

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 July 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 takes place in their home. the executor shows and plays 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 won't 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., Pajooresh 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 questionnaire

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 Jihad ave., - infront of Besat clinic

City

Kerman

Province

Kerman

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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

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Province

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Phone

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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

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Province

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Person responsible for scientific inquiries

Contact

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Full name of responsible person

Hosein Ali Ebrahimi

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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

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Phone

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Email

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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

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