Is Therapeutic Horseback Riding Effective in Order to Stimulate Physical Activity and Fitness in Wheelchair-bound Children? A Pilot Study

Published: 09-04-2010
Last updated: 10-08-2024

The determination of the energy expenditure in wheelchair-bound children in rest, during daily activities, and during therapeutic horseback riding.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Congenital and peripartum neurological conditions
Study type	Observational non invasive

Summary

ID

NL-OMON34792

Source
ToetsingOnline

Brief title
Energy Expenditure during Horseback Riding

Condition

- Congenital and peripartum neurological conditions

Synonym
Cerebral palsy, spasticity

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Utrecht
Source(s) of monetary or material Support: Stichting BIO kinderrevalidatie

Intervention

Keyword: Energy Expenditure, Oxygen Uptake, Physical Activity, Therapeutic Horseback Riding

Outcome measures

Primary outcome

The primary study parameter is the (difference between) energy expenditure during therapeutic horseback riding, during daily activities, and in rest.

Secondary outcome

The level of percieved exertion (ten-point scale), filled out by the participants. A structured interview will take place with the parents concerning the daily activity patterns of the children, in which the physical activities (active leisure activity) and sedentary activities (playing computer games, watching television, surfing the net, et cetera) are of particular interest.

Study description

Background summary

This pilot study will provide information concerning the energy expenditure in wheelchair-bound children during therapeutic horseback riding. Disabled children, who are dependant on a wheelchair for their mobility, generally lack a sufficient level of physical activity. This inactive lifestyle is further stimulated since the possibilities to be physically active that fit their age-range, including sports activities and physical education, are inaccessible. The children will come in a vicious circle of a progressive loss of function, hypo activity, obesity, and a reduced fitness, which leads to secondary disabilities, including an increased tiredness, a decreasing participation in social events, and a reducing quality of life. Programs in the pediatric age-range that are focused on the enhancement of the children*s fitness may contribute to prevent the aforementioned secondary disabilities. For wheelchair-bound children, therapeutic horseback riding seems to be an

attractive and promising type of exercise to increase their daily energy expenditure and to improve overall function. By means of this pilot study, the researchers will investigate whether therapeutic horseback riding is able to increase the energy expenditure in wheelchair-bound children, and if so, whether the achieved exercise intensity is sufficient to improve the children*s fitness.

Study objective

The determination of the energy expenditure in wheelchair-bound children in rest, during daily activities, and during therapeutic horseback riding.

Study design

In this observational pilot study, wheelchair-bound children will participate in a single therapeutic horseback riding session. Energy expenditure will be measured during three protocols by means of respiratory gas analysis using lightweight, mobile measuring equipment (Cortex Metamax) and by means of accelerometry. 1. Protocol during the resting phase: during a ten-minute rest period (sitting on a chair), heart rate, ventilation, carbon dioxide production, and oxygen uptake will be measured with the Cortex Metamax; 2. Exercise protocol: one therapeutic horseback riding session (thirty minutes), in which the physical strain (heart rate, ventilation, carbon dioxide production, and oxygen uptake) will be measured using the Cortex Metamax; 3. Daily activities protocol: the participants will wear two advanced accelerometers (Actiheart and Actical) for four days (including one day in the weekend) in order to monitor their daily activity level and their heart rate. On the basis of this data, it is possible to determine the energy expenditure in rest, during daily activities, and during therapeutic horseback riding. The extent of the increase in oxygen uptake and heart rate during therapeutic horseback riding will be determined and will be compared to the values measured during daily activities and in rest. Furthermore, the children will be asked to fill out a ten-point scale (with the help of pictures) concerning the level of percieved exertion directly after the horseback riding session. A structured interview will take place with the parents concerning the daily activity patterns of the children, in which the physical activities (active leisure activity) en sedentary activities (playing computer games, watching television, surfing the net, et cetera) are of particular interest.

Study burden and risks

The participants will be asked to take part in a single therapeutic horseback riding session for thirty minutes. These children are familiar with therapeutic horseback riding at the riding-school of *stichting BIO kinderrevalidatie* and the risks are not increased compared to their normal horseback riding sessions. Moreover, the children will execute the exercise protocol riding their *own*

horse. During the protocol, the children will wear fitted helmets and use chinstraps. One or two side walkers will use various side-helping techniques. If the rider is more physically challenged, a back-rider will be used to sit directly behind the child, helping to maintain upright posture. The instructor will constantly stand nearby and directs the therapy, always monitoring the movement and behavior of the horse. After the exercise protocol, the children will be asked to fill out a ten-point scale concerning the rate of percieved exertion. Before the therapeutic horseback riding session, a measurement during rest will be conducted (ten minutes, seated on a chair). Furthermore, the participants will be asked to wear two activity monitors for four days (including one day in the weekend), which doesn*t induce extra risks as well.

Contacts

Public
Universitair Medisch Centrum Utrecht

Postbus 85090
3508 AB Utrecht
NL
Scientific
Universitair Medisch Centrum Utrecht

Postbus 85090
3508 AB Utrecht
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adolescents (12-15 years)
Adolescents (16-17 years)
Children (2-11 years)

Inclusion criteria

- Children, eight to eighteen years of age (both prepubescent and pubescent children will be enrolled);
- Children who are able to cooperate with the testing procedures;
- Children diagnosed with Cerebral Palsy (Gross Motor Function Classification System Levels 3 or 4).

Exclusion criteria

- A medical status that will not allow exercise;
- Insufficient understanding of the Dutch language in both the child and his/her parent(s).

Study design

Design

Study type: Observational non invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Prevention

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	07-07-2010
Enrollment:	10
Type:	Actual

Ethics review

Approved WMO

Date:	09-04-2010
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Utrecht (Utrecht)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL31214.041.10