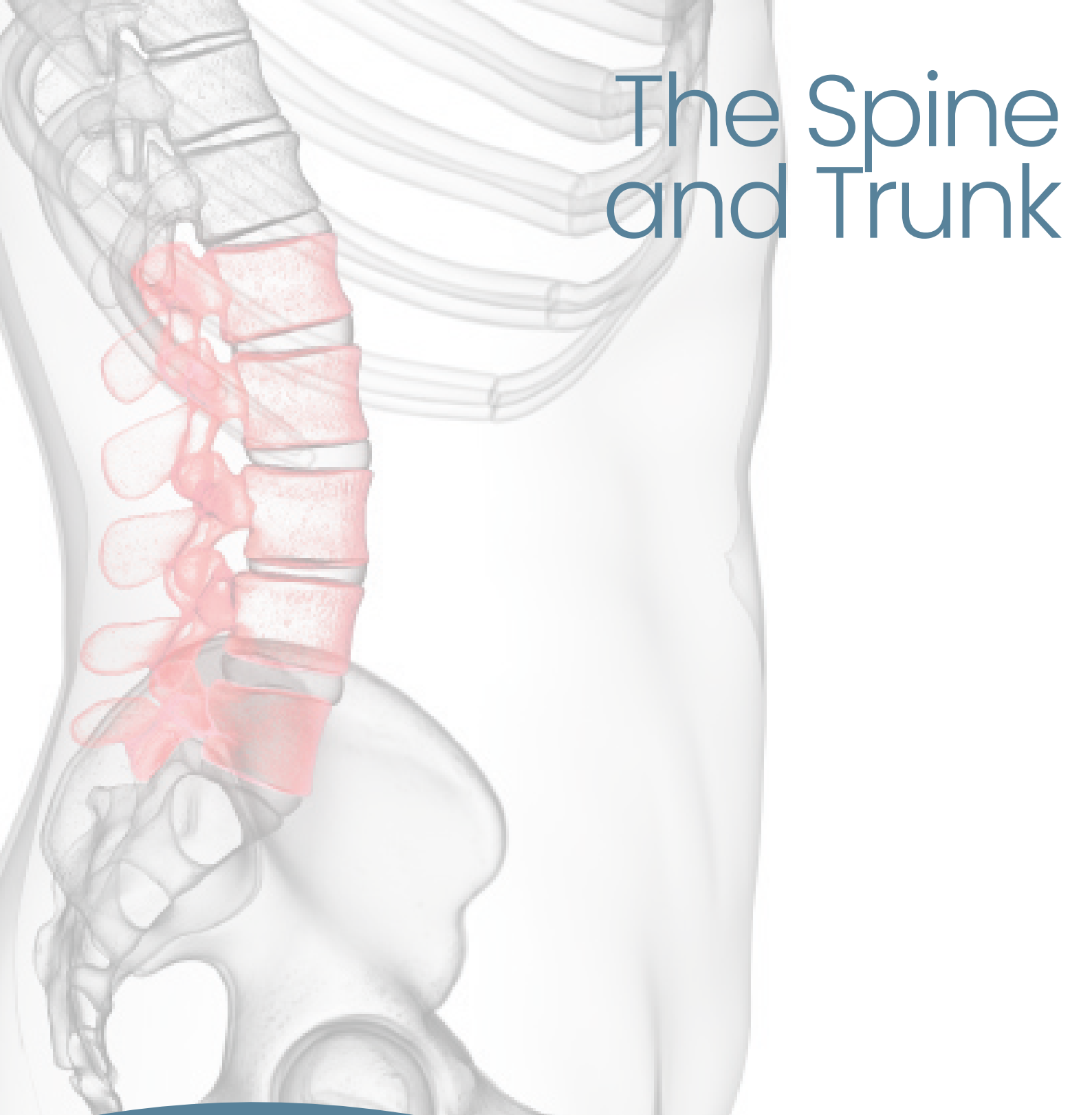


The Spine and Trunk

CareFlex

THE SEATING CHALLENGES SERIES

SEATING CHALLENGES OF THE SPINE & TRUNK

A person's inability to sit upright may result in decline in overall health, primarily reflecting altered physiological function.[1] Trunk asymmetry can impair:

- Respiration
- Cardiac efficiency
- Swallow function
- Digestion

What postures can challenge the spine and trunk?

- Scoliosis
- Increased thoracic kyphosis
- Increased lumbar lordosis

How can specialist seating help?

An unsupported trunk will require more effort from the user to maintain their position and therefore result in fatigue and discomfort. The aim is to fully support the trunk and align the spine as much as possible to reduce the risk of pressure injury and postural deterioration.

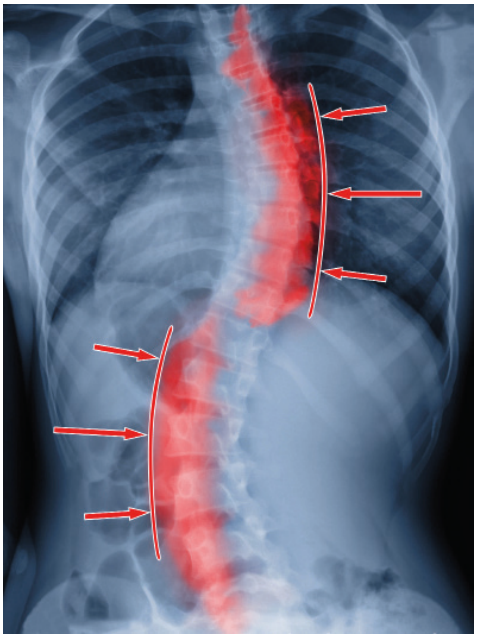
An appropriate seating system can provide the optimum position for respiratory and circulatory function.[2] An upright sitting position can also facilitate a normal swallowing pattern[3] and improve components of eating and drinking behaviour.[4] Appropriate trunk and spine support is also essential for comfort and energy management.



SCOLIOSIS

Scoliosis is when an individual's spine twists and curves to the side. The curve is usually "S" or "C" shaped. An individual may present with leaning to one side, uneven shoulders and protruding ribs on one side. This postural challenge can be associated with pelvic obliquity, pelvic rotation, asymmetrical trunk posture, kyphosis and pain.

What can cause a scoliosis?



In 8 out of 10 cases the cause of scoliosis is unknown, this is known as idiopathic scoliosis. Some cases of scoliosis are congenital, while others are due to age related degeneration. In individuals with complex postures, resulting from an underlying condition such as cerebral palsy, it is referred to as neuromuscular scoliosis and can be affected by the following:

- Incorrect chair set-up
- Poor sitting balance
- Trunk weakness
- Abnormal muscle tone
- Asymmetrical pain or discomfort
- Pelvic instability
- Fatigue and the effects of gravity

Are there any seating solutions that can help?

Scoliosis requires a holistic multi-disciplinary management plan as the individual can present with physiological dysfunction, including respiratory and digestive problems, swallowing difficulties if they are unable to achieve a safe position for eating and drinking, and their altered head position can have a significant impact on interaction and wellbeing.

Postural management will depend on whether the scoliosis is correctable or fixed, which can be identified during a comprehensive assessment. It is essential to assess range of movement and flexibility to ascertain whether the individual's posture can be corrected or if it needs to be accommodated. Seating solutions can include:

- Ensuring appropriate chair set-up and seat dimensions.
- Adequate trunk support, encouraging an as aligned position as possible.
- Mild scoliosis can be well managed with 2-point lateral support.
- Moderate to severe scoliosis may require 3-point or multi-point lateral support.
- Chest harness, following risk assessment, to encourage trunk stability.
- Tilt-in-space, if appropriate, to encourage pelvic stability and energy management.
- Addressing any associated pelvic obliquity and/or pelvic rotation.

INCREASED LUMBAR LORDOSIS

Lumbar lordosis is the normal inward curvature of the lumbar region of the spine. This curve helps the body to absorb shock and remain stable but flexible. However, if the curve arches too far inward, it's known as an increased lumbar lordosis, or swayback posture. If the individual has an extreme curve, there will be a visible C-shaped arch from the lateral view when they stand, and their abdomen and buttocks will stick out.

This postural challenge can be associated with an anterior pelvic tilt and an increased thoracic kyphosis. It is worth noting that an individual can also present with a decreased lumbar lordosis, or flat-back posture; this posture will be managed differently, ensuring their spinal posture is adequately supported. Individuals who present with this postural challenge can experience pain, fatigue, instability and reduced functionality.



What can cause an increased lumbar lordosis?

An increased lumbar lordosis can be caused by:

- Pelvic instability
- Tight spinal muscles
- Other abnormal spinal curvatures impacting on the lumbar region

Certain conditions and factors can also increase the risk for increased lordosis, such as:

- Osteoporosis
- Discitis
- Pregnancy
- Obesity

Are there any seating solutions that can help?

Management will depend on whether the increased lumbar lordosis is correctable or fixed, which can be identified during a comprehensive assessment. It is essential to assess if an increased anterior pelvic tilt is the cause as this will need addressing first. Seating solutions can include:

- Tilt-in-space, a ramped base, or pelvic belt, following a risk assessment, to encourage pelvic stability, comfort and energy management.
- Ensuring appropriate support to the shape of the spine. A lumbar support can be trialled; however, this can sometimes increase hyperextension depending on the individual's response to sensation.
- Using a tray to form an anterior support for the trunk as this can often be very effective and functional for the individual.

INCREASED THORACIC KYPHOSIS

Every person has some degree of curvature to the spine, this is our spinal posture. It is normal to have a kyphotic curve in the thoracic region of the spine; this curve helps the body absorb shock, support the weight of the head, align the head over the pelvis, and remain stable but flexible. However, a curve of more than 45° is considered excessive. An increased thoracic kyphosis is when an individual presents with a thoracic curvature that results in the top of the back to appear more rounded than normal.

This postural challenge can be associated with posterior pelvic tilt, scoliosis and an increased risk of pressure injuries, especially through the apex of the curvature, sacrum and heels. An individual with an increased thoracic kyphosis can also present with physiological dysfunction, including respiratory and digestive problems, and swallowing difficulties if they are unable to achieve a safe position for eating and drinking. Their head position can result in their line of vision being towards the floor, which can have a significant impact on interaction and engagement, and ultimately quality of life.

What can cause an increased thoracic kyphosis?

There are various reasons why an increased thoracic kyphosis can occur, including:

- Age
- Postural kyphosis (poor posture)
- Spinal injury
- Scheuermann's kyphosis due to abnormally shaped vertebrae
- Congenital kyphosis



Some conditions are also associated with kyphosis, including:

- Osteoporosis
- Spondylosis
- Spina bifida
- Muscular dystrophy
- Cancer that develops inside the spine or spreads to the spine from another part of the body

In individuals with complex postures, resulting from an underlying condition such as dementia or cerebral palsy, kyphosis can be affected by the following:

- Incorrect seat dimensions
- Posterior pelvic tilt
- Muscle weakness and poor trunk control
- Abnormal muscle tone
- Fatigue and the effects of gravity

INCREASED THORACIC KYPHOSIS

Are there any seating solutions that can help?

As aforementioned, management will depend on whether the increased thoracic kyphosis is correctable or fixed. Seating solutions can include:

- Ensuring correct seat depth, seat width and arm rest height.
- Ensuring adequate trunk and head support.
- Waterfall back with wadding adjusted to fully support posture, especially the apex of the curvature, and promote comfort.
- An articulating head rest to encourage a supportive head position for maximum comfort.
- An anterior support, such as a chest harness, following a risk assessment, may be indicated.
- Tilt-in-space, if appropriate, to encourage pelvic stability and energy management.
- Addressing any associated posterior pelvic tilt and scoliosis.



HOW CAN CAREFLEX HELP?

A comprehensive seating assessment is critical for appropriate seating prescription. Due to the variability among people, a universal seating position is not practicable or safe; therefore, a thorough assessment is recommended to ensure the chair prescribed is tailored to the individual. CareFlex offer a free no-obligation assessment service; we are a team of highly skilled and extremely knowledgeable professionals and we pride ourselves on our efforts to truly improve quality of life, from initial contact through to after-care.

The much-loved HydroTilt could be a great solution for an increased lumbar lordosis or thoracic kyphosis with a waterfall back that can be reconfigured, tilt-in-space and integral WaterCell Technology. The HydroTilt XL may be indicated for individuals with increased body weight and size that is impacting on their lordosis.

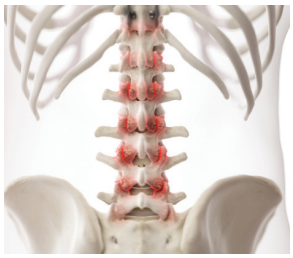
In multi-user environments, the MultiAdjust could be the ideal solution for individuals with moderate postural challenges as it offers adjustable seat dimensions, back angle recline, and the ability to fit adjustable lateral support.

The HydroFlex could be a great solution for individuals who present with scoliosis with a deep contoured back or a flat back with adjustable lateral support. The HydroFlex's articulating headrest and the option to fit a chest harness for anterior support could also offer the necessary postural support for kyphotic postures.

If greater flexibility is required for more complex postures, then the SmartSeatPro with multi-adjustable back components, which can be altered in height, depth, angle, offset and rotation, could be the suitable solution. The built-in adjustable wings can be positioned out of the way to assist transfers and activities of daily living. Any changes are best done in small increments to allow the individual to physiologically adapt.



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DISCLAIMER

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The information given in this book represents current advice at the time of publication. It is intended as general information and guidance and is not a substitute for professional medical advice which should be sought for specific, individual cases. It is the responsibility of the treating clinician, relying on independent knowledge and skills, to determine the best intervention and method of application for the client.

1. Tilt-in-Space and Back Angle Recline should always be prescribed responsibly, ensuring that they are safe and appropriate for the user following a comprehensive assessment of posture and risk, with advice sought from the multi-disciplinary team where indicated. In some cases these functions will be contra-indicated, and they could also increase shear and friction forces.

2. All belts and harnesses must also be prescribed, implemented and monitored responsibly following a comprehensive risk assessment. Please see the Device safety information alert for further information: www.gov.uk/drug-device-alerts/all-posture-or-safety-belts-fitted-to-supportive-seating-wheelchairs-hoists-and-bathroom-equipment-risk-of-serious-injury-or-death