Clinical Trial Protocol
Iranian Registry of Clinical Trials

09 Nov 2026

The effects of backpack and modified pack carriage in different weights on posture, kinematics and kinetics of gait in schoolchildren

Protocol summary

Study aim

The aim was investigating and comparison of posture, kinematic and kinetic of during walking and carrying backpack and modified pack (with three bags that distribute the load equally in front and back of trunk) in 7.5, 10, 12.5, and 15 percent of body weight, in two heights of placement only in the 10% load, among 8 – 11 years old schoolboys.

Design

Within group comparison of eleven times randomized (repeated) measuring for each participant, Single blind

Settings and conduct

Location:Tehran city, motor control laboratory of electrical and computer faculty, university of Tehran. Method: Each participant in one day, walked on Gaitway treadmill, while carrying backpack and modified pack with four different weights. At the end of each trial, then, the data recording was done. All randomized measurements (11 trials) were saved with a code then later calculations and analysis would be done. After calculations, trials would be arranged according to the primary list. Thus researcher and measurer didn't know how the measurements arrangement are, and each file of data is related to which trial, till the end of process.

Participants/Inclusion and exclusion criteria

Inclusion criteria: 1.The age ranged from 8 to 11 years; 2.Male gender; 3.The subject and his parent's consent; 4.Right hand and foot dominancy. Exclusion criteria: Any condition affecting on gait and carrying packs by participants.

Intervention groups

Tow types of packs; Four different load for each one of packs; Tow position of each pack only in 10% of body weight load .

Main outcome variables

Postural parameters including craniovertebral angle, trunk forward lean, hip and knee angle; Vertical ground reaction force parameters including first and second peaks, loading rate, support phase peak; Kinematical parameters of gait including stride length, step width, double support time, cadence, swing phase time,

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20180607039995N1**
Registration date: **2020-04-28, 1399/02/09**
Registration timing: **retrospective**

Last update: **2020-04-28, 1399/02/09**
Update count: **0**

Registration date

2020-04-28, 1399/02/09

Registrant information

Name
Ali Akbar Jadidian

Name of organization / entity
Payamenoor university

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Iran (Islamic Republic of)

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2018-05-27, 1397/03/06

Expected recruitment end date

2018-07-22, 1397/04/31

Actual recruitment start date

2018-06-09, 1397/03/19

Actual recruitment end date

2018-08-05, 1397/05/14

Trial completion date

2018-08-05, 1397/05/14

Scientific title

The effects of backpack and modified pack carriage in different weights on posture, kinematics and kinetics of gait in schoolchildren

Public title

Effect of the carriage of tow types of pack on schoolchildren

Purpose

Other

Inclusion/Exclusion criteria

Inclusion criteria:

The age ranged from 8 to 11 Male gender The subject and his parent's consent Right hand and foot dominancy

Exclusion criteria:

pain and injury within 6 months leading to measurement obesity with a BMI of over 30 history of chronic diseases postural and walking abnormalities such as flat foot drug intake fever within 72 hours leading up to measurement severe vision and hearing impairment history of surgery

Age

From **8 years** old to **11 years** old

Gender

Male

Phase

N/A

Groups that have been masked

- Investigator
- Outcome assessor
- Data analyser

Sample size

Target sample size: **30**

More than 1 sample in each individual

Number of samples in each individual: **11**

Each participant will be avaluated for 11 times. First is walking without backpack and load as control. 4 times is caring conventional backpack in different weights (7/5, 10, 12/5, 15 percent of body weight). 4 times is caring modified backpack in mentioned same weights. The 2 remained is caring every pack with 10% weight at mid-back position.

Actual sample size reached: **28**

More than 1 sample in each individual

Actual sample size in each individual: **11**

Each participant was avaluated for 11 times. First was walking without backpack and load as control. 4 times was caring conventional backpack in different weights (7/5, 10, 12/5, 15 percent of body weight). 4 times was caring modified backpack in mentioned same weights. The 2 remained was caring every pack with 10% weight at mid-back position.

Randomization (investigator's opinion)

N/A

Randomization description

Blinding (investigator's opinion)

Single blinded

Blinding description

Prior to measurement, each participant's data sheet was coded without specification, and all measurement interventions were randomly assigned to each participant in the sheet and each intervention was numbered. Each number is issued by the technician of the device, respectively. Therefore, the researcher and evaluator and data analyzer until the end of the analysis process in SPSS is unaware from the nature of the data and their relationship to the repetition.

Placebo

Not used

Assignment

Crossover

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of physical education and sports science faculty, university of tehran

Street address

physical education and sports science faculty of university of tehran, AmirAbad, North Kargar

City

Tehran

Province

Tehran

Postal code

1439813117

Approval date

2018-05-29, 1397/03/08

Ethics committee reference number

IR.UT.SPORT.REC.1397.002

Health conditions studied

1

Description of health condition studied

Backpack, modified pack, gait, posture, kinetics, kinematics, pack position

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

postural parameters

Timepoint

one time, while applying independent variable

Method of measurement

Panasonic camera, NV-GS75

2

Description
Vertical ground reaction force
Timepoint
one time, while applying independent variable
Method of measurement
H/P/Cosmos Gaitway

3

Description
Spatiotemporal parameters of gait
Timepoint
one time, while applying independent variable
Method of measurement
H/P/Cosmos Gaitway

Secondary outcomes

empty

Intervention groups

1

Description
Control group: walking no load on level surface
Category
Prevention

2

Description
Intervention group: walking while carrying a backpack with 7.5% of body weight load.
Category
Prevention

3

Description
Intervention group2: walking while carrying a backpack with 10% of body weight load.
Category
Prevention

4

Description
Intervention group3: walking while carrying a backpack with 12.5% of body weight load.
Category
Prevention

5

Description
Intervention group4: walking while carrying a backpack with 15% of body weight load.
Category
Prevention

6

Description
Intervention group5: walking while carrying a modified pack with 7.5% of body weight load.
Category
Prevention

7

Description
Intervention group6: walking while carrying a modified pack with 10% of body weight load.
Category
Prevention

8

Description
Intervention group7: walking while carrying a modified pack with 12.5% of body weight load.
Category
Prevention

9

Description
Intervention group8: walking while carrying a modified pack with 15% of body weight load.
Category
Prevention

10

Description
Intervention group9: walking while carrying a backpack with 10% of body weight load, on thoracic position
Category
Prevention

11

Description
Intervention group10: walking while carrying a modified pack with 10% of body weight load, on thoracic position
Category
Prevention

Recruitment centers

1

Recruitment center
Name of recruitment center
Motor control laboratory, electrical and computer engineering faculty of university of Tehran
Full name of responsible person
Dr Fariba Bahrami¸
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Sponsors / Funding sources

1

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Name of organization / entity
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Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Physical Education and Sports Science, University of Tehran
Proportion provided by this source
100
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
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Sharing plan

Deidentified Individual Participant Data Set (IPD)

No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD

There is no need to publish IPD in this study.

Study Protocol

Yes - There is a plan to make this available

Statistical Analysis Plan

Yes - There is a plan to make this available

Informed Consent Form

Yes - There is a plan to make this available

Clinical Study Report

Yes - There is a plan to make this available

Analytic Code

Not applicable

Data Dictionary

Not applicable

Title and more details about the data/document

The mean and standard deviation of demographic information, and all data will publish as thesis and original article. There is no need to publish lore than these.

When the data will become available and for how long

After submitting the thesis, 2019

To whom data/document is available

It will be free after publishing the thesis and article.

Under which criteria data/document could be used

After publish, it will be free with referencing.

From where data/document is obtainable

University of Tehran to achieve and reading full text of the thesis, and after publishing the articles, by searching in related scientific databases.

What processes are involved for a request to access data/document

There is no other kind of request to achieve more information.

Comments