

September 2001

Total Bodycare because you're worth it!

- Presentation by Andy Field and Jamie Hall of Posturite.

Andy Field introduced his talk by saying that he would be looking at various items of equipment and some general adaptations that can be made in order to improve a workstation. Although his main focus would be on office environments, he added, the general principles are equally applicable to most work and domestic situations.

He went on to say that most of us were familiar with workplaces that had been designed or arranged with the requirements of the work task as the key criterion. This approach, however, relied on the workers to adapt what they were given in order to 'fit in'. Unfortunately, this did not allow for the fact that the human body was not infinitely adaptable, or that people were different and had their own limitations. In addition to the differences arising out of size and age, people often had different mental capabilities. As a result, wrists cannot tolerate excessive flexing motions or the back cannot withstand lifting heavy loads or turning movements, or the mind cope with the mental strain of reacting to stimuli.

Poorly designed workplaces and tasks can result in a variety of musculo-skeletal disorders, causing aches, pains, swellings and even mental stress. The commonly affected areas are the back, arms, shoulders and neck. In **1996/97**, for instance, there were 63,793 work-related back accidents/injuries and 452,300 work-related back illnesses. The highest incidences were in Nursing, Construction, Agriculture, Retail, Food and Water Industries. Altogether, back injury is the largest single cause of long term sick leave, with 60% of adults suffering annually and 30 % becoming chronic sufferers.

The problem, Andy said, was not just related to work, because what happened at home or leisure very often had a lasting effect which was felt at other times, and *vice versa*. A poor lifestyle often comprised lack of exercise, sagging mattresses, ill-fitting sofas/armchairs, or bad lifting or carrying methods. Many spinal problems can take years to develop.

The consequences of the potential for such mis-match between worker and workplace emphasises the need for careful design of equipment to fit the work to the worker – and not the other way round! Good design also had to be reinforced by good training and supervision of both manual and sedentary workers. Extended periods working in fixed positions, were common in all manual and sedentary work, but were greatly reduced when tasks and activities were varied.

The key factors influencing ergonomic risk are as follows: -

- **Repetition** It is generally accepted that the number of repetitive motions made per workday can aggravate musculo-skeletal disorders and that the cumulative effects can take years to show up.
- **Force** The exertion used to carry out an action is the over-riding factor, affecting the physical harm caused
- **Posture** Adopted awkward positions whilst working, particularly with twisting motions, place considerable stress on the spine. This can be reduced by good layout of the workstation and attention to good housekeeping by workers.
- **Distances** Excessive horizontal or vertical distances between the task and the worker are also undesirable and are a result of bad design. Work that is too far away creates a 'long lever' that transfers excessive force to the neck, arms and back.
- **Environment** Extremes of Heat, Cold, Relative Humidity, bad flooring and tight access, all these aggravate problems in the workplace.
- **Personal** The size, weight, strength, flexibility and fitness of the individual all affect coping with the task.

The secret of a good posture, Andy emphasised, was a question of balance.

A balanced posture is one which allows the different sections of the spine to adopt their normal curved shapes that help to spread load and give flexibility. If you have a sway back, flattened back, rounded shoulders or forward head, or if you spend long periods of time in stressful positions, your spine is not in its normal balance. This can either strain ligaments or cause excessive wear in portions such as discs.

Adopting this principle to the sitting position, Andy then showed diagrams of good and bad postures. In the first diagram, the left view shows the curves in the spine following their natural shape, with the dotted lines indicating the lines of force parallel to the back. In the right view, the curves are un-natural and the spine is unsupported in the lumbar region and the dotted lines are not aligned with the direction of force.

Diagram 1

Diagram 2

In the second diagram, Andy surprised everyone by saying that a '**slouch position**' could, in fact, be '**correct**' – as long as the chair **back** and **base** could be adjusted together, so that full support was provided. The balanced rocking pelvic tilt and the adjustable '**floating tilt**' chairs allow the user to release the whole seat and back into **free float**

Andy then went on to describe some of the chair features that enhanced its performance. It was important to have a gap of about 5cms. between the front of the seat and the back of the user's leg, so that circulation was not impaired. Arm rests which were adjustable for height not only support the arms but the shoulders, as well! Adjustable lumbar

supports were also obtainable as were high backs and head rests for occasional use. He added that it was advisable to use an 'L-shaped' workstation, so that the DSE monitor could be placed in the corner to increase the distance from the operator's eyes and provide more space in front of the keyboard. With this arrangement it was also better to have a **straight front edge** across the corner, instead of a '**wave-front**', to avoid clashing with the chair arms. On the subject of wrist rests, he said that they were very useful but warned to be careful with touch-typists whose keying actions were different to other users.

On the subject of arm support, he showed rotating arm rests for mouse operation and a desk-mounted "**Ergo Arm**" which took the total weight of the user's arm, as opposed to normal chair arms which only supported part of the weight.

Andy then showed a '**Contour Mouse**' which was slightly bigger than the normal designs and had a thumb grip for more control. He also showed a '**Mouse Trapper**' in which a conventional mouse action could be converted for remote operation to remove wrist flexion stresses.

Finally, Andy showed us a "**Lap Rest**" designed for use with lap-top computers where a desk was not available – obviously, this was only for occasional use!

Members' Questions

Mark Hoare of Birmingham University asked if Andy had any advice on the use of 'Swedish-type' kneeling chairs. Andy replied that these were quite popular but were not entirely suitable for an eight hour working day. The Secretary, **Andy Chappell**, added that it was important to address the whole of the operators task when assessing the use of these chairs. Where an operator's job involved several tasks located around the workstation, a significant benefit in reducing fatigue, it was important that good mobility was provided. This was best done by a chair with castors, whereas the knee chair hindered easy movement and could sometimes pose a hazard to fast rising.

Jamie Hall ended the presentation by outlining some of the Posturite Services, including on-site consultancy to match their products to customers' needs, and physiotherapy advice.

The Chairman thanked the speakers for their presentation and asked the members to show their appreciation in the traditional manner.