

# Clinical Trial Protocol

## Iranian Registry of Clinical Trials

10 Jun 2026

### Ergonomic design, development and evaluation of microscope workstation to reduce musculoskeletal loads in users

#### Protocol summary

##### Summary

The aim of the study: Ergonomic design, development and evaluation of microscope workstation to reduce musculoskeletal loads in users. Study design: This research is an interventional study. At baseline, the new workstation is designed . Then compare with a typical workstation which is prevalent in our laboratory. Study populatio: The population included in this study were cytologists, pathologists and lab technician for at least one year of work experience and a daily average of at least 4 hours using of microscope. In addition, none of users should not have musculoskeletal disorders. After set up an ergonomic workstation, we compare this station with the typical microscope workstation. Sample size: For this study, 12 users of microscope from both sex with more than a year of work experience will be asked to do an operation cycle of using microscopes in each of the workstations. Study time: The standard working time is an average of 1 minute and 15 seconds. Standard work is repeated 10 times. Each repeat is includes a 3-minute rest period with relaxing the muscles of the upper limb, neck and shoulders. During the rest, if needed, the person is transferred to another table. The total duration of work on each workstation is 20 minutes. The outcome of the study: For assess of differences in working postures and the muscle activity of the users, the dependent variable of electromyography activity of neck and shoulder muscles while using of any workstations will be measured. This outcome will be measured once after making an ergonomic microscope workstation for each user then, will be compared with each other.

#### General information

##### Acronym

##### IRCT registration information

IRCT registration number: **IRCT2014121620337N1**

Registration date: **2015-06-22, 1394/04/01**

Registration timing: **prospective**

Last update:

Update count: **0**

##### Registration date

2015-06-22, 1394/04/01

##### Registrant information

###### Name

Toktam Balandeh

###### Name of organization / entity

Shiraz University of Medical Sciences

###### Country

Iran (Islamic Republic of)

###### Phone

+98 71 3212 2438

###### Email address

balandeh\_t@sums.ac.ir

##### Recruitment status

**Recruitment complete**

##### Funding source

Shiraz University of Medical Sciences

##### Expected recruitment start date

2015-06-30, 1394/04/09

##### Expected recruitment end date

2015-07-31, 1394/05/09

##### Actual recruitment start date

empty

##### Actual recruitment end date

empty

##### Trial completion date

empty

##### Scientific title

Ergonomic design, development and evaluation of microscope workstation to reduce musculoskeletal loads in users

##### Public title

Ergonomic design, development and evaluation of microscope workstation

### **Purpose**

Prevention

### **Inclusion/Exclusion criteria**

Inclusion criteria: More than one year of work experience; a daily average of at least 4 hours using of microscope in pathology and cytology laboratory; not having musculoskeletal disorders. Exclusion criteria: The work experience less than one year; a daily average of less than at least 4 hours using of microscope in the laboratory of Pathology and cytology; having musculoskeletal disorders.

### **Age**

No age limit

### **Gender**

Both

### **Phase**

N/A

### **Groups that have been masked**

No information

### **Sample size**

Target sample size: 12

### **Randomization (investigator's opinion)**

N/A

### **Randomization description**

### **Blinding (investigator's opinion)**

Not blinded

### **Blinding description**

### **Placebo**

Not used

### **Assignment**

Single

### **Other design features**

## **Secondary Ids**

empty

## **Ethics committees**

### 1

#### **Ethics committee**

##### **Name of ethics committee**

Shiraz University of Medical Sciences

##### **Street address**

Next to the Red Crescent pharmacy,Zand Blvd

##### **City**

Shiraz

##### **Postal code**

14336 71348

#### **Approval date**

2014-11-24, 1393/09/03

#### **Ethics committee reference number**

CT-9379-7229

## **Health conditions studied**

### 1

#### **Description of health condition studied**

Musculoskeletal disorders

#### **ICD-10 code**

XIII

#### **ICD-10 code description**

Diseases of the musculoskeletal system and connective tissue

## **Primary outcomes**

### 1

#### **Description**

Electrical activity of muscles

#### **Timepoint**

after working at typical work station and designed work station

#### **Method of measurement**

Electromyography whit the MEGA EMG device

## **Secondary outcomes**

empty

## **Intervention groups**

### 1

#### **Description**

At first typical workstation: using microscope on the typical workstation which is not adapted with user's anthropometric dimensions (in size and settings). Then new workstation: designed workstation which is adapted with user's anthropometric dimensions (in size and settings). The standard working time is an average of 1 minute and 15 seconds. Standard work is repeated 10 times. Each repeat includes a 3-minute rest period with relaxing the muscles of the upper limb, neck and shoulders. During the rest, if needed, the person is transferred to another table. The total duration of work on each workstation is 20 minutes.

#### **Category**

Other

## **Recruitment centers**

### 1

#### **Recruitment center**

##### **Name of recruitment center**

Nemazee Hospital

##### **Full name of responsible person**

Alireza Dozandeh

##### **Street address**

Nemazee Square

##### **City**

Shiraz

**2**

**Recruitment center**

**Name of recruitment center**

Zeinab Hospital

**Full name of responsible person**

Farahnaz Karimi

**Street address**

Defa moghadas Square

**City**

Shiraz

**3**

**Recruitment center**

**Name of recruitment center**

Khalili Hospital

**Full name of responsible person**

Afson Hakimzadeh

**Street address**

khalili Avenue

**City**

Shiraz

**4**

**Recruitment center**

**Name of recruitment center**

Dastgheib Hospital

**Full name of responsible person**

Ali Eftekhari

**Street address**

Next to National Garden-Hafez Street

**City**

Shiraz

**Sponsors / Funding sources**

**1**

**Sponsor**

**Name of organization / entity**

Shiraz University of Medical Sciences

**Full name of responsible person**

Dr Ali postforoush fard

**Street address**

Next to the Red Crescent pharmacy, Zand Blvd

**City**

Shiraz

**Grant name**

**Grant code / Reference number**

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

Yes

**Title of funding source**

Shiraz University of Medical Sciences

**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**

Shiraz University of Medical Sciences

**Full name of responsible person**

Toktam Balandeh

**Position**

Master student Ergonomics

**Other areas of specialty/work**

**Street address**

Eram 6 dormitory, Eram Square

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7194685791

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haveltb80@yahoo.combalandeh\_t@sums.ac.ir

**Web page address**

**Person responsible for scientific inquiries**

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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*