Occupational Health Clinics for Ontario Workers Inc.

Office Equipment Purchasing Policy

Policy Statement:
Any employee requesting new office equipment shall do so as per the attached office ergonomics purchasing procedure.

All equipment used in this facility will be standardized to ensure that all furniture meets current ergonomic standards and will meet the ergonomic needs of all staff to ensure they may be safe, healthy, effective and comfortable.

Rationale:
Previously, staff selected equipment from a catalogue only to discover afterwards that it was not specific to their body dimensions or that the equipment was not as described. In consultation with a Certified Ergonomist, this plan has been implemented to ensure the safety of all staff and for the procurement of equipment that is truly *ergonomic*.

Refer to the attached equipment purchasing procedure prior to requesting equipment.

Supporting Documents:

1) Equipment Purchasing Procedure
2) Equipment Request Form
3) Office Ergonomics Purchasing Guide

Occupational Health Clinics for Ontario Workers Inc.

Equipment Purchasing Procedure

Any employee requesting office equipment must complete the *"Equipment Request Form"* and submit this to their immediate supervisor.

Employee:

1) Obtain *"Equipment Request Form"*
2) If requesting a new chair, the employee shall provide the following measurements in centimeters (cm) :
    a. **Buttock-Popliteal Length (Sitting)**
        - Sitting erect, with feet flat on the floor so that the knees are bent at right angles.
        - Measure from the back of the knees to the back of the buttocks.
    b. **Popliteal Height (Sitting)**
        - Sitting erect, with feet resting on the floor so the knees are bent at right angles.
        - Measure the vertical distance from the floor to the underside of the closest to the knee
    c. **Knee Height (Sitting)**
        - Sitting erect, with feet resting on the floor so the knees are bent at right angles.
        - Measure the vertical distance from the floor to the top of the knee.
    d. **Elbow Height (Sitting)**
        - Sitting erect, with feet resting on the floor so the knees are bent at right angles.
        - Relax shoulders.
        - Bend elbows with the forearms level to the floor.
        - Measure from tip of elbow to floor.
    e. **Eye Height (Sitting)**
        - Sitting erect with the head level, and with feet resting on the floor so the knees are bent at right angles.
        - Measure the vertical distance from the floor to the eye.

Note: If these measurements are not provided at the time the request is submitted, the request form will be returned to the employee so that the appropriate information may be completed.

Immediate Supervisor:
Upon receiving an employee's *"Equipment Request Form"*:

a) Ensure that all required information has been completed by the employee
b) Authorize/deny employee request
c) Upon authorizing request, forward to purchasing department for processing and ordering

Purchasing Department:

1) Upon receiving an employee's authorized "*Equipment Request Form*", order the requested equipment from a supplier that has been approved by a "Certified Ergonomist".

2) Utilize existing ordering procedure

For Further Information:
Refer to the document entitled *"Office Ergonomics Purchasing Guide"* or call the Occupational Health Clinics for Ontario Workers – Sudbury at (705) 523-2330.

Occupational Health Clinics for Ontario Workers Inc.

Equipment Request Form

Requested By:

Department:

Date Requested:

Item Requested: (Check all that apply)	**Required Measurements:** (provide the following personal measurements to be used for the purchase of new equipment).
☐ **Chair**	**Buttock-Popliteal Length:** _____ cm - 3 cm = _____ cm seat pan depth **Popliteal Height:** _____cm **Seated Elbow Seated**: _____cm
☐ **Desk**	**Seated Elbow Seated:** _____cm **Seated Knee Height:** _____cm
☐ **Keyboard/Mouse Tray**	**Seated Elbow Seated:** _____cm
☐ **Monitor**	**Seated Eye Height:** _____cm
☐ **Monitor Arm**	**Seated Eye Height:** _____cm
☐ **Head set**	
☐ **Footrest**	
☐ **Document Holder**	
☐ **Wrist rest**	
☐ **Mouse rest**	

Authorized By:_____ **Date:**_____

Account #: _____

For additional information regarding selection of equipment and required measurements, please refer to the Office Ergonomics Purchasing Guide.

Occupational Health Clinics for Ontario Workers Inc.

Office Ergonomics Purchasing Guide

Introduction:

When purchasing office equipment it is best to have a standard purchasing plan to ensure that there is consistency with products. Many workplaces do not have a system in place and allows employees to purchase any product they choose. The problem with this method is that one chair or desk does not fit all and may be more costly to modify at a later date instead of addressing the issue from the start.

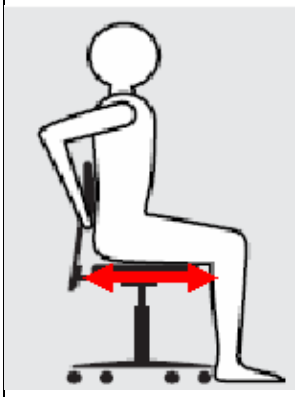
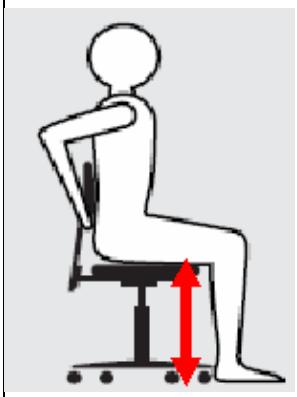
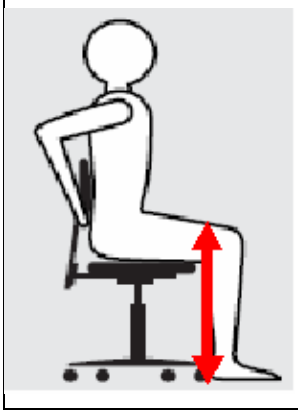
Anyone requiring new equipment for their workplace should fill in a form stating the equipment needed and the reason why. The form should include information on the physical dimensions of the employee for whom the equipment has been requested. The form should then be sent to one central person or committee to approve the request. Once approved, the request should then go to a purchasing agent responsible for the purchasing of the product in order to maintain continuity.

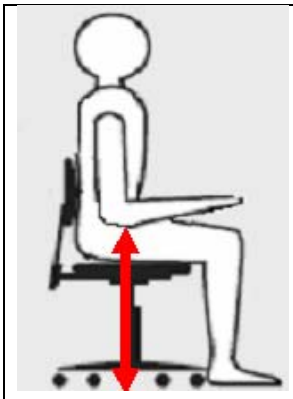
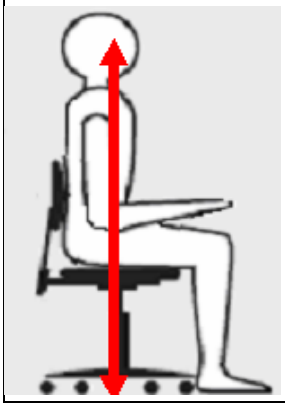
What Measurements are Required?

The definition of *ergonomics* is the “science of designing the job to fit the worker, rather than physically forcing the worker’s body to fit the job”. Therefore, workstations need to be adjustable to accommodate the worker.

To accomplish this there are a number of measurements that must be taken in order to fit the worker to their workstation. The process of measuring the body is known as *Anthropometrics* (the technique that deals with the measurement of the size, weight, and proportions of the human or other primate body). These measurements are then used to compare the worker to the workstation dimensions to determine sources of mismatch. Table 1 shows how to measure and what to compare each measurement to.

Table 1: Anthropometric measurements

Body Measurement	Compared With
 **Buttock-to-Popliteal Length:** • Sitting erect, with feet flat on the floor so that the knees are bent at right angles. • Buttock-to-popliteal length is measured as the horizontal distance from the back of the buttock to the back of the knee. • This value defines the minimum seat depth for a chair to ensure that pressure on the underside of the thigh is not excessive. • Measure from the back of the employee's knee to the back of the buttock.	**Seat Depth** 
 **Popliteal Height (Sitting)** • Sitting erect, with feet flat on the floor so that the knees are bent at right angles. • Measure the vertical distance from the floor to the underside of the closest to the knee.	**Seat Height** 
 **Knee Height (Sitting)** • Sitting erect, with feet flat on the floor so that the knees are bent at right angles. • The vertical distance from the floor to the top of the knee is measured. • This measure is useful in the design of seated workplace heights.	**Thigh Clearance**

	**Elbow Height (Sitting)** • Sitting erect, with feet flat on the floor so that the knees are bent at right angles. • Relax shoulders. • Flex elbows, forearms level with floor • Measure from tip of elbow to floor.	**Desk Height** **Mouse Height** **Keyboard Height** **Armrest Height**
	**Eye Height (Sitting)** • Sitting erect with the head level, and with feet resting on the floor so the knees are bent at right angles. • Eye height is measured as the vertical distance from the floor to the eye.	**Screen Height**

Seating

The size of the worker is an important consideration in purchasing a chair. Many newer models of chairs come in different sizes to accommodate the variation in user sizes. The average chair has been designed with the average male in mind. As a result, some chairs are often too large for female users. The two main factors that are too large for female users are the seat depth and minimum armrest height. Table 2 lists the minimum measurement for specific seat dimensions for most males and females. If the female worker in question is taller than average (5'4") then a deeper seat pan may suffice.

Table 2: Minimum measurement for specific seat dimensions

Chair Dimension	Male	Female
Seat Height	Standard Cylinder	Lower Cylinder
Seat Depth	48 cm (19")	43 cm (17")
Armrest Height	17 cm (6.7") from top of seat to top of armrest Must be height adjustable	17 cm (6.7") from top of seat to top of armrest Must be height adjustable
Seat back height	38-43 (15"-17") Must be height adjustable	38-43 (15"-17") Must be height adjustable
Lumbar Support	Must be height adjustable	Must be height adjustable

Seat height varies from user to user and often even at the lowest setting, some women cannot reach the floor or attain a 90° angle. Lower chair cylinders can be purchased if a chair is still too high even at its lowest setting.

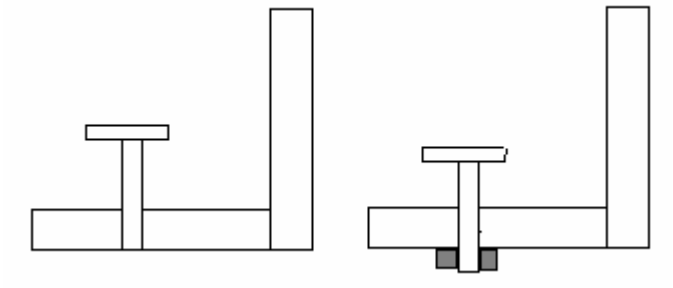
When the seat pan is too deep, a new chair should be purchased that is not as deep for these workers. You should be able to place a fist between the front of the seat and the back of the workers legs. If you cannot do this, then the seat is too deep. Many new chairs available on the market today have different sized seat depths.

In the short term, an OBUS form could be placed on the back of the chair. This would result in worker sitting 2" further forward on the seat, thereby allowing for increased space between the chair and the back of the legs. It is essential though that the OBUS comes equipped with a Velcro lumbar pad that should be positioned in the small of the worker's back.

Armrests

Many chairs do not have armrests or are not height adjustable. For shorter female workers, armrests at the lowest setting can still be 1" too high. When armrests are too high, especially when at a fixed height (mostly with female workers) the worker will be forced to sit forward in their seat thereby placing additional strain on the lower back and their shoulders due to being elevated. Armrests should be height adjustable (Table 2).

Instead of purchasing a new chair, you may be able to adjust the armrest by lowering the fixed armrest. This may be accomplished by installing small wooden blocks under the armrests to bring them down in height. When adjusting the armrests keep in mind that the arm should just graze over the top of the armrest.



Casters (Wheels)
There are two types of casters on chairs (a hard caster and a soft caster). The type of flooring the chair will be placed on will determine the type of casters to be used.

Hard caster
A hard caster should be used on a soft surface such as carpeting.

Soft caster
A soft caster should be used on a hard surface. You should purchase rubber casters if used on a hard floor such as tiles or ceramics.

The casters on many chairs are of a hard material and have been placed upon a hard surface such as tile. This can lead to gradual moving away from the desk surface during the course of the workday due to lack of friction.

Plastic mats
The plastic mat on the hard tile floor serves no purpose as they are designed to protect carpets from wear and tear of the chair moving over the surface.

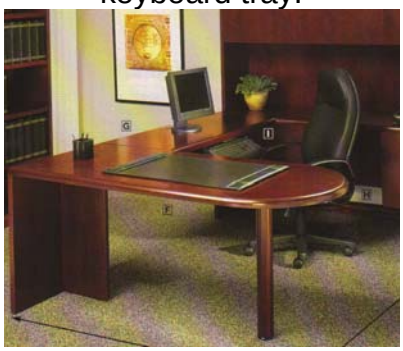
Seat Back
Many chairs do not come equipped with a lumbar support to help maintain the normal curvature of the spine when sitting. Each seat back should have a lumbar support that is height adjustable independent from the seat pan.

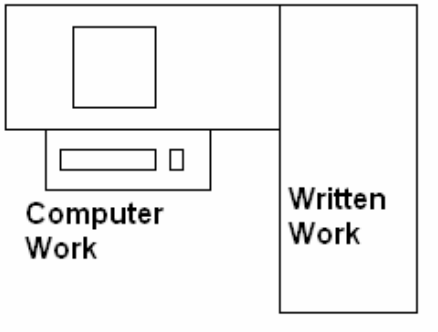
Desks
Attention should also be placed when acquiring desks, if not it could lead to a great deal of problems.

Curved Workstation
A curved workstation may be pleasing to the eye, however it does have its disadvantages. These desks often do not have enough room for both the keyboard and the mouse to be placed on the same tray due to the size of the curve. A keyboard tray should be a minimum of 65cm wide x 27 cm deep. In some instances when they do have enough room for the mouse and keyboard to be placed upon the tray, often the mouse is located under the lip of the desk and the worker will hit their hand when utilizing their mouse. Additionally, a large amount of desk space is lost due to the curve so writing areas become a concern.

L-shaped Workstation

The preferred desk is an L-shaped desk. This design allows for a separate writing and typing area and will accommodate the proper keyboard tray.





Footrests

Ideally the desk should be just below seated elbow height. This may not be possible for some workers due to their height. As a result, the worker will raise the height of their chair when writing thereby placing their feet on the legs of the chair. This should not occur as this posture reduces blood flow and nerve supply in the legs and increases strain on the lower back. A footrest should be provided for the writing surface allowing the worker to raise the height of their chair while keeping their feet in contact with a flat surface instead of on the legs of the chair. The footrest should **never** be placed under a height adjustable keyboard tray. This will result in the worker having to change the way they are sitting during the day. The worker will be required to raise their chair when writing and use the footrest, and then lower it again when typing. This actually has two benefits:

1. It forces the worker to change their posture during the day to prevent static postures
2. It helps to preserve the lift of the chair since it has a built in lubricating mechanism that is secreted on the cylinder when the seated height is altered.

Keyboard/Mouse Trays

Keyboard/mouse trays must be height adjustable so they can be placed just below seated elbow height. The dimension of a keyboard tray should be a **minimum of 65cm wide x 27 cm deep and ¾" thick.**

Care should also be taken when purchasing prefabricated keyboard trays. Some trays have a hard plastic lip that can apply pressure points to the base of the wrist thereby reducing blood flow and nerve supply to the hands. Others have slide out platforms for the mouse that are unsteady and the tray shakes when the worker uses the mouse.

A standard melamine shelf should be purchased from a local hardware store could be cut to 65cm wide x 27cm deep which is wide enough and deep enough for both the mouse and keyboard to be placed upon, while being sturdy enough for mouse use.

To ensure a tray is height adjustable it must have an articulating arm. Some desks come with one installed while others do not and you may have to pay extra. This can have the benefit of saving up to $500.00 depending on the company you deal with. The arm itself can be purchased from some companies for approximately $100.00.

When purchasing trays that come with the desk, ensure that they are height adjustable, do not have a hard plastic lip and meet the minimum dimension of 65cm wide x 27cm deep.

You should then purchase a wrist rest and mouse rest to promote neutral postures of the wrists or an elongated wrist rest that spans both the length of the keyboard and mouse.

Ergonomic Considerations for the Purchase of Monitors

Monitors should be placed so that the top of the screen is at the operator's eye level, (there are exceptions as noted in the next section on bifocals). If the screen is too low or too high, the muscles of the neck must work continuously to hold the head in a viewing position, which may result in fatigue and discomfort. In addition, the monitor should be located an arm's length from the worker to allow for proper viewing angles.

One of the first hurdles to overcome is what type of computer to purchase.

- Never purchase a desktop hard drive since people will often place the monitor on top of the hard drive resulting in the screen being too high. The hard drive should be placed on its side and moved out of the way or at least moved away. Tower hard drives are recommended since it prevents this issue from ever arising.

For standard monitor

If a monitor is too low:

- Place screen on a book or modular stand until the top of the screen is level with seated eye height

If a standard monitor is too high:

- If on a book or modular stand – remove until the top of the screen is level with seated eye height.
- If the screen is still too high remove the base of the monitor and then raise if necessary.

For flat screen monitor

- Purchase flat screens that are height adjustable

If the monitor is not height adjustable and is either too high or too low:

- Purchase a flat screen monitor arm to allow the screen to be positioned properly with the top of the screen level with seated eye height

If a worker wears bifocals

- A computer operator who wears bifocals may tilt the head back to view the monitor through the bottom, close-vision part of the glasses. If bifocals cause discomfort or awkward head positions, place the monitor so it is 1" ***below*** seated eye height either by removing the base of a standard monitor or purchase a flat screen monitor arm.

Document Holder

Computer work often involves entering information from source documents. These should be located beside the screen and in the same viewing plane. This reduces the size and amount of head and eye movements between the document and the screen and decreases the likelihood of muscular and visual fatigue. The best way to position documents correctly is to use an adjustable document holder. If you do not purchase a height adjustable document holder, placing a book underneath the holder can always elevate it. This also helps to reduce clutter on the desk.

Headsets

Increasingly, workers are required to use a keyboard while on the telephone. This often results in awkward head, neck and back postures with the telephone receiver cradled between the shoulder and head in an effort to leave both hands free. Workers required to use a computer while on the telephone for long periods tend to experience discomfort, particularly in the head and back. In such cases, headsets should be used.

If staff spend more than 30% of their day on the telephone then a headset should be provide to keep the neck in a neutral posture when talking on the telephone.

Laptops

When a laptop is being used in an office, it should only be used as a hard drive. An external mouse and keyboard should be provided as well as a proper desk equipped with a height adjustable keyboard and mouse tray. In addition, elevate the lap top monitor following previous recommendations for screen height (or purchase an external monitor).

Try Before You Buy

The premise behind standardization is that all employees will be using equipment that has been deemed both safe and adaptable to their body dimensions.

However, you should have an agreement with a supplier regarding having a trial period for equipment prior to purchasing.

Additional Information

For more information on office ergonomics please contact the Occupational Health Clinics for Ontario Workers Inc nearest you or visit our website at http://www.ohcow.on.ca .