

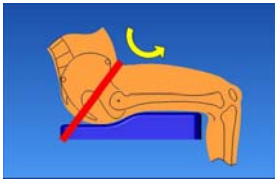
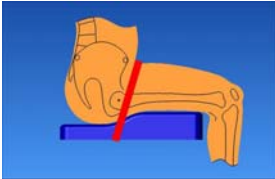
Postural intervention for posterior pelvic tilt and kyphosis

Posterior pelvic tilt and kyphosis

This table is a guide for clinicians to address all aspects of the seating and mobility system in postural interventions. A MAT evaluation and body measurement are required prior to postural interventions.



<p>Common causes of posterior pelvic tilt and kyphosis in SCI clients:</p>	<p>Posterior pelvic tilt:</p> <ul style="list-style-type: none"> ➤ fixed thoracic kyphosis against a planar back support ➤ hip extensor spasm pattern ➤ restricted hip flexion range of motion ➤ influence of hamstrings ➤ footplate set up too low causing the pelvis to slide ➤ seat depth too long pulling pelvis forward ➤ inadequate posterior support on backrest and / or cushion contour to provide pelvic stability 	<p>Kyphosis:</p> <ul style="list-style-type: none"> ➤ posterior pelvic tilt ➤ increased thoracic curvature of the spine ➤ poor trunk control and balance ➤ inadequate posterior support and / or contour of the back support to provide comfort or stability ➤ arm support too low
	<ul style="list-style-type: none"> ➤ poor posture and positioning after transfer ➤ the client is unable to self adjust their posture ➤ habitual posture for function or comfort 	
<p>Indicators for intervention:</p>	<ul style="list-style-type: none"> ➤ risk of sliding down the wheelchair ➤ risk of falls ➤ risk of pressure area on sacrum, ischial tuberosities ➤ increase kyphosis, neck and head flexion posture ➤ poor visual field for interaction with the environment ➤ swallowing and respiratory function ➤ reduce wheelchair propulsion efficiency and increase risk of upper limb overuse syndrome 	
<p align="center">Possible seating solutions for posterior pelvic tilt and kyphosis</p>		
<p>Cushion:</p>	<p>Assess the cushion size is correct for the client's body size measurement. Seat depth is shorter than the thigh depth by no less than 0.5 inch / 14mm. Ensure there is clearance between cushion and the calf.</p> <p>A shorter seat depth may be required for a client with tight hamstrings and has less than 90 degree thigh to lower knee angle.</p> <p>For a client who has a flexible posterior pelvic tilt, contouring the cushion anterior to the pelvis may hold the pelvis in place.</p> <p>For a client who has a fixed posterior pelvic tilt, support fixed postures through contouring that matches the client's posture.</p> <p>In the posterior pelvic tilt position, the ischial tuberosities (IT) are pointing forward. Check that the IT are not sitting hard against the "crest" of the Ischial well / dish design cushions.</p>	
<p>Back support</p>	<p>Back rest height should be providing sufficient support to the type of sitter.</p> <p>Back support should match the client's trunk to thigh angle to seat to back support angle.</p> <p>If there are restricted trunk to thigh and thigh to lower leg angles, the seat to back support angle may need to be increased depending on the available front riggings / footplate hanger and foot support configuration. Where possible maintain thigh to trunk angle no greater that 100° to reduce the</p>	

	<p>tendency of sliding. Seat tilt or rake should be considered if a greater angle is required.</p> <p>Match the lumbar space to shape of the backrest at lumbar thoracic area to support posterior superior iliac spine (PSIS).</p> <p>When the client has a flexible posterior pelvic tilt and /or kyphosis, provide posterior support to PSIS, and / or anterior support such as a pelvic belt and a shoulder harness. An effective shoulder harness requires the back support height to be level with the shoulder.</p> <p>For a client who has a fixed posterior pelvic tilt and /or kyphosis, the posture can be accommodated by providing support to PSIS and contouring to spinal curvature. Consider the use of tilt in space or the combination of seat rake and back recline angle to facilitate vision.</p>
Leg rest and foot support	<p>Ensure the footplate is setup to support the lower legs: an approximate calculation for seat base to foot support distance is the lower leg length + shoes / heel height – estimated cushion height</p> <p>Consider the influence of the hamstring on thigh to knee angle and pelvic tilt. A thigh hamstring may pull the pelvis into posterior pelvic tilt and / or reduce the thigh to knee angle when it is over-stretched.</p> <p>An 80 degree front frame angle has a smaller thigh to knee angle, thus relaxes a tight hamstring when compares with a 60 degree front frame angle. Please refer to the manufacturer order form for options for the front frame angle, front riggings or hanger angle.</p> <p>Posterior pelvic tilt resulted from thigh hamstrings can also be accommodated by reducing the thigh to lower leg angle using an extended 'swept- back' footplates and / or centre-mount footplate hangers.</p> <p>Read more on 'Measuring the Right Angle', Kell G Waugh, MA, PT. Rehab Management, 2005 http://www.rehabpub.com/features/1022005/4.asp</p>
Arm support	Adjust armrest to body measurement as arm support influences the trunk's position.
Headrest	Adjust to headrest position to support the head during tilt in space position.
Manual wheelchair setup	The use of seat rake with biangular back cane may improve pelvic positioning and to accommodate the client with a fixed kyphosis.
Power wheelchair configuration	The tilt in space function uses gravity to assist in maintaining trunk and pelvic positioning. It can facilitate upper trunk balance and head alignment for vision.
Secondary support and accessories	<p>Shoulder harness can be used to provide anterior support.</p> <p>Consider using a 2 point or 4point pelvic belt over and under the anterior superior iliac spine (ASIS) to maintain the pelvic position.</p> <p>Cautions: A standard "lap belt" has a possible risk of rising up over the belly to come in contact with insertion sites or obstructing tubing such as the supra- pubic catheter and PEG feed tube. The use of sub-ASIS pad and a 60 or 70 degree mounting angle rather than a 45 degree may be a possible solution after careful assessment and trials on individuals.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>45 degree hip belt</p> </div> <div style="text-align: center;">  <p>60 degree hip belt</p> </div> </div> <p>(illustration used with permission from Bodypoint®, 2008)</p>
Others positioning items	<p>Custom fabrications of the anterior knee blocks on a power wheelchair have been used to control pelvic tilt position in situations where there are limited options. The femur and the hip joint must be intact with good bone density and are in good alignment for this setup is to be used.</p> 