

The Spine

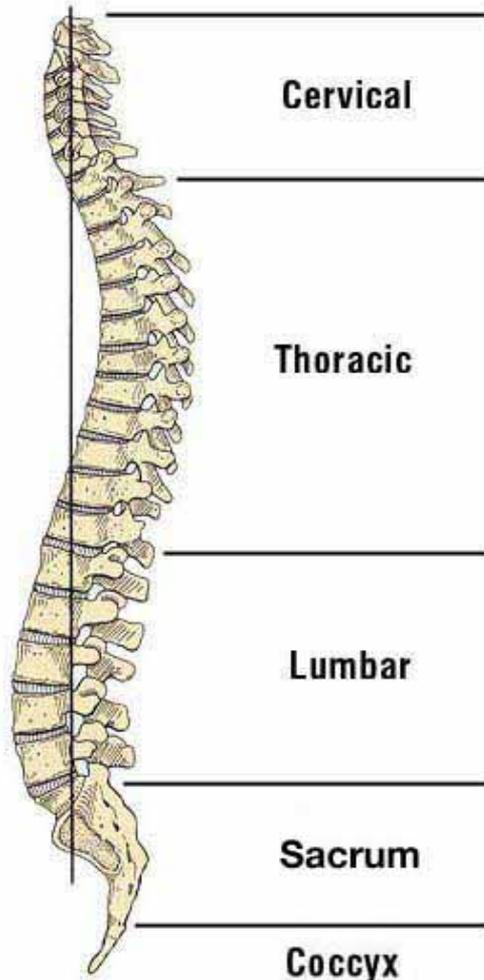
Physiotherapy advice and management

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Catherine Dimmer

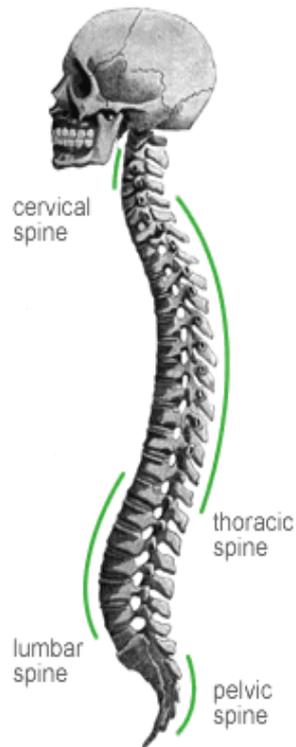
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General Anatomy



- Spinal anatomy is a remarkable combination of strong bones, flexible ligaments and tendons, large muscles and highly sensitive nerves. It is designed to be incredibly strong, protecting the highly sensitive nerve roots, yet highly flexible, providing for mobility on many different planes.

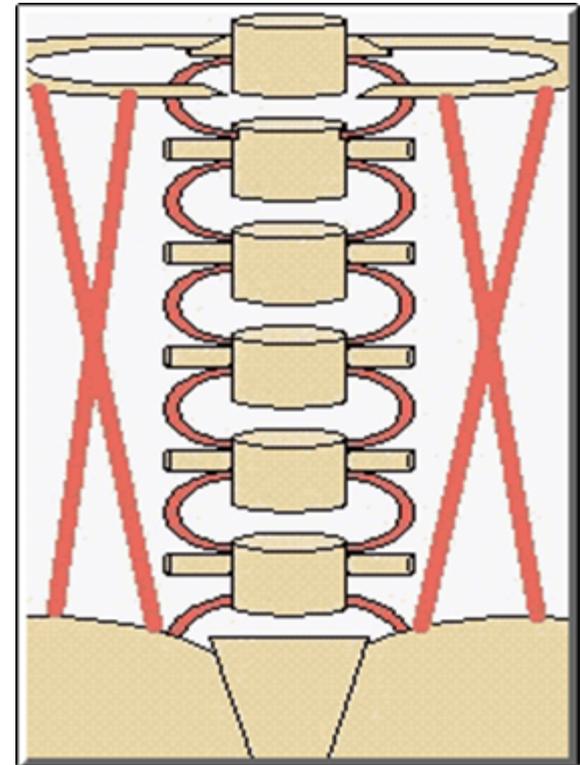
Spine Neutral



- Neutral position for the spine is that in which the spine retains its natural anatomical curves
- Cushions spine from too much stress and strain

Neutral Spine Supporting Structures

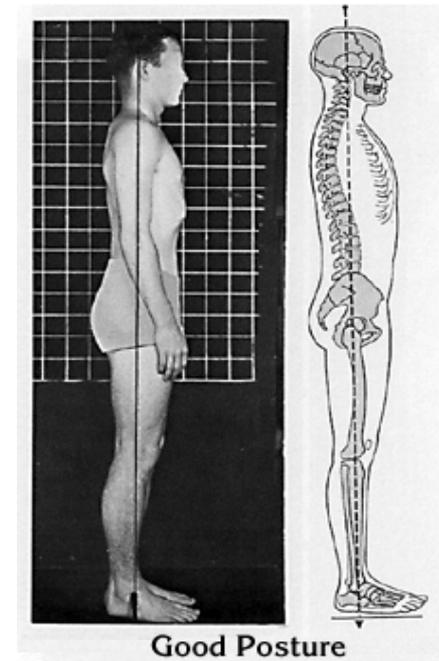
- Abdominal and back muscles act like guide wires supporting mast of ship
- Controlling pelvic tilt helps to balance spine



Posture

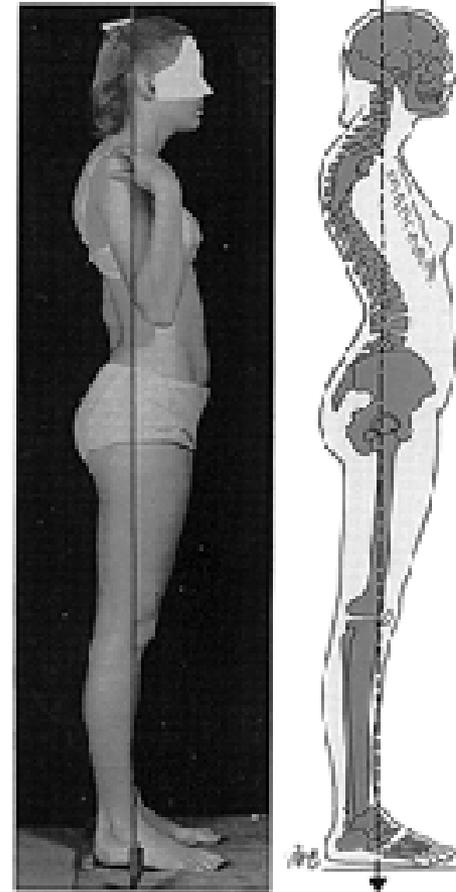
- Ideal vertebral alignment
- Least strain on supporting muscles and ligaments

- 1. Flat back
- 2. Sway back
- 3. Kyphosis-lordosis



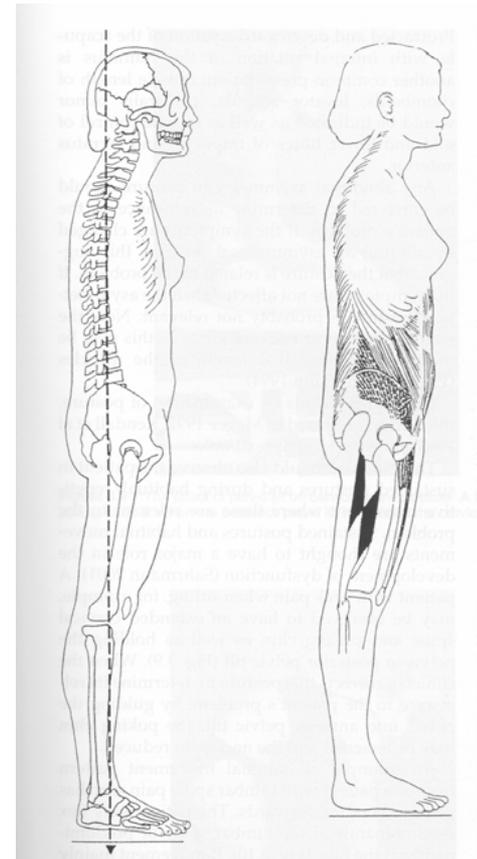
Kyphosis-Lordosis

- Pelvis tilted anteriorly
- Hip relatively flexed
- Increased lumbar lordosis
- Increased thoracic kyphosis



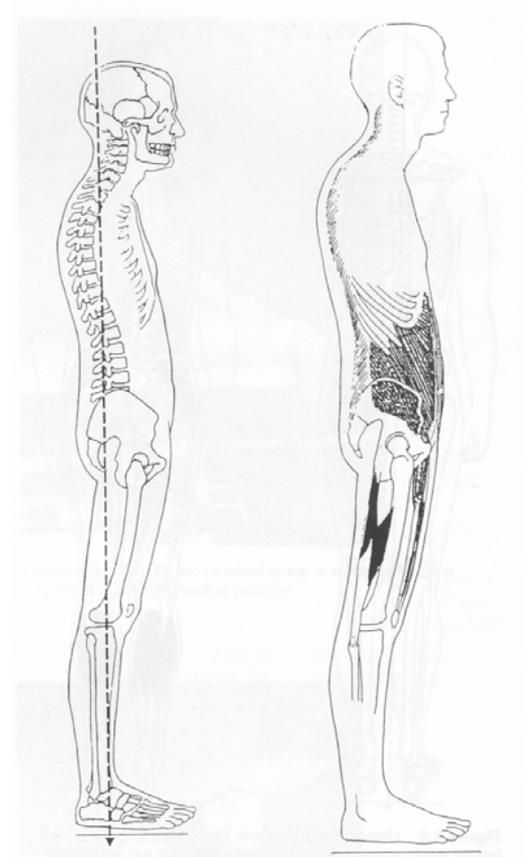
Flat Back

- Lumbar lordosis flattened
- Pelvis is neutral / posterior tilt
- Hip relatively extended
- Line of gravity passes posterior to hip



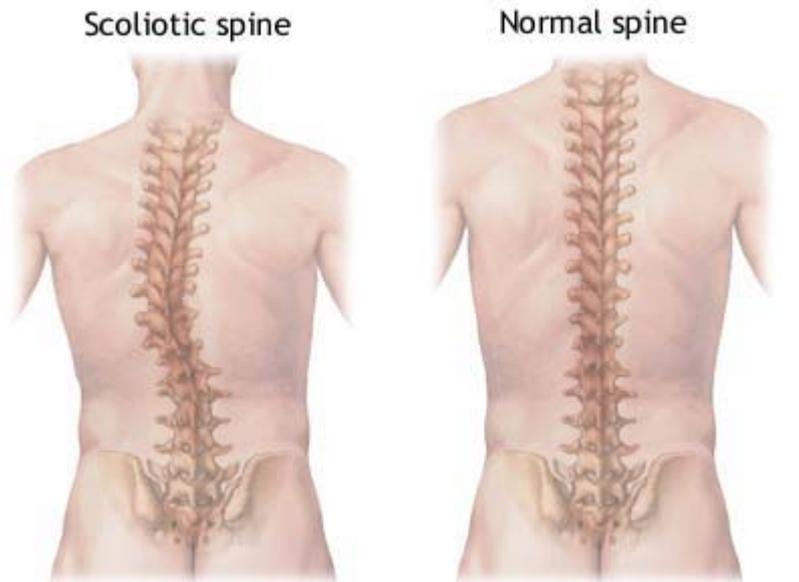
Sway Back

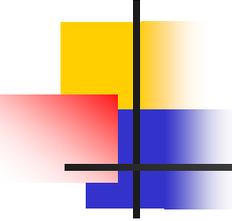
- Forward sway of pelvis
- Line of gravity posterior to hip
- Relative hip extension
- Thoracic kyphosis increased in length



Scoliosis

- Sideways curvature of the thoracic spine.



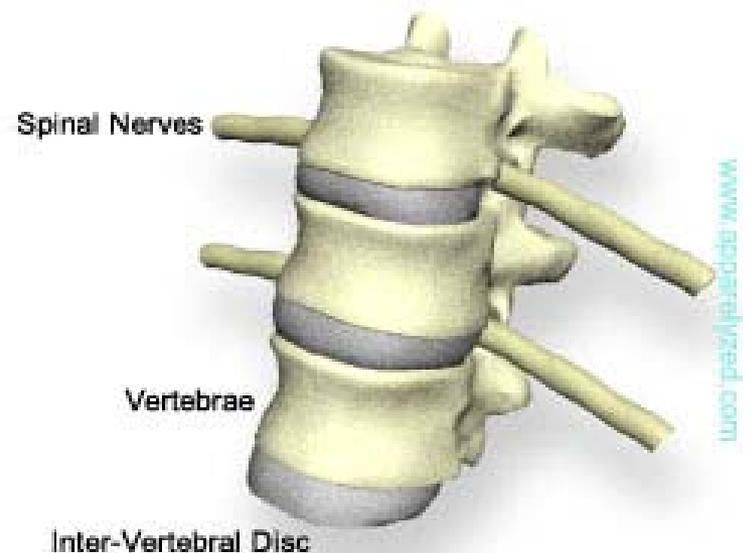


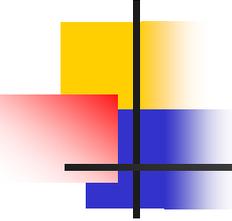
Spinal Movements

- Flexion
 - Extension
 - Right side flexion
 - Left side flexion
 - Rotation to the right
 - Rotation to the left

Sources of Lower Back Pain

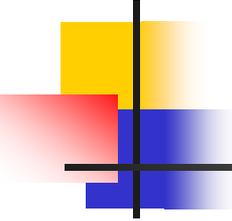
- The nerves that innervate the spine may be irritated
- The large paired back muscles (erector spinae) may be strained
- The bones, ligaments or joints themselves may be injured
- The disc space itself can be a source of pain





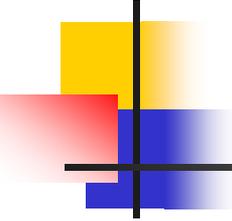
Types of Lower Back Pain

1. Simple Lower Back Pain
2. Nerve irritation
3. Serious spinal pathology.



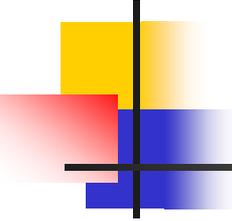
Lumbar Spine Stability

- Research has shown that the deep stabilising muscles weaken with each episode of LBP and that recovery only occurs with specific exercises and spinal movements.



Muscles prone to weakening with lower back pain

- Transversus abdominus
- Internal oblique
- External oblique
- Gluts
- Iliopsoas
- Deep lumbar multifidus



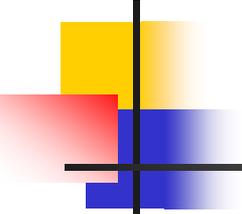
Treatment modalities

- Mobilisations/
Manipulation
- Exercises
- Electrotherapy
- Advice
- Prevention

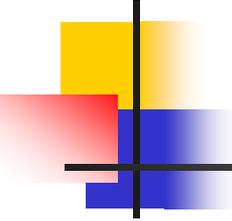
Heat...

- Heat to area to relax any spasm/stiffness.
- Reduces pain



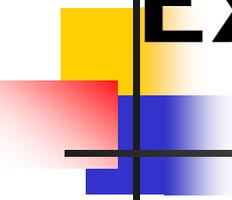
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- Physiotherapists play a very important role in giving advice on self-help, management and general exercises





Advice to Patients...

- Continue with normal activities as much as possible within limits of pain
- As a rule, don't do anything that causes a lot of pain - some discomfort when you are trying to keep active.
- Setting a new goal each day may be a good idea. For example, walking around the house on one day, a walk to the shops the next, etc.
- In the past, advice had been to rest until the pain eases. It is now known that this was wrong.
- The patient is likely to recover more quickly and are less likely to develop chronic (persistent) back pain if they keep active, rather than resting.
- Also, sleep in the most naturally comfortable position on whatever is the most comfortable surface.

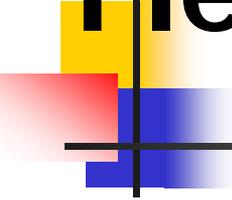


Exercises Post LBP: Acute

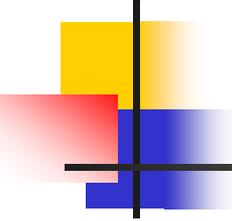
Exercise is important during all stages of recovery

1. In the acute phase specific positioning exercises are used to relax the spine and relieve pain
2. Gentle mobility exercises are then introduced which ease pain by providing nutrition and lubrication to the injured area

Flexibility Exercises for LBP



- Exercises which ↑ flexibility help the spine to maintain its neutral position
- Tight muscles can cause an imbalance in spinal movements making injury more likely
- Flexibility exercises for the trunk and lower limbs help to establish safe patterns of movement

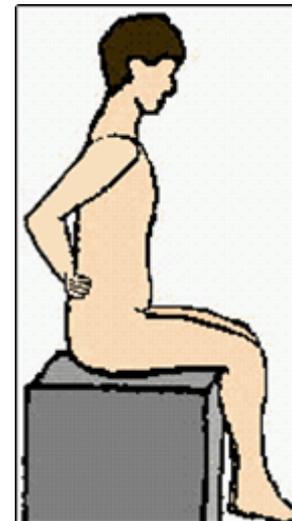


Strengthening Exercises for LBP

- Well trained abs, back and hip muscles can bring the spine into a neutral position and keep it there forming a natural corset
- Simple exs to do at home that don't require expensive equipment

Testing & Retraining of Tr. Ab.

- Start in 'spine neutral' on all-4's (1)
- Allow stomach to sag down with G
- Gently pull in stomach and move belly button towards spine
- Low-effort contraction
- Do not contract '6 pack'
- Do not hold breath or suck tummy in
- Hold initially for 4 secs
- Progress in sitting and standing (2 & 3)



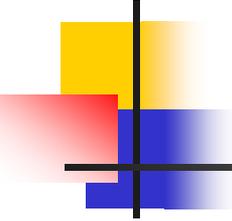
Exercises



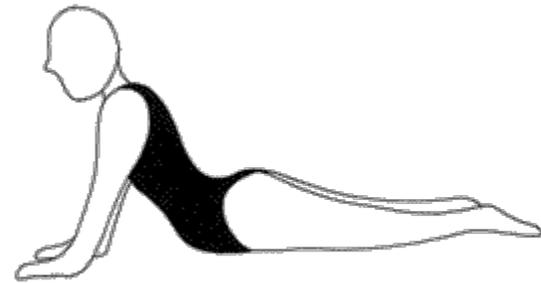
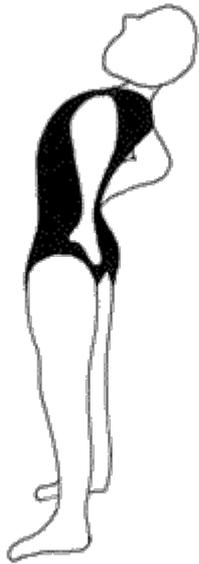
- 1. Pulling in tummy muscles.



- 2. Hollowing and humping Spine

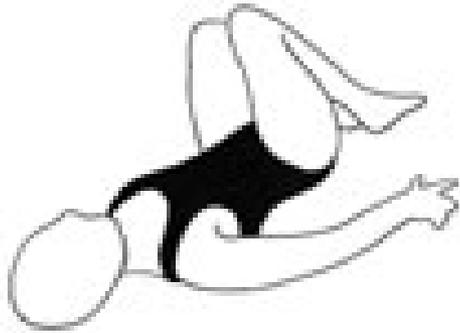


3. Spinal extensions

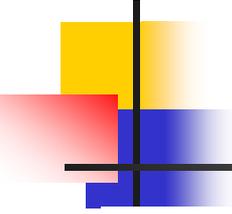


Back care exercises continued..

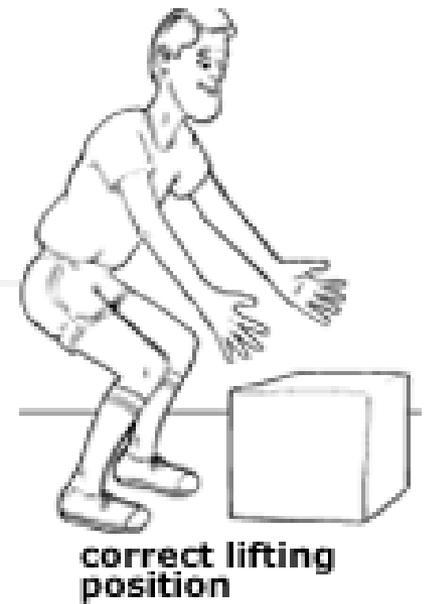
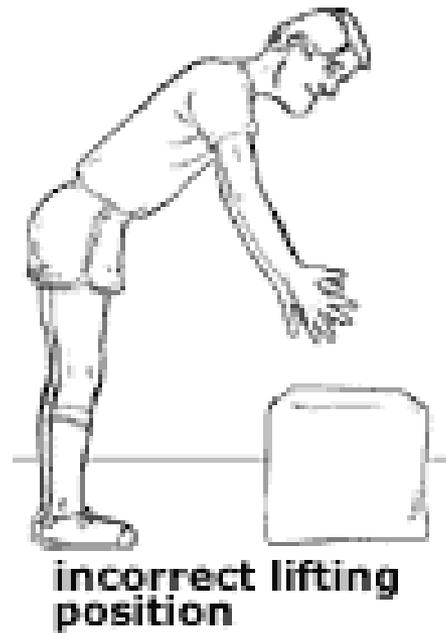
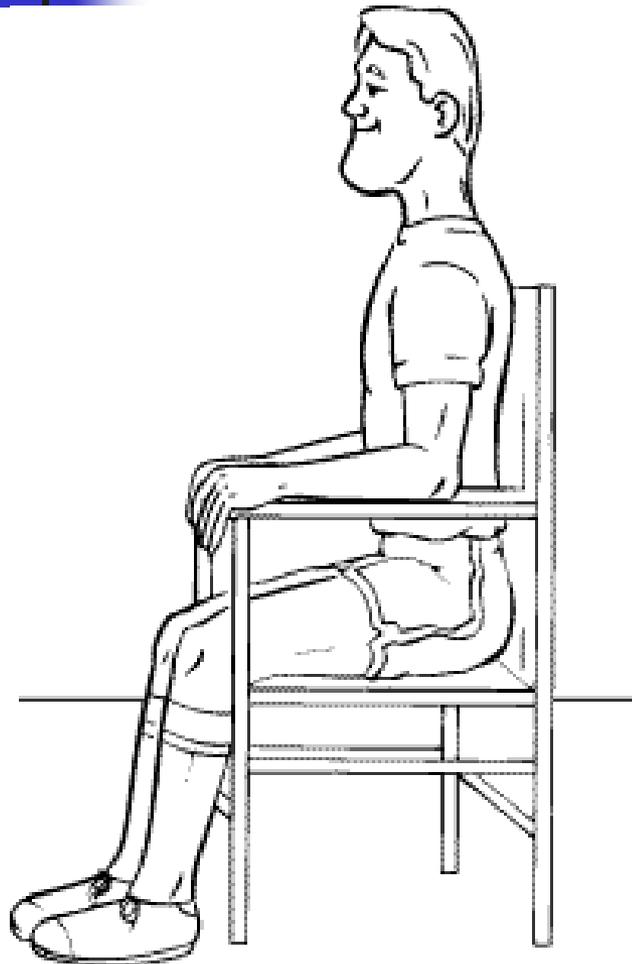
- 4.Knee Rolling

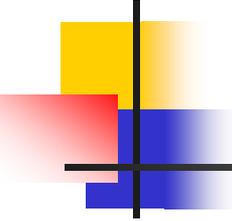


- Whilst specific exercises are good for strengthen the abdominals... its important the pt has an active lifestyle and should be stay active generally- eg walking/swimming,



Correct Posture's





Key Points

- Back pain responds to movement.
- Encourage gentle mobility
- Apply heat to painful area/ensure pain relief
- Think Posture
- Abdominal exercises to strengthen
- Rom exercises to ease pain.