

Clinical Trial Protocol

Iranian Registry of Clinical Trials

16 Sep 2026

The effect of high-intensity interval exercise and training on the mobilization of hematopoietic stem cells in autologous bone marrow transplant patients

Protocol summary

Study aim

The general aim of the present study was to investigate the effect of high-intensity interval exercise and training on the mobilization of hematopoietic stem cells in autologous bone marrow transplant patients.

Design

A clinical trial with a control group, with parallel groups, randomized, on 40 patients

Settings and conduct

Patients who were candidates for autologous bone marrow transplantation after inpatient in Taleghani Hospital, volunteered to participate in this study.

Participants/Inclusion and exclusion criteria

Entry requirements: Lymphoma and multiple myeloma patients candidates for autologous bone marrow transplantation, BMI less than 30, no history of cardiovascular diseases, diabetes, autonomic disorder, kidney disease, hepatitis or lung disease, non-smokers, successful exercise test up to the fourth stage of the test, not having a movement disorder and no difficulty in exercising clinically Non-entry conditions: Inability to exercise according to the opinion of a specialist doctor

Intervention groups

The exercise group will exercise during the bone marrow transplant process. The control group will receive only the usual care during the bone marrow transplant process without doing any exercise.

Main outcome variables

Increase of stem cells in peripheral blood following exercise Improving platelet and leukocyte grafting

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20230101057012N1**

Registration date: **2023-01-08, 1401/10/18**

Registration timing: **prospective**

Last update: **2023-01-08, 1401/10/18**

Update count: **0**

Registration date

2023-01-08, 1401/10/18

Registrant information

Name

Tayebe Zarekar

Name of organization / entity

Shahid Beheshti University

Country

Iran (Islamic Republic of)

Phone

+98 21 2990 0000

Email address

t_zarekar@sbu.ac.ir

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2023-01-10, 1401/10/20

Expected recruitment end date

2023-05-10, 1402/02/20

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The effect of high-intensity interval exercise and training on the mobilization of hematopoietic stem cells in autologous bone marrow transplant patients

Public title

The effect of exercise on the mobilization of hematopoietic stem cells

Purpose

Supportive

Inclusion/Exclusion criteria**Inclusion criteria:**

Lymphoma and multiple myeloma patients candidates for autologous bone marrow transplantation BMI less than 30 No history of cardiovascular disease, diabetes, autonomic disorder, kidney disease, hepatitis or lung disease Non-smoker Successful completion of exercise test up to the fourth stage Not having a movement disorder and no difficulty in exercising clinically Having a medical approval to exercise

Exclusion criteria:

Inability to do exercise based on the opinion of a specialist doctor

Age

From **18 years** old to **60 years** old

Gender

Both

Phase

N/A

Groups that have been masked

No information

Sample size

Target sample size: **40**

Randomization (investigator's opinion)

Randomized

Randomization description

Qualified subjects are selected for the research based on the file information and after obtaining informed consent. The website <https://www.sealedenvelope.com> is used for randomization and the generation of a random block sequence, and sealed opaque envelopes are used to hide the random allocation. Each of the generated random sequences is recorded on a card and the cards are placed in the letter envelopes in order. In order to maintain a random sequence, the outer surface of the envelopes is numbered in the same order. The lid of the letter envelopes is glued and placed in a box. The participants open one of the letter envelopes and are placed in one of the groups based on it.

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**

Ethics Committee of Shahid Beheshti University of Medical Sciences

Street address

Eerabi Ave, Velenjak

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Tehran

Postal code

1985717443

Approval date

2021-10-10, 1400/07/18

Ethics committee reference number

IR.SBMU.REC.1400.017

Health conditions studied**1****Description of health condition studied**

Lymphoma

ICD-10 code

C85.1

ICD-10 code description

Unspecified B-cell lymphoma

2**Description of health condition studied**

Multiple myeloma

ICD-10 code

C90.0

ICD-10 code description

Multiple myeloma

Primary outcomes**1****Description**

Mobilization of hematopoietic stem cells

Timepoint

Before and after exercise activity

Method of measurement

Counting hematopoietic stem cells with flow cytometry

Secondary outcomes

empty

Intervention groups**1****Description**

Intervention group: Performing interval exercise before apheresis

Category

Treatment - Other

2

Description

Control group: Without physical activity before apheresis

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Taleghani Hos[ital

Full name of responsible person

Tayebe Zarekar

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Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Shahid Beheshti University of Medical Sciences

Full name of responsible person

Afshin Zarghi

Street address

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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

Shahid Beheshti University of Medical Sciences

Proportion provided by this source

50

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

Shahid Beheshti University

Full name of responsible person

Tayebe Zarekar

Position

Ph.D student

Latest degree

Master

Other areas of specialty/work

Exercise Physiology

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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

Yes - There is a plan to make this available

Analytic Code

Yes - There is 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

Data from this study and supplemental information will be available upon request after de-identifying participants' personal information.

When the data will become available and for how long

Data from the current study will be available immediately after publication.

To whom data/document is available

Data from this study and supplementary information will be available to both those working in academic and academic institutions, as well as those working in business, trade, and industry, whenever they request it.

Under which criteria data/document could be used

Data from this study and supplementary information will be publicly available. However, those who wish to use them must respect copyright, not manipulate them, and cite the original study articles that will be published.

From where data/document is obtainable

The raw data and supporting information for this study will be available without reservation upon request from the corresponding author. The author is Tayebe Zarekar from the Department of Biological Sciences in Sports, Faculty of Sports and Health Sciences, Shahid Beheshti University, Valenjak, Tehran, Iran. Email: t_zarekar@sbu.ac.ir. Postal code: 1983963113

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

The raw data and supporting information of this study will be available up to three weeks after their request.

Comments