

Clinical Trial Protocol

Iranian Registry of Clinical Trials

27 Jul 2026

Effect of virtual reality on trunk control in children with developmental delays

Protocol summary

Study aim

To investigate the effect of virtual reality on trunk control in children with developmental delays

Design

randomized controlled trial , single blind, parallel group

Settings and conduct

The children hospital Faisalabad

Participants/Inclusion and exclusion criteria

- Willing to give consent. • Both gender male/female • Age limit 3-8 years (11) • Able to follow visual and verbal commands (16) • Gross motor function level II-IV (11) • Those with an appropriate cognitive level to understand a VR exercise program • Inability to follow instructions • Other Neurological disorders (polio, epilepsy, seizures, trumatic brain injury) • Malignancies and Infectious disorders (encephalitis, meningitis, malignancy, tumors) • Patients having musculoskeletal problems (fracture, congenital hip dysplasia) • Spastic CP with Ashworth scale 2 + • Any surgery within last 6 months • A diagnosis of Autism or attention deficit disorders • Psychiatric disorder

Intervention groups

Group A receives baseline treatment utilizing neurodevelopmental treatment (NDT) principles, focusing on trunk control through three stages of exercises: initial stage for dynamic co-activation, second stage for weight shift facilitation, and third stage for trunk rotation induction. Group B, the study group, undergoes 24 sessions of baseline treatment combined with immersive virtual reality (VR) protocol over 8 weeks. Sessions last 30 minutes, with 15 minutes of NDT followed by 15 minutes of playing VR games targeting trunk control and gross motor function. Games involve dynamic adaptations for head and trunk movements to promote engagement and motor learning.

Main outcome variables

The trunk control measurement scale

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20240307061203N1**

Registration date: **2024-03-24, 1403/01/05**

Registration timing: **registered_while_recruiting**

Last update: **2024-03-24, 1403/01/05**

Update count: **0**

Registration date

2024-03-24, 1403/01/05

Registrant information

Name

Gulraiz Ayub

Name of organization / entity

The University of Faisalabad

Country

Pakistan

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Email address

2022-ms-pt-014@tuf.edu.pk

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2024-02-17, 1402/11/28

Expected recruitment end date

2024-03-30, 1403/01/11

Actual recruitment start date

2024-02-17, 1402/11/28

Actual recruitment end date

2024-04-30, 1403/02/11

Trial completion date

2024-05-02, 1403/02/13

Scientific title

Effect of virtual reality on trunk control in children with developmental delays

Public title

virtual reality on trunk control with developmental delays

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

Willing to give consent. Both gender male/female Age limit 3-8 years Able to follow visual and verbal commands Gross motor function level II-IV Those with an appropriate cognitive level to understand a VR exercise program

Exclusion criteria:

Inability to follow instructions Other Neurological disorders (polio, epilepsy, seizures, traumatic brain injury) Malignancies and Infectious disorders (encephalitis, meningitis, malignancy, tumors) Patients having musculoskeletal problems (fracture, congenital hip dysplasia) Spastic CP with Ashworth scale 2 + Any surgery within last 6 months A diagnosis of Autism or attention deficit disorders Psychiatric disorder

Age

From **3 years** old to **8 years** old

Gender

Both

Phase

2-3

Groups that have been masked

- Outcome assessor

Sample size

Target sample size: **22**

Actual sample size reached: **20**

Randomization (investigator's opinion)

Randomized

Randomization description

The randomization will be done with the help of lottery method. Lottery generated numbers will be drawn from the computer by the help of sample size. Different numbers will enter in the poll of group.

Blinding (investigator's opinion)

Single blinded

Blinding description

single blinded: outcome assessors are typically kept unaware of which participants received the experimental treatment and which received the control or comparative intervention. This blinding helps to prevent conscious or unconscious biases that could influence the assessment of study outcomes.

Placebo

Not used

Assignment

Parallel

Other design features

developmental delays, trunk control measurement scale

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Research and Ethics/ technical committee for The University of Faisalabad

Street address

Faisal Town, West Canal Road, Faisalabad, Punjab

City

Faisalabad

Postal code

38000

Approval date

2024-01-05, 1402/10/15

Ethics committee reference number

TUF/Addl Reg/SB/753

Health conditions studied

1

Description of health condition studied

Delayed developmental milestone

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Trunk control

Timepoint

before and after 6 weeks of intervention

Method of measurement

Trunk control Measurement scale

Secondary outcomes

empty

Intervention groups

1

Description

Active Control group: this group will receive handling and facilitation principle of neurodevelopmental treatment approach will be utilize to encourage trunk weight bearing, uprightness and elongation. This intervention will be in three stages. In the initial stage, to stimulate flexors and extensors muscles dynamic co-activation and to maintain trunk upright without tilting body in sagittal plane children will be asked to play with toys in front of them. In the second stage children will be asked to play with toys. Subsequently, toys will be placed at the child's side to prompt weight shift, facilitating dynamic co-activation of trunk muscles and elongation of the weight-bearing side. In the third stage, elongation of the weight-bearing side will be continued by placing a toy at

approximately 45 degree to induce trunk rotation in horizontal plane. Trunk rotation will be fostering on weight bearing side in this phase.

Category

Rehabilitation

2

Description

intervention group: Patient in this group will receive handling and facilitation principle of neurodevelopment treatment approach will be utilize to encourage trunk weight bearing, uprightness and elongation. along with immersive virtual reality treatment protocol. It will involves 24 sessions in alternating three days a week for 8 weeks. this session will last for 30 minutes, starting with 15 minute of neurodevelopmental treatment followed by 15 minutes of playing immersive VR games with 1 minute rest interval. The first game involves participants features a bird's flight (bird's back), task is to collect to collect golden coins with dynamic adaptation for head and trunk movements. The second game representing planetary exploration (solar system) with head-trunk rotations, and third game entails climbing a elevator ride focuses on sitting posture, elongation and weight transfer, promoting hand and body movement.

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Children Hospital & Institute of Child Health
Faisalabad

Full name of responsible person

Dr. Gulraiz Ayub; PT

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GC university,, Jhang road, New Campus Dr,
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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

The University of Faisalabad

Full name of responsible person

Dr. Syed Saqlain Babar; PT

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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

The University of Faisalabad

Proportion provided by this source

100

Public or private sector

Private

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

The University of Faisalabad

Full name of responsible person

Dr. Zainab Boota

Position

Consultant

Latest degree

Master

Other areas of specialty/work

Physiotherapy

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Person responsible for scientific inquiries

Contact

Name of organization / entity

The University of faisalabad

Full name of responsible person

Dr. warda jabbar;PT

Position

Consultant clinical physiotherapist

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Person responsible for updating data

Contact

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Sharing plan

Deidentified Individual Participant Data Set (IPD)

Yes - There is a plan to make this available

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

No - There is not a plan to make this available

Data Dictionary

Yes - There is a plan to make this available

Title and more details about the data/document

Effect of virtual reality on trunk control in children with developmental delays

When the data will become available and for how long

15 days after publication

To whom data/document is available

google scholar

Under which criteria data/document could be used

Access to the data will be facilitated through a specified mechanism, such as a secure online portal or data sharing platform. Requests for access will be reviewed by a designated committee or entity responsible for ensuring that they meet the established criteria and comply with relevant regulations and guidelines. Additional supporting information and documents may be provided to assist requesters

From where data/document is obtainable

The University of Faisalabad 38000 <https://tuf.edu.pk/> 00924187509715

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

To receive the documents or data files, the process typically involves the following steps: 1. Request Initiation: The applicant submits a formal request specifying the documents or data files they need. 2. Verification and Authorization: The organization verifies the request and ensures that the applicant is authorized to access the requested documents or data files. This may involve confirming the identity of the requester and checking their permissions. 3. Processing Time: The processing time varies depending on the complexity of the request, the volume of documents or data files, and any legal or regulatory requirements. It could range from a few hours to several weeks. 4. Document Retrieval or Data Extraction: Once the request is approved, the organization retrieves the documents from their archives or extracts the requested data from their databases. 5. Quality Assurance: Before releasing the documents or data files to the applicant, the organization may conduct quality checks to ensure accuracy and completeness. 6. Delivery: The documents or data files are delivered to the applicant through a secure channel, such as encrypted email, secure file transfer protocols, or a secure online portal. 7. Confirmation of Receipt: The applicant acknowledges receipt of the documents or data files, confirming that they have received the information they requested.

Comments