



MOVING & HANDLING OPERATIONS REGULATIONS, 1992

The Moving Handling Operations Regulations 1992 (MHO) have been introduced under the provisions of the Health and Safety at Work Act 1974 (HSW Act), to enable the UK to implement the requirements of European Directive 901269/EEC on the moving handling of loads. The Regulations, which came into force on 1 January 1993, seek to prevent injury from moving handling operations and revoke and replace all previous legislation concerned with the lifting and carrying of heavy weights

The Moving & Handling Operations Regulations, 1992 resulted from the Moving & Handling of Loads – European Directive of May 1990. A European Directive is a legal document obliging each member state to introduce legislation complying with the main aims of the Directive. The Intention is to harmonise standards of practice throughout the whole of the European Union

There are 8 Regulations in total that form the 1992 Regulations; the most applicable are Regulations 2, 4 & 5.

Regulation 2 (Definitions)

“..... any transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving thereof by hand or by bodily force...”

“A load is anything which is moveable e.g. inanimate objects, person or Animal”

Regulation 4 (The Employer)

(a) So far as reasonably practicable, **AVOID** the need for his employees to undertake any Moving Handling Operations at Work which involve a risk of their being injured

(b) Where it is not reasonably practicable to avoid the need for his employees to undertake any Moving Handling at Work which involves a risk of their being injured

- i. to make a suitable and sufficient **ASSESSMENT** of all such Moving & Handling Operations to be undertaken by them, having regard to the factors which are specified..... and considering the questions which are specified.....
- ii. to take appropriate steps to **REDUCE** the risk of injury to those employees arising out of their understanding any such Moving & Handling Operations to the lowest level reasonably practicable.
- iii. To take appropriate steps to provide any of those employees who are undertaking any such Moving & Handling Operations with general indications and, where it is reasonably practicable to do so, precise information on:-
 - a. *The weight of each load, and*
 - b. *The heaviest side of any load whose centre of gravity is not positioned centrally*



(c) Any Assessment such as is referred to in paragraph (b) i of this regulation shall be reviewed by the employer who made it if:-

- i. there is reason to suspect that it is no longer valid, or
- ii. there has been significant change in the Moving & Handling Operations to which it relates;

and where as a result of any such **REVIEW** changes to an assessment are required, the relevant employer shall make them.

Regulation 5 (The Employee)

(a) Each employee while at work shall make a full and proper use of any system of work provided for his use by his employer in compliance with Regulation 4.

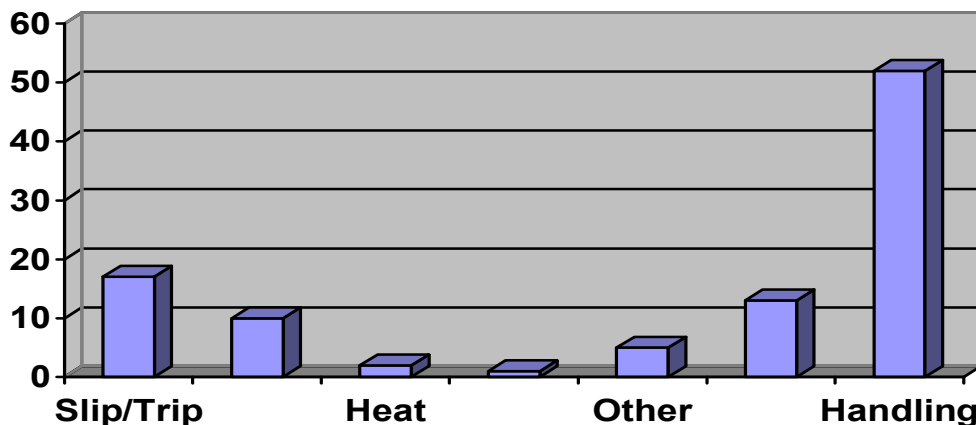
Regulation 4 of the 'Moving & Handling Operations Regulations, 1992' requires employers to make a suitable and sufficient assessment of any hazardous operations that cannot be avoided, also these assessments should be reviewed as mentioned above. The assessment requires an Ergonomic approach to be adopted.....(Fitting the job to the person, rather than the person to the job). The Ergonomic approach, therefore, looks at Moving & Handling as a whole, taking into account four key main factors:-

- 1. The Nature of the **TASK**
- 2. The **INDIVIDUAL CAPABILITY**
- 3. The **LOAD**
- 4. The working **ENVIRONMENT**

The responsibility of Risk Assessments also falls onto the Employee's who have too adopt a Dynamic Approach (On the spot Risk Assessment) before performing any kind of Moving & Handling Operation, using the same above key factors.

Statistics

Percentage of >3 day injuries to employees by kind of accident in the NHS 2001/2





Over the last 25 years - 1.5 Million working days
have been lost due to back pain costing the NHS
£70 Million

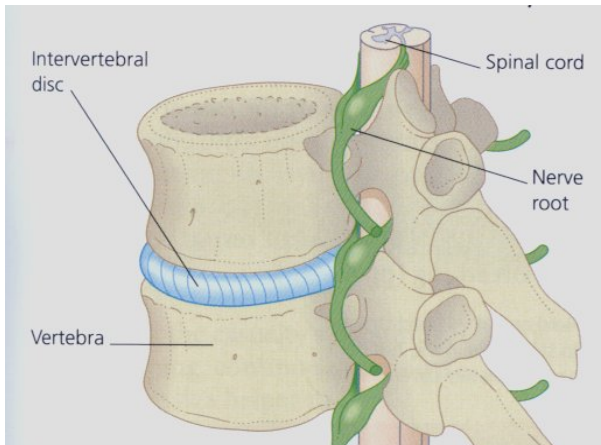


The Normal Spine

The Spine or vertebral column is made up of 33 vertebrae of which 24 are separated by intervertebral discs of cartilage.

The spine is made up of:-

- a. **7 Cervical**
- b. **12 Thoracic**
- c. **5 Lumbar**
- d. **5 Sacrum**
- e. **4 Coccyx**



Cervical Vertebrae

Thoracic Vertebrae

Lumbar Vertebrae

Sacrum

Coccyx



Facet Joints link the vertebrae together and limit its movement

Intervertebral Discs separate 24 vertebrae and act as shock absorbers. They allow free movement

Muscles support the spine in the upright position, produce and control its movement

Ligaments hold the bones together and add to the stability of the spine

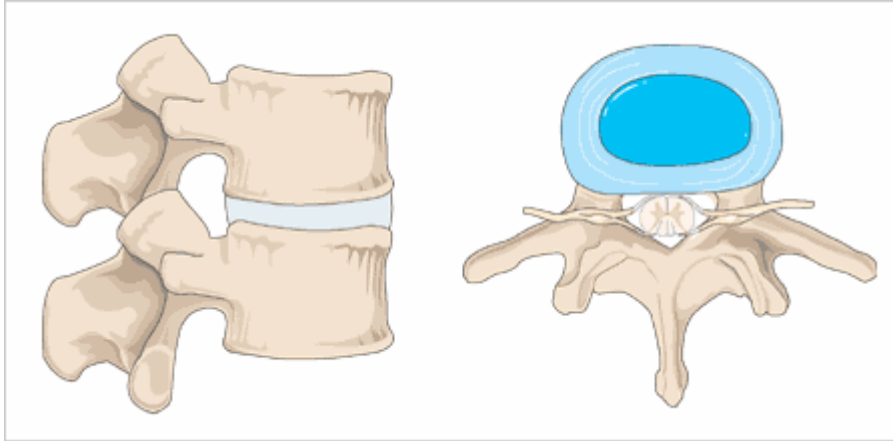
The spinal cord passes down the middle of the spinal column in the spinal canal. It is therefore protected by the vertebrae

Spinal Nerves – 31 pairs that branch off at each level of the vertebral column and carry both sensory and motor nerve impulses to and from the various body structures

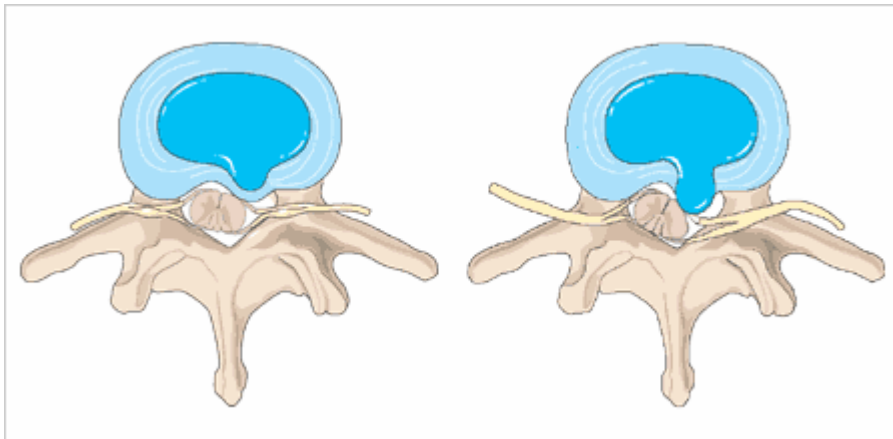


The Intervertebral Disc

The human spine is made up of individual vertebrae, or units of bone, that are stacked on top of each other. Intervertebral discs sit between these units of bone, acting as shock absorbers – they are made up of a hard, outer layer (the *annulus fibrosus*) and a soft, inner core (the *nucleus pulposus*):



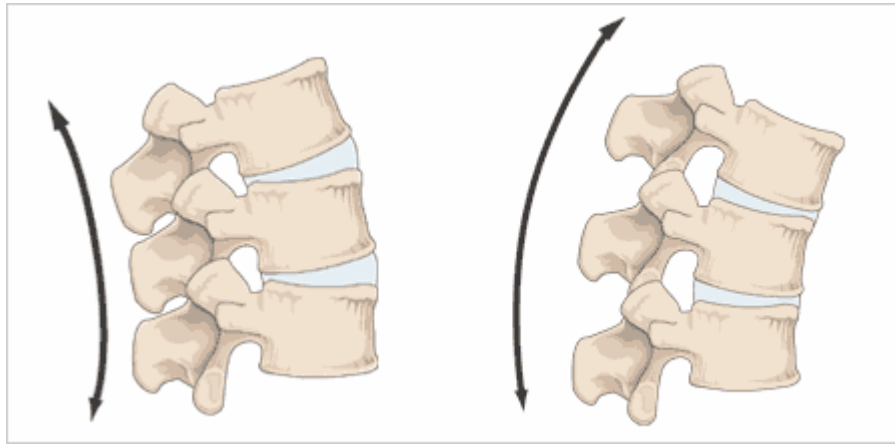
If the spine becomes compressed for any reason, the pressure on one (or more) of the discs is increased. If the pressure becomes too great, the disc will start to bulge; eventually, it may even burst – if this happens, the outer layer will rupture and the inner core spurts out (a condition referred to as a complete, herniated disc):



The pain associated with either condition is usually severe. The outer layer of the disc is well supplied with nerves and, as a result, pain is often caused (without nerve root compression) by mechanical distension, or stretching, of the outer wall. In addition to this, a bulging or herniated disc will often exert pressure on the nerves that branch off the spinal column, causing pain. Herniated discs are usually more painful, because the ruptured, inner core spills out into the surrounding area, causing more problems.

At this stage, it is important to be clear about terminology. The terms bulging, and herniated, discs are clinical terms that accurately describe certain aspects of disc pathology. Slipped disc is a generic, lay term that may refer to *either* of the two previous conditions (please note, however, that the term 'slipped' is incorrect – this gives the impression that the entire disc slips, or moves sideways – this does *not* happen).

The discs that separate the vertebrae are designed to be flexible – they need to accommodate the spine when it moves in several different directions. For example, when we bend over (either backwards or forwards) the discs are squashed at one end, and enlarged at the other:



The discs are uniquely equipped to handle this movement – the inner core is soft, and is designed to move within the disc, transferring from one side to the other (and back) as the spine moves in various directions.

So, the discs are obviously designed to handle compression – the question is, how much? If too much pressure is applied, both the inner and outer layers will deform, without returning to the centre of the disc; that is, the disc starts to bulge. If the pressure isn't reduced (or, worse still, if it's increased) the disc will continue to bulge; over time, the structure weakens and, eventually, the outer layer will split – either partially (in which case the inner core remains trapped) or completely, in which case a hernia forms.

In theory, a herniated disc can occur anywhere in the spine. However, in practice, the vast majority of all hernias (95%) occur in the lumbar spine (the lower back), where the discs are subject to the highest level of compression.

The remaining hernias tend to form in the cervical spine (the neck), despite the fact that the intervertebral discs in this region are subject to *less* compression than discs in the thoracic spine (mid-upper back) – this is because the range of movement in the neck is far greater than in the mid-to-upper back and, as a result, the discs in the cervical spine are subject to far more wear-and-tear.

At a basic anatomical level, the compression that leads to a herniated disc is caused by compression of the spine; in turn, this is caused, by compression of the facet joints that lock the vertebrae together.

Common Causes of Back Pain

80 % of Adults experience some form of back pain, which is often to blame on one specific incident, but this is rarely the case. It is however the result of cumulative affects of five major factors:-

1. **Poor Posture** – how we sit, stand or move
2. **Faulty Body Mechanics** – how we lift, lower, push, pull and move objects
3. **Stressful Living and Working Habits** – staying in one position for too long, not relaxing
4. **Loss of Flexibility** – becoming stiff and unable to utilise full range of body movement
5. **Poor physical Condition** – Losing the strength and endurance necessary to perform physical tasks without strain



**PREVENTION
IS
BETTER
THAN
A
CURE**

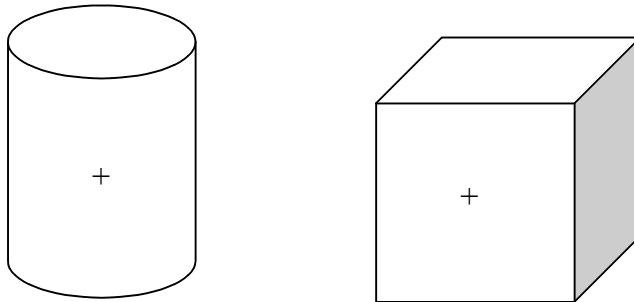


INTRODUCTION TO THE PRINCIPLES OF BIOMECHANICS

Biomechanics is the study of how the human moves and the effects that outside influences have on the motion of the body. The human body gets to move by the action of muscles acting on the skeletal system. When a muscle contracts it produces a force. The force in turn pulls on the bone causing the limb to move, rotating about a joint. The bone, muscle and joint system can be modelled as a lever system. Almost all of unassisted human movement is generated in this way.

Principle 1 (Centre of Gravity)

Everything has a centre of gravity, indicated by the crosses on the diagrams below.



This is the point where the total body mass is concentrated. With uniform objects such as boxes and cylinders, the centre of gravity will always be in the middle.

However unlike boxes and cylinders, the Human Body, alters its dimensions at will, therefore the centre of gravity will change, sometimes moving outside the physical body.

In the upright position, the centre of gravity lies within the pelvis.

In the recumbent position the centre of gravity again lies within the pelvis.

In the sitting position, the centre of gravity is outside the physical body.

The further the centre of gravity is away from the body, the greater the effort required to keep the body stable. By lowering our centre of gravity by bending our knees slightly makes us humans become more stable.

Standing a from a sitting position can be made easier by first bringing ourselves or our patient closer to our / their centre of gravity, before standing up.

Principle 2 (Base of Support)

The base of support in humans consists of feet and the area between. The line of gravity is the vertical direction down to the floor from the centre of gravity. To remain stable it is necessary to keep the line of gravity within the base of support.

Humans are more stable with their feet shoulder width apart and knees slightly bent – this will widen the base of support and lower the centre of gravity.



Principle 3 (Avoid Tension – Short Levers)

As the centre of gravity moves forward by leaning forward our bodies counterbalance this by using the internal muscles & ligaments in the back to prevent us from falling over – thus we have tension applied which increases the risk of injury and makes us unstable. Our spine is naturally curved which gives it its strength and abilities. When performing any kind of moving handling operation we should adopt a relaxed spine, as well as short levers.

Keeping the load close to the body will:

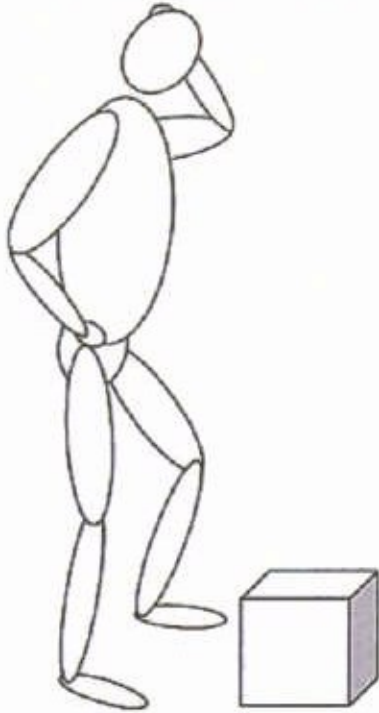
- **Reduce tension**
- **Reduce fatigue**
- **Reduce Injury**
- **Create more stability**
- **Create efficient movement**

APPLICATION OF BIOMECHANICS TO INANIMATE OBJECTS

- Think before you lift
- Feet, shoulder width apart with leading foot forward
- Knees bent, but not kneeling
- Hands level with waist, maintaining a secure grip
- Back, relaxed maintaining its natural curve
- Shoulders, level and inline with hips
- Arms, within legs
- Head raised, chin in
- Load close to your body
- Change direction with your feet, do not twist or turn your body



The Base Lift Technique



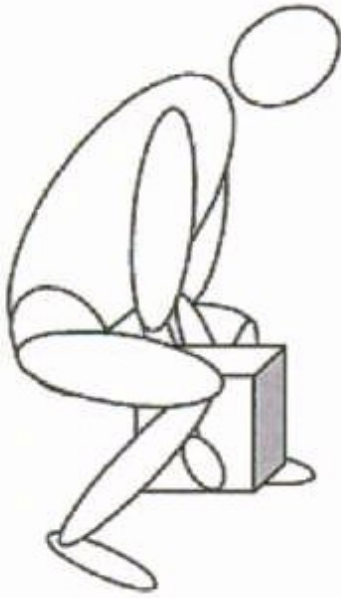
THINK BEFORE YOU LIFT

Where are you going? Consider your route. Make sure the task can be performed as safely as possible. Run through the 'ELITE' reminder.



FEET

Place feet apart, ensuring you are in a stable, balanced position - leading foot forward.



KNEES - bent but not kneeling.

HANDS - level with waist,
maintaining a secure grip.

BACK - maintaining its natural
curve.

SHOULDERS - level and in line with
hips.

ARMS - within legs.



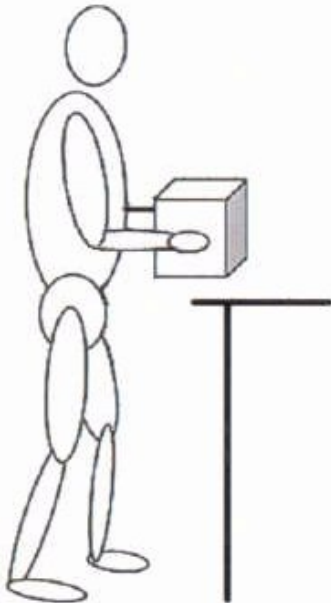
HEAD

Lead with your head, raising your
body and lifting the load smoothly.



BODY

Keep load as close to your body as possible. Use your feet to change direction - do not twist or turn your body.



THE END

Place load down close to your body. Manoeuvre the load once it is down.