism spectrum disorder (ASD) is the reason why complementary and alternative methods of treatment are sought in order to support the classic approach.

Objectives: the aim of the study was to assess the effectiveness of equine-assisted activities and therapies (EAAT) in ASD patients based on a review of the literature

METHODS:

A review of the literature and a meta-analysis were conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Pubmed, Cochrane library, Web of science, clinicaltrials.gov and Pedro databases were searched until July 20, 2017. Only articles published In English, in a journal with a review process, after 1999, with a control group or presentation of comparative pre-/post-therapy results in ASD patients, and clear inclusion/exclusion criteria were considered. The methodological quality of the included studies was assessed using the quality assessment tool for quantitative studies (QATQS). The meta-analysis of three studies was conducted

RESULTS:

A total of 15 studies with 390 participants (aged: 3–16 years) were included. The interaction between psychosocial functioning and EAAT was investigated in most studies. Improvement was reported in the following domains: socialization, engagement, maladaptive behaviors, and shorter reaction time in problem-solving situations after EAAT. The meta-analysis revealed no statistically significant differences for the investigated effects.

CONCLUSION:

Despite the need for further, more standardized research, the results of the studies included in this review allow us to conclude that EAAT may be a useful form of therapy in children with ASD