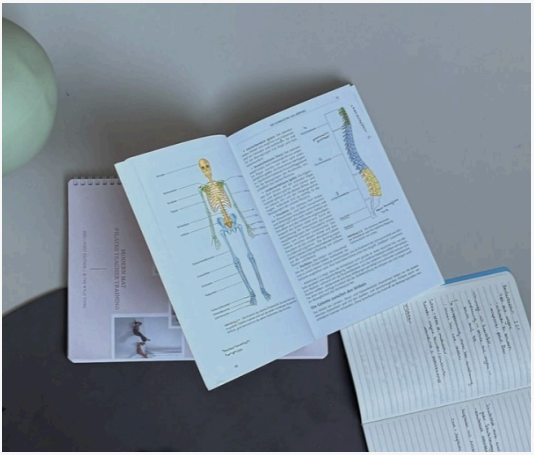
Understanding spinal movement in Pilates



A SCIENCE-INFORMED GUIDE TO SPINAL MOBILITY, STABILITY & MOVEMENT QUALITY

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Your spine was esigned to move

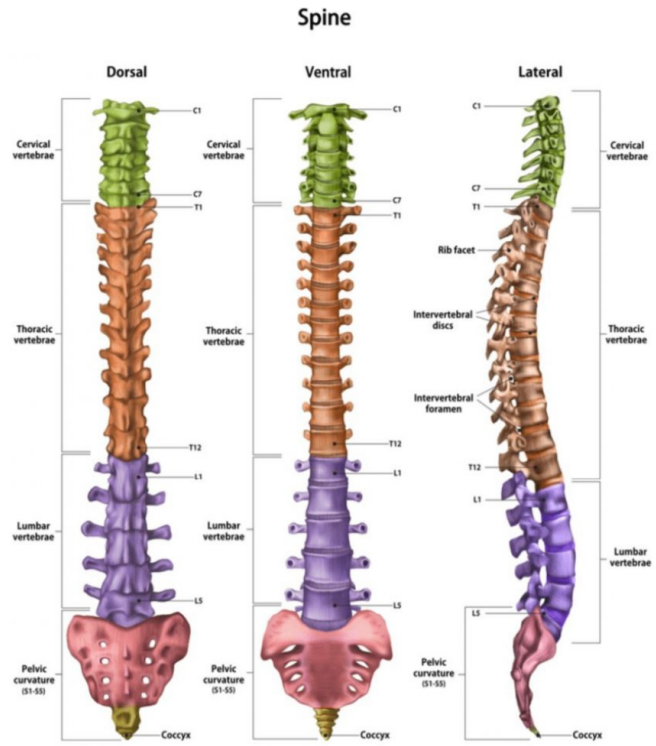
One of the misconceptions in fitness and rehabilitation is that the spine is fragile and must always remain “neutral.”
In reality, the spine is a highly adaptable structure designed to bend, rotate and respond to movement variability.

Pilates can help improve: spinal mobility, movement awareness, coordination, breathing mechanics, load tolerance. Research suggests that movement itself, rather than rigid protection, is an important factor in spinal health.

<u>The 4 Main Regions</u>

Cervical Spine

- Designed for mobility: large rotational capacity and mobility in **all planes of motion**
- Supports head movement



Thoracic Spine

- Attached to the rib cage: less flexibility
- Important for **rotation** and extension, natural kyphosis

Lumbar Spine

- Naturally moves into **flexion and extension**
- Natural lordosis

Sacrum & Pelvis

- Connect the spine to the lower body
- Essential for **stability**

The 6 Fundamental Spinal Movements

1. Flexion
Forward bending of the spine.
Pilates examples: Roll Up, Spine Stretch Forward
Main muscles: Rectus abdominis, Obliques, Hip flexors
Spinal flexion is a normal human movement, not inherently dangerous.

2. Extension
Backward movement of the spine.
Pilates examples: Swan, Breaststroke

Benefits: posterior chain activation, load sharing through the spine

3. Rotation
= Turning
Pilates examples: Spine Twist, Criss Cross

Important for: thoracic mobility

4. Lateral Flexion
Side bending.
Pilates examples: Mermaid, Side Bend

Supports: trunk coordination, asymmetrical load tolerance

5. Axial Elongation
Lengthening through the spine.
Pilates cue: "Grow taller through the crown of the head."
This may improve: postural awareness

6. Stabilization
The spine also needs controlled stiffness when required.

Stability depends on: muscular coordination, breathing, task demands

Myth vs Reality
Let's fact-check!

"A neutral spine is always safest."

Reality: The spine is designed to move through many positions.
No single posture has been proven universally correct.

"Flexion is bad for the back."

Reality: Controlled flexion is part of normal spinal function. Fear of spinal movement can increase movement avoidance.

"Low back pain means your core is weak."

Reality: Research does not consistently show that people with back pain have weak cores. In some cases, people with chronic pain actually over-brace trunk muscles.

mobility vs stability - healthy movement requires both

Too much stiffness: may reduce movement adaptability
Too much mobility without control: may reduce force management efficiency

Pilates aims to develop: controlled movement variability, coordination, load tolerance.

Research shows that people with persistent low back pain often move with increased stiffness during daily activities!

The Role of the Diaphragm
Breathing influences: rib cage motion and trunk pressure regulation. _The diaphragm works together with: pelvic floor, abdominal wall, deep spinal muscles

In Pilates, breathing can improve: movement timing and body awareness

Pilates Exercises for Spinal Health

Cat Cow

- Focus on spinal articulation and coordination

Swan

- Focus on thoracic extension and posterior chain activation

Spine Twist

- Focus on thoracic rotation and rib cage mobility

Roll Down

- Focus on controlled flexion and segmental awareness

Mermaid

- Focus on lateral mobility

key takeaways

Your spine benefits from:
movement variability
gradual loading
confidence in movement
mobility AND stability

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