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The training effect of concentrative coordination exercise on academic-related motor functions of children with ADHD

Submission date
16/01/2021

Recruitment status
No longer recruiting

Registration date
04/02/2021

Overall study status
Completed

Last Edited
01/03/2021

Condition category
Mental and Behavioural Disorders

[ ] Prospectively registered
[X] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Attention deficit hyperactivity disorder (ADHD) is a condition that includes symptoms such as inattentiveness, hyperactivity and impulsiveness. The aim of this study is to assess the effect of an intervention program to improve concentration, executive functions and handwriting performance in children with ADHD.

Who can participate?
Children with ADHD

What does the study involve?
Children will be recruited and randomly allocated to either on-site table tennis, a table tennis exergame), or a control group. The table tennis training is provided either by a coach or a ball-projection machine in the on-site group. In the exergaming table tennis group the intervention is Nintendo Wii Sport providing coordination exercise to train the concentration of the children with ADHD. The control group receives their regular treatment for the symptoms of ADHD. The intervention lasts 12 weeks with three 1-hour sessions per week.

What are the possible benefits and risks of participating?
The possible benefits of participants are the improvement of concentration level, executive functions, and handwriting. There are very few minor risks such as fatigue or soreness after exercise training.

Where is the study run from?
I-Shou University (Taiwan)

When is the study starting and how long is it expected to run for?
August 2015 to October 2017

Who is funding the study?
Ministry of Science and Technology (Taiwan)

Who is the main contact?
Prof. Nan-Ying Yu
ying@isu.edu.tw

Contact information

Type(s)
Scientific

Contact name
Prof Nan-Ying Yu

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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
I-Shou 1227

Study information

Scientific Title
The training effect of concentrative coordination exercise on the executive function and upper limb motor control of children with ADHD

Study objectives
Concentrative coordination training can improve executive function and handwriting performance in children with ADHD.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 17/01/2014, Institutional Review Board of the E-DA Hospital (No.6, Yida Road, Jiaosu Village, Yanchao District, Kaohsiung City 82445, Taiwan, R.O.C., +886 (0)7 6150011 ext. 5110; ed107339@edah.org.tw), ref: EMRP60102N

Study design
Single-centre randomized controlled trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Attention deficit hyperactivity disorder (ADHD)

Interventions
Children will be recruited and randomly assigned (using randomizer.org) to on-site table tennis (n=20), a table tennis exergame (n=20), or a control group (n=20). The table tennis training is provided either by a coach or a ball-projection machine in the on-site group. In the exergaming table tennis group the intervention is Nintendo Wii Sport providing coordination exercise to train the concentration of the children with ADHD. The control group receives their regular treatment for the symptoms of ADHD. The intervention lasts 12 weeks with three 1-hour sessions per week.

Intervention Type
Behavioural

Primary outcome(s)
Handwriting performance measured using a self-developed computer program for automation level and response time at baseline and 12 weeks

Key secondary outcome(s))
Executive functions measured using the Stroop test and Wisconsin Card Sorting Test (WCST) at baseline and 12 weeks

Completion date
31/10/2017

Eligibility

Key inclusion criteria
1. Meet the criteria of DSM-V for ADHD
2. Handwriting deficits confirmed by the administration of the Chinese Handwriting Evaluation Form (CHEF). According to the test manual, the cut-off criterion for the identification of handwriting deficit was two or more of the six dimensions with a median larger than, or equal to, 3

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Child

Sex
All

Total final enrolment
60

Key exclusion criteria
1. A history of any medical, neurological, or pervasive developmental disorders, intellectual disability, oncological, musculoskeletal, sensory (hearing, vision), or skin disorders
2. Children with IQ score <80
3. Taking any medication other than methylphenidate

Date of first enrolment
10/10/2015

Date of final enrolment
30/05/2016

Locations

Countries of recruitment
Taiwan

Study participating centre
I-Shou University
No.8, Yida Rd.
Jiaosu Village Yanchao District
Kaohsiung
Taiwan
82445

Sponsor information

Organisation
I-Shou University

ROR
https://ror.org/04d7e4m76

Funder(s)

Funder type
Government

Funder Name
Ministry of Science and Technology, Taiwan

Alternative Name(s)
Ministry of Science and Technology, R.O.C. (Taiwan), Ministry of Science and Technology of Taiwan, MOST

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
Taiwan

Results and Publications

Individual participant data (IPD) sharing plan
The participant-level data will be available upon request from Dr Nan-Ying Yu (ying@isu.edu.tw). The data will be available for 2 years and can be provided to researchers who engage in ADHD-related researches upon request for further correlation analyses among the measured variables.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Protocol file			01/03/2021	No	No