樂動預健及物理治療中心
Happy Prehab Physiotherapy Centre

Low Back Pain

Physiotherapy Leaflet

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Relationship between Low Back Pain and Poor Posture

Long-term sitting in urban populations can lead to the loss of the lumbar lordosis (neutral curve of the spine), resulting in a straightening or flattening of the lumbar spinal curvature. Habitually crossing the legs can also affect pelvic alignment and spinal posture, leading to muscular and ligamentous strain at the posterior trunk, increased intervertebral disc loading, and a higher risk of developing low back pain. Additionally, hip flexor muscles may become shortened and weakened due to prolonged sitting, which can impair hip joint mobility.

By adopting proper ergonomic posture, releasing hypertonic muscles, and strengthening the lumbar extensors and posterior chain muscles, patients often experience significant symptom relief and functional improvement.

Patients suffering from low back pain or lumbar discomfort are encouraged to refer to this leaflet, which includes movements that may help alleviate their symptoms.

Neutral Spine

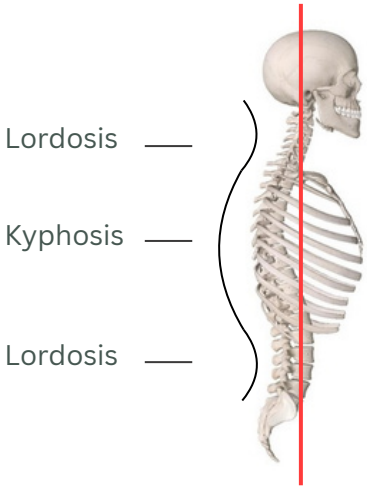


Figure 1. The ideal curvature of the spine

The healthy, fully functional human spine has a 30–35° curve in the lumbar, thoracic and cervical spines, all in balance.

Imagine a gentle string pulling upward from the top of your head, lengthening your spine toward the ceiling and tailbone toward the floor. This subtle pull encourages your head, neck, and back to stay tall and aligned, helping you maintain a neutral spine with an elongated and naturally curved posture.

Low Back Pain and Foot Overpronation

Overpronation of the foot is a prevalent biomechanical abnormality that is frequently associated with both direct and indirect etiologies of low back pain. Given the interconnected nature of the musculoskeletal system, excessive foot pronation can initiate a kinetic chain response, resulting in interanl rotation of the hindfoot, talocrural joint, lower leg, knee, and femur. This compensatory pattern may subsequently alter the alignment and biomechanics of the lumbopelvic region, including the lumbar spine and pelvic girdle, potentially contributing to the development or exacerbation of lumbar and pelvic pathologies.

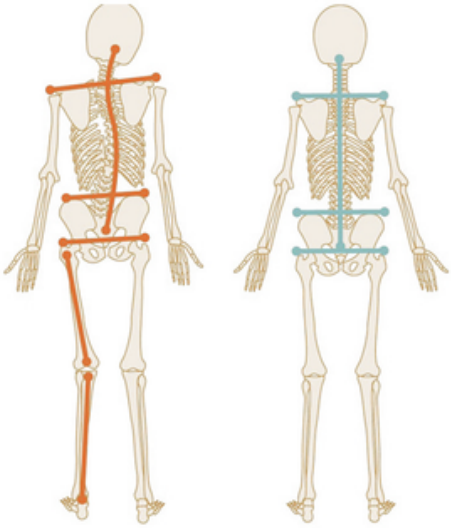
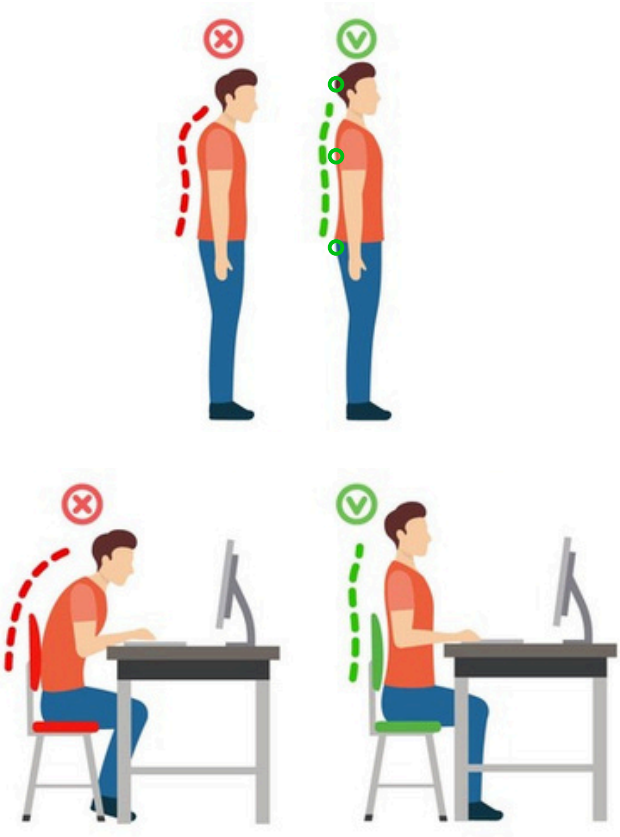


Figure 2. the kinetic chain relationship between lower back and foot overpronation

Ideal Postures



In daily activities, it is advisable to minimize neck flexion and lumbar flexion during sitting, standing, and bending motions. Maintaining an upright thoracolumbar posture helps to reduce strain on the posterior lumbar musculature and ligaments, thereby alleviating stress on the intervertebral discs and mitigating the risk of lumbar spine overload.

- **The three reference points—head, upper back, and sacral region—must maintain contact with the rod.**

Proper Lifting Technique

Improper technique:

Maintaining a prolonged distance from the load often necessitates excessive lumbar flexion and bilateral upper limb effort. Lumbar flexion increases shear and compressive forces on the lumbar spine, thereby elevating the risk of lumbar strain or injury.

Figure 3a. Starting position

Figure 3b. Ending position

Proper technique:

Maintain lumbar lordosis and reduce the distance between the body and the load by bringing the object closer to the body, thereby engaging the core musculature to optimize load transfer and minimize lumbar stress.

Figure 4a. Starting position

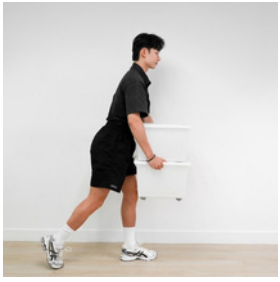


Figure 4b. Ending position

Stretching | Quadriceps

Stretching the muscles at the front of the thigh usually helps to alleviate knee joint pain.

fig. 6 Ending position

1. Lie face down, bend your knees, and use your left hand to pull your right foot up. Hold for 5 - 10 seconds, 10 sets.
2. During the process, keep your pelvis neutral, knee together and both feet planted firmly. Repeat the other side.

Stretching | Hamstrings

Relaxing the muscles and fascia connecting the lower back to the hips, back of the thighs, and calves can help reduce various types of lower limb pain.

fig. 7 Ending position

1. Loop a resistance band around the sole of your foot, using your hands to assist in straightening the knee until you feel a stretch at the back of the thigh and leg.
2. Hold for 5–10 seconds, 10 sets. Repeat the other side.

Stretching | Piriformis

Relaxing the piriformis muscle can help alleviate lower back pain and sciatica.

fig. 8 Demonstration

1. Flex the knee and grasp the shin to bring the knee towards the chest.
2. Internally rotate and adduct the shin to bring the knee towards the contralateral shoulder.
3. Maintain the stretch for 5 to 10 seconds, then relax. Repeat for 10 repetitions.

Stretching | Spine - Cobra

Stretch the entire spine, strengthen the back muscles, and improve lumbar mobility.

fig. 9a Starting position

fig. 9b Ending position

1. Prone, elbows stick to the sides of the body, palms placing next to the chest on either side.
2. Inhale, extend the upper back by pressing up through the hands, ensuring the shoulders is not shrugged.

Stretching | Scorpion

Increase lumbar and hip joint range of motion, and strengthen the gluteal and lower back muscles.
Basic: extend hip and knee joint.
Advanced: may attempt combined trunk rotation to further alleviate lower back pain.
*Patients with spinal instability or disc protrusion should avoid advanced movements.

fig. 10 Basic level

fig. 11 Advanced level

Stretching | Thoracic Rotation

Not only mobilizes the intervertebral joints, this exercise also effectively stretches the muscles of the waist and the front of the chest. It helps improve thoracic spine flexibility, open the chest, and reduce rounded shoulders.

fig. 12 Ending Pose

1. Lie on your side with the lower leg extended and the upper knee bent.
2. Rotate the lower shoulder outward.
3. Rotate the upper arm outward to the opposite side, thus achieving thoracic spine rotation.
4. Hold this position for 10 seconds, maintaining steady breathing. Repeat the movement 10 times.
5. Perform the exercise on both sides.

Strengthening | Bridge

Targeted muscles Posterior Chain, Core, Gluteals, Hamstrings

fig. 13a Starting Pose

fig. 13b Ending Pose

1. Lie supine with both knees flexed and feet flat on the bed.
2. Engage the gluteal and thigh muscles to lift the hips, until the lower back and thighs form a straight line.
3. Hold the position for 2–5 seconds, then return to the starting position.

Advanced level — you can try slightly straightening both legs before lifting the hips, focusing on feeling the activation at the back of the thighs. You can also experiment with lifting one leg at a time for added challenge.

* Be aware of the lower limb's alignment: the pelvis, knee, and feet should stay in a straight line. The knee should not twist inward, and both sides of the pelvis should remain same level.

Strengthening | Hip Hinge

Targeted muscles Posterior Chain, Gluteals, Hamstrings

Purpose This exercise focuses on using the hip joint as the pivot to learn the correct hip hinge movement, ensuring you can bend forward without bending the lower back. This reduces the risk of lower back strain. Throughout the movement, maintain an optimal spinal posture, utilizing the posterior chain —hamstrings and glutes—to support the upper body and distribute weight effectively.
The hip hinge movement is essential not only for daily activities such as lifting and bending but also for performing exercises like deadlifts, squats, and Romanian deadlifts, all of these require proper coordination of hinging through the hip

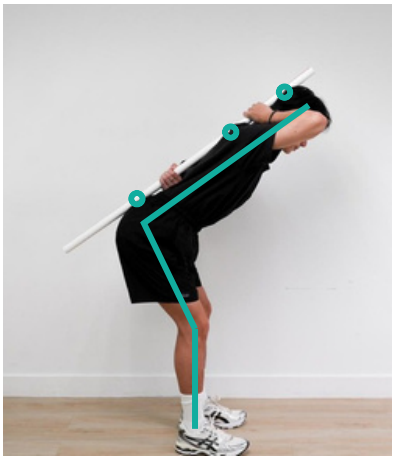


fig. 13 Correct movement - hinge through the hip

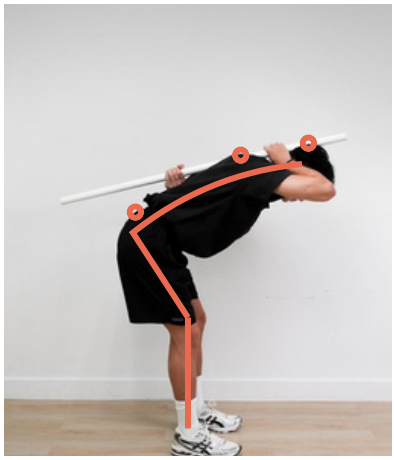


fig. 14 Incorrect movement - bend through the lumbar spine

- Maintain contact of three points with the stick throughout the movement, keeping the spine in an upright position with an optimal natural curvature.

1. Slightly flex the knee and then lock it in position.
2. Hip joint flexes and extends posteriorly (hip hinge movement).

Strengthening | Romanian Deadlift

Targeted muscles Posterior Chain, Gluteals, Hamstrings

Purpose: By using the hip joint as the pivot, this movement ensures that you can bend forward to lift or carry heavy objects without bending at the lower back, reducing the risk of lower back strain. This is an advanced version of the hip hinge movement. Throughout the process, maintain an ideal spinal posture, engaging the hamstrings and glutes to support the body and any additional weight through the lower body.

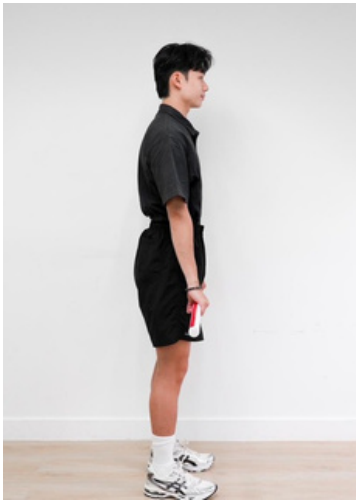


fig. 15a Starting Pose

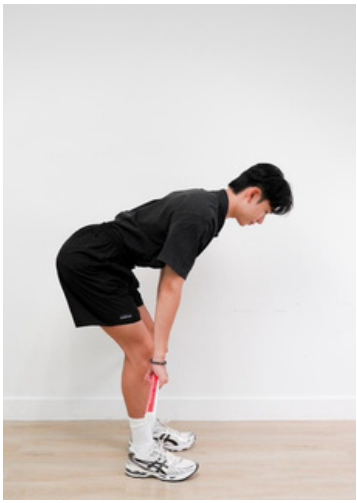


fig. 15b Ending Pose

1. Start in a standing position, holding the barbell in front of your hips.
2. Slightly unlock your knees, then primarily hinge at the hips and push your hips backward, keeping your back straight.
3. Slowly push your hips back until you feel a stretch in the hamstrings (around below the knees).
4. Use your glutes to drive your hips forward and return to the starting position.

Strengthening | Bent Over-row

Targeted muscles posterior chain muscles, latissimus dorsi, rhomboids, and muscles around the scapulae

Purpose It is based on the Romanian deadlift, combined with latissimus dorsi training.

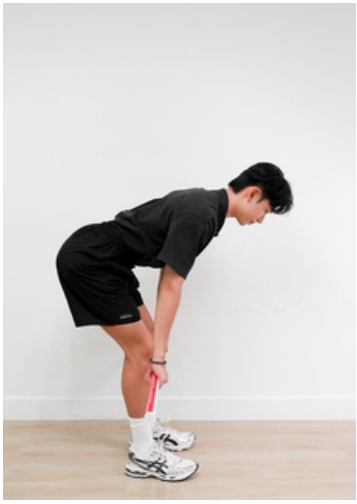


fig. 16a Starting Pose

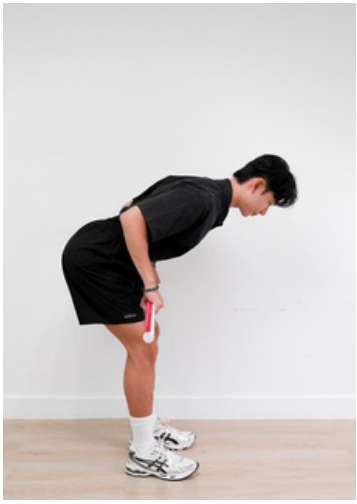


fig. 16b Ending Pose

1. Stand with feet shoulder-width apart, knees slightly bent.
2. Lean forward at the hips, keeping the back straight, until your torso is at approximately a 45-degree angle or lower.
3. Hold dumbbells or a barbell with your hands, hanging vertically downward.
4. Use your back muscles to pull the weight toward your body, with elbows moving backward.
5. Control the descent, then repeat.

Strengthening | Birddog

Targeted muscles: Core

fig. 17 Basic level

fig. 18 Advanced level

1. Kneel on the ground with both hands supporting your body, shoulder-width apart.
2. Lift one leg straight back, maintaining balance; for an advanced version, lift the opposite arm forward simutaneously.
3. Slowly lower your hand and foot back to the starting position.
4. Repeat the same movement on the other side.

Strengthening | Plank

Targeted muscles: Core

fig. 19 Demonstration

1. Prone, with elbows bent and positioned directly under the shoulders, forearms flat on the floor.
2. Support your body with your forearms and toes, keeping your body in a straight line from head to heels.
3. Engage your core muscles and maintain this position, avoiding sagging or raising the hips and shrugging shoulders.
4. The optimal duration is 30 seconds to 1 minute (adjust based on your individual condition).

Myofascial Self-Release

Use a massage ball or foam roller to do a myofascial self-release for yourself.

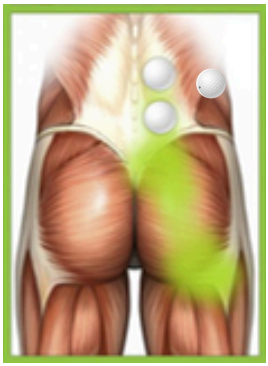
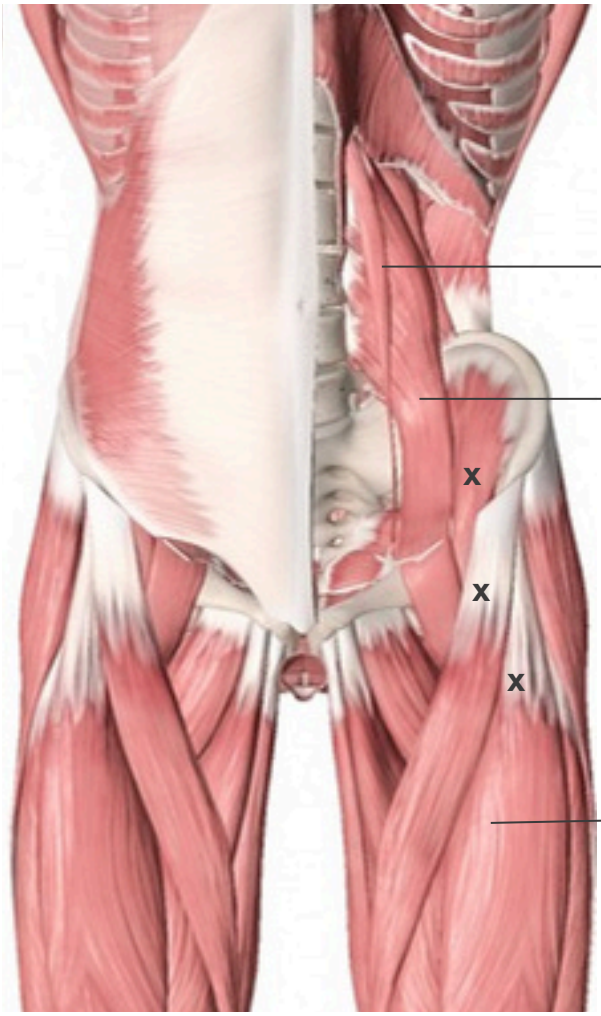


fig. 20a Demonstration - erector spinae/quadratus lumborum

fig. 20b Demonstration - gluteus medius/gluteus maximus/piriformis/tensor fasciae latae

fig. 20c Demonstration - latissimus dorsi

肌肉解剖圖及激痛點
Muscle Anatomy and Trigger Points

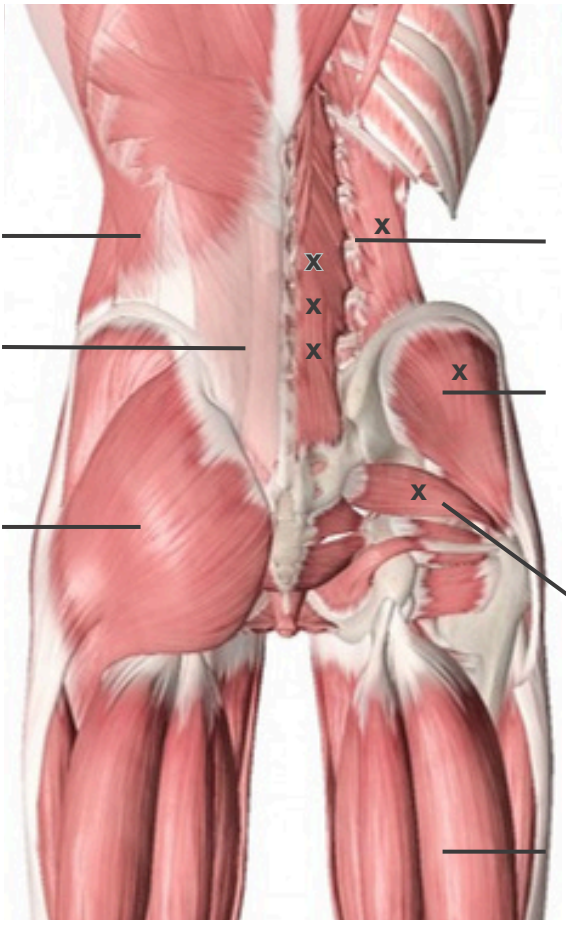


淺層肌肉
Superficial

深層肌肉
Deep

前 Anterior

肌肉解剖圖及激痛點
Muscle Anatomy and Trigger Points



後 Posterior

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預防+治療
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筋骨痛症

3612 9188 (如有任何問題或想預約服務 可WhatsApp查詢)

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