Clinical Trial Protocol
Iranian Registry of Clinical Trials

22 Nov 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
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Shiraz University of Medical Sciences
Full name of responsible person
Dr Ali poostforoush 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
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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