ISRCTN39646748 https://doi.org/10.1186/ISRCTN39646748

Ergonomic risk assessment and evaluation of work-related musculoskeletal disorders among physiotherapists

Submission date
28/08/2023

Recruitment status
No longer recruiting

Registration date
04/09/2023

Overall study status
Completed

Last Edited
01/09/2026

Condition category
Other

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Work-related musculoskeletal disorders (WMSD) are injuries or dysfunctions that affect the muscles, nerves, tendons, bones, joints, ligaments and other soft tissue structures including strains, sprains, and injuries to surrounding structures. Healthcare practitioners, especially physiotherapists through direct patient interaction, are among the occupations with the highest rate of WMSDs due to their occupational load bearing and body positions sustained during the day. Continuous movements in ergonomically adverse positions can lead to the development of MSDs and declined productivity. WMSDs place a substantial load on present society, not only for the reason of their occurrence but also for the expenses related to work absence as a result of such disorders. The frequency rates and missed employed days differ across various considering the discrepancy in the financial circumstances. For instance, in the United Kingdom, about 6.6 million absent on salaried days (2018), in the Netherlands around 28% (2017) and, in Germany about 21% of work nonattendance days (2018) have been reported due to WMSDs. Proper assessment tools may prevent musculoskeletal symptoms associated with ergonomic risks, and WMSDs, one such important tool is the rapid upper limb assessment (RULA) questionnaire. Research has shown that musculoskeletal pain and discomfort experienced by physiotherapists in the back, neck, shoulders, hand, and wrist is the most common. There are many factors that arise from the back that increase the risk of injury and may cause pain, increase pressure pain threshold, decreased proprioception, and decreased quality of life. The aim of this study is to evaluate the WMSDs and level of ergonomic risk using the RULA tool among physical therapists and also to find the correlation of pain intensity, pressure pain threshold, proprioception, and quality of life with RULA among physical therapists.

Who can participate?
Physiotherapists aged between 28-55 years old who are suffering from low back pain

What does the study involve?
The participants will be randomly allocated into two groups and their pain intensity, pressure pain threshold, proprioception, and quality of life will be assessed and correlated with their RULA scores.

Then the subjects in Group 2 will be provided ergonomic advice as per their group protocol and Group 2 will be provided ergonomic advice and a pilates program as per their group protocol for a period of 8 weeks. After 8 weeks all the outcome measures will be re-assessed and correlated with their RULA scores.

What are the possible benefits and risks of participating?
Participants will benefit from an improved overall quality of life and are expected to have other benefits like decreased levels of work-related musculoskeletal disorders and ergonomic risk which are essential for performing functional activities.

Possible risks are pain and fatigue which will be assessed and managed immediately by expert medical professionals.

Where is the study run from?
The study will be conducted at various centers and hospitals, in the Kingdom of Saudi Arabia.

When is the study starting and how long is it expected to run for?
March 2023 to March 2024

Who is funding the study?
The Deanship of Scientific Research at King Khalid University through a large group research project under grant number: RGP 2/58/44

Who is the main contact?
Venkata Nagaraj Kakaraparthi, vnraj@kku.edu.sa

Contact information

Type(s)
Principal investigator

Contact name
Mr Venkata Nagaraj Kakaraparthi

ORCID ID
https://orcid.org/0000-0002-8145-1625

Contact details
King Khalid University
Department of Medical Rehabilitation Sciences
College of Applied Medical Sciences, Gate-7
Abha
Saudi Arabia
62421
+966172418594
vnraj@kku.edu.sa

Type(s)
Public

Contact name

Dr Study Team

Contact details
King Khalid University
Department of Medical Rehabilitation Sciences
College of Applied Medical Sciences, Gate-7
Abha
Saudi Arabia
62421
+966172418645
rshankar@kku.edu.sa

Additional identifiers

Study information

Scientific Title
Evaluation of work-related musculoskeletal disorders and the level of ergonomic risk using Rapid upper limb assessment and their correlation with pain, pressure pain thresholds, proprioception, disability, quality of life, and WORQ scores among physical therapists suffering from low back pain

Study objectives
Null hypothesis: The rapid upper limb assessment (RULA) will not assess the level of ergonomic risk in physical therapists

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 09/05/2023, Research Ethics Committee at King Khalid University (King Khalid University, Al Farah campus, Abha, 61421, Saudi Arabia; +966172418386; ecm@kku.edu.sa), ref: ECM#2023-13040

Primary study design
Interventional

Study design
Multi-center interventional randomized controlled trial

Study type(s)
Diagnostic, Efficacy, Quality of life, Treatment

Health condition(s) or problem(s) studied
Assessment of ergonomic risk and work-related musculoskeletal disorders among physiotherapists

Interventions
Current interventions as of 11/03/2024:
The study participants with low back pain are randomly assigned into two groups using a simple

randomisation method. The recruited physiotherapists will be divided into two groups. Group 1 will receive only ergonomic advice about their back care and Group 2 will receive a pilates training program, both for 5 days/week for a period of 8 weeks.

The physiotherapists who provide the intervention in this study have extensive experience of more than 10 years in the field of physiotherapy and provide pilates training programs to various patients to change and improve their body strength and posture through breathing, stretching and conditioning exercises. The interventions are provided face-to-face individually at the outpatient physiotherapy departments of King Khalid University, Aseer Central Hospital, Khamis Mushait General Hospital, Armed Forces Hospital - Southern Region, and Khamis Mushait.

Previous interventions:
The study participants with low back pain are randomly assigned into two groups using a simple randomisation method. The recruited physiotherapists will be divided into two groups. Group 1 will receive only ergonomic advice about their back care and Group 2 will receive ergonomic advice about their back care and pilates training, both for 5 days/week for a period of 8 weeks.

The physiotherapists who provide the intervention in this study have extensive experience of more than 10 years in the field of physiotherapy and provide pilates training programs to various patients to change and improve their body strength and posture through breathing, stretching and conditioning exercises. The interventions are provided face-to-face individually at the outpatient physiotherapy departments of King Khalid University, Aseer Central Hospital, Khamis Mushait General Hospital, Armed Forces Hospital - Southern Region, and Khamis Mushait.

Intervention Type
Mixed

Primary outcome(s)
Risk factors associated with upper extremity musculoskeletal disorder measured using rapid upper limb assessment (RULA) score at baseline and 8 weeks

Key secondary outcome(s)
Current secondary outcome measures as of 11/03/2024:
The following secondary outcome measures were assessed at baseline and 8 weeks:
1. Pain intensity measured using a visual analog scale (VAS) score
2. Pain threshold measured using a pressure algometer
3. Proprioception measured using a digital inclinometer
4. ODI measured using a disability scale
5. Quality of life measured using SF-36
6. Functions after rehabilitation measured using the WORQ questionnaire

Previous secondary outcome measures:
The following secondary outcome measures were assessed at baseline and 8 weeks:
1. Pain intensity measured using a visual analog scale (VAS) score
2. Pain threshold measured using a pressure algometer
3. Proprioception measured using a digital inclinometer
4. ODI measured using a disability scale
5. Quality of life measured using a QOLS scale

Completion date
14/03/2024

Eligibility

Key inclusion criteria
1. Age 28-50 years old
2. Physical therapists with an experience of at least 5 years of general health care practice
3. Subjects who will be willing to participate in the study
4. Participants scoring more than 3 on the RULA questionnaire

Participant type(s)
Health professional

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
28 Years

Upper age limit
55 Years

Sex
All

Total final enrolment
72

Key exclusion criteria
1. Any history of injury or surgery in the neck, upper and lower extremities
2. Any neurological or rheumatic diseases
3. Subjects who will be participating in elite sports or exertional activities
4. Subjects with any congenital or acquired deformities
5. Subjects with acute or chronic orthopedic conditions
6. Subjects with Vestibular impairments
7. Any other medical conditions that interfere with work
8. RULA score less than 3

Date of first enrolment
09/05/2023

Date of final enrolment
30/01/2024

Locations

Countries of recruitment
Saudi Arabia

Study participating centre
King Khalid University
Al Farah campus
Abha
Saudi Arabia
61421

Study participating centre
Asir Central Hospital
Al Rabwah
Abha
Saudi Arabia
62523

Study participating centre
Armed Forces Hospital - Khamis Mushayt
Tamiah
Khamis Mushayt
Saudi Arabia
62413

Study participating centre
Abha International Private Hospital
Shamasaan
Abha
Saudi Arabia
62521

Study participating centre
Khamis Mushayt General Hospital
King Khalid Road
Khamis Mushayt
Saudi Arabia
62457

Sponsor information

Organisation

King Khalid University

ROR
https://ror.org/052kwzs30

Funder(s)

Funder type
University/education

Funder Name
Deanship of Scientific Research, King Khalid University

Alternative Name(s)
Deanship of Scientific Research at King Khalid University Saudi Arabia, Deanship of Scientific Research at King Khalid University, Deanship of Scientific Research, Scientific Research Deanship, ,

Funding Body Type
Government organisation

Funding Body Subtype
Research institutes and centers

Location
Saudi Arabia

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		21/08/2026	01/09/2026	Yes	No
Participant information sheet			04/09/2023	No	Yes
Participant information sheet			04/09/2023	No	Yes