



Information for employees and students working at the Faculty of Science (W&N)

Most people spend a considerable part of their working day behind a monitor. Do you spend more than 2 hours a day working behind a pc? If so, you are considered a computer using employee ("beeldschermwerker"). In that case the information below applies to you.

1 What is CANS or RSI?

CANS is an occupational illness you may develop by spending a lot of time behind the computer. However, you could also develop CANS in the lab due to repetitive work, such as pipetting (See AMD information sheet RhL030). CANS stands for Complaints of Arm, Neck, and Shoulder.

The old term RSI (Repetitive Strain Injury) may be more familiar. It used to be called "mouse arm". However, professionals rarely use these names anymore. CANS and RSI are collective terms for complaints that develop by a static load combined with repetitive motions. In other words, the body is set in one posture, while a small number of muscles repeat a certain movement.

It is assumed that the balance between load (the demands of work and/or personal conditions) and capacity (what you are capable of considering your physical and/or mental condition) is disrupted. This balance may differ from person to person. If a certain factor lowers the capacity, while the load stays the same, complaints may develop.

There is still a lot of research going on into the exact causes of CANS. Sometimes the cause of the complaints can be determined, for example, carpal tunnel syndrome. However, in many cases the complaints cannot be attributed to a specific cause (aspecific complaints).

2 Recognizing and reporting CANS

Early signs of CANS are: tingling fingers; a deaf, stiff, or cold feeling; shaking of the wrist; and rubbing the neck. These complaints often pass after a night's sleep, and often remain unrecognized. However, it is especially important to act immediately in this early stage. By continuing the work there is a chance that the complaints worsen, and that you end up in a vicious circle. In that case the complaints will no longer disappear spontaneously when you take a rest. You may also develop complaints during other activities, such as cleaning dishes, you may suffer loss of muscular strength (and start dropping things for no apparent reason), and you may have trouble sleeping due to persisting pain. In those cases it will be increasingly difficult to recover.

If you recognize this kind of complaints, please warn immediately. Have it diagnosed by a doctor, but also do report your complaints to the organization. The latter is important, because there may be adaptations necessary in the work or study to ensure a proper recovery. Employees report complaints to their supervisors, the [\(company\) medical officer](#) and/or AMD. Students contact their study adviser or the AMD.

3 Preventing CANS

3.1 Adjusting the computer workplace

One of the conditions of healthy computer work is a properly adjusted permanent workplace. This means that the desk height is adapted to the body length, the adjustment capabilities of the chair are used, the monitor is at the proper distance and height, and the keyboard is placed directly in front of the monitor with the mouse next to it.

Another condition is proper use of the furniture. Popular “seating mistakes” are:

- *Sitting at the edge of your seat (not using the back of the chair).*
- *Placing your feet on the supports (instead of flat on the floor).*
- *“Crawling into the monitor” (trunk bend forwards). The back of the seat remains unused, is too upright, and/or the distance to the monitor is wrong.*
- *Sprawling.*
- *Working with hunched shoulders.*

There are many types of desks and chairs about within the faculty. Try and fiddle a little with the buttons and handles to figure out their function. Sometimes you must press a button while simultaneously exerting force.

You can use the instructions on the next page to adjust your workplace yourself, or use the adjustment test including correct/wrong pictures that was made for the Working Conditions Catalogue of the Dutch Universities: <http://kanstest.nl/en/>

If you experience trouble figuring things out, or you have specific questions, please [contact the AMD for workplace advice](#). If your complaints persist despite your workplace advice, please make an appointment with the [company medical officer/doctor](#).

How to adjust your workplace yourself:

1. Adjust the height of your seat using the spring. Your feet should be flat on the floor; your knees making a 90° angle. Ladies, please note: If you normally wear high heels, adjust to that!
2. Put your behind snug to the backside of the seat. Shift forward or backward over the seat until you have a palm's width between the seat and the hollow of your knee. This way the blood flow to your feet will not be restricted.
3. Adjust the height of the back in such a manner that the bump of the backrest fits in the hollow of your back. This way the lumbar vertebra are supported.
4. Some chairs have a tilting mechanism that moves with you to promote a more active seating. The tilt resistance should be adjusted to your bodyweight, which is usually done with a rotary knob under the seat. The adjustment is proper if you feel resistance, and the chair almost, but not quite, launches you forward. You could also fix the mechanism in a certain position.
5. Sit upright and loosen your shoulders. Keep your underarms horizontally. Adjust the armrests in such a manner that they support your underarms. Adjust their height, and, if need be, their width for this. Some armrests may also be rotated in the horizontal plane as well.
6. Pull up to the desk. The armrests and desk should now be adjusted to the same height. Many desks can be adjusted in 2 cm intervals. Therefore, it may be that you need to heighten or lower you chair a little bit. In case of an adjustable desk, you measure the height of the armrest and adjust the desk to that. If tools are required to do this, please report it to [Selfservice facilitair](#) (Please mention the desired height) to have it done for you. If you have a non-adjustable desk, you can apply for an adjustable footrest through your supervisor in case the desk is too high. If the desk is too low it may be set on blocks, but it is preferred that you find yourself a higher desk.
7. Put the monitor at about an arm's length distance (50 to 70 cm). The larger the monitor, the further away it may be put. The top of the monitor is at eye level. If necessary use a stand to achieve this (of 1 or 2 packs of A4 paper / a thick book).
8. Fold in the legs of the keyboard to keep the wrists in a neutral position. Keep the mouse as close as possible to your body and properly adjust its speed.
9. During retying or typing out, a document holder may be useful to prevent working with a strained neck.

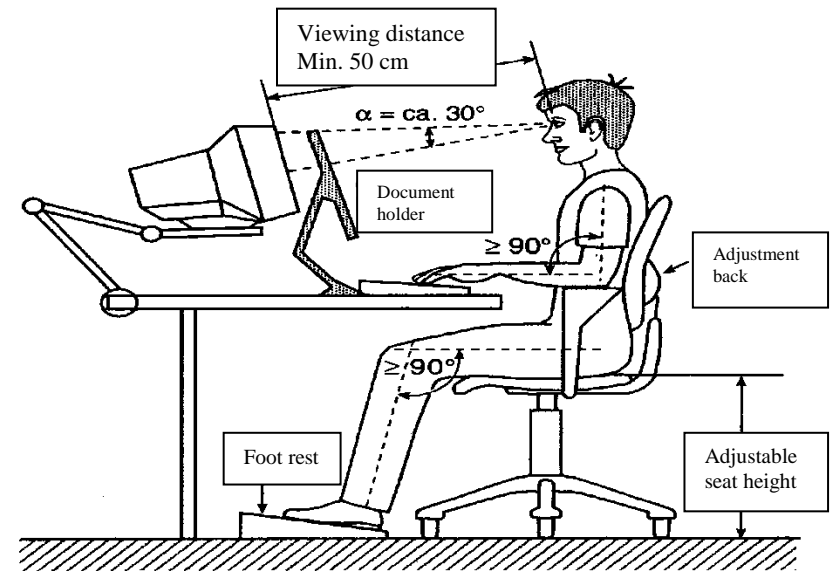


Figure 1 The proper workplace adjustment (illustration taken from arbo catalogue VSNU)

3.2 Adjustment of special computer workplaces

Duo workplaces

Do you have a duo workplace? Do you share your workplace with someone who does not share your desk height? If so, you need an easily adjustable desk, for example one with a crank. Remember the settings of your chair and desk. The chairs will have to fit your body's proportions too; therefore, it may be that you both need your own chair, if there is no type that may be adjusted to the both of you.

Workplace in computer rooms for students

To students who work in computer rooms it is important to adjust the chair properly at all times too, and, if possible, to choose a table of which the height fits their body length. See 3.1.1 for further information. Are you a student and do you often use a laptop? If so, please read the heading "laptop workplace" too.

Laptop workplace

Laptops are convenient for people that often have to work at different locations, but they do not offer a genuine computer workplace. When working with a laptop you can never properly adjust the monitor height, and, therefore, (neck) complaints are prone to crop up. However, there are special aids available, such as docking stations or laptop stands with an external keyboard or separate monitor, and separate mouse. If you do not have these aids, then please do not work for more than two hours a day with a laptop.

Home workplace

It is also advisable to check your desk at home using these guidelines. Arrange to have a proper desk chair at home and do not seat yourself at the kitchen table with a laptop. Any work you do after hours at home behind the pc or laptop, may contribute to the development of complaints as well. Ideally, you should not spend more than 4 to 6 hours a day behind a monitor. If you have a choice, please arrange your activities with this in mind.

3.3 Furniture and aids

From time to time it will not be possible to properly adjust the workplace using the available furniture and aids. This may be due to the furniture being out-of-date and having few options for adjustment, but also because office furniture is meant for the "average person". Even new furniture that satisfies all standards of adjustability may not fit the person or situation. Brands and models differ and so do people.

Sometimes there will be no option but to replace the furniture, for example if the adjustment options of a chair are insufficient or the adjustment means are broken. However, please never just purchase new furniture, but make sure to obtain expert advice first (from the AMD or supplier)! The AMD has several types of chairs of the contracting partners on loan; you can come and try chairs to see what type of chair is comfortable and provides sufficient support.

The purchase of office furniture is by open tender, and, therefore, occurs through one of the selected office furnishers (known to AMD and purchase department). Please refer to your superior for questions about budgets.

If your measurements deviate strongly from the average – for example, if you have extremely long legs – the supplier often can advise about tailor-made chairs (composed of different parts). In case of severe medical complaints, for example, of the spine, it is wise to consult the medical officer first. The selected contracting partners all have in-house specialists (for example, physiotherapists) who may advise people with complaints; obviously, you will have to indicate this when you contact them.

Aids

There are many products, such as wrist supports, joysticks, vertical mice, tablet mice, or split keyboards, and such, which claim to be the solution for CANS complaints. However, this should be considered with some reserve: Use the product you are comfortable with; remember that people and tasks differ. Alternating between a normal mouse and a pen mouse or joystick won't hurt, but expect no miracles. What may work for one, may be a disaster for the other and a source of extra stress and, therefore, added burden.

3.4 Sufficient variety and motion

Another risk factor for the development of CANS is working too long in one session. According to the Dutch Working Conditions Act you are not allowed to work for more than 6 hours a day behind a monitor, and you should take a break of 10 minutes at least every 2 hours. It would be better to take more and shorter breaks while standing up from your workplace. Consider visiting your colleague in person instead of using the phone, pour yourself a glass of water, collect your print-outs, and schedule your meetings and other tasks in the middle of the morning or afternoon, if you can. In taking breaks or determining the daily amount of active computer time ergonomic software (like the free package Workrave) may be helpful. (Please ask for installation through the ISSC helpdesk.)

3.5 Preventing work overload

Please ensure proper planning. He/she who starts in time, suffers less stress and runs a lower risk of CANS. Discuss a too high workload with your superior, for example, in R&O talks. Try to prevent peak loads. And, if that is not entirely possible, take sufficient time for recovery after a busy period, and schedule in sufficient mini-breaks (See 3.4) even in busy periods. To illustrate this, see [this clip](#).

3.6 Personal factors

If you have a pre-existing medical condition (for example, back complaints), you may need more than just an adjustment advice. It may also be that you have trouble focusing on the screen due to (age-related) long-sightedness. If so, it is possible you are eligible for [compensation for special monitor glasses](#). Please contact the medical officer if one of these conditions apply to you.

CANS/RSI show a so-called multifactorial determined complaint pattern. This means that in their development several factors may play a role. Besides factors at work, circumstances at home, as well as the overall mental and physical condition may affect the development and persistence of CANS. Some of us are more sensitive to the development of CANS by nature. Fear of failure or perfectionism may play a role. These induce a higher experienced stress load. Considering the circumstances at home you could, for example, think of having small children, which mean a lot of heavy lifting at home and a possibly disrupted night's rest, which means you will not be as fresh in the daytime, and, therefore, not as resilient. Other personal matter may play a role too, such as financial worries, health issues of family members, or a divorce.

Because there are so many combinations of factors that may be at the root of the complaint pattern, we cannot provide a standard treatment or advice that will make you complaint free. At the moment our approach is twofold: improving physical fitness by some type of therapy or sports, and addressing any personal factors that may apply.

4 More information and links

On the VGM website you can find [even more information about working with computers](#). The medical officers have provided a [flyer on computer work and RSI](#) containing more information and exercises. For any questions or a consultation you can contact the medical officer through extension 8015.

You may also find a lot of information on RSI on external websites, for example on:

- The RSI-association website (in Dutch): <https://www.rsi-vereniging.nl/>
- Since the middle of 2010 you may find the [Working Condition Catalogues on the collective labour agreements of the Dutch Universities](#) ("arbocatalogi") on the VSNU website. These contain a description of what the universities do to prevent the occupational risks that are mentioned. The arbo catalogue is an agreement between the universities and the Dutch Labour Inspectorate and counts as a specific implementation of the Dutch Working Conditions Legislation for the branch. There is also a CANS arbo (OHS) catalogue (in Dutch, but some of the appendices are available in English): http://vsnu.nl/Arbocatalogus_KANS.html.