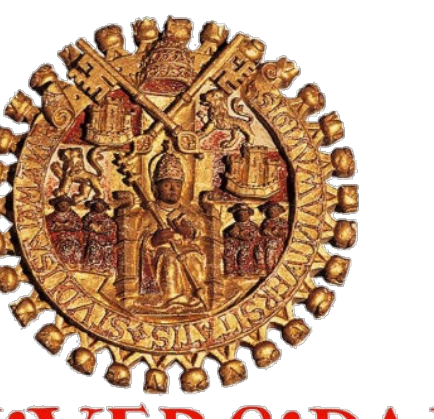


The effects of a therapeutic horseback riding program in a child with developmental delay: a case study



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INTRODUCTION

Hippotherapy is a therapy using the horseback riding as a natural instrument for the physical, psychic or social rehabilitation. It makes use of the horse's rhythm and dynamics to influence posture and mobility. The horse's movement offers a sensorial discharge, because it is both repetitive and variable in rhythm (Fernández-Gutiérrez et al., 2015). The three dimensional range of movement provides the perception of motion and works on motor control, spatial cognition and several other psychomotor skills. These movements provide similar stimuli to the pelvis and back as that of the human walk. This kind of therapy is used to address not only motor issues but also cognitive and social skills (Alemdaroglu et al., 2016). It is especially recommended for work with children, both at a psychological and physical level.

The purpose of this study was to determine the outcome of a therapeutic horseback riding intervention on the motor and cognitive functions in a 5 years old child with developmental delay, diagnosed with hip subluxation and encephalopathy.

Keywords: Hippotherapy; psychometric function; Rehabilitation; Horses; Muscle spasticity

METHODS

The subject participated in a 10-month therapeutic horseback riding program consisting of half hour of riding per week. The sessions started in a "dorsum" at floor, not too wide. The procedure was then performed with the child and the therapist mounted on the horse's back (horseback riding), sitting the child into the ischial branches, so that the pelvis can be released with the movement of the horse allowing the abductors to relax (El-Meniawy and Thabet, 2012). Each riding session consisted of stretching, strengthening, and balance activities. The child's psychometric function levels were tested (using the trunk control measurement scale, the Gross Motor Function Measure-88 and assessing the hip abduction angle), prior to the intervention, upon completion of the intervention, and 5 weeks postintervention.

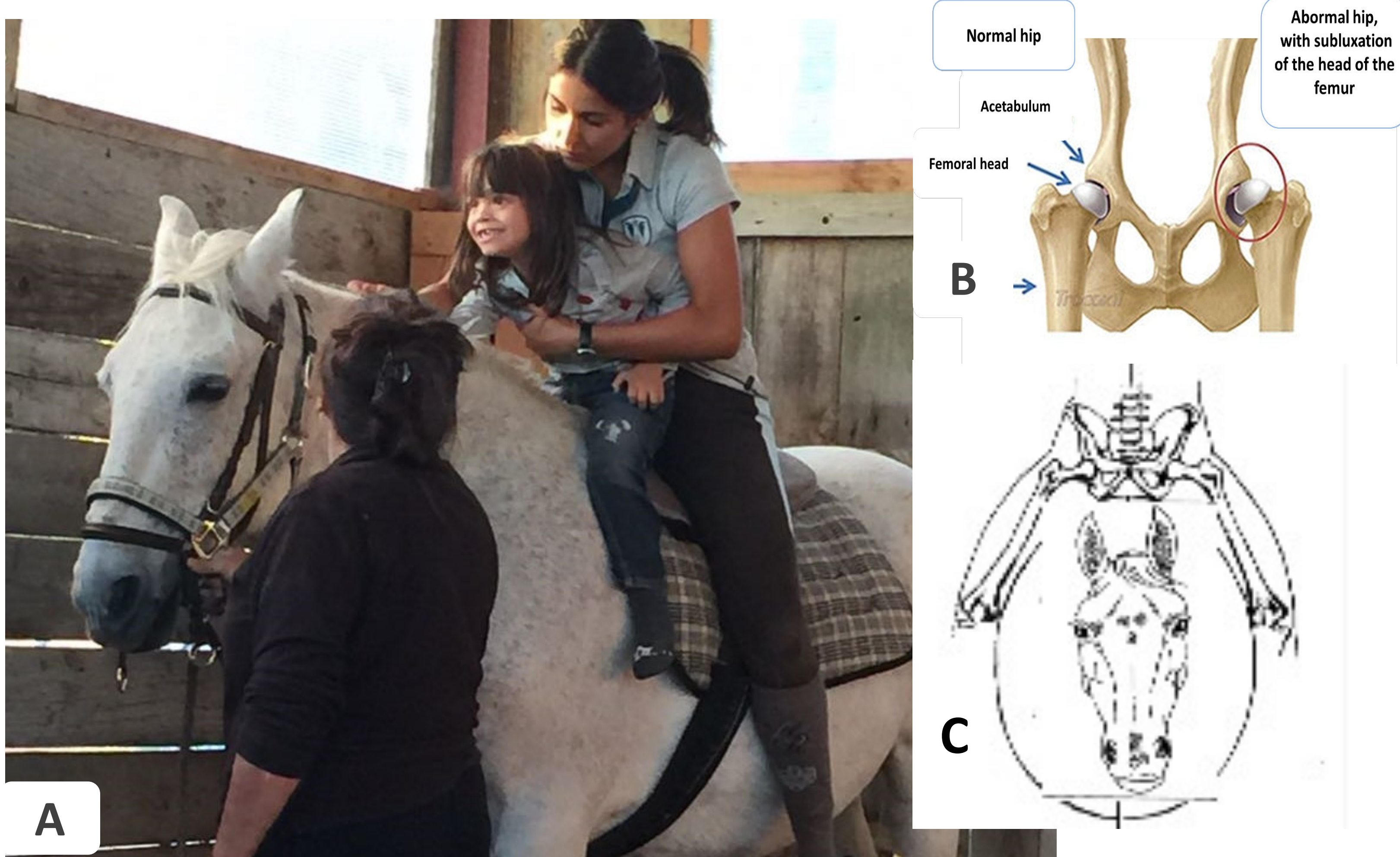


FIGURE 1. A. horseback riding with child and therapist mounted on the horse's back (o *monta gemela*). B. Anatomical view of a normal hip versus a hip with subluxation. C. Through the horseback riding we favour the correct alignment of the pelvis in a neutral position, on the ischial branches, allowing the external rotation of limbs, preventing the muscles to attach. The 3-dimensional movement of the horse triggers reactions of straightening and balance that are absorbed by the child's abdominal, paravertebral and middle gluteus musculature (the main hip stabilizer), enhancing neurological and physical functioning (Kwon et al., 2011).

RESULTS

Upon completion of the intervention, the child was observed to have

- improved the ability to move;
 - decreased the degree of subluxation (decreased hip abduction angle);
 - decreased spasticity;
 - strengthened and relaxed the muscles;
- improving locomotion, posture and balance.

In addition, the child improved behavioral autocontrol and cognitive skills

- improved gestural and oral communication,
- Improved vocabulary, articulation and socialization.

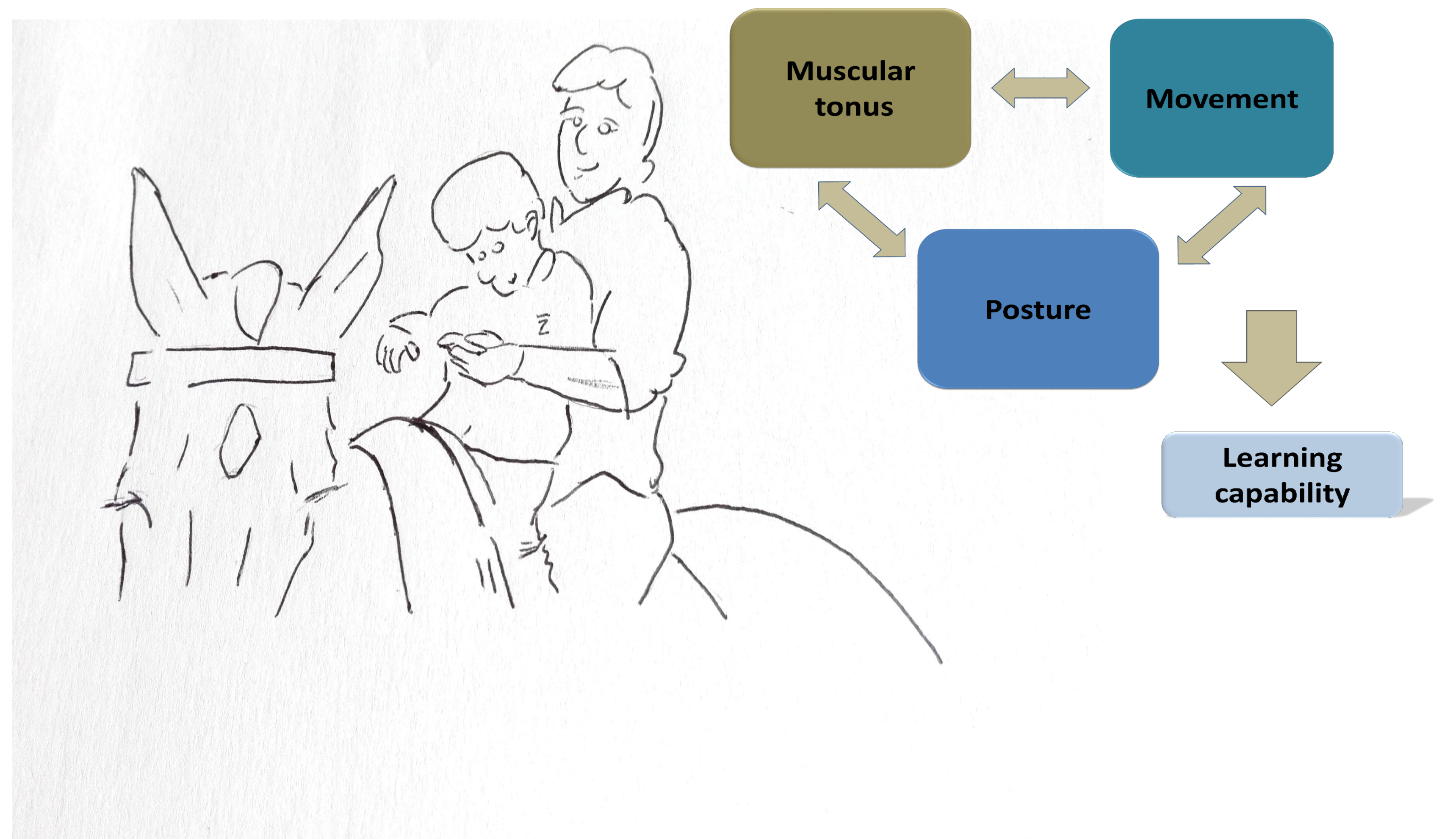


FIGURE 3. The reciprocal movement of the walking horse produces pelvic movements in the rider's body that closely resembles human ambulation (Garner and Rigby, 2015). That has been fundamental while sending important information to the brain for acquire a suitable pattern of march.

We hope our results demonstrate the successful maintenance of the improved scores in the long term.

CONCLUSIONS

THIS CASE STUDY PROVE THAT THERAPEUTIC RIDING PRODUCE POSITIVE CHANGES IN MOTOR AND COGNITIVE FUNCTION IN CHILDREN WITH DEVELOPMENTAL DELAY.

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