

Effect of tablet tilt position on students' muscle and breathing function

Submission date 24/06/2021	Recruitment status No longer recruiting	☐ Prospectively registered ☐ Protocol
Registration date 28/06/2021	Overall study status Completed	☐ Statistical analysis plan ☒ Results
Last Edited 20/07/2023	Condition category Musculoskeletal Diseases	☐ Individual participant data

Plain English summary of protocol

Background and study aims

Prolonged use of tablets causes a reduction in movement which can lead to musculoskeletal disorders. This study aims to evaluate the effect of different tablet tilt positions on muscle and breathing function.

Who can participate?

Undergraduate student aged 18 - 25 years who use a tablet for more than 2 hours per day for the past 6 months.

What does the study involve?

Participants perform a writing task for 2 hours. Group 1 position their tablets at a tilt of 0 degrees, and group 2 use a tablet tilt position of 40 to 55 degrees.

What are the possible benefits and risks of participating?

None

Where is the study run from?

Burapha University (Thailand)

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

January 2021 to June 2021

Who is funding the study?

Burapha University (Thailand)

Who is the main contact?

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Contact information

Type(s)

Scientific

Contact name

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Additional identifiers

Study information

Scientific Title

Effect of tablet tilt positioning on ergonomic risks and respiratory function

Study objectives

0-degree tablet placement on a flat surface of a student chair affects ergonomic risks and respiratory function when compared with 40- to 55-degree tablet placement.

Ethics approval required

Old ethics approval format

Ethics approval(s)

Approved 04/04/2021, Research and Innovation Administration Division, Burapha University (Chonburi, Thailand; +66 (0)38-102561-62; research@buu.ac.th), ref: HS004/2564

Primary study design

Interventional

Study design

Interventional randomized controlled trial

Study type(s)

Prevention

Health condition(s) or problem(s) studied

Prevention of poor posture in students

Interventions

A total of 18 undergraduate student participants are divided into two groups of 9 persons per group using the sealed envelope method.

Group 1 position their tablets at a tilt of 0 degrees, and group 2 use a tablet tilt position of 40 to 55 degrees.

Participants perform the same writing task for 2 hours in the same environment with identical temperature, light, and chair.

The researchers collected data on the rapid upper-limb assessment (RULA), respiratory function, and costovertebral (CV) angle before and after the study. They used a standard student chair, a tablet with a tilting tool, a spirometer (CareFusion MicroLab), and a CV angle assessment tool for the evaluation.

Intervention Type

Behavioural

Primary outcome(s)

Upper limb function measured using rapid upper-limb assessment (RULA) at baseline and 2 hours after tablet use

Key secondary outcome(s)

Respiratory function measured using spirometer at baseline and 2 hours after tablet use:

- 1.1. Forced expiratory volume in 1 second (FEV1)
- 1.2. Forced vital capacity (FVC)

Completion date

10/06/2021

Eligibility

Key inclusion criteria

1. Undergraduate student aged 18 - 25 years
2. Used a tablet for more than 2 hours per day for the past 6 months

Participant type(s)

Healthy volunteer

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 Years

Sex

All

Total final enrolment

18

Key exclusion criteria

1. History of neck or upper-extremity surgery in the past year
2. Disorder or malalignment of the cervical spine or upper extremity
3. Neck and upper-extremity pain, as measured by a visual analog scale score of greater than 3 /10
4. Chronic musculoskeletal disorder such as rheumatoid arthritis, osteoarthritis, or fibromyalgia
5. Nervous or musculoskeletal system disorder affecting sensory input
6. Visual problem that could not be fixed by glasses
7. Dizziness that resulted in poor balance
8. Sedative drug uptake or alcohol drinking in the previous 48 hours

Date of first enrolment

05/04/2021

Date of final enrolment

31/05/2021

Locations**Countries of recruitment**

Thailand

Study participating centre**Burapha University**

169 Lonhard bang sean road

Saen suk subdistrict

Muang district

Chonburi

Thailand

20131

Sponsor information**Organisation**

Burapha University

ROR

<https://ror.org/01ff74m36>

Funder(s)**Funder type**

University/education

Funder Name

Burapha University

Alternative Name(s)

, BURAPHA, BUU

Funding Body Type

Government organisation

Funding Body Subtype

Universities (academic only)

Location

Thailand

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated and/or analysed during the current study during this study will be included in the subsequent results publication.

IPD sharing plan summary

Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		24/04/2023	20/07/2023	Yes	No
Participant information sheet			08/07/2021	No	Yes