ISRCTN13896188 https://doi.org/10.1186/ISRCTN13896188

Can a digital workplace strength exercise programme improve neck and shoulder health in female university workers?

Submission date
04/10/2026

Recruitment status
No longer recruiting

Registration date
06/10/2026

Overall study status
Completed

Last Edited
05/10/2026

Condition category
Musculoskeletal Diseases

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[X] Record updated in last year

Plain English summary of protocol

Background and study aims
People who work at a computer often spend long periods sitting and may experience pain or discomfort in the neck and shoulder region. Strength exercises performed during the working day may help improve musculoskeletal health, but exercise programmes can be difficult to integrate into normal work routines. This study aims to investigate whether a digital workplace strength exercise programme can improve neck and shoulder musculoskeletal health in female university employees with sedentary, computer-based jobs and musculoskeletal complaints, compared with a wait-list control group. The study also aims to examine how the programme is implemented in the workplace, including participation, adherence, exercise exposure and progression, acceptability and perceived usefulness, as well as barriers and facilitators to integrating the exercises into the working day.

Who can participate?
Female employees of the University of Salamanca aged 18 years or older who have a predominantly sedentary job involving regular computer use for at least 4 hours per day or 20 hours per week and who report musculoskeletal complaints in the neck, shoulder and/or upper-back region.

What does the study involve?
Participants are randomly allocated to one of two groups. Participants in the intervention group complete a 10-week digital strength exercise programme targeting the muscles of the neck, shoulders and shoulder-blade region. The programme consists of three sessions per week, with each session lasting approximately 20 minutes, and is delivered through the University of Salamanca's institutional online platform so that participants can perform the exercises during the working day. Participants receive an introductory training session before starting the programme and are provided with elastic resistance bands and instructional materials. The exercises become progressively more challenging during the programme. Participants record their exercise sessions in a digital training diary. Participants allocated to the wait-list control group receive no exercise programme during the study period and are offered access to the programme after the post-intervention assessment. Measurements are taken before and after

the 10-week intervention to assess neck and shoulder health, including muscle strength, pain, neck movement and sensitivity to pressure. Information about participation, adherence, exercise exposure, progression and participants' experience of the programme is also collected.

What are the possible benefits and risks of participating?
Participants may or may not benefit directly from taking part in the study. The exercise programme is intended to improve neck and shoulder musculoskeletal health, but individual benefit cannot be guaranteed. Participants may experience discomfort or pain while performing the exercises. Before starting the programme, participants receive instruction on correct exercise technique, safety recommendations and situations in which exercise should be modified or stopped. Any problems or discomfort experienced during the exercise sessions can be recorded in the digital training diary. Participants in the wait-list control group do not receive the exercise programme during the initial study period but are offered access to it after completing the post-intervention assessment.

Where is the study run from?
University of Salamanca (Spain)

When is the study starting and how long is it expected to run for?
April 2025 to July 2025

Who is funding the study?
University of Salamanca (Spain)

Who is the main contact?
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Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Study information

Scientific Title
USALASPAUSAS: a randomized controlled trial of a digital workplace strength exercise programme versus a wait-list control for neck and shoulder musculoskeletal health and implementation outcomes in female university workers with sedentary occupations

Acronym
USALASPAUSAS

Study objectives
The study hypothesized that participants allocated to the USALASPAUSAS digital workplace strength exercise programme would show greater improvements in neck and shoulder musculoskeletal health, particularly muscle strength and musculoskeletal complaints, than participants allocated to the wait-list control group. The study also aimed to evaluate implementation of the programme in the university workplace through participation, adherence, intervention exposure and exercise progression. Participant acceptability and perceived usefulness of the digital workplace exercise programme were assessed, and perceived barriers and facilitators to integrating the exercise programme into the working day were explored.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 20/03/2025, Research Ethics Committee of the University of Salamanca (Vicerrectorado de Investigación, Edificio I+D+I, 2ª planta, C/ Espejo 2, Salamanca, 37007, Spain; +34 (0)923 29 44 30; ceinves@usal.es), ref: 1345

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Blinded (masking used)

Control
Uncontrolled

Assignment
Parallel

Purpose
Treatment

Study type(s)

Health condition(s) or problem(s) studied
Neck and shoulder musculoskeletal complaints in sedentary university workers

Interventions

Participants were individually allocated in a 1:1 ratio to the intervention group or the wait-list control group using a computer-generated simple randomisation sequence produced in Stata version 16.0 (StataCorp, College Station, TX, USA). The randomisation sequence was prepared by a member of the research team who was not involved in the clinical assessment of participants.

Participants allocated to the intervention group completed the USALASPAUSAS digitally delivered progressive strength exercise programme targeting the neck, shoulder and scapular musculature. The programme was delivered through the University of Salamanca's institutional Studium platform and was designed to be performed autonomously during the working day.

Before starting the programme, participants received an introductory training session on the exercise programme and its correct performance. The exercise intervention lasted 10 weeks and comprised 30 sessions, with three sessions per week and each session lasting approximately 20 minutes. Each session consisted of a 3–5-minute warm-up involving cervical and scapular mobility and low-intensity activation exercises, a 12–14-minute strength-training component, and a 2–3-minute cool-down involving mobility exercises, gentle stretching and breathing exercises.

The strength-training component targeted the neck-shoulder complex and scapular stabilizing musculature and included five exercises: shoulder shrugs, shoulder abduction in the scapular plane, unilateral row at approximately 45°, upright row, and posterior shoulder raises with external rotation. Exercises were performed using progressive-resistance TheraBand® elastic bands (red, green, blue and black).

The programme was organized into three progressive phases (weeks 1–3, 4–7 and 8–10), with the first two weeks including familiarization with exercise technique and use of the elastic bands. Participants performed three sets of 8–12 repetitions per exercise. Exercise intensity and resistance progression were individually self-regulated using the OMNI Resistance Exercise Scale (OMNI-RES; 0–10) and progressive increases in elastic-band resistance. No one-repetition maximum (1RM) test was performed. Instructional audiovisual materials and session resources were provided through the institutional Studium platform.

Participants allocated to the control group received no exercise intervention during the study period and were placed on a wait-list. They were offered access to the exercise programme after completion of the post-intervention assessment.

Intervention Type
Behavioural

Primary outcome(s)
1. Active cervical range of motion measured using a universal goniometer, measured in degrees (°) for cervical flexion, extension, right and left lateral flexion, and right and left rotation; three trials per movement, with the mean of the three trials used, at baseline (T0) and post-intervention (T1, during the week immediately following completion of the 10-week intervention)

2. Pain during active cervical movement measured using a four-category ordinal scale (no pain, mild pain, moderate pain, severe pain), recorded during the first trial of cervical flexion, extension, right and left lateral flexion, and right and left rotation, separately for each movement, at baseline (T0) and post-intervention (T1, during the week immediately following completion of the 10-week intervention)

3. Maximal isometric muscle strength measured using strain-gauge dynamometry (Chronojump Boscosystem® Force Sensor), measured in newtons (N) for cervical flexion, cervical extension, right shoulder elevation and left shoulder elevation; maximum 1-second average force (MaxAvgForce1s) across valid maximal voluntary contractions, at baseline (T0) and post-intervention (T1, during the week immediately following completion of the 10-week intervention)

4. Current pain intensity measured using 10-cm Visual Analogue Scale (VAS), quantified from 0 (no pain) to 10 (maximum pain), at baseline (T0) and post-intervention (T1, during the week immediately following completion of the 10-week intervention)

5. Pressure pain threshold (PPT) measured using digital pressure algometry (FPIX Force One™, Wagner Instruments) at eight bilateral anatomical sites in the neck and shoulder region (16 anatomical locations in total), with two measurements per location and the mean of the two measurements used for each location, measured at baseline (T0) and post-intervention (T1, during the week immediately following completion of the 10-week intervention)

Key secondary outcome(s)

Completion date
22/07/2025

Eligibility

Key inclusion criteria
1. Female employee of the University of Salamanca, currently in active employment and aged 18 years or older
2. Self-reported musculoskeletal complaints in the neck, shoulder and/or upper-back region
3. Predominantly sedentary occupation involving habitual computer use for at least 4 hours per day or 20 hours per week

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 Years

Upper age limit
99 Years

Sex
Female

Total final enrolment
90

Key exclusion criteria

1. Medical contraindication to physical exercise
2. Musculoskeletal, neurological or cardiovascular condition incompatible with safe participation in the exercise programme
3. Recent surgery incompatible with participation in the exercise programme
4. Pregnancy
5. Concurrent participation in another structured physical exercise programme
6. Scheduling constraints incompatible with participation in the intervention
7. Insufficient information provided during pre-randomization screening to determine eligibility for participation in the study

Date of first enrolment
07/04/2025

Date of final enrolment
11/04/2025

Locations

Countries of recruitment
Spain

Study participating centre
University of Salamanca
Salamanca
Spain

Sponsor information

Organisation
Universidad de Salamanca

ROR
https://ror.org/02f40zc51

Funder(s)

Funder type

Funder Name
Universidad de Salamanca

Alternative Name(s)

USAL

Funding Body Type
Private sector organisation

Funding Body Subtype
Universities (academic only)

Location
Spain

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available