

Hyperkhyphosis

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Hyperkyphosis – Definition

- **Hyperkyphosis** is an **increase in the normal thoracic kyphotic curve**.
- Common postural features include:
 - **Rounded upper back**
 - **Protracted (rounded) scapulae**
 - **Head-forward posture (forward head position)**

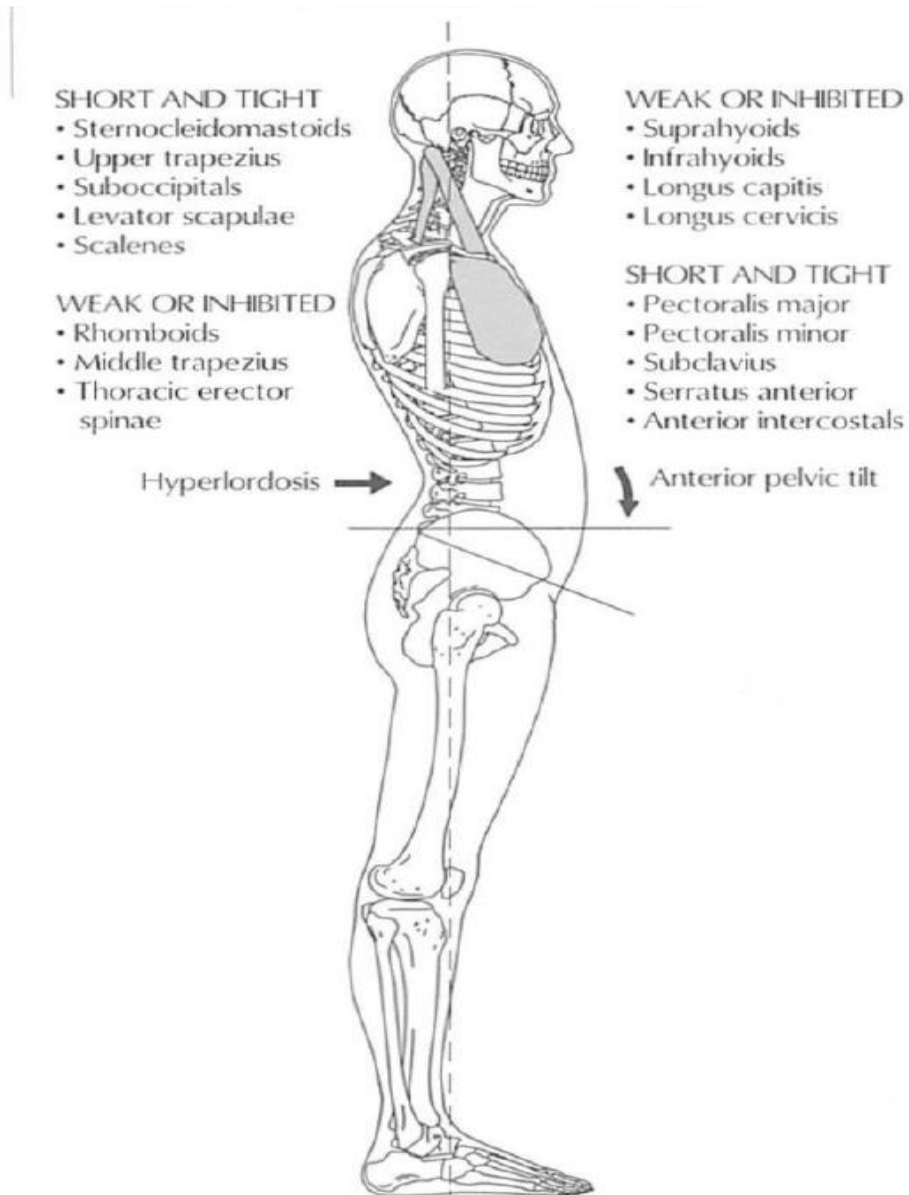
Types of Hyperkyphosis

Functional (Postural) Hyperkyphosis

- Caused primarily by **poor posture and muscle imbalance**.
- Curve can be **voluntarily corrected or reversed** with proper positioning.
- Responds well to:
 - Passive soft tissue stretching
 - Joint mobilization
 - Strengthening exercises
- Usually reversible with appropriate treatment.

Structural Hyperkyphosis

- Caused by **fixed bony or structural changes**.
- Cannot be corrected by:
 - Voluntary effort
 - Positional changes
- Requires long-term management rather than correction.



Tight and weak muscles in hyperkyphosis, illustrating shoulder-crossed syndrome and head-forward posture; there is an accompanying hyperlordosis and anterior pelvic tilt.

Muscle Imbalance – Shoulder-Crossed Syndrome

- **Short & Tight Muscles**
- **Chest Muscles**
 - Pectoralis major
 - Pectoralis minor
 - Subclavius
 - Serratus anterior
 - Anterior intercostals
- **Shoulder Internal Rotation**
 - Subscapularis
- **Depressed Shoulders**
 - Latissimus dorsi
- **Head-Forward Posture**
 - Levator scapulae
 - Upper trapezius
 - Sternocleidomastoid (SCM)
 - Scalenes
 - Suboccipital muscles

- **Clinical Note:** These muscles respond to prolonged poor posture and stress by becoming shortened and overactive.

Stretched & Weak Muscles in Hyperkyphosis

- **Weak, Lengthened (Phasic) Muscles**

- Rhomboids
- Middle trapezius

Characteristics

- Easily fatigued
- Reduced scapular retraction
- Poor postural endurance

Head-Forward Posture: Weak Deep Neck Muscles

- Longus cervicis
- Longus capitis
- Suprahyoid muscles
- Infrahyoid muscles

- **Adaptively Lengthened Postural Muscles**

- Thoracic erector spinae
- Lower cervical extensors

- **Clinical Importance**

- Reduced thoracic extension
- Difficulty maintaining upright posture

Hyperkyphosis Combined with Hyperlordosis

- **Weak & Lengthened Muscles**
- Abdominal muscles
- **Short & Tight Muscles**
- Hip flexors
- Lumbar erector spinae
- **Resulting Postural Changes**
- Increased thoracic kyphosis
- Increased lumbar lordosis
- Forward head posture
- Reduced spinal stability

Pathologies that may lead to hyperkyphosis:

Osteoporosis is a metabolic bone disease in which bone density decreases, making bones weak and fragile.

How it Causes Hyperkyphosis

- Vertebral bodies become weak.
- Compression fractures occur, especially in the thoracic spine.
- The front (anterior) portion of the vertebra collapses.
- This creates **vertebral wedging**, increasing the thoracic kyphotic curve.

Clinical Features

- Rounded upper back ("Dowager's hump")
- Loss of height
- Chronic thoracic pain
- Reduced spinal mobility
- Increased risk of fractures

Clinical Notes:

- Avoid deep pressure over vertebrae.
- No aggressive spinal mobilization.
- Gentle myofascial work and postural education are appropriate.
- Encourage physician-guided exercise programs.

Ankylosing Spondylitis

It is a chronic inflammatory disease that mainly affects the spine and sacroiliac joints.

How it Causes Hyperkyphosis

- Inflammation causes:
- Ligaments to calcify
- Vertebrae to fuse together
- Loss of spinal flexibility
- Eventually the spine becomes fixed in a flexed (kyphotic) posture.

Clinical Features

- Morning stiffness
- Chronic back pain
- Reduced chest expansion
- Decreased spinal mobility
- Forward-stooped posture

Clinical Note;

- Avoid forceful stretching.
- Gentle mobility techniques only.
- Breathing exercises may help maintain rib cage mobility.
- Coordinate care with the patient's physician.

Pott's Disease (Tuberculosis of the Spine)

Pott's disease is tuberculosis infection involving the vertebrae.

- **Pathology**
- Tuberculosis destroys the vertebral bodies causing:
- Bone destruction
- Vertebral collapse
- Vertebral wedging
- Severe structural kyphosis
- This deformity is called a **Gibbus deformity**.

Gibbus Deformity

- A gibbus deformity is:
- A sharp, angular kyphosis
- Much more pronounced than ordinary rounded shoulders
- Caused by collapse of one or more vertebrae



Scheuermann's Disease

Scheuermann's disease is also called: Juvenile osteochondrosis , Juvenile kyphosis , Idiopathic thoracic kyphosis

Cause

- During adolescence:
- Growth plates (ossification centres) of the vertebral bodies fail to develop normally.
- The front of the vertebra grows slower than the back.
- Vertebrae become wedge-shaped.
- The result is a structural increase in thoracic kyphosis.

Clinical Features

- Appears during adolescence ,Mostly affects males ,Rounded upper back ,Tight hamstrings ,Mild to moderate back pain ,Fatigue with prolonged sitting ,Poor posture ,Some individuals remain asymptomatic.

Clinical Notes:Treatment focuses on:

- Stretching anterior chest muscles
- Strengthening thoracic extensors
- Improving posture
- Avoid forcing correction of structural deformity

Causes of Hyperkyphosis

Not every hyperkyphosis is caused by disease. Many cases are **functional (postural)**.

Sustained Poor Posture

- Most common cause.
- Examples:
 - Slouching
 - Sitting with rounded shoulders
 - Sleeping curled into a fetal position
- Over time this causes:
 - Tight anterior muscles
 - Weak posterior muscles
 - Adaptive shortening
 - Increased thoracic curvature

Emotional Posture

- Psychological stress may influence posture.
- Protective postures include:
 - Rounded shoulders
 - Depressed sternum
 - Head forward
 - Collapsed chest
- Over months or years these patterns may become habitual.



- **Occupational Causes**

- Common occupations include:

- Computer workers
- Students
- Drivers
- Office workers
- Phone operators

- Prolonged sitting causes:

- Forward head posture
- Rounded shoulders
- Tight pectoral muscles
- Weak thoracic extensors

- **Exercise Imbalance**

- Overemphasis on:

- Bench press
- Push-ups
- Chest strengthening

- Without balancing exercises for:

- Rhomboids
- Middle trapezius
- Lower trapezius
- Thoracic extensors

can gradually increase shoulder protraction and thoracic kyphosis.

Hyperkyphosis with Flatback Posture

Definition

- Hyperkyphosis may occur together with **flatback posture**, where there is a **decreased or absent lumbar lordosis**.
- The normal inward curve of the lower back becomes flattened.
- **Postural Characteristics**
 - Increased thoracic kyphosis
 - Flattened lumbar spine
 - Posterior pelvic tilt
 - Hip extension
 - Slouched overall posture

Muscle Imbalances

- **Tight & Short Muscles**

- Hamstrings
- Abdominal muscles

- **Weak & Inhibited Muscles**

- Lumbar extensors (erector spinae)
- Hip flexors (iliopsoas, rectus femoris)

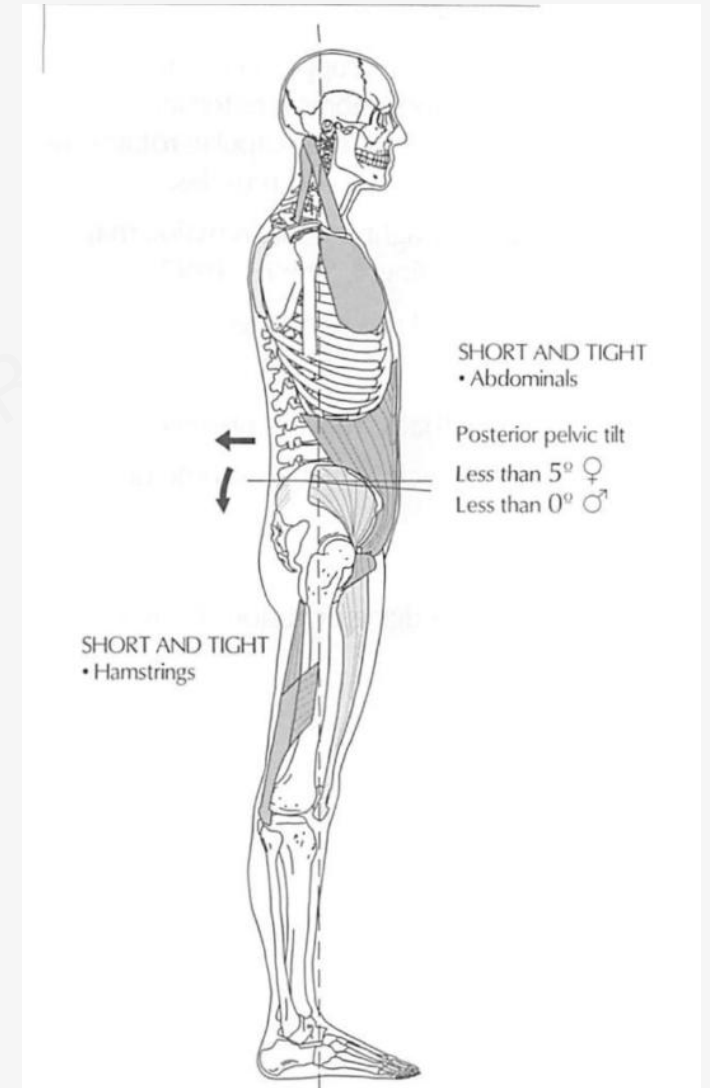
Causes

- Habitual slouched sitting or standing posture
- Long-term poor postural habits
- Muscle imbalance between trunk flexors and extensors

Flatback posture showing posterior pelvic tilt clue to tight hamstrings and abdominal muscles, with accompanying hyperkyphosis.

Clinical Significance

- Overstretching of the **posterior longitudinal ligament**
- Reduced shock-absorbing ability due to loss of normal lumbar lordosis
- Increased stress on lumbar spine
- Low back pain and fatigue during prolonged standing or walking



Symptom Picture of Hyperkyphosis

- Increased **thoracic curve** with:
 - Rounded shoulders (**scapular protraction**)
 - Forward head posture
- **Functional Hyperkyphosis**
- Pain from stretched tissues, tight muscles, and trigger points
- Apical breathing and reduced rib movement
- Muscle imbalance:
 - Tight: pectorals, upper cervical extensors
 - Weak: thoracic extensors, scapular retractors, neck flexors
- Reduced spine and rib mobility
- Poor posture (slouching)
- May lead to:
 - Thoracic outlet syndrome
 - TMJ dysfunction
- **Structural Hyperkyphosis**
- Due to spinal changes:
 - Vertebral wedging or fusion
 - Fixed curvature

Contraindications

- If a pathology is suspected but undiagnosed, such as osteoporosis, refer the client to a physician.
- Avoid mobilizing hypermobile vertebral segments.
- Joint play techniques for the ribs and rib springing are contraindicated with rib hypermobility and a history of rib subluxation.
- Do not randomly stretch fascia. Assess the fascia and only treat areas of restriction.
- Avoid lengthening techniques on weak, overstretched tissues.

Treatment Goals Summary

- Improve posture and mobility
- Reduce muscle imbalance
- Decrease pain and discomfort
- Maintain soft tissue health
- Support functional movement

Treatment Plan for Hyperkyphosis

Assessment

- Determine whether hyperkyphosis is **functional or structural**.
- Assess pelvic position because hyperkyphosis may be associated with:
 - **Anterior pelvic tilt** → shortened **hip flexors**
 - **Posterior pelvic tilt** → shortened **hamstrings**
- Assessment helps decide which muscles require treatment.

Functional vs Structural Hyperkyphosis Treatment

- **Functional Hyperkyphosis**
- Spinal curves can be modified.
- Treatment focuses on:
 - Stretching shortened tissues
 - Strengthening weak muscles
 - Postural correction
- **Structural Hyperkyphosis**
- Curve cannot be changed due to fixed bony changes.
- Treatment goals:
 - Maintain tissue health
 - Reduce pain
 - Manage secondary conditions (e.g., frozen shoulder)
 - Improve comfort and function

- **Massage Therapy Treatment Approach**
- Techniques may be selected based on client needs.
- Treatment may be divided over several sessions.
- Apply techniques **bilaterally**.

Client Positioning & Hydrotherapy

- **Supine Position**
- Place pillows under knees for comfort.
- Use a small towel roll along the spine to help flatten the thoracic curve.
- **Prone Position**
- Client is repositioned after supine treatment.
- **Hydrotherapy**
- **Pre-treatment heat:**
 - Applied over pectoralis major before fascial techniques.
 - Treat one side at a time.
- **Cool applications:**
 - Applied over stretched rhomboid muscles.

