Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

Effects of an Ergonomic Education on Musculoskeletal Disorders and Job Satisfaction at a Detergent Manufacturing Company

Protocol summary

Study aim
Effects of an Ergonomic Education on Musculoskeletal Disorders and Job Satisfaction at a Detergent Manufacturing Company

Design
A controlled clinical trial with parallel groups, single-blind, randomized, conducted on a sample of 100 participants. Randomization was performed using the RAND function in Excel.

Settings and conduct
Two groups—ergonomic training intervention and control—will be studied in a detergent factory in Semnan. Participants will be blinded to their group assignment. Initial assessments will use the REBA checklist, Nordic questionnaire, and Minnesota Job Satisfaction Survey. The intervention group will receive at least 120 minutes of specialized ergonomic training plus a two-week follow-up; the control group will continue usual work without specialized training. Measurements will be repeated three months post-intervention to evaluate the training's effectiveness by comparing both groups.

Participants/Inclusion and exclusion criteria
All workers employed in a detergent manufacturing factory aged 18–65 years, employed in the detergent manufacturing factory, with at least one year of work experience in the factory, no history of severe inflammatory diseases (such as rheumatoid arthritis) or serious musculoskeletal injuries (such as recent fractures), no recent musculoskeletal surgery (e.g., lumbar disc surgery in the past 6 months), and willingness to participate in the study.

Intervention groups
The intervention group receives specialized and practical ergonomic training, while the control group continues their usual workplace activities without specialized training (nutrition, stress management, and general ergonomic topics).

Main outcome variables
Assessment of body posture (risk level for musculoskeletal disorders); prevalence of musculoskeletal disorders; workers' job satisfaction

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20170704034900N2**
Registration date: **2025-08-12, 1404/05/21**
Registration timing: **prospective**

Last update: **2025-08-12, 1404/05/21**
Update count: **0**

Registration date
2025-08-12, 1404/05/21

Registrant information

Name
Daryoush pahlevan

Name of organization / entity
Semnan University of Medical Sciences

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Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2025-10-23, 1404/08/01

Expected recruitment end date
2025-11-01, 1404/08/10

Actual recruitment start date
empty

Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Effects of an Ergonomic Education on Musculoskeletal Disorders and Job Satisfaction at a Detergent Manufacturing Company

Public title
Effects of an Ergonomic Education on Musculoskeletal Disorders and Job Satisfaction at a Detergent Manufacturing Company
Purpose
Prevention
Inclusion/Exclusion criteria
Inclusion criteria:
Age 18–65 years Employment in a detergent manufacturing factory Having at least one year of work experience in a factory No history of severe inflammatory diseases (such as rheumatoid arthritis) or serious musculoskeletal injuries (such as recent fractures) No recent surgery on the musculoskeletal system (e.g., lumbar disc surgery in the past 6 months) Willingness of individuals to participate in the study
Exclusion criteria:
Lack of participant consent to continue the intervention at any stage of the process Absence from the workplace for more than 2 weeks during the study History of recent traumatic events (such as accidents in the past 3 months) Continuous use of strong painkillers (which may distort pain reporting) History of receiving ergonomic training in the past 6 months
Age
From **18 years** old to **65 years** old
Gender
Both

Phase
N/A
Groups that have been masked

- Participant

Sample size
Target sample size: **100**
Randomization (investigator's opinion)
Randomized
Randomization description
In this study, eligible workers who provide consent and comply with existing protocols will be randomly allocated (random allocation) into groups. All workers are numbered from 1 to n, and using blocks of four and a random number table, selected employees are assigned according to a predetermined list into two groups: intervention and control. This approach ensures two balanced groups equal in number and guarantees that the two groups will not have significant differences in baseline and confounding factors.
Blinding (investigator's opinion)
Single blinded
Blinding description
In this type of study, only the participants are unaware of their group assignment (intervention or control), while the researchers and assessors are aware of the intervention type. In this research, after measuring the study variables at baseline, participants were divided into two groups: intervention and control. The intervention group received specialized and practical ergonomic training, while the control group continued their usual workplace activities without specialized training (nutrition, stress management, and general ergonomic topics).
Placebo
Not used
Assignment
Parallel
Other design features
The control group attends sham classes that include topics unrelated to the main intervention.

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Ethics committee of Semnan University of Medical Sciences
Street address
Deputy of Research and Technology, Central Headquarters, Semnan University of Medical Sciences, Basij Boulevard, Semnan, Iran
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semnan
Province
Semnan
Postal code
3514799442
Approval date
2025-07-21, 1404/04/30
Ethics committee reference number
IR.SEMUMS.REC.1404.123

Health conditions studied

1

Description of health condition studied
Musculoskeletal Disorders
ICD-10 code
M99.9
ICD-10 code description
Biomechanical lesion, unspecified

Primary outcomes

1

Description
Musculoskeletal Disorders

Timepoint
3 months after the intervention
Method of measurement
Nordic questionnaire and REBA checklist

Secondary outcomes

1

Description
Job Satisfaction
Timepoint
Before and after the intervention
Method of measurement
Minnesota Job Satisfaction Questionnaire

Intervention groups

1

Description
Intervention group: Participants in the intervention group will receive specialized ergonomic training through a course lasting at least 120 minutes, followed by a two-week follow-up period. The workshop content, delivered via lectures, videos, and practical workstation adjustments, includes:1. Introduction to ergonomics and its principles2. Work-related musculoskeletal disorders with an emphasis on the detergent manufacturing industry3. Ergonomic solutions for office environments, such as workstation setup, manual handling, work-rest cycles, participatory ergonomics, and more4. Ergonomic principles for managing musculoskeletal disorders5. Encouragement of workplace exercise and stretching6. Recommendations for isometric muscle strengthening exercises7. Techniques for reducing psychological stress and improving workplace communicationAll educational content for both intervention and control groups will be delivered by an occupational medicine specialist. The book *Introduction to Ergonomics* will be used as the reference for preparing the training materials.
Category
Prevention

2

Description
Control group: Control group: The control group will receive general and non-specialized training (nutrition, stress management, and general ergonomic topics).
Category
Prevention

Recruitment centers

1

Recruitment center
Name of recruitment center
کارخانه پودر شوینده کندر سمنان
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Daryosh pahlevan
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Sponsors / Funding sources

1

Sponsor
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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
Semnan 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
Semnan University of Medical Sciences
Full name of responsible person

دکتر داریوش پهلوان
Position
Associate Professor
Latest degree
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Person responsible for updating data

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Email
sobhansangesari@gmail.com

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
Personal identity data (such as name, national ID number, contact information, and any personal identifiers) are completely removed and not included in the shared files. All data, after undergoing a de-identification process, including research data and results, are shared anonymously without any possibility of tracing individual identities. Data related to the primary study outcomes (such as ergonomic risk assessment scores, prevalence of musculoskeletal disorders, and job satisfaction scores) will be shared without full demographic details. Data related to educational interventions and their implementation will be provided in summary form, without personal information, as accompanying documentation.
When the data will become available and for how long
The access period will begin 6 months after the publication of the results.
To whom data/document is available
Requests for data and documentation will only be accepted from researchers, graduate students, or reputable research institutions that have clear research objectives and adhere to ethical research principles.
Under which criteria data/document could be used
Formal Request: The request must be submitted in writing and include a full description of the purpose and the type of analysis or intended use of the data and documents. The applicant must also guarantee that the data will only be used for the specified purposes. Confidentiality and Ethics Agreement: Before receiving the data, the requester must sign a Non-Disclosure Agreement (NDA) and a commitment to adhere to ethical

principles and protect the research data. Permitted Types of Analysis: Statistical and research analyses aligned with the primary objectives of the study and aimed at advancing knowledge in ergonomics, occupational health, or related fields are permitted. Any commercial use, reproduction of data for non-research purposes, or analyses violating ethical principles is prohibited. Restrictions on Further Sharing: Received data cannot be transferred or shared with any other individual or entity without prior written permission from the data owner. Reporting Results: The researcher is obliged to present the results of the data analysis in the form of a report or scientific article and provide a copy of the results to the data owner. Privacy Protection: Data usage must ensure the privacy of participants is maintained, and no information that could reveal individual identities will be disclosed.

From where data/document is obtainable

Semnan, Basij Boulevard, Central Headquarters of Semnan University of Medical Sciences, Deputy of Research and Technology Phone: +98 23 3345 1336 Email: [sem.ums.res@gmail.com]

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

Preparation of Official Request The applicant must prepare a formal letter or request form including: • A detailed description of the research purpose and intended use of the data • The type of required data and documents • The planned analysis or use of the data This step usually takes 2 to 5 business days. Submitting the Request to the Research Team The request should be sent to the email address or portal designated by the research data manager. Initial Review of the Request The research team reviews the request for completeness, alignment of objectives with research policies, and applicant's eligibility. This step typically takes 5 to 10 business days. Request for Additional Documents (if needed) If more documents are required (e.g., CV, proposal, introduction letter), the applicant will be asked to provide them. The duration depends on the applicant's response time (usually 5 business days). Signing Agreements and Commitments After preliminary approval, the applicant must sign and submit the confidentiality agreement and the ethical research commitment. This step takes 3 to 7 business days. Final Approval and Data Preparation Upon receipt of signed agreements, the research team issues final permission and prepares the requested data and documents, ensuring de-identification. This process usually takes 7 to 14 business days. Sending Data and Documents to the Applicant Data will be sent securely (e.g., via data portal, encrypted email, or secure drive). Depending on the delivery method, this step may take 1 to 3 business days.

Comments