

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### Effects of diode laser (980 nm) on orthodontic tooth movement

#### Protocol summary

##### Summary

The aim of this study is to evaluate the effects of low-level laser therapy on the velocity of orthodontic tooth movement (OTM) and the interleukin-6(IL-6) concentration in gingival crevicular fluid (GCF) during orthodontic treatment. In this randomized double blind clinical trial, 11 female patients who need first premolar extraction and canine retraction will be selected. The GaAlAs laser (diode laser, 980 nm, 100 mW, 5.6 J/cm<sup>2</sup>, 6 points, 56 seconds, and continuous mode) will be used in the canine retraction phase in one quadrant (LG). The other quadrant is considered as the control group (CG). The laser will be applied on day 0,7th, 14th, 21st, 28th days each month during canine retraction phase. Dental casts will be made at different time points during the treatment and the amount of tooth movement will be measured. GCF samples will be obtained from the distal side of maxillary canine teeth on both sides at the beginning of the trial, the end of aligning phase and at the 21st days of each month during canine retraction, to evaluate the levels of IL-6.

#### General information

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT2015100324324N1**  
Registration date: **2016-01-25, 1394/11/05**  
Registration timing: **retrospective**

Last update:

Update count: **0**

##### Registration date

2016-01-25, 1394/11/05

##### Registrant information

##### Name

Farzaneh Eslami

##### Name of organization / entity

Shahid Sadoughi university of medical science

##### Country

Iran (Islamic Republic of)

##### Phone

+98 35 3623 5775

##### Email address

farzaneheslami@ssu.ac.ir

##### Recruitment status

**Recruitment complete**

##### Funding source

Vice chancellor for research of Shahid sadoughi university of medical science

##### Expected recruitment start date

2014-04-05, 1393/01/16

##### Expected recruitment end date

2014-07-17, 1393/04/26

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

##### Trial completion date

empty

##### Scientific title

Effects of diode laser (980 nm) on orthodontic tooth movement

##### Public title

Effects of laser on tooth movement

##### Purpose

Treatment

##### Inclusion/Exclusion criteria

Inclusion criteria: patients with bimaxillary dentoalveolar protrusion who need first premolar extraction and canine retraction; no systemic disease; no previous permanent teeth extraction; not being under medical treatment that could interfere with bone metabolism such as NSAIDs or doxycycline; a good level of oral hygiene; no periodontal disease or radiographic evidence of bone loss, 7- no pregnancy during treatment; signing the informed consent by the patient or her parents Exclusion criteria: lack of patient interest; inappropriate oral hygiene;

prolonged drug consumption during treatment; not coming for their appointment; repeated bracket debonds

### Age

From **14 years** old to **25 years** old

### Gender

Female

### Phase

N/A

### Groups that have been masked

*No information*

### Sample size

Target sample size: **11**

### Randomization (investigator's opinion)

Randomized

### Randomization description

### Blinding (investigator's opinion)

Double blinded

### Blinding description

### Placebo

Used

### Assignment

Parallel

### Other design features

the selection of the laser and control group was randomly done, according to the flipping a coin.

## Secondary Ids

empty

## Ethics committees

### 1

#### Ethics committee

##### Name of ethics committee

Ethics committee of shahid sadoughi university of medical science

##### Street address

shahid bahonar squire, Yazd

##### City

Yazd

##### Postal code

#### Approval date

2014-05-11, 1393/02/21

#### Ethics committee reference number

17/1/31871

## Health conditions studied

### 1

#### Description of health condition studied

orthodontic tooth movement

#### ICD-10 code

z51.8

#### ICD-10 code description

Other specified medical care

## Primary outcomes

### 1

#### Description

accelerating tooth movement

#### Timepoint

4 times oer month

#### Method of measurement

from dental cast

### 2

#### Description

interluekin6

#### Timepoint

1 time per month

#### Method of measurement

sampling from gingival crevicular fluid

## Secondary outcomes

empty

## Intervention groups

### 1

#### Description

in laser group, the diode laser is used to accelerate tooth movement

#### Category

Treatment - Other

### 2

#### Description

in control group ,laser is not used.

#### Category

Treatment - Other

## Recruitment centers

### 1

#### Recruitment center

##### Name of recruitment center

Faculty of Dentistry, Shahid Sadoughi University of Medical Sciences

##### Full name of responsible person

Farzaneh Eslami

##### Street address

##### City

Yazd

## Sponsors / Funding sources

### 1

#### Sponsor

##### Name of organization / entity

Research vice chancellor of Shahid Sadoughi

University of Medical Science

**Full name of responsible person**

dr.Mmehrparvar

**Street address**

shahid bahonar square, Yazd

**City**

Yazd

**Grant name**

**Grant code / Reference number**

**Is the source of funding the same sponsor organization/entity?**

Yes

**Title of funding source**

Research vice chancellor of Shahid Sadoughi University of Medical Science

**Proportion provided by this source**

100

**Public or private sector**

*empty*

**Domestic or foreign origin**

*empty*

**Category of foreign source of funding**

*empty*

**Country of origin**

**Type of organization providing the funding**

*empty*

## Person responsible for general inquiries

**Contact**

**Name of organization / entity**

Faculty of Dentistry, Shahid Sadoughi University of Medical Sciences

**Full name of responsible person**

Farzaneh Eslami

**Position**

orthodontic resident

**Other areas of specialty/work**

**Street address**

Department of Orthodontics, Faculty of Dentistry, Daheye Fajr BLV,Yazd

**City**

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+98 35 3621 2222

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farzaneh.eslami@yahoo.com

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## Person responsible for scientific inquiries

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## Person responsible for updating data

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**Position**

Orthodontic resident

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**Web page address**

## Sharing plan

**Deidentified Individual Participant Data Set (IPD)**

*empty*

**Study Protocol**

*empty*

**Statistical Analysis Plan**

*empty*

**Informed Consent Form**

*empty*

**Clinical Study Report**

*empty*

**Analytic Code**

*empty*

**Data Dictionary**

*empty*