Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 2026

effects of virtual rehabilitation on upper extremity motor learning in hemiplegic cerebral palsy

Protocol summary

Study aim
To investigate the effects of virtual rehabilitation on upper extremity motor learning in patients with hemiplegic cerebral palsy

Design
A single blinded randomized controlled trial and Purposive sampling technique is used. The sample size was twenty five enrolled between May 2022 to July 2022

Settings and conduct
Patients were taken from Allied hospital Faisalabad and Madina teaching hospital Faisalabad. Group A patients received regular physiotherapy and virtual rehabilitation while Group B patients received physiotherapy sessions. Only the researcher knew which group received regular therapy and other received virtual therapy

Participants/Inclusion and exclusion criteria
• Patients between 5 to 10 years old • Diagnosed as hemiplegic cerebral palsy Both genders will include • Patients with visual impairments and auditory problem • Patients with severe spasticity (Modified Ashworth spasticity score of 4) were excluded from the study • patients with Psychological illness • patients Suffered from uncontrolled seizures

Intervention groups
Patients in the intervention group will be given through regular physiotherapy as well as virtual rehabilitation. The UE VR training sessions will be 2 times each week for 8 weeks (2 months). For training, non-Immersion Microsoft Xbox Kinect will be used. In Intervention sessions each child will participate in a total of 16 sessions of 40 min each. In control group patients will underwent routine physiotherapy program. The protocol includes passive stretching and strengthening exercises. Each exercise will takes place for 20 minutes 10 repetitions, twice a week, for 8 weeks.

Main outcome variables
To improve the motor functions of upper extremity To improve range of motion to increase muscle strength and decrease limited activity To improve reaching ability and grasping function

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20220616055192N1**
Registration date: **2022-09-11, 1401/06/20**
Registration timing: **retrospective**

Last update: **2022-09-11, 1401/06/20**
Update count: **0**

Registration date
2022-09-11, 1401/06/20

Registrant information

Name
Fizza Hussain

Name of organization / entity
The University of Faisalabad

Country
Pakistan

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2022-05-01, 1401/02/11

Expected recruitment end date
2022-07-30, 1401/05/08

Actual recruitment start date
2022-05-01, 1401/02/11

Actual recruitment end date
2022-07-30, 1401/05/08

Trial completion date
2022-08-01, 1401/05/10

Scientific title
effects of virtual rehabilitation on upper extremity motor learning in hemiplegic cerebral palsy

Public title
effects of virtual rehabilitation on upper extremity motor learning in hemiplegic cerebral palsy

Purpose
Treatment

Inclusion/Exclusion criteria

Inclusion criteria:
Patients between 5 to 10 years old Diagnosed as hemiplegic cerebral palsy Both genders will include Being able to cooperate and being motivated will include in the study Patients who are able to understand and clearly follow verbal instructions and command that include in training and evaluation. Patients with Gross Motor Function Classification Scale level 1, 2 and 3 will include

Exclusion criteria:
Patients with visual impairments and auditory problem Patients with severe spasticity (Modified Ashworth spasticity score of 4) excluded from the study Patients with Psychological illness Participants Suffered from uncontrolled seizures Patients injected with Botulinum toxin injections within past three months were excluded Patients having prior surgery for spasticity within past 3 months were excluded from study

Age
From **5 years** old to **10 years** old

Gender
Both

Phase
N/A

Groups that have been masked

- Participant

Sample size
Target sample size: **25**
Actual sample size reached: **25**

Randomization (investigator's opinion)
Randomized

Randomization description
The method used for randomization was simple randomization. The randomization unit was done on an individual basis. A computer software randomized tool is used.

Blinding (investigator's opinion)
Single blinded

Blinding description
the participants will be unaware in which group they will be allocated after meeting the inclusion criteria an informed consent will be taken from them by physiotherapist.

Placebo
Not used

Assignment
Other

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Ethics Committee of The University of Faisalabad

Street address
4-km, Sargodha road, University Town, Faisalabad, Pakistan

City
Faisalabad

Postal code
38000

Approval date
2022-04-07, 1401/01/18

Ethics committee reference number
TUF/DR/MSPP/332

Health conditions studied

1

Description of health condition studied
Cerebral palsy is a prevalent neurodevelopmental disorder that ranging from 1.5 to 2.5/1000 births beginning in the early childhood and continues throughout life. It causing the non-progressive disturbance of motor function that influences posture and movement, motor coordination with secondary complications of contractures and bone deformity. These alternations leading to hindrance in independent performance of daily activities

ICD-10 code
G80.9

ICD-10 code description
Cerebral palsy, unspecified

Primary outcomes

1

Description
spasticity and impaired range of motion in the upper extremity

Timepoint
motor function will be measured at start of treatment sessions and after eight weeks after treatment sessions finished

Method of measurement
modified ashworth scale will use

2

Description
motor dysfunction in the upper limb

Timepoint
motor function will be measured at start of treatment

sessions and after eight weeks after treatment sessions finished

Method of measurement

ABILHAND - KIDS and PMAL scale will use

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group Patients in this group will be given through regular physiotherapy as well as virtual rehabilitation. The Upper extremity Virtual Rehabilitation training sessions will be two times each week for eight weeks (2 months). For training, non-Immersion Microsoft Xbox Kinect will be used. The Xbox-Kinect display place used an infrared camera to detect handlers' physical motions in 3-D space for interactive activities inside the game, eliminating the requirement for the user to carry an interface device. In Intervention sessions each child will participate in a total of sixteen sessions of forty minute each.

Category

Rehabilitation

2

Description

Control group: In this group patients will underwent routine physiotherapy program. The protocol includes passive stretching and strengthening exercises. On the affected side, the therapist will use resistance to strengthen the muscles. Each exercise will takes place for 20 minutes 10 repetitions, twice a week, for 8 weeks

Category

Rehabilitation

Recruitment centers

1

Recruitment center

Name of recruitment center

Madina Teaching Hospital

Full name of responsible person

Brig. Dr. Munir Ahmad

Street address

Sargodha Road, University Town, Faisalabad, Pakistan Faisalabad

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2

Recruitment center

Name of recruitment center

Allied Hospital Faisalabad

Full name of responsible person

Rashid Maqbool

Street address

Jail Road Adjacent Faisalabad Medical University, near Sargodha road Faisalabad, Pakistan

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

The university of Faisalabad

Full name of responsible person

Dr. M. KHALEEQ-UR-RAHMAN

Street address

4 km, Sargodha Road, University Town, Faisalabad, Pakistan

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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. Sidra Majeed

Position
Associate Professor

Latest degree
Master

Other areas of specialty/work
Physiotherapy

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Person responsible for updating data

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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
Undecided - It is not yet known if there will be a plan to make this available

Analytic Code
Undecided - It is not yet known if there will be a plan to make this available

Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available

Title and more details about the data/document
All collected deidentified participant data set for the outcome measures

When the data will become available and for how long
4 months after publication

To whom data/document is available
people working in the academic institutions

Under which criteria data/document could be used
IPD and any additional supporting documents will be provided for research on similar topic and can be obtained by asking through contact person

From where data/document is obtainable
contact person: Fizza Hussain Mobile No. 923041676206 email address : drfizzahussain206@gmail.com

What processes are involved for a request to access data/document
Data files will be provided after talking to contact person mentioned above

Comments