

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

<b>Submission date</b> 16/01/2021	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered
<b>Registration date</b> 04/02/2021	<b>Overall study status</b> Completed	<input checked="" type="checkbox"/> Protocol
<b>Last Edited</b> 01/03/2021	<b>Condition category</b> Mental and Behavioural Disorders	<input type="checkbox"/> Statistical analysis plan
		<input type="checkbox"/> Results
		<input type="checkbox"/> Individual participant data
		<input type="checkbox"/> 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

### Contact details

No.8, Yida Rd.

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## Additional identifiers

### 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?
<a href="#">Protocol file</a>			01/03/2021	No	No