

Guidelines for the ergonomically correct use of digital equipment



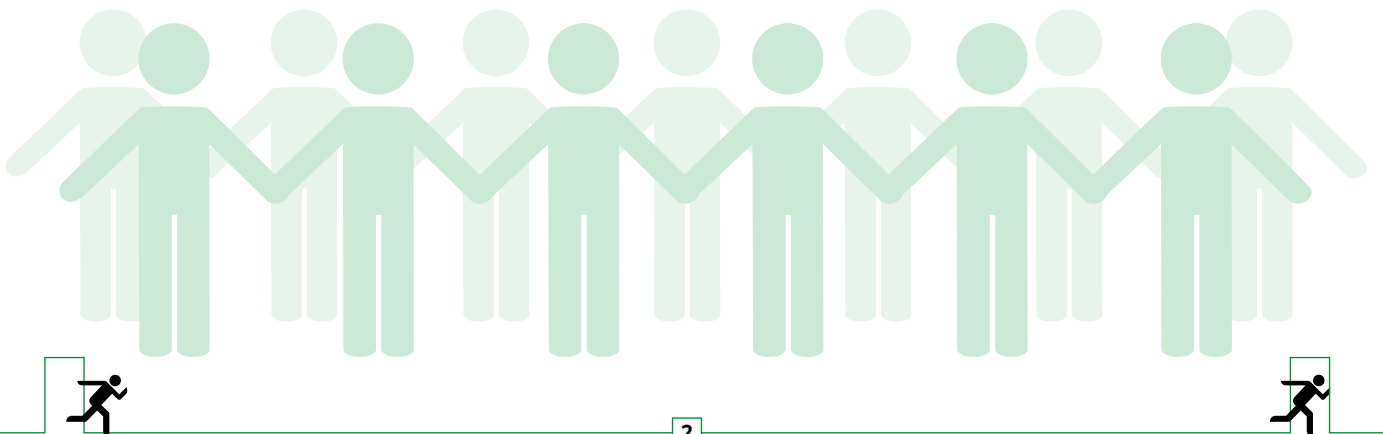
These guidelines from SDU are intended to provide an overview of the appropriate, ergonomically correct use of the various items of digital equipment that are used in our daily lives. The guidelines are based on the current rules issued by the Danish Working Environment Service and on general knowledge of ergonomics and practice in the area.

The Danish Working Environment Service (AT) describes the rules for working with display screen equipment (DSE) in 'Skærmarbejde At-vejledning D.2.3' (Working with display screen equipment, AT Guide D.2.3) The guide is applicable:

'when staff regularly and for a not inconsiderable proportion of their working hours work in front of a screen. As a rule of thumb, the special provisions apply when the individual member of staff works in front of a screen for approximately two or more hours almost every working day. If the member of staff in question uses a laptop computer regularly and for approximately two or more hours almost every working day at his/her permanent workstation (or at home/outside the office), the computer must fulfil the same layout requirements as those that apply to stationary computers.'

AT equates tablets with laptop PCs in relation to the above.

This is the definition of workstation referred to below in these guidelines as 'working with DSE'.



BEFORE ACQUIRING DIGITAL EQUIPMENT

WHAT can I get?

- The type of computer equipment you will be offered as standard will depend on your position in the organisation. Your need for computer equipment must be assessed on the basis of the type of work you perform and on physical conditions. The items below should be referred to for advice about this process.
- By agreement with your manager, your equipment can be supplemented with a tablet, which can, if necessary, be ordered with additional facilities/accessories: apps, a separate keyboard, a pointer and a screen stand.
- Smartphones are often supplied with a corded headset.

WHAT should I choose?

Assess your needs in consultation with your manager:

- What will the equipment be used for? (type of work involved).
For example: information retrieval, correcting assignments, laboratory work, word processing, communication.
- How long will I use it at any one time? And how often? (duration and intensity).
For example: brief periods every day, every day for several hours or at changing intervals from week to week.
- Where I will use it? (physical conditions).
For example, in the office, during teaching, in the laboratory, at home, to and from work.

IT Service, the computer section of the Faculty of Business and Social Sciences (SFEO) and TEK – IT can provide detailed advice about the best match between you and your digital equipment. You can also contact your local Health and Safety Group for advice and guidance. SDU collaborates with external advisers who can assist you with individual assessments and advice regarding ergonomics.



WHY is it important to consider the choice of digital equipment?

Working with DSE may be a contributory factor in physical discomfort. Areas that are particularly at risk when working intensively and for longer periods of time are the shoulder and neck region, the forearm and the muscles and joints of the hand.

- The longer and more intensive working processes are, the greater the risk of repetitive strain and discomfort/fatigue.
- The smaller the screen (and keyboard) the greater the risk of awkward working postures that result in pain in muscles and joints when working for longer periods of time.

WHAT should I pay attention to when choosing a product?

- **Design and weight**

Weight and ease of handling are important factors influencing discomfort during transport and use. Also think about the assessment of necessary accessories: keyboards, a mouse and power supply equipment/chargers may be heavy to carry.

- **Screen size**

Assess your need for an overall view and orientation. Reading longer texts requires a screen size and character sharpness that support your vision and appropriate working postures.

- **Duration and intensity**

According to the ministerial order on working with DSE, a laptop PC or a tablet must not be used as primary equipment for prolonged periods of DSE use without the right supplementary equipment. If you only use a PC at your workstation, a stationary PC might be preferable.



- **Accessories**

Look into your options for obtaining accessories that can create variation and reduce fixed working postures. A separate keyboard must be available when work is defined as DSE use so that the screen and the keyboard can be separated.

- **Software**

Compare your needs with what is technically possible and familiarise yourself with the software you will be using so that you are aware of the possibilities offered by the system and can take advantage of them.

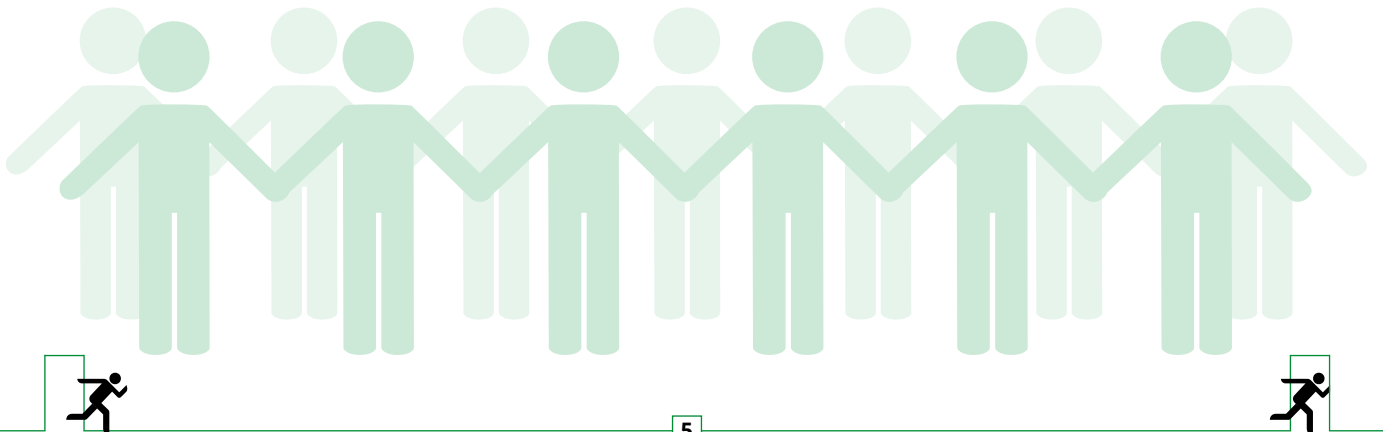
GENERAL RECOMMENDATIONS WHEN USING DIGITAL EQUIPMENT

Working posture and layout

- Make sure that your arm and hand are resting on the desk top and that your lower back is supported.
- Keep your back straight and your upper arms close to your body.
- Maintain physical symmetry when sitting and standing.
- Organise your workstation so that you can move and change your position and make active use of it.
- Use a chair with a separate or fluid tilt function in the seat and back and make use of the functions in your adjustable height desk.

Variation

- Change your position frequently to avoid repetitive physical strain.
- Place the objects you use regularly outside your reach so that you have to stand up to reach them.



- Plan and hold short breaks when typing intensively and possibly perform small exercises.
- Stretch your body and straighten your lower back and neck. Stretch, bend and shake your hands and fingers now and then.
- Focus on mental breaks, stop looking at the screen and 'look into the distance' now and then.
- Follow the 20-20-20 rule: look at something that is 20 metres away for 20 seconds every 20 minutes.

Work-life balance

- Think about your total working hours in front of the various screens, both at work and at home.
- Limit your working hours so that you create a balance between your working life and leisure.
- Make agreements with yourself and your surroundings about when you are 'at work' and when you are 'off'.

WHERE can I find more information?

SDU's intranet: www.sdunet.dk/arbejdsmiljoe

The intranet contains material and good advice on ergonomically correct practice in the layout of your workstation and for stationary DSE work. The material includes a checklist that you can use to review your working conditions with DSE work and provides suggestions for exercises. You can also contact your Health and Safety Group for advice and guidance about how to obtain help in arranging your DSE workstation and using your digital equipment. If you experience discomfort with your vision and eyes, refer to the procedure for obtaining special glasses for DSE use.



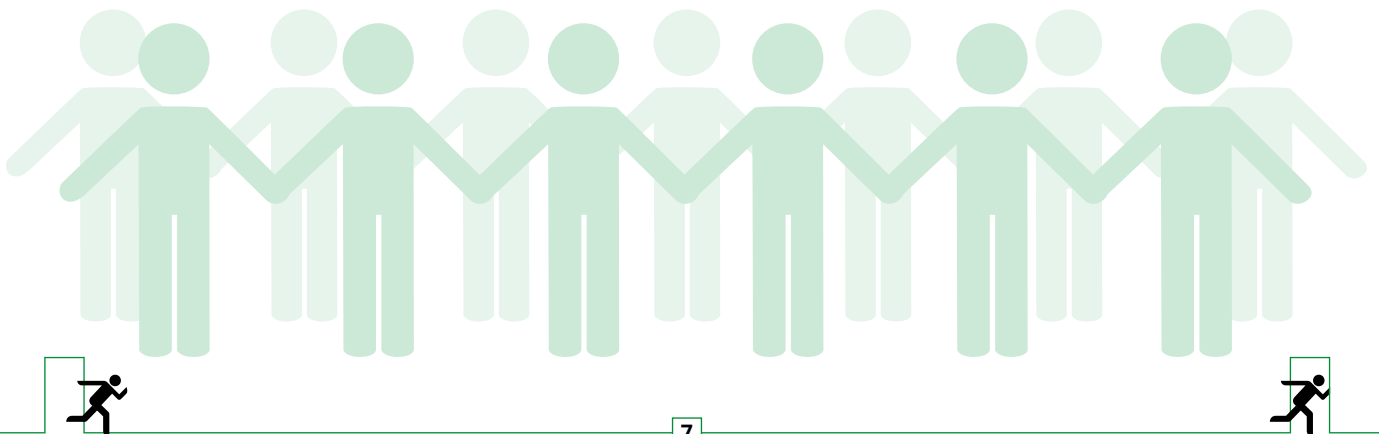
STATIONARY WORKSTATIONS

General

- Make sure that your position in front of the screen is symmetrical.
- Avoid glare and reflections from natural and artificial light and make sure that the lighting in the office is uniform.
- Make space on and beneath your desk to ensure you can move freely.
- Change your position frequently to vary your working posture.

Screen

- Make sure that the characters on the screen are sharp and do not flicker, for example, and clean the screen regularly.
- Use dark text on a light background and adjust type size so that it suits you and your eyes. The smaller the type size, the greater the strain on your eyes.
- The screen should be at a height that allows you to look over its top edge. This corresponds to a reading field that is approximately at shoulder height.
- The distance to the screen should be approximately 50-70 cm with a 17-20" screen. The distance can be increased if the screen is bigger.
- Place reading material in the most appropriate position between the screen and the keyboard when keying in notes to avoid twisting your neck.
- If you are working with two screens, you should choose a primary screen for writing and place it as described above. Place the other screen close to the primary screen at the same height and angle if possible. When you switch between the screens, turn your whole body instead of only turning/twisting your back and neck.



Keyboard

- Place the keyboard symmetrically in relation to the job, i.e. pushed slightly to the right if you do not use the numeric keys on a daily basis.
- Adjust the keyboard so that it is as flat as possible so that you keep your wrists straight.
- Relax your fingers – let them rest on the keyboard during the brief breaks from keying in and remember not to use unnecessary pressure on the keys.

Mouse

- Use a mouse that matches the size of your hand so that it can rest on the mouse and relax.
- Choosing a symmetrical mouse will allow you to use both hands and provide more options for variation.
- Adjust one of the mouse keys to function as a 'double click' so it will only be necessary to click once.
- Learn to use the shortcut keys on the keyboard so that it is not always necessary to use the mouse.
- Place the mouse close to the edge of the keyboard – either next to the keyboard or between the keyboard and your body to protect your shoulder joint.
- The best option for placing a mouse centrally to your body between the keyboard and the front edge of the desk is to use a cordless mouse.



Supplementary equipment

Rollermouse

- A special mouse with a cursor activated via a long roller bar with the fingers in front of the body.
- Advantages: more fingers can 'click' and the arms are naturally kept close to the body and supported by the desk top in front of the body.
- Disadvantages: takes up a good deal of desk space and is not suitable for all sizes of hands and keyboard types.

Manuscript holder

- Place it between the keyboard and the screen so that your view can move from the keyboard over the manuscript to the screen in a smooth movement to avoid twisting your neck. Use when transcribing texts from physical documents to the PC.

Alternative office chair

- A standing support chair without a back or a big gym ball, which provides options for variation and movement, trains the back and stomach muscles and improves circulation.

LAPTOP PCS

General

- Sit symmetrically in front of the centre of the screen.
- Avoid glare and reflections from natural and artificial light and make sure that the lighting in the office is uniform.



- Make space around you so that there is nothing to prevent you moving freely.
- Do not sit for any length of time with the PC on your lap
- Change position frequently to vary your working posture.
- Use a suitable bag to carry the PC to avoid unnecessary strain. The power supply equipment typically also weighs a considerable amount. Decide whether you always need to take it with you.

Screen and keyboard/mouse

- Cannot be separated, and this limits options for varying working posture and establishing the best possible set-up because you have to look at the screen and use the keyboard/mouse at the same time. For these reasons, a laptop PC should not be used as permanent equipment for more than two hours a day without supplementary equipment in the form of a separate keyboard and mouse at the very least.

Permanent workstations at home or in the office

- Supplement with a separate keyboard and mouse and place the laptop on an elevation at optimum reading distance and height so that it is solely used as a screen (and a hard disk) and the keyboard and mouse can be operated with the forearm supported on the desk top.
- Place the screen (the laptop) at a distance of 50-70 cm from your eyes (corresponds to being able to touch the screen with the palm of your hand) with the reading field at approximately shoulder height.
- Place the keyboard and mouse in front of your body, see instructions under stationary PC.

Travelling

- Position the screen at an angle as though you were holding a book or a newspaper in front of you.



- Make sure your arms are supported.
- If possible, place the unit on a bag or a briefcase on your lap so that your arms are a little higher and you can avoid bending forwards too much and extending your arms too far in front of you.

Supplementary equipment

Bag

- Use a rucksack to carry your laptop and accessories to avoid unnecessary strain.

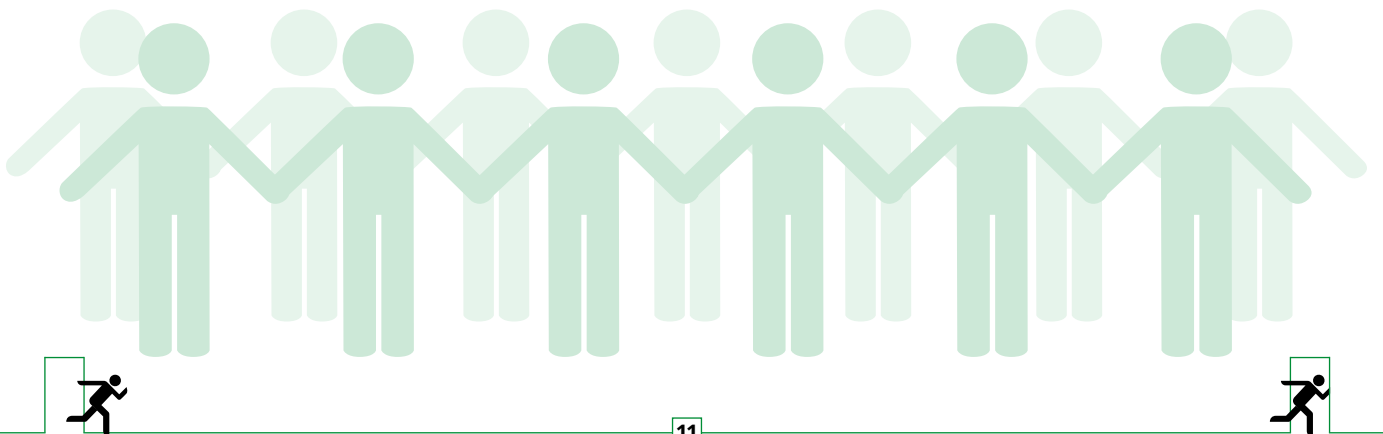
Laptop heightener

- Available in many different designs, they make it possible to place your laptop on a slanting surface so that its upper edge is at or just below eye level.

TABLET

Information retrieval/reading

- Place the unit at reading height to avoid bending your back and neck forwards and exposing them to unnecessary strain. Put a cushion or something similar on your lap to increase the height of the unit. Do not hold the unit in your hands for any length of time.
- Raise the screen to eye level instead the reverse to avoid leaning forward and straining your neck and back.
- The more the tablet can be at an upright angle, the better for the angle of your neck. This can be further improved if the unit can be placed so that the reading field is at or just below eye level.



- Preferably sit at a desk or table for support so you can keep your back and neck straight with your arms close to your body and your forearms resting on the desk/table in front of you.

Notes/writing

- Place the unit on a supporting surface at a slight angle for a comfortable viewing angle without increasing the difficulty of typing so that you can avoid holding the unit in your hand for any length of time.
- Use a holder and a separate keyboard so that the tablet is at a fixed angle with an upright screen and a flat keyboard for a comfortable viewing angle and support for your forearms.
- You can attach an external keyboard to the tablet if you will be writing more than brief notes, and place the unit in the holder at angle similar to that of a laptop. This makes it possible to have the screen at an angle as described above and to adjust the height of the unit to avoid straining your neck and back.

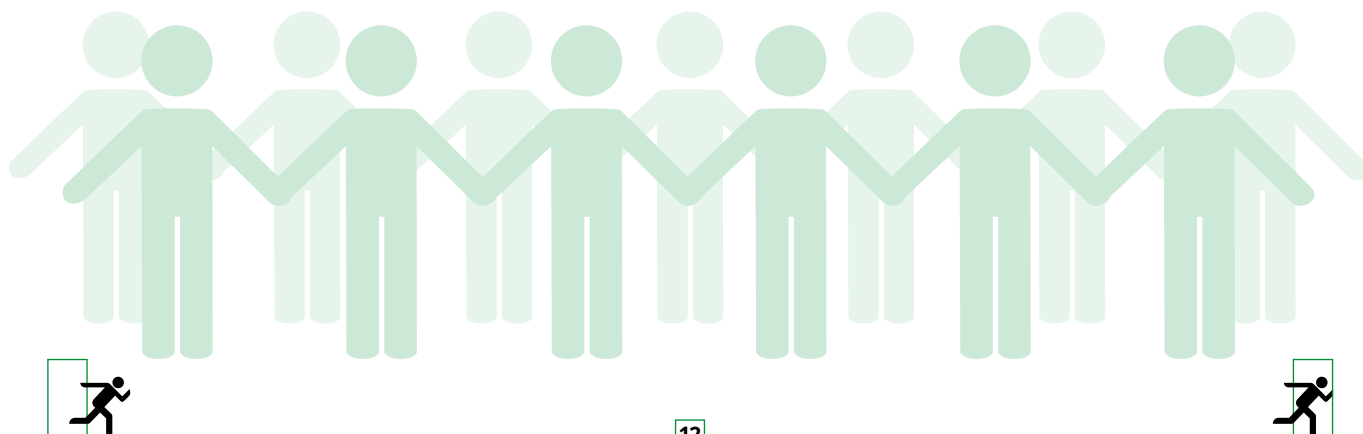
Supplementary equipment

Tablet handles

- Make it possible to vary the position of your hand by holding the tablet with the palm of your hand when holding it for any length of time. This reduces strain on the muscles of your fingers and hands and your joints. Available in many different designs according to your needs.

Digital pens

- Help to avoid straining your fingers when keying in as it can be used as a writing and pointing tool and allow alternative hand and finger positions.



Apps

- Limit keying in on the tablet by installing dictation and speech reproduction software or 'text shortcuts'. Contact IT to discover your options and obtain help with installation.

SMARTPHONES

Telephone operation

- Use a headset for hands-free operation especially during longer conversations to reduce fixed and uncomfortable positions for your neck/shoulders and hands/fingers.

Word processing

- Limit the duration and frequency of writing and reading texts (text messages and e-mails). The screen and the keyboard are most suitable for brief texts and can lead to shoulder/neck, wrist/finger strain with longer use.
- Remember to 'keep your head up' to avoid straining the joints and muscles of your neck. Lift the screen to eye level instead of the other way round.
- Hold the telephone in both hands and support your arms if possible so that you do not become fatigued.
- Keep your wrists straight without twisting or bending them and hold the screen alternately with one hand and then with two hands and use the keyboard in various positions and alternate between keying in with your thumb and index finger.

Travelling

- Pay attention to your surroundings and watch where you are going when using your mobile phone for concentrated DES work. Stand still or sit down



if you are to read a text or key in on the screen. You will be at risk of falling, tripping or bumping into people or objects if you are absorbed by keying in/reading and most of your attention is on the screen.

Supplementary equipment

Cordless headset/hands-free operation

- Do not hold the telephone when conversing or playing music on the unit. Support your arm, hand and fingers to reduce static holding functions.

Keyboard

- You can attach a separate keyboard to the phone if you will be writing more than brief notes and place the unit in a holder at a fixed angle similar to that of a tablet for the benefit of your viewing angle and to avoid straining your neck and back. However, the screen is very small in relation to the optimum viewing angle and distance.

Apps

- Limit keying in on the phone by installing dictation and speech reproduction software or 'text shortcuts'. Contact IT to discover your options and obtain help with installation.

