Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 2026

The effectiveness of working memory training on brain waves changes in early stage of Alzheimer disease

Protocol summary

Study aim
studying the effectiveness of working memory training in Alzheimer patients

Design
A randomised clinical trial with a parallel group design and 20 patients enrolled in julay 2019

Settings and conduct
research is conducted under supervision of a neurologist in his clinic.participants are put in experimental or control group by flipping a coin. according to subject's health status the training take place in their home.the executor shows and play the game in her laptop and trains patients

Participants/Inclusion and exclusion criteria
Inclusion criteria: having Alzheimer, being right handed, being over 50 years old, having normal vision. Exclusion criteria: stroke, Epilepsy, having any kind of neurodegenerative disease, use of psychiatric medicine

Intervention groups
participants in the training group attend 12 sessions(30 minutes each).the sessions take place 3 days a week for 4 weeks in row.The subject is presented with a sequence of stimuli and the task consists of indicating when the current stimulus matches the one from n steps earlier in the sequence.The load factor n can be adjusted to make the task more or less difficult.the visual n-back test is similar to the "concentration game" but instead of different items that are in a fixed location, there is only 1 item that appears in different positions.subject must remember if the current location of item matches with n step earlier in the sequence."N-1" means you must remember the position of the item,1 turn back.if the score of subject is more than 75% he/she goes to next n-back level.if the score is between 50%-75% he/she remains the current level and if the score is less than 50% he/she goes 1 level back.control group wont practice any memory training between pretest and post-test

Main outcome variables
Alpha peak;alpha absolute power;relative alpha power;beta absolute power; relative beta power;working memory;dementia severity

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20190616043901N1**
Registration date: **2020-01-18, 1398/10/28**
Registration timing: **registered_while_recruiting**

Last update: **2020-01-18, 1398/10/28**
Update count: **0**

Registration date
2020-01-18, 1398/10/28

Registrant information

Name
Pegah Dehghan

Name of organization / entity

Country
Iran (Islamic Republic of)

Phone
+98 71 3621 2674

Email address
pegah.dehghan14@gmail.com

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2019-12-11, 1398/09/20

Expected recruitment end date
2020-01-21, 1398/11/01

Actual recruitment start date
empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effectiveness of working memory training on brain waves changes in early stage of Alzheimer disease

Public title

The effectiveness of working memory training in Alzheimer disease.

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

All Alzheimer patients which are in the early stage of their disease participants are right hand participants have normal vision being over 50 years old

Exclusion criteria:

Epilepsy, use of psychiatric medication any kind of degenerative neurological pathway

Age

From **50 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **20**

Randomization (investigator's opinion)

Randomized

Randomization description

patients will be subdivided into intervention and control groups by flipping a coin (simple individual randomization)

Blinding (investigator's opinion)

Not blinded

Blinding description

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethic Committee of Shahid Bahonar University of Medical Science

Street address

Shahid Bahonar University., Pajoohesh Sq., Kerman

City

Kerman

Province

Kerman

Postal code

76169-14111

Approval date

2019-08-25, 1398/06/03

Ethics committee reference number

IR.KMU.REC.1398.279

Health conditions studied

1

Description of health condition studied

Alzeimer

ICD-10 code

G30

ICD-10 code description

Alzheimer's disease

Primary outcomes

1

Description

Alpha peak

Timepoint

3 day before and 3 day after the intervention

Method of measurement

electroencephalograph

2

Description

alpha absolute power

Timepoint

3 day before and 3 day after the intervention

Method of measurement

electroencephalograph

3

Description

relative Alpha power

Timepoint

3 day before and 3 day after the intervention

Method of measurement

electroencephalograph

4

Description

beta absolute power

Timepoint

3 day before and 3 day after the intervention

Method of measurement

electroencephalograph

5

Description

relative beta power

Timepoint
3 day before and 3 day after the intervention
Method of measurement
electroencephalograph

6

Description
working memory
Timepoint
3 day before and 3 day after the intervention
Method of measurement
digit span questionare

7

Description
Severity of dementia
Timepoint
3 day before and 3 day after the intervention
Method of measurement
mini-mental status examination test

Secondary outcomes

empty

Intervention groups

1

Description
Intervention group: participants in the training group attend 12 sessions (30 minutes each). the sessions take place 3 days a week for 4 weeks in row (in another words for 1 month). The subject is presented with a sequence of stimuli, and the task consists of indicating when the current stimulus matches the one from n steps earlier in the sequence. The load factor n can be adjusted to make the task more or less difficult.To clarify, the visual n-back test is similar to the classic memory game of "Concentration". However, instead of different items that are in a fixed location on the game board, there is only one item, that appears in different positions on the game board during each turn and subject must remember if the current location of item matches with n step earlier in the sequence. "N-1" means that you have to remember the position of the item, one turn back. "N-2" means that you have to remember the position of the item two turns back, and so on. if the score of subject is more than 75% he or she will go to next n-back level. if the score is between 50%-75% he/she remain the current level. and if the score is less than 50% he/she will go one level back.
Category
Treatment - Devices

2

Description
Control group: the control group is not under any intervention or treatment.
Category
N/A

Recruitment centers

1

Recruitment center
Name of recruitment center
Kerman Neuroscience Center
Full name of responsible person
Doctor Hosein-ali Ebrahimi meimand
Street address
No.1 Jahad ave., - infront of Besat clinic
City
Kerman
Province
Kerman
Postal code
7619813159
Phone
+98 34 3226 4198
Email
hebrahimi@kmu.ac.ir

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Kerman University of Medical Sciences
Full name of responsible person
Reza Dehnavi
Street address
Kerman University of Medical Sciences,Medical University Campus,Haft-Bagh Highway, Kerman, Iran
City
Kerman
Province
Kerman
Postal code
13555-76169
Phone
+98 34 3132 5402
Email
rdehnavi@gmail.com
Web page address
http://futures.kmu.ac.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Kerman University of Medical Sciences
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

Kerman University of Medical Sciences

Full name of responsible person

Hosein-ali Ebrahimi meimand

Position

Professor

Latest degree

Subspecialist

Other areas of specialty/work

Neuroscience

Street address

Center of Brain Disease Research., Shafa hospital., Kosar ave,. Kerman

City

Kerman

Province

Kerman

Postal code

7618751151

Phone

+98 34 3212 4727

Email

hebrahimi@kmu.ac.ir

Person responsible for scientific inquiries

Contact

Name of organization / entity

Kerman University of Medical Sciences

Full name of responsible person

Hosein Ali Ebrahimi

Position

professor

Latest degree

Subspecialist

Other areas of specialty/work

Neuroscience

Street address

Center of Neurology Research , Shafa Hospital,. Kosar ave.

City

Kerman

Province

Kerman

Postal code

۷۶۱۸۷۵۱۱۵۱

Phone

+98 34 2345 3032

Email

hebrahimi@kmu.ac.ir

Person responsible for updating data

Contact

Name of organization / entity

Kerman University of Medical Sciences

Full name of responsible person

Pegah Dehghan

Position

Master student

Latest degree

Bachelor

Other areas of specialty/work

Psychology

Street address

Shahid Bahonar University.; Pajoohesh Sq

City

Kerman

Province

Kerman

Postal code

76169-14111

Phone

+98 34 3132 3066

Email

pegah.dehghan14@gmail.com

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

Undecided - It is not yet known if there will be 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

the data about main consequence (dependent variables) will be shared

When the data will become available and for how long

6 Month after the conclusion get published

To whom data/document is available

limitless

Under which criteria data/document could be used

there is no limit

From where data/document is obtainable

email: pegah.dehghan14@gmail.com It will be also published as a thesis and will be available in library of Shahid Bahonar University

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

first the responsible of research must approve the request.then data will be sent.

Comments