Universitat de les Illes Balears | Servei de Prevenció

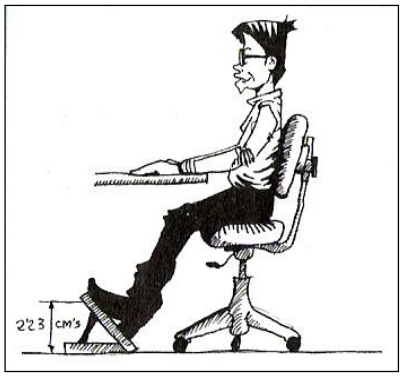
RISKS FACING TEACHING AND RESEARCH STAFF (PDI) AND ADMINISTRATIVE AND SERVICES STAFF (PAS) THAT WORK IN OFFICES

1. RISKS STEMMING FROM WORKING WITH A COMPUTER

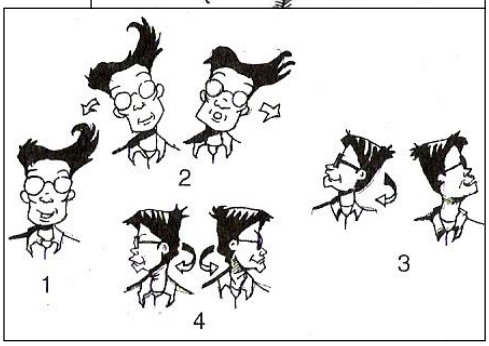
The majority of the university staff works with visual display units (VDUs) for several hours per day. This has led to an increased incidence of musculoskeletal disorders (such as back and neck pain, tendinitis, carpal tunnel syndrome, etc.) which are caused by various factors, including having poor posture, incorrect placement of the desk and screen, the use of non-ergonomic chairs, and the repeated use of a mouse, among others.

Thus, it is important to maintain proper posture, position oneself correctly to see the screen, and ensure that all work involving the computer meets some minimum ergonomic criteria.

A) Proper posture



- Keep the spinal column straight, supporting the lumbar region on the back of the chair.
- Avoid turning and leaning the trunk of the body and the head.
- Keep arms near the trunk of the body. Elbows and knees should make right angles (90º).
- Wrists should be kept straight and relaxed; they should not be bent and the hands should not move laterally or vertically.
- Support feet on the floor or on a footrest. Do not cross legs and do not put feet on the legs of the chair as these actions can hinder venous return (blood flow back to the heart) in the legs.
- Rest forearms on the table and hands on the keyboard while typing.
- Put the most used devices (telephone, mouse, etc.) in places where they can be reached easily so as to avoid stretching and awkward postures.

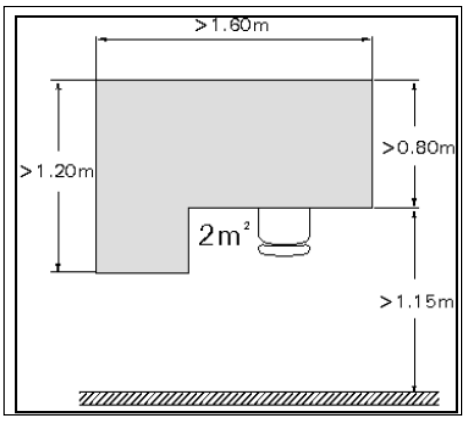


Keeping any posture, even proper posture, over an extended period of time is tiring. So, changing positions while working is advisable, as is taking small breaks, and if possible, alternating work that does not require posture changes with other tasks. In any case, 10 minute breaks should be taken after every hour of continuous work at the computer. Stretches and exercises are also suggested to help those working at computers relax their muscles.

Videos of various exercises, based on a study carried out by physiotherapists at the UIB, are available at the following link. http://ergonomia.uib.es/exercicis/

B) The desk

The size of the desk should be big enough to be able to properly place documents and work items, the screen at an appropriate distance (greater than 40cm) from the eyes, and the keyboard in such a way that there is a 10 cm space in front of it to support the arms and hands.



The surface of the desk should be 160 x 80 cm. Its height should be about 70 cm. It is recommended to have an L-shaped desk, though putting the computer screen on the extension is not advisable as it is too narrow.

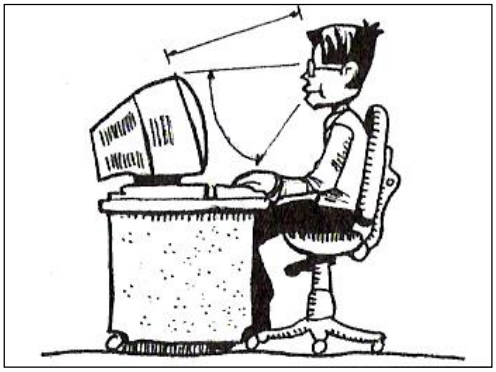
The work surface should have a matte finish to minimize reflections, and it should be a light pale colour, not shiny or dark.

It is recommended that there be 15 cm of space behind the desk. Also, there should be at least 2 m^2 of free space around the work station in order for the chair to be able to move around freely.

The space that is set aside for one's legs should be kept free of objects (drawers, bins, etc.) that could hinder movement or prevent proper posture.

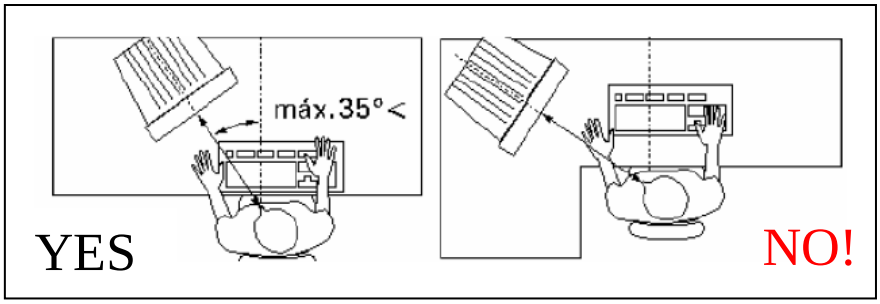
C) The screen

Positioning the screen properly will eliminate many posture-related problems:

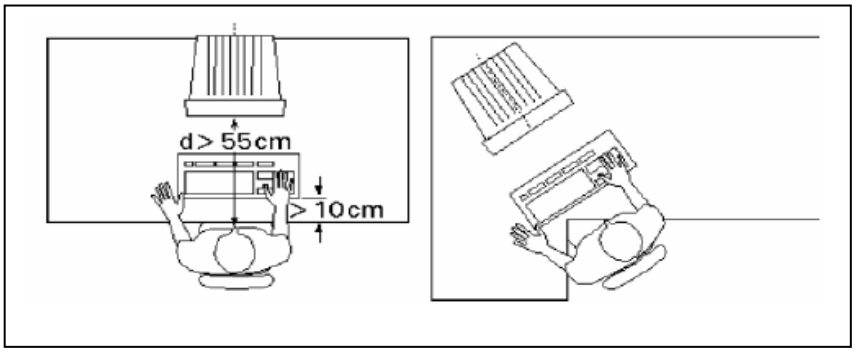


- One should be able to adjust the vertical and horizontal angle of the screen.
- The **screen should be situated perpendicular to windows** so as to avoid glare, which requires users to take on awkward positions to avoid it and which is straining to the eyes. It is not recommended to sit facing or with one's back to windows.
- The upper part of the monitor should be at the same level as the eyes, or a bit below them. Having the screen too high will cause the head to tilt back, which could lead to neck pain. Furthermore, it could dry out the eyes as they will be more exposed and tears will dry up quicker.
- The distance between the screen and one's eyes should be greater than 40 cm.
- The image should be stable and should not flicker.
- The screen's brightness and contrast should be adjustable so that they can be adapted to the surroundings.

- The screen should be situated in front of the keyboard to avoid awkward neck posture; having an awkward posture creates constant strain on the back, neck, and shoulders. You should not have to turn more than 35º to look at the screen.



- There should be enough space between the keyboard and the edge of the desk (>10 cm) for resting one's forearms and wrists when typing. Muscle tension in the shoulders and neck can be avoided if the arms are supported while typing.

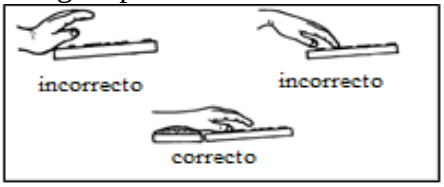


It is important to consider the different tasks that one will carry out:

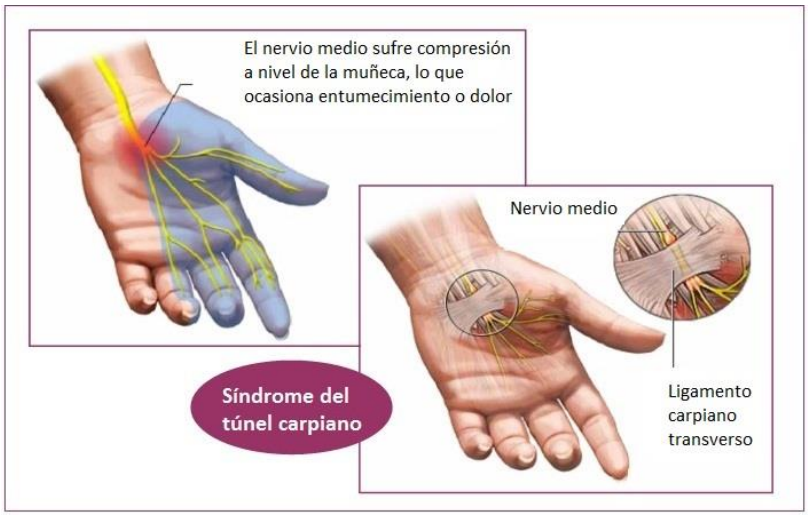
- If the tasks mostly use the computer, it should be placed on the desk in front of the person.
- If various tasks will be carried out (on the computer, with paper documents, attending to clients, etc.) the computer can be positioned on the corner of the desk as long it is possible to use it without having to twist the neck and the trunk of the body.

D) The keyboard and the mouse

- The keyboard should be adjustable (between 0º and 25º) and separate from the screen. If working with a laptop for an extended period of time, it is advisable to connect an external keyboard and raise the screen to eye level (laptop boosters are available on the market) or connect it to a different screen.
- Position the mouse near the keyboard with enough space for it to be used comfortably. It is also important to keep the desk clean and tidy.
- The wrists should be kept straight and relaxed. Incorrect hand or wrist posture could lead to problems and in the long term could lead to a

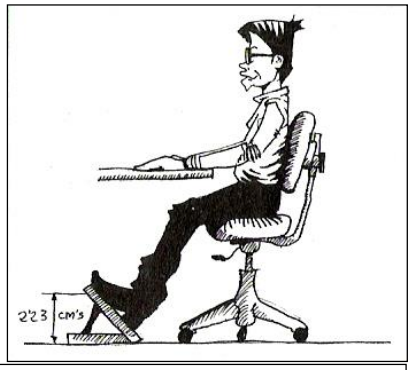


condition known as carpal tunnel syndrome which is characterized by a tingling or pricking sensation, wrist pain, lowered sensitivity, and loss of strength or accuracy when completing tasks.



E) The chair

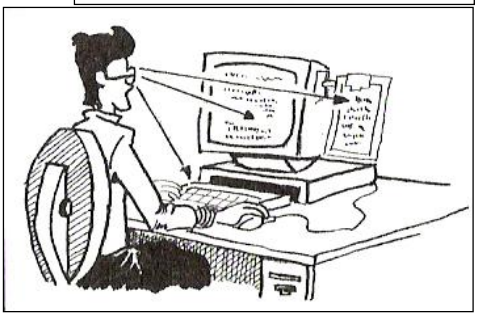
The chair should have an adjustable height and its back should be able to be adjusted to provide proper lumbar support. It is also recommended that it have a base with five arms, each with a caster. The chair's upholstery should be made of a breathable fabric.



Adjusting the chair:

- Adjust the height of the chair so that the elbows are at the same height as the desk, or a bit above them. If the chair is too high or too low, it will lead to an incorrect posture.
- Once the height of the chair has been set, the feet should rest comfortably on the floor. If they do not, a footrest should be used.

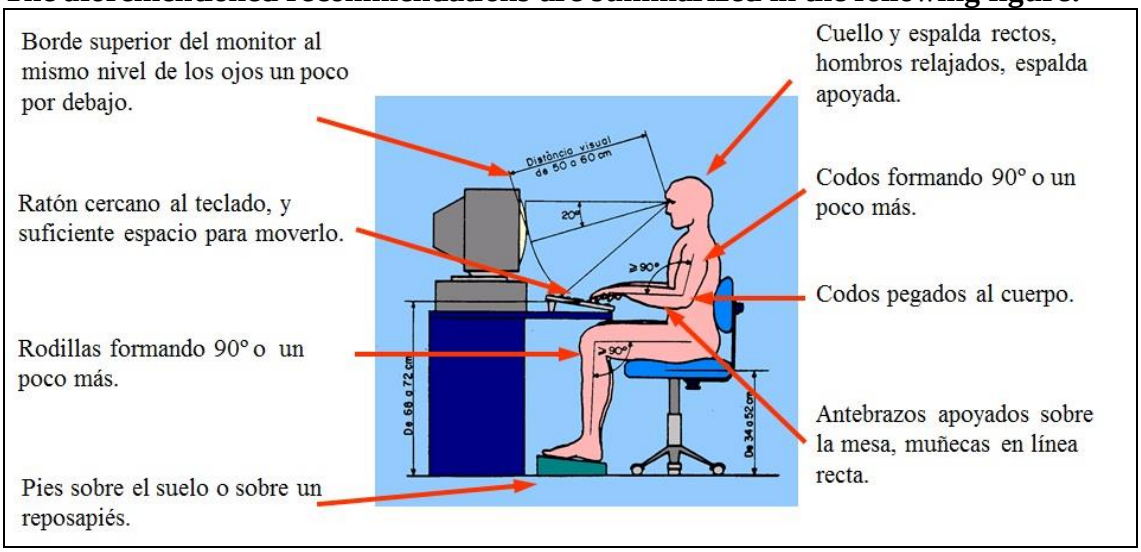
F) Footrests and document holders



A footrest is needed if one's feet cannot rest comfortably on the floor, and it should have an adjustable tilt and be slip-resistant.

A document holder is needed when the work to be carried out involves entering data from printed documents. The document holder allows for documents to be hung up at a height and a distance similar to those of the screen, this reduces strain on the eyes as well as neck movement. The height, tilt, and distance of document holders should be adjustable.

The aforementioned recommendations are summarized in the following figure:



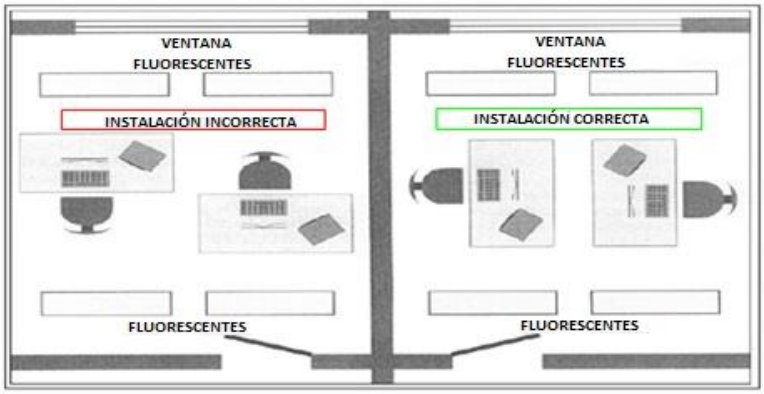
The video at the following link shows the proper way to adjust a seat, a screen, and the other items needed for working with a computer:
http://ergo.uib.es/playsubc.php?ex=exercici_20.flv

G) Room conditions

Lighting

Work spaces, including classrooms, should have natural light complemented by artificial light when necessary. Neither kind of light should produce glare or marked contrast. The most appropriate artificial light comes from fluorescent lamps with uniform light distribution elements. The ideal level of light for working on a computer and for teaching in a classroom is 500 lux.

It is important to keep the desk and screen separate and perpendicular to windows. Neither monitors nor workers should face or have their backs to windows. Furthermore, the windows should have adjustable curtains or blinds, and desks should be situated in between the rows of fluorescent ceiling lights in order to avoid glare.



Noise

Irritating sounds in offices are caused mostly by printers, telephones, conversation, heating and air conditioning, etc. and can make it difficult to concentrate or maintain a conversation. It is recommended that in offices the volume not exceed 55 dB when tasks require a high level of concentration. And it should never exceed 65 dB.

It is a good idea to have the noisiest machinery (printers, photocopiers, etc.) located in isolated rooms or far away from workers.

Temperature

In offices, classrooms, and similar spaces, the temperature should be kept within the following ranges:

Royal Decree 486/1997 establishes that the temperature of businesses where office-type work will be performed must be between 17 ºC and 27 ºC.

Royal Decree 1826/2009 states, that for energy conservation, the air temperature in heated areas shall be no greater than 21 ºC and the air temperature in cooled areas shall be no less than 26 ºC. Considering both of these regulations, the temperature should be:

- **In summer, between 26 ºC and 27 ºC**
- **In winter, between 17 ºC and 21 ºC**

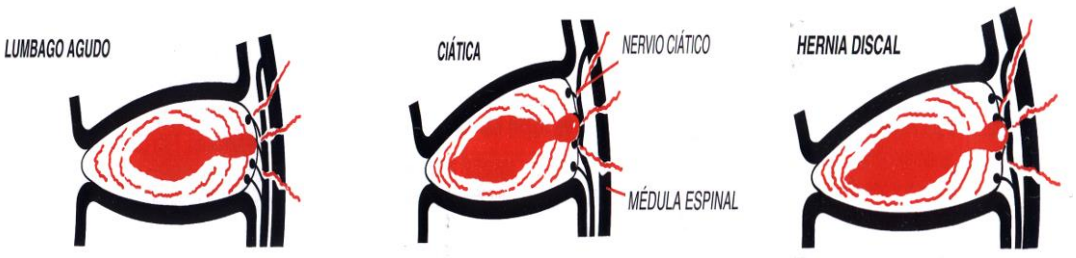
These are the temperature conditions that should be maintained under regular humidity conditions with appropriate air exchange.

Nevertheless, individuals have their own individual needs depending on what they do, the clothes they wear, age, and their physiology. Workplace arguments and conflicts often arise over the temperature. It is important for people who work in an office to agree upon an optimal temperature.

2. OVEREXERTION

Manually handling loads can lead to muscle and bone injuries, especially if excessive weight is lifted and/or incorrect postures are used.

The spinal column is made up of vertebrae that are separated by intervertebral discs. If the pressure put on these discs is too great, by twisting or bending the spinal column, serious injury may result:



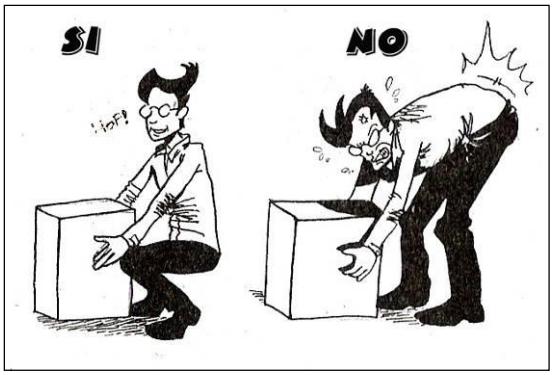
Safe load handling:

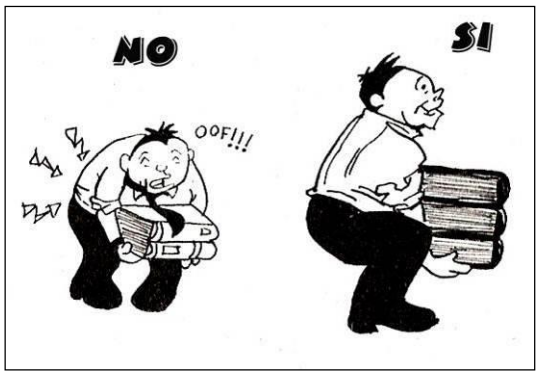
1st. Whenever possible materials should be transported with a dolly, a wheeled cart, or something similar.

2nd. Before lifting a load, pay attention to its size, shape, and weight; where it can be held; and any possible dangerous parts (sharp edges, slippery areas, etc.).

3rd. Always try to find the position that causes the least amount of strain when lifting objects.

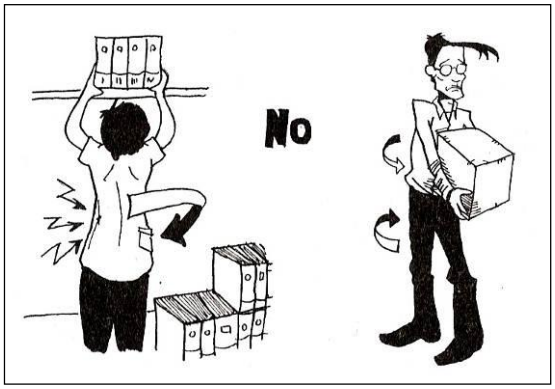
4th. To lift an object, even if it is light, one should **bend one's knees slightly without bending the back. The spinal column should always remain straight.** Grab the object firmly and lift it using the force of the legs.





Other recommendations:

- Weights of more than 25 kg should not be lifted. For women, this weight should not exceed 15 kg. For weights greater than these limits use an auxiliary device (dolly, carts, etc.) or ask someone for help.
- When transporting loads, keep them as close to the body as possible, and keep the back straight at all times.
- Do not lift any load over the shoulders. Use a stepladder if necessary.
- Do not turn at the waist to pick up an object or when carrying a load.
- Heavier objects should be stored on mid-level shelves to avoid having to bend down or stretch in order to handle them.
- It is better to make various trips than it is to move an overweight load once.
- To keep one's back healthy, exercise should be done regularly.



3. PSYCHOSOCIAL RISKS

According to the ILO and the WHO, psychosocial factors in the workplace include, on the one hand, interactions between the work, environment, satisfaction, and conditions within the organization, and on the other hand, the abilities of workers, their needs, their culture, and their personal situation outside of the workplace. Via perceptions and experiences, all of this can influence health, performance, and satisfaction at work.

What are the main psychosocial risk factors in organizations?

The content of the work: a job with content is one that allows a person to feel that their work serves a purpose, that it provides utility to the organization, and that it offers him/her the possibility to utilize and apply his/her knowledge and abilities.

Independence: the level of freedom that a person has to influence the various aspects that affect his/her work, e.g., how he/she performs the work (ordering of tasks, methods, tools, etc.), time spent working (rhythm, breaks, schedules, vacations, etc.), and the organization of the work (objectives, rules, etc.).

Role in the organization: the function each person plays in the business. Problems could be the result of the existence of role conflicts, i.e., contradictions between work demands and a person's values and beliefs. Another problem is role ambiguity, which occurs when objectives and competences of each position are not well defined and there is a lack of information on the functions, work methods, quantity, and quality of the product, time, completion of a task, responsibilities, objectives, etc.

Personal relationships: they can be satisfying, or contrarily, they can be the source of stress if they are poor or inappropriate. Good interpersonal relationships serve as a buffer against negative consequences that can result from a stressful job. This phenomenon is known as social support, and it provides resources for mitigating adverse working conditions.

The effects of psychosocial risks on health

Exposure to psychosocial risks can lead to various consequences on workers' health and on the performance of the organization:

- **Effects on the organizations:**
  - ✓ Reduction in the quality and quantity of the company's product or service.
  - ✓ Increase in the number of mistakes.
  - ✓ Increased absenteeism and rate of accidents.

- **Effects on the worker:**

Stress: this happens when work demands exceed the ability of the worker to face or handle them. When working under pressure, performance could be improved and offer satisfaction if objectives present a personal challenge. But, when the demand and pressure becomes too great, they create a tension that, when consistent over time, can degrade both mental and physical health.

Occupational burnout: a syndrome characterized by emotional exhaustion, depersonalization, and a lack of personal fulfilment at work that can occur in workers who are in constant direct contact with other people. It includes a set of symptoms that give suffering workers the sensation that they are failing at their jobs and that they cannot do anything about it as it does not depend solely on them. This leads to a change in attitude and behaviour with others, notably via emotional distancing, irritability, and rejecting others, all of this especially with respect to those with a stake in the work. Vocational burnout tends to progressively increase and leads to mental and physical inability, both professionally and personally.

Mobbing: an abusive behaviour that negatively affects, via repetition or systematization, a person's dignity or physical or psychological wellbeing at the workplace. The harassment can be varied (verbal or physical attacks, belittling of the work done, social isolation, etc.). Its consequences can be devastating. Those who suffer from this abuse can suffer from anxiety, stress, depression, lack of self-esteem, feelings of guilt, psychosomatic illnesses, etc. as a result. Thus, it is important to adopt preventative measures and create an organizational culture with rules and values against abuse, look into and resolve cases that arise, and implicate all workers and actors involved. The UIB has an action protocol for dealing with such cases.

Mental fatigue: the consequence of a large mental workload appearing when high levels of attention must be maintained over long periods of time in order to process large quantities of information and provide suitable results to mental demands. Mental fatigue leads to difficulty in focusing, slow thinking, diminished observation abilities, lower performance in intellectual work, and in general, reduces the ability to respond to the mental demands of the job.

Preventative measures for dealing with psychosocial risks:

- Adjust workers' knowledge, abilities, and competences. Encourage learning new things at work.
- Offer a certain level of variety in the contents of the work. Reduce the number of monotonous and repetitive tasks.
- When possible, alternate tasks that require a high level of attention and concentration with those that require lower levels of mental focus.
- Whenever possible, allow the workers themselves to establish the rhythm of work that is most suited to their abilities.

- Give workers a clear description of the tasks that must be completed, the resources available, and obligations. A clear knowledge of the objectives that must be researched, and which have already been reached, allows workers to establish and incorporate changes to their own rhythm of work.
- Explain the role that each worker plays in the organization in such a way that their importance is given value as a part of the whole that makes up the company.
- Avoid confusion when assigning roles and functions.
- Encourage participation, oversight, and communication via meetings, work instructions, notice boards, suggestion boxes, etc.
- Guarantee respectful and fair treatment.
- Set up prevention, detection, and treatment programmes for psychosocial problems.

4. VOICE DISORDERS

Dysphonia, aphonia, and vocal fatigue

Due to exertion, abuse, or misuse of the voice, teachers and personnel who attend to the public can suffer from disorders of the voice. These problems take shape in the form of changed vocal qualities (dysphonia) or complete loss of the ability to produce voiced sounds (aphonia).

Dysphonia can be sporadic or temporary, as in the case of colds, flus, or tonsillitis. It can also be chronic, in which case it tends to be irreversible. Thus, prevention is paramount.

Breathing and the voice

Teachers should know that the simple breathing that we do unconsciously and automatically throughout our daily routines is not good enough for those who use their voices as part of their job. If you breathe badly, you will speak badly. 90% of vocal weakness or fatigue comes from improper breathing. Costodiaphragmatic breathing is the proper way to breathe as it avoids exertion.

The sound made when speaking comes from the vibration of the tensed vocal chords as air moves through them. Inhaling should be done through the nose, which requires a pause to be taken before exhaling through the mouth with a smooth extended blowing out of air. It is this exhalation that produces the voice, and it should not require a contraction of the neck muscles. If the muscular equilibrium is altered by overly excessive respiration or too little of an exhalation, a vocal disorder will not be far off. The progressive practice of relaxation allows for the elimination of muscular tension that would otherwise require psychotherapeutic treatment.

In addition to not knowing proper vocal techniques, certain conditions of the teaching profession contribute to vocal impairment, including having groups with large numbers of students which require speaking loudly, working in noisy environments, poor acoustic conditions in classrooms, having too many teaching hours, etc.

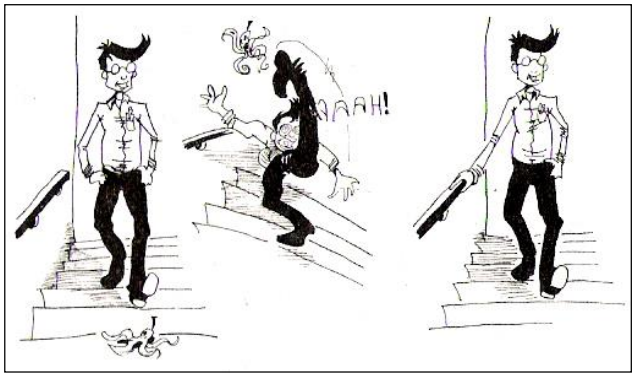
Symptoms:

- Hoarseness, pain or a burning sensation when speaking, shortness of breath, loss of voice.
- The feeling of having a foreign body in the throat.
- Difficulty swallowing or a constricted feeling in the neck.
- Coughing, excessive throat clearing.

Recommendations for preventing vocal problems:

- It is very important for professors and those who work with the public to receive **specific training** on projecting the voice (proper positioning of the voice on the vocal chords to produce a full sound without fluctuations or shakiness) and hygiene measures.
- Before speaking, be sure to breathe properly (costodiaphragmatic).
- Avoid overly long sentences.
- Properly articulate sounds while avoiding forcing the voice.
- Speak at an appropriate speed, not too fast, and not monotonously.
- Do not speak constantly throughout the entire class period, alternate speaking with another kind of task.
- Inasmuch as is possible, avoid coughing, throat clearing, shouting, etc.
- Avoid speaking in noisy places. Use voice amplification equipment when possible.
- It is best to give classes while being situated in the centre of the classroom. If possible, put the audience in a "U" shape.
- Avoid tobacco and things that dehydrate, such as alcohol and caffeine.
- Avoid dryness in the throat by taking frequent sips of water.
- Avoid areas polluted with smoke and do not over use heating or air conditioning systems.
- Avoid sudden temperature changes.
- Take advantage of free time to rest the voice and recover muscle balance.
- Perform the following exercises:
    - Move the tongue and lips.
    - Tonal extension: pronounce one sentence first in a very deep pitch and then repeat that sentence in progressively higher pitches.
    - Repeat the same sentence with different inflections: as a question, affirmatively, informatively, and critically.
- Sleep for an appropriate length of time in a well-ventilated space.

5. FALLING FROM A HEIGHT



People can fall down stairs, especially if they are going too fast of if they are not paying attention. Do not read documents, check your mobile phone, or have your hands in your pockets when using stairs. Use closed-toe footwear with a slip-resistant sole to help avoid falls

Staircases in buildings should have railings or handrails, and the surface of the steps should not be slippery.

Do not use chairs, tables, or other unstable objects to reach things located at a height. Rather, use a stepladder. Stepladders should have slip-resistant foot pads, a mechanism that prevents them from opening, and handles so that they may be carried. In order to use the stepladder correctly, consider the following instructions:

- Do not take on awkward positions to reach distant objects. Get off and move the ladder.
- Do not step on the top rung.
- Do not go up or down the ladder while carrying objects.
- Going up, going down, and working from the stepladder should be done with the ladder facing the task at hand.

6. FALLS FROM THE SAME LEVEL

One in four office accidents are falls. They are normally the result of tripping over cables (from the computer, telephone, etc.) or objects (boxes, rugs, etc.) placed in walkways. In order to avoid these falls, follow the recommendations listed hereafter:

- Keep workspaces clean and tidy. Quickly clean up coffee, water, or other spills. It is everyone's responsibility to keep the workplace orderly and transited areas free from objects.
- Keep cables out of transited areas, fix them to walls or tables, or install cable conduits. If you cannot do this yourself, ask for help from maintenance services.

7. BUMPS, CUTS, AND FALLING OBJECTS

- Shelves and cabinets can tip over, so they should be fixed to walls.
- Drawers and filing cabinets should have mechanisms that keep them from moving out of place.
- Do not leave drawers or cabinet doors open.
- Do not overload shelves. Place heavier objects on the lower part of shelving units. Keep frequently used documents on nearby shelves to avoid unnecessary movement.

In order to avoid bumps, the minimum width of passageways should be at least 80 centimetres. Any unnecessary objects should be removed from passageways and furniture should be placed in such a way that there is ample room to pass.

Cuts:

- Scissors and other objects that cut should be kept in a safe place (drawer or similar).
- Never put objects that can cut or puncture the skin in waste bins. Keep these materials (broken glass, utility knives, thumb tacks, etc.) in durable containers so that they may be disposed of in appropriate containers later.

Risks posed by office machines: document shredders have moving cutting elements. All machinery should have safeguards to inhibit access to its dangerous parts as well as an emergency shutoff. If the machinery is not safeguarded well, this information should be shared with Preventative Services. Never remove safeguards from machinery. For more information, see the instruction manual that came with the machine.

8. ELECTRICITY

- Only use power plugs and sockets with a ground connection. Never use extension cables or multi-outlets that do not have a ground connection.
- Do not use stripped cables or broken plugs. Do not fix electronic cables by yourself (with electrical tape). If a cable is worn, request that maintenance services fix it.
- If a residual-current device trips in the breaker box when some piece of equipment is connected, it means that the equipment has a wiring problem. Do not use it as there is a risk of being electrocuted. Ask technical services to repair it.
- If a **circuit breaker** trips in the breaker box when a device is plugged in, it means that the electrical installation is overloaded. Try plugging the device into another socket in the room, or turn off other devices. Extension cords and multi-outlets

should not be used in excess because they can overload the wiring and lead to a short circuit or fire.

- Do not unplug electronic machinery or devices by pulling on the cable; they should be pulled out from the plug.
- Do not handle any electrical equipment or wiring in the presence of water.
- Communicate anything abnormal to maintenance services.
- If someone is electrocuted, the current must be disconnected before touching that person. If this is not possible, separate the affected person from the source of the electricity with a non-conducting element (chairs, non-metal sticks, etc.). Get medical attention.

9. RADIATION AND STATIC ELECTRICITY

Static electricity can build up in some work spaces as a consequence of the concentration of electrical devices, dryness, etc.

Although its causes are not yet well defined, **lipoatrophia semicircularis** seems to be at least partially caused by low levels of environmental humidity along with the presence of static electricity. This condition involves the loss of fatty tissue, mainly in the thighs and forearms where marks or ribs develop. It mostly affects office workers. It does not usually cause any discomfort, and it is curable.

Recommendations for eliminating static electricity include the following:

- Open windows daily to refresh the air in the office.
- Avoid rugs and carpeting.
- Avoid directly contacting the desk with thighs (do not sit cross-legged, do not rest thighs on the desk when standing up).
- Workers who are especially prone to this phenomenon should wear conductive footwear (i.e., with a leather sole), not shoes with a rubber sole. It is also recommended that workers wear cotton clothing (and underwear), avoid wearing synthetic fabrics, and limit their use of woollen clothing. If problems with static electricity persist after following these recommendations, contact Prevention Services (*Servei de Prevenció*).

10. MOTOR VEHICLE COLLISIONS

These accidents can occur when commuting to or from work, or when making trips to do work (give classes, deliver mail, etc.). The rules that should be followed are as follows:

- Respect the traffic rules while on the road and around the campus (speed limits, passing prohibited on marked sections, do not use mobile phones, always wear seat belts or a helmet if on a motorcycle, respect zebra crossings, etc.).
- Leave home with a sufficient amount of time so as not to be in a hurry on the road.
- Be aware of other vehicles' movements so that you are able to take evasive action if another vehicle makes a dangerous manoeuvre.
- If an animal crosses the road, the correct action is to reduce your speed, never make an evasive manoeuvre: it is better to hit an animal than it is to risk your life and the lives of others.

STOP accidentes
Asociación Ayuda y Orientación a los Afectados Por Accidentes de Tráfico

11. CHEMICAL CONTAMINANTS

Offices are not devoid of this risk, and it comes mostly from cleaning products or the accumulation of dust. The fact that the ozone generated by photocopiers can cause headaches, drying of mucous membranes, etc. should not be forgotten. For this reason, photocopiers that are constantly running should be located in well ventilated areas that are isolated or far from workers.

12. OTHER RISKS PRESENT IN CLASSROOMS

All of the aforementioned risks are present in the classroom, too. But the following risks should also be considered, too:

Falls from the same level: these are caused mainly by the step on the elevated speaking area and cables from computers, projectors, etc. Other related risks include students leaving backpacks or clothes in transited areas. If additional clothes hangers or extra outlets are required to keep transited areas unobstructed, make a request to maintenance services.

Manual handling of loads: if classes are given in different buildings and books, projectors, or other materials must be transported, it is recommended that this be done with a wheeled suitcase or similar.

Posture fatigue: spending extended periods of time on one's feet when giving classes can cause fatigue and musculoskeletal injuries. It is recommended that those who have to give a class not remain on their feet for the entirety of the session, rather standing should be alternated with a sitting or semi-sitting (supported on a desk or elevated stool) position. If remaining on foot during the entire class, it is recommended to support the weight of the body on one leg and alternate between both legs, keeping the body straight at all times. It is important to change posture frequently in order to avoid fatigue. Avoid turning your neck, bending your torso, and making sudden or awkward movements during class. Be sure to wear comfortable footwear that supports your feet well. It should not have too much of a heel, and it should have a slip resistant sole.

12. EMERGENCIES

SAFETY REGULATIONS FOR AVOIDING FIRES

- Keep areas clean and tidy: dirt, flammable liquid spills, and the accumulation of combustible materials (papers, boxes, etc.) favour the spread of fires.
- Turn off all lights and devices before leaving the room.
- Do not use outlet extensions in excess as they can overcharge the wiring and cause short circuits and fires.
- Handle flammable materials with care and do not leave them near heat sources.
- Regulations prohibit smoking in educational buildings. In areas where smoking is permitted, butts should not be thrown into waste bins.
- Do not block emergency pathways or exits; do not leave boxes, furniture, or any other material that could obstruct an evacuation in pathways. Access to fire suppression mechanisms (extinguishers, fire hoses, etc.) should also remain unhindered.

WHAT SHOULD YOU DO IF YOU ENCOUNTER AN EMERGENCY?
(fire or smoke, explosion, gas leak, an injured person, a suspicious package, etc.)

1st. **KEEP CALM.**

2nd. **NOTIFY** a PORTER immediately so that he/she may implement the emergency plan. Porters can be notified by telephone or in person. Indicate to the porters the exact location and type of emergency (fire, injured persons, gas leak, etc.).

3rd. **TRY TO COMBAT THE EMERGENCY** with your know-how and the tools available (extinguishers, fire hoses, flame retardant blankets, etc.) **WITHOUT TAKING ANY NEEDLESS RISK**, and wait for help to arrive.

TOOLS FOR FIGHTING FIRES

a) Dry chemical or ABC extinguisher: Appropriate for type A (solids like paper, wood, etc.), type B (flammable liquids), and type C (flammable gasses like propane and butane) fires. It can put out fires where electrical installations are present, but it is not recommended as the dry chemicals can get into electronic circuits and lead to the breakdown of machines, computers, etc.

b) Carbon dioxide (CO2) extinguisher: Appropriate for fires where electrical installations are present (breaker boxes, computer rooms, etc.). It contains a gas that comes out at -70 ºC, and thus it should not be applied to people.

HOW TO USE AN EXTINGUISHER

 Get the right extinguisher and pull the pin	 Aim at the base of the flames and move slowly from side to side to blanket all of the flames

c) Installed firehoses: Water is appropriate for solid matter fires, but extreme care must be taken if electrical installations are present, given that there is a risk of electrocution.

There are two sizes of installed firehoses:

- 25 mm: it is rigid and can be used by only one person, as does not need to be completely rolled out.
- 50 mm: two trained people are needed to handle this firehose, and it should be completely rolled out to be used.

d) Fire alarm control panels, fire detectors, and emergency buttons: these detectors and buttons send a signal to the fire alarm control panel when they are activated. Then, a porter will immediately check if an emergency situation truly exists. If the fire alarm control panel is activated when no porters are present, the alarms will sound throughout the building automatically.

f) Alarms: This is the warning signal that indicates that all personnel must evacuate the building. Alarms should be able to be heard in all corners of a building.

EMERGENCY EVACUATION

- When a building's alarms sound continuously, machines and dangerous installations in your area (machinery, water, gas, electricity, etc.) should be shut down, and all persons should leave the building, without running, following the signs to the nearest exit.
- When working at night, at the weekend, or during holidays, you must put your name in the registration book available at the porters' office so that people will be aware of your presence in case of an emergency.

Procedures to follow during an evacuation:

- Do not waste time gathering personal items. Leave quickly and in an orderly manner, but without running.
- When leaving the room, close the door.
- Never go back to get personal items and never go back to look for someone.
- If the fire is giving off toxic gasses, the area in the direction of the gas cloud should also be evacuated. In the presence of smoke, breathe through a handkerchief, scarf, or tissue (moistened if possible), and if necessary, crawl to get yourself out of the building.
- If the fire is blocking the exit of the building, go to a room with exterior windows. Close the door, and if possible, put wet clothing against the bottom of the door. Signal for help from the window or make a phone call from inside the room.
- Direct yourself to the meeting point located at the main entrance of the building.

- Wait until the authorities declare that the emergency situation has been resolved.
- Do not go to the parking lot to get your car as it could block firefighters and ambulances.
- Collaborate at all times with emergency officials and participate in the drills that take place in the building.

ORGANIZATION IN EMERGENCY SITUATIONS

All UIB buildings have emergency response teams in order to quickly deal with emergency situations.

- **Head of emergencies:** this is the person with the most senior position in the building (deans, department heads, centre administrators, etc.). He/she is in charge of handling the emergency and giving pertinent instructions to the different emergency teams.
- **Communications team:** this team is made up of the porters in the building. If an emergency occurs, they are in charge of immediately advising the head of emergencies and the intervention team. They monitor the fire alarm control panel and the fire alarms, and they make internal and external calls, following the orders of the head of emergencies.
- **Action team:** this team is made up of maintenance personnel and volunteers from each building who have received practical training in extinguishing fires. They are in charge of dealing with the emergency (fire, gas leak, chemical spill, etc.) first-hand with the tools and knowledge available, and of informing the head of emergencies about the evolution of the incident.
- **Evacuation team:** this team is made up of personnel in various areas of the building. They will check each room to make sure that nobody is left behind in their particular area if the alarms sound. Afterwards, they will contact the head of emergencies who is in charge of the evacuation register for the entire building.
- **Healthcare team:** this team is made up of the UIB's medical unit as well as volunteers in each building who have received training in first aid. The healthcare team is in charge of attending to and evacuating the injured and wounded.

Drills are carried out every year to ensure the proper functioning of the emergency plan.