

## **ergoform**

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### **ERGONOMIC PRINCIPLES:**

Ergonomics is one of the most inexact sciences and something that, on a day by day basis can be put largely down to commonsense.

There is a lot of mystery surrounding ergonomics but in effect, in so far as our daily lives are concerned there are some simple rules to being comfortable in an office chair.

The office chair is what more and more of us are spending more and more of our time sitting in and therefore it is vitally important to not only have a quality chair but, just as importantly, to know how to use it so as to gain the best possible health benefits from the chair.

In this section of our catalogue we make an attempt to put some of the basic principles of ergonomics, as it pertains to the office workstation area, into some sort of perspective.

In the following pages there are 3 main sections.

#### **Section 1: Ergonomic Principles.**

Concerned with some of the main general principles of ergonomics in the workplace, and the ergonomic reasoning behind the need for well designed ergonomic seating.

#### **Section 2: Adjustments.**

Concerned with chair adjustment mechanisms, which give the best possible avenue towards achieving the required "Dynamic" sitting needed for better long term health and wellbeing in the workplace.

#### **Section 3: Sitting in the Chair.**

Concerned with the best way to sit in and use our ergonomic chairs to enable you to get the best health benefits from your investment.

**SECTION 1:****ERGONOMIC PRINCIPLES****Ergonomics:**

The interaction between people, their tasks & their surroundings.

From a design & manufacturing perspective, the science of designing equipment or a workplace with the intent of minimizing operator fatigue or injury.

To fit the task to the person rather than trying to fit the person to the task.

Ergonomics pertains to all areas of life in which work or movement in relation to our surroundings is involved. eg; car / kitchen / workshop / OFFICE.

(The interaction between people, tasks & surroundings.)

In office design everything should be organised in order of frequency of use.

The things most often used within easy arms reach and from there round in an arc to form the "sitting reach zone."

For working long term in the same spot, sitting is the best option. Next to lying down sitting uses considerably less energy than any other posture. Sitting is better for the legs than standing in one spot for prolonged periods of time. When we stand our body has to be held in an upright position by means of static muscular effort. This subjects the muscles to excessive static stress and causes fatigue. It also impairs the return flow of the blood and contributes to typical complaints suffered in "standing jobs."

Even if next to lying down sitting is the posture which requires the least energy, it is still not necessarily completely healthy, as it involves little or no movement.

As well as the spine, lack of movement also affects the muscles. Static muscle activity can lead to insufficient supply of oxygen to the muscles and an increase of harmful substances such as lactic acid.

Incorrect posture physiologically leads to greater strain on muscles, joints and the blood supply, and therefore to premature fatigue, lower performance and increased risk of injury.

If we start from 100% efficiency, the drop in performance caused by a poorly conceived workplace and the subsequent energy needed to maintain a healthy posture can be up to 30%. Therefore we could be working at only 70% efficiency due to poor work place design.

There are many facets of workplace design. However, the chair is what the body is encased in and supported by all day and as such is the single most important facet of the work area.

The chair should allow for easy, frequent changes of body position during a working day.

The smallest alteration in body position can have a marked effect on pressure and stress points of joints, muscles and the skeletal system.

We spend up to 80,000 hours sitting during our working lives, and the time spent sitting at a desk keeps increasing. Studies have shown that nearly two-thirds of office workers sit incorrectly, so there is a very real need for ergonomically sound seating, but also for education in how to get the best support from the chair.

At ergoform we offer the service of training customers in the best use of our chairs.

Dynamic posture:

We can prevent the muscular tension involved in a static posture by adopting a “moving” or “dynamic” posture while supported in a good chair.

This means being able to move from the central axis to a slightly more forward or reclining position at will.

Change position reasonably frequently and aim for an angle of 90° or greater at knees, hips and elbows.

A good chair allows easy movement forward and backward, thus allowing muscles to contract, extend and relax.

Even a small alteration in the backrest angle of your chair will change the angles at hip, elbow and shoulder and also mean a probable change in the angle at knee and ankle as well, thereby giving some relief from a static position.

Alternating between sitting and standing at work is desirable, but as this is not possible in most workplaces it is important to get out of your chair and walk, at least briefly at regular intervals.

## SECTION 2:

### ADJUSTMENTS

Two of the mechanisms we use at **ergoform** can be particularly recommended to encourage easy “dynamic” sitting.

#### The #2 and #4 Mechanisms

Both of these mechanisms incorporate a tension adjustable ‘free’ mode to allow for differing weight / height of user.

The mechanism is a ‘load controlled’ system whereby the more you lean back the more the spring loading tightens, thereby exerting greater pressure and avoiding the feeling of ‘tipping over’ backwards. This means you can leave the chair in ‘free’ mode a great deal of the time.

The adjustment can be locked in any position. (“infinitely lockable”).

#### The # 2 Mechanism:

This is a “centre pivot” back tilt mechanism, one of the most ergonomically acceptable types of action available.

Due to the pivot point being forward under the seat, the backrest moves down as it goes back. This means the backrest remains in the same position in relation to the users spine; ie; The lumbar does not ride up and down your back as the backrest is moved forward and back.

#### The # 4 Mechanism;

This is a full “synchron” mechanism. The main difference from the 2 being that it has all the same features but the seat and back move together in a ratio of about 1 in 4. On the two the seat remains static.

The choice between the 2 or 4 mechanism is mainly one of personal preference as both are well engineered and ergonomically superior products.

We also use two other more standard mechanisms at **ergoform**:

#### The #1 Mechanism:

This is a standard “back tilt” mechanism, a good but much less sophisticated mechanism than the # 2. Can be put into “free mode” but does not have the centre pivot advantages and no tension adjustment. It makes a good chair as a price alternative.

#### The # 3 Mechanism:

This is a “seat and back tilt” mechanism, preferred by some people due to the ability to alter the seat angle independently from the back angle. Apart from the ability to alter the seat angle the mechanism is the same as the # 1. Again this is a good price alternative to the more sophisticated # 2 and # 4 mechanisms

### **SECTION 3:**

#### **SITTING IN THE CHAIR**

Adjust the height of the seat so there is no pressure on the underside of the thighs. Your feet should be flat on the floor and your thighs about horizontal. Should your desk still be too high and not height adjustable, use a large surface footstool to enable you to get into the correct position.

You need to get your hips back into the seat to enable your hips to get in “under” the lumbar support. To best achieve this, sit in the chair, move the backrest back and lock it, then move your hips back into the seat.

Having done that, and with your back against the backrest let it come forward again. At this stage set the tension resistance to suit your body Height / Weight.

When the back rest is almost upright lock it again and adjust the back height until it supports your lumbar area without pushing your hips forward or pushing into your back above your lumbar. This is normally about waist high. In this way you will succeed in gaining full support from the backrest.

Getting the hips back into the seat correctly is the single most vital issue in gaining the best support from the chair. The next most important issue is getting the lumbar to the correct height. This may take a little time to get exactly right.

When getting out of the chair, first take the backrest back a little. This means that when you come to sit in the chair again it is already set up for you to get your hips back into the seat.

With kind regards from the team at **ergoform**.