

Healthy workplaces  
with computers  
an ergonomic review of the  
office workplace

by  
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# Background

- > Lecture and dialog.
- > Working with computers is a relative safe activity, but it can occasionally cause health problems.
- > Poor workstation design and prolonged or intensive use increase the risk of aches, pains and tensions
- > Today ´s focus:
  - > Design of the workplace
  - > Use of the workplace
  - > Working positions



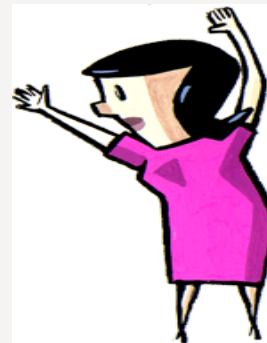
COWI

## Find the cause

- > Work /bodypositions that create tensions/pain?
- > Equipment/desk/ chairs insufficient /defect?
- > Design of the workplace?
- > Work organisation - variation?  
(Pauses, variety, stress...)
- > Light conditions? (Reflection, contrast, missing light)
- > Indoor climate? (Cold/heat, draft, noise)
- > Need for glasses/computer glasses?



# The best working position – is a different one!



# Working/body position and -technique

## *Stop and be aware*

*questions to ask yourself*

- > How does the actual body position feel to me?
- > How can I change position if it doesn't feel right/appropriate ?
- > How are my colleagues working/body positions - are they perhaps better than mine?
- > Is it possible that the design of my workplace or the way I organise my work can improve my well-being?

Maybe I should try something different?



# Behaviour – habits

What is needed to get rid of old habits?



- > Attention
- > Time / Patience
- > Strong will



# Timeout, exercises



# The body – Muscles and joints, short introduction

- > There are large and small muscles and joints for different purposes
- > Both muscles and joints work best in intermediate positions
- > Muscles work **statically and dynamically**
- > Muscles get energy through the blood supply





## Static or dynamic work?



## The office chair

The chair must be adjusted to fit you:

- > **Seat height**

It must be possible to place the foot flatly on the floor. The knee must be bent in max. 90 degrees. (avoid compression of blood vessels)

- > **Lumbar support**

Lower back must be supported – it should fit the hollow in your lower back

**Depth of seat**

Front edge must not push against the back of the knee. The hips must be fully supported

- > **Flexibility**

Use the different settings of the chairs and switch positions often on the chair



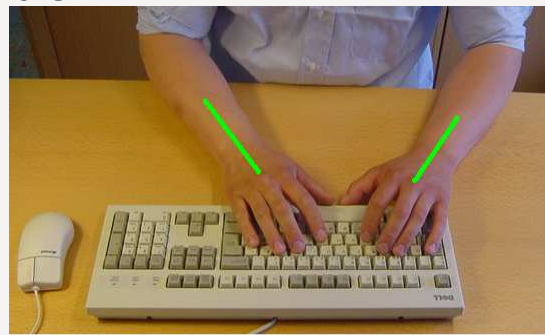
## The desk

- > The desks are adjustable and should be adjusted to fit you. Stand up/sit down – change position!
- > Adjust the height, so that the forearm and hands are supported when you work (using keyboard/mouse and writing)
- > Make room for yourself– on and under the desk!  
A clean desk is a better starting point for you arranging the workplace for good work positions.



## The keyboard

- > Push the keyboard forward on the desk in order to support your forearms in front of the keyboard
- > Place the keyboard symmetricly in front of you
- > Wrists in a neutral position (green line)
- > The keys must be easy to push down
- > The keyboard must be as flat as possible



# The screen

## Working position:

Your neck and back are minimally strained if you are looking downwards when working at the screen. The upper line, that you should see on the screen must be at least 15 cm below eye level. (matching shoulder height)



## Reading distance:

Should normally be 50-70 cm in order for minimal load of the eyes. (approximately an arm length) The larger screen the larger distance when placing the screen. At least 70 cm for 22" screen)

## Lighting impact:

Pay attention to reflections in your eyes either directly, from the screen or from windows/daylight or other lightsources

## The mouse

- > Avoid the mouse – use shortcuts when possible.
- > Find a mouse that fits your hand. (neutral positions without you having to bend your wrist backwards. The buttons should be operable without stretching/tension in the fingers).
- > Support the forearm (from the elbow to the hand when using the mouse).
- > Let the upper part of the arm rest with the elbow kept close to the side of the body.
- > You may use the mouse in front of the keyboard.



## The phone

- > When using the phone keep it close to avoid reaching too far
- > Use headset, when speaking and using the computer at the same time
- > Wireless headset gives the possibility for a large variety of working positions
- > Ordinary handheld phones or mobile phones combined with typing creates poor/ inappropriate positions that can cause health problems (shoulder/neck pain etc)



# Glasses for using the PC

You have the right to an appropriate examination of your eyes and sight:

- > Before you begin working at a monitor
- > Hereafter with regular check-ups
- > If any eye problems appear, it could be due to working at a monitor

SDU probably has a politic for glasses for computer purposes:


An agreement with an optometrist that can examine and deliver glasses if there is a need for that.

**Til Optikeren**

De fleste forlange en synglas for at arbejde, men vores medarbejdere har brug for en  
mandat.

Vores synglas, til medarbejdere har behov for en skærmtilpasning, som bliver afhængigt  
af den afstand til skærmen, hvilket der kan at være mere.

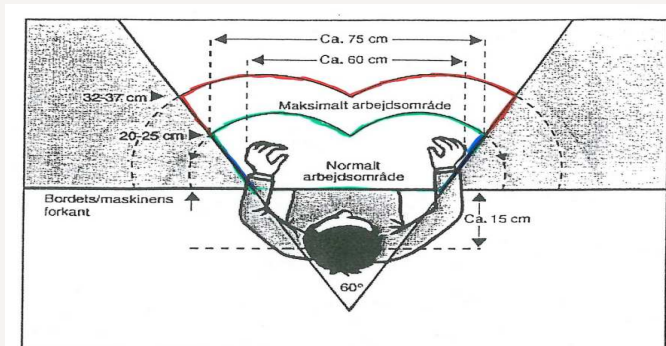
Vi der ikke betale for en skærmtilpasning, uanset hvordan med medarbejdere.

Faktura nummer til:	Firma:	
Fødsels nummer:		
Biltype:		
Fødselsdato:		
<input type="checkbox"/> Har brug for at se på skærm, tastatur og dokument		
<input type="checkbox"/> Har brug for at se på skærm, tastatur, dokument og ud i lokaler		
	<b>A.</b> Afstand fra skærm til læseren: cm	
	<b>B.</b> Afstand fra skærm til tastatur: cm	
	<b>C.</b> Afstand fra skærm til dokument: cm	
	<b>D.</b> Skærmens afstand fra gulvet: cm	
	<b>E.</b> Afstand fra gulvet til computer monitor: cm	
	<b>F.</b> Afstand fra skærm til hovedet: cm	
	Kontrol med afstand (standard): cm	
Hovedretningen af synet (symptomer):		
Dato:	Dato:	Dato:
Hvornår, hvordan og hvorfor? _____		
Dokumentation af undersøgelse _____		



## Distance and space

AT-vejledning: Arbejdspladsens indretning og inventar (nov. 2008)  
AT-vejledning: Skærmarbejde (juni 2009) (not translated into eng.)



Figur 1. Normal og maksimal arbejdsafstand og arbejdsområder

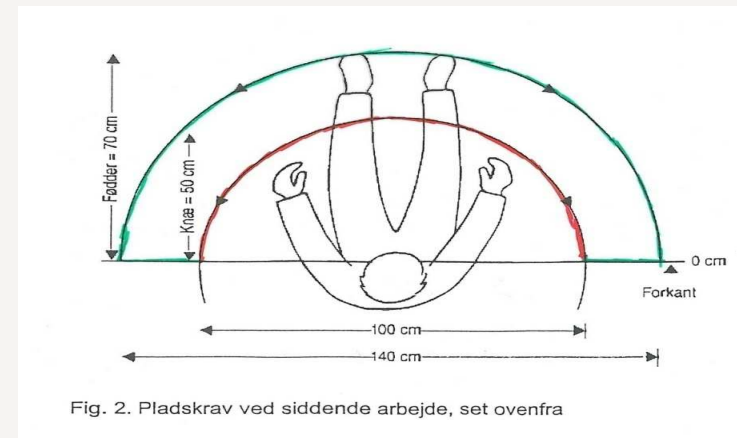


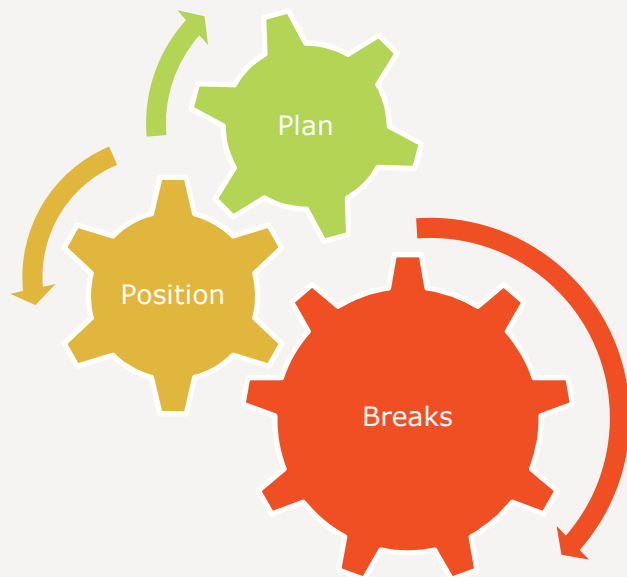
Fig. 2. Pladskrav ved siddende arbejde, set ovenfra

## Work at home or at other destinations

- > Similar principles regarding the design of appropriate workstation.
- > Change your working/body position!
- > Only use laptop, tablet, smartphone etc. as a supplement for a short period of time.
- > Be aware of your working/body position – also at home, in the train, on the sofa.



# Put on your workplace....



## Breaks can be various elements..

### a) Micro break < 2 min.:

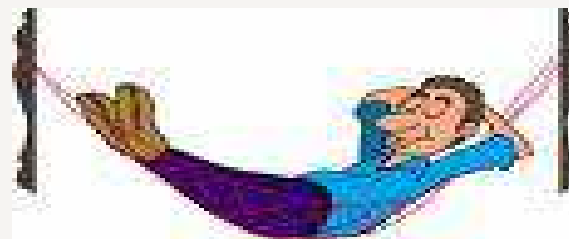
1. Short time out
2. Change of working position
3. Stretching exercise

### c) Rest break > 2 min.:

1. Timeout for body and mind – read the paper ex.
2. Lunch break

### b) Activity break > 2 min.:

1. Variety and timeout of muscles
2. Exercises during break
3. Go get a glass of water
4. Go to the restroom
5. Conversing with a colleague



# Everyday exercises

**4 ØVELSER MED ELASTIK**  
FOR NAKKE, SKULDRE OG ARME

Øvelserne træner de muskler, du blandt andet bruger, når du arbejder ved computer. Det kan mindske smerter i nakke, skuldre og arme.

Længden på elastikken skal være fra næsetip til gulv – inklusiv håndtag.

**1**



**Sideløft (den store nakke-skuldermuskel)**

- Sæt tæerne på fødder og løft armen ud til siden og op, indtil musklerne er strakte. Hold i ca. 10 sekunder.
- Du skal føle armen løst fra kroppen i hele bevægelsen.
- Hold ikke åndeholten i hele bevægelsen.

**2**



**Skulderblad-klem (musklerne mellem skulderbladet)**

- Gør skulderbladet kortere til cirka skulderhøjden og hold armen strakt frem fra kroppen.
- Træk nu armen ud til siden og boget til skulderbladet sammen fra ryggen.
- Åbn armen skulderbladet sammen på ryggen.
- For armen helt ud til side og hold.
- Hold ikke åndeholten i hele bevægelsen.

**3**



**Udad-drejning (musklerne, der styrer armen)**

- Sæt elastikken over anklet til i en vandretstilling eller over et ben på et trægulv.
- Placer albuen på skulderen og sænk og løft armen ud til siden og tilbage igen.
- Hold ikke åndeholten. Du skal føle armen og kroppen bevæge sig i kroppen.

**4**



**Håndføddes-vip (musklerne i underarmen)**

- Sæt dig over på fødder og træk nakke på skulderen med den ene fod.
- Læg håndflade ned på gulvet og løft kroppen, så du har en 90° bevægelse.
- Begynd og hold håndfladerne op og ned – dog såvel på højre hånd.

**Træningstips:**

- Læg dig i ryggen i rummet og ryggen – eller gerne mod en væg.
- Det er en god idé at have armen sammen med den anden.
- Brug 10-15 minutter, to gange i ugen. Hvis du har smerter, skal du måske gøre det mindre.
- Træk med den lettere hånd og løft til en let smerte.
- Hvis du har smerter i nakke eller på armen, skal du gøre det mindre.

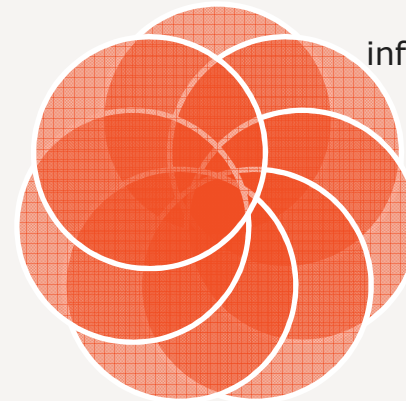
Job&krop  
Hverdag og hel  
Læs mere og se øvelserne på video på [www.jobogkrop.dk](http://www.jobogkrop.dk)

Provide good relations across the office

Make people in a good mood/a good laugh with positive side effects in the body

Increase the blood supply for muscles and tissue

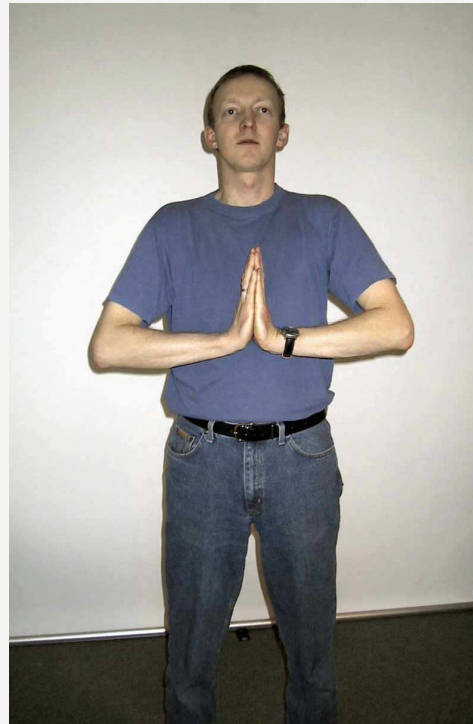
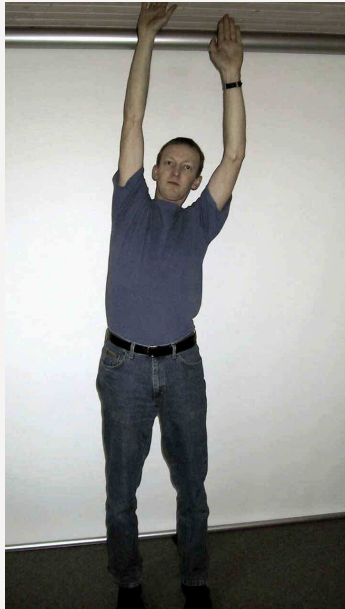
Reduce the risk for neck/shoulder infiltrations and tension headache



Increase the energy level and the ability to concentrate

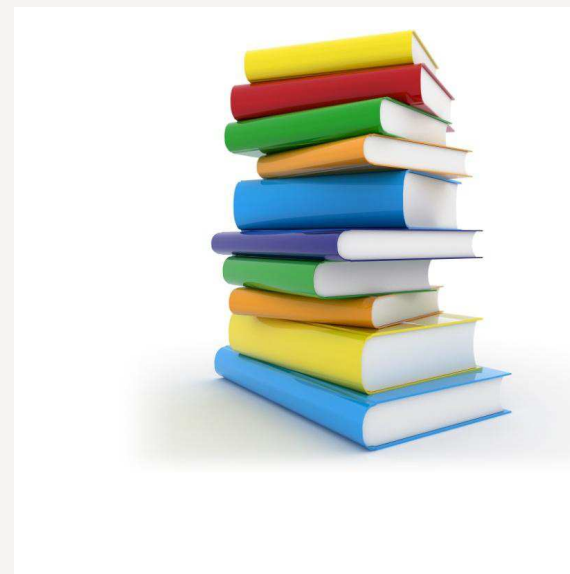
Increase the awareness of tension in the muscles

# Stretch!



## Exercise

- > Stretching exercises
- > Circulation exercises
- > Strenght exercises
  
- > [www.hk.dk/arbejdsmiljoeportalen](http://www.hk.dk/arbejdsmiljoeportalen)
- > [www.computersmerter.dk](http://www.computersmerter.dk)
- > [www.firmaidraet.dk](http://www.firmaidraet.dk) (mail exercise + time out-cd)
- > [www.jobogkrop.dk](http://www.jobogkrop.dk) (elastic-exercises)



## Adjustment of the workplace

Office chair

Desk

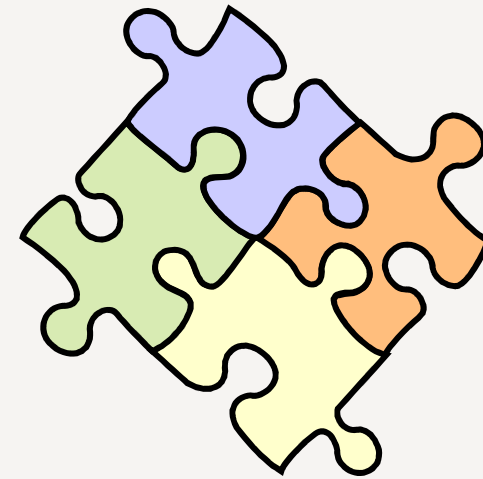
Keyboard,  
mouse,  
monitor

Light

Variety



Fit the pieces together



Thank you!