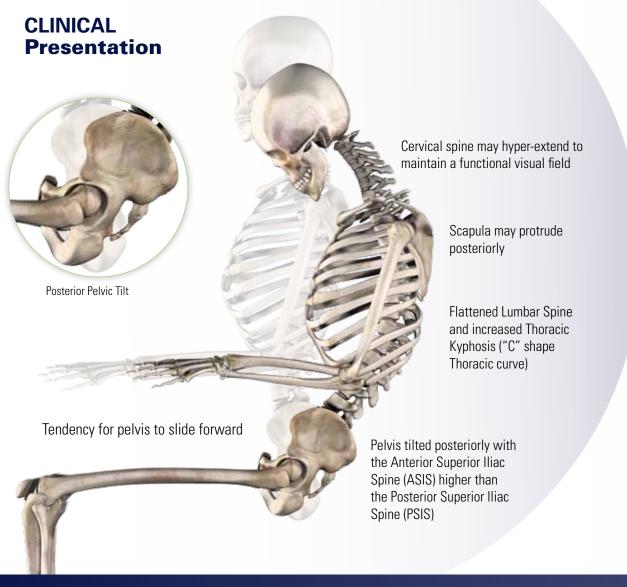
INVACARE® MATRX®

CLINICAL SEATING & POSITIONING GUIDE

POSTERIOR PELVIC TILT WITH KYPHOSIS



POTENTIAL Causes

Wheelchair Fit Seat depth too long/short

Foot support position No support for PSIS In manual wheelchair, location of rear wheel not

optimal for reach Seat to floor height too high/low for foot propulsion

Clinical

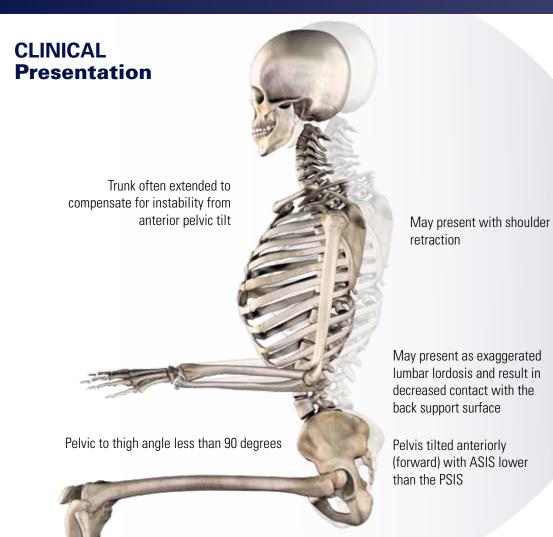
High or low tone in trunk Lacks true 90° of hip flexion Weak abdominals/back extensors Shortened/tight hamstrings

Assumes position for increased postural stability





ANTERIOR PELVIC TILT WITH HYPERLORDOSIS



May present as exaggerated lumbar lordosis and result in decreased contact with the back support surface

Pelvis tilted anteriorly (forward) with ASIS lower than the PSIS

POTENTIAL Causes

Wheelchair Fit Back support too upright Excessive lumbar contouring

Clinical

right quadriceps/hip flexors/paraspina Weak abdominal musculature Obesity



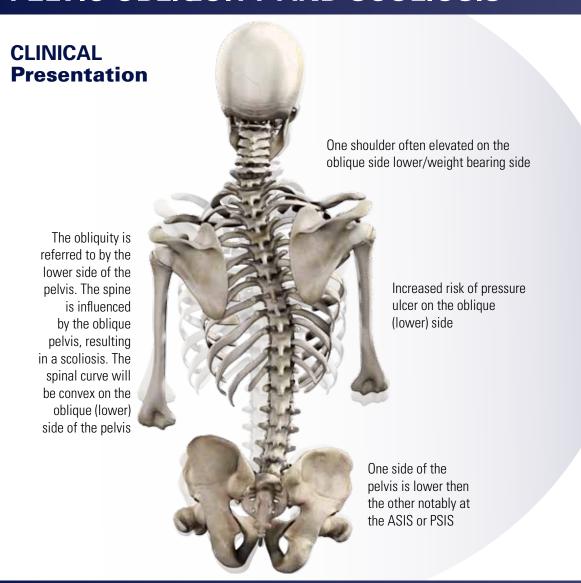
Each client will differ in preference of sagittal seat and back support angles, especially those with Muscular Dystrophy and Spina Bifida

Assess small incremental changes to seat slope, angle adjustment of wheelchair back frame and/or the angle orientation of the back support to move the pelvis and spine into a neutral orientation

Provide back support at level of PSIS to reduce lordosis



PELVIC OBLIQUITY AND SCOLIOSIS



POTENTIAL Causes

Wheelchair Fit

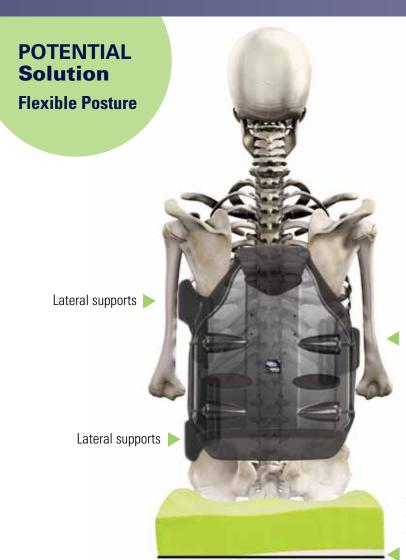
Sling or stretched seat upholstery Seat width too wide and/or arm supports too low to support upper extremities Cushion does not provide effective support for greater trochanters

Wheelchair seating angles and/or foot support position does not accommodate hip range limitations Power wheelchair joystick or manual wheelchair rear wheel location not optimal for reach Back support too wide

Clinical

Asymmetrical pain or discomfort Asymmetrical Tonic Neck Reflex (ATNR) Asymmetrical muscle tone/weakness in trunk and/or lower extremities Limitations of hip flexion, abduction, adduction, internal

or external rotation Structural bony deformity in spine or surgery Asymmetrical upper extremity strength with manual propulsion



Lateral trunk supports can be used to provide either 3 or 4 key points of control to support or minimize progression of scoliosis

Alternate approach -Deep contoured back support with lateral contour positioned to support ribcage

If flexible, build up the cushion under the lowest ischial to encourage a level pelvis



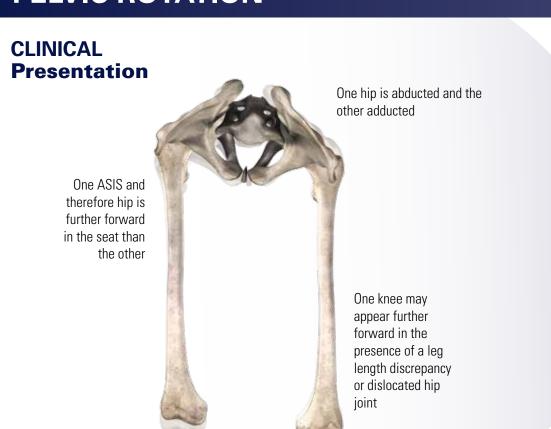
Ensure lateral depth is deep enough to support the lateral trunk

If fixed, build up support under the highest ischial tuberosity to increase weight bearing

on high side



PELVIC ROTATION



POTENTIAL Causes

Wheelchair Fit Poor wheel placement on manual chair

Seat to floor height too high for foot propulsion

Clinical

Limited hip flexion, abduction, adduction Leg length discrepancy may be caused by dislocated or subluxed hip

Unequal buttock/thigh depth, leg length discrepancy



Flexible: Try to align femurs in neutral using contoured

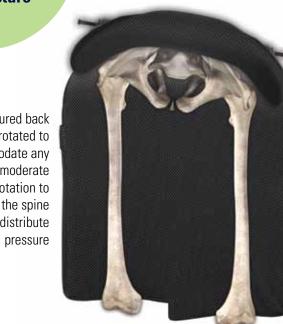
Fixed: Accomodate with custom contoured seating

belt to bring hips back in alignment

In order to maintain head and shoulder in a neutral position for function, you may need to maintain some asymmetry in the pelvis. In this case, use an anterior trunk support on the forward side

POTENTIAL Solution Fixed Posture

Contoured back support rotated to accommodate any mild to moderate trunk rotation to support the spine and distribute



If present, measure the leg length difference. Order cushion for longer leg

length and

specify amount

to cut-back on

shorter side

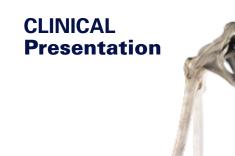
Accommodate

opening seat to back angle

limited hip

flexion by

HIP ABDUCTION



Movement of the femur away from midline Can be unilateral or bilateral

Lower extremities are separated further apart from neutral

POTENTIAL Causes

Inadequate seat depth

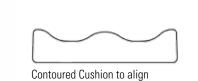
Low or high tone Surgeries, LE Abduction due to excessive abdominal tissue

POTENTIAL

Solution



Try distal lateral thigh supports



lower extremities

Cushion ridgidizer contoured to eliminate "hammock effect" of

sling upholstery

Flexible: Use seat ridgidizer or solid seat pan Try distal medial thigh support or contoured seating **Fixed:** Accommodate with custom contoured seating

Invacare® Matrx® Seating Objectives

- Facilitate postural stability while allowing purposeful movement to promote effective function and support healthy resting postures.
- Respect 3 dimensional anatomical shapes, working to match contours for optimal support and pressure
- Wherever possible, support postures from within the contours of the seating system in order to maintain skin integrity and to promote stability, balance and function, complemented with additional

external components as needed. Invacare® Matrx® Guiding Principles

- The effect that seated posture has on breathing and swallowing should be a primary concern.
- Long term sitting can cause secondary complications such as tissue trauma, back and neck pain, postural deformities and joint contractures.
- A comprehensive evaluation, including a physical assessment in both supine and sitting, is the foundation of all effective seating solutions. The position of the pelvis directly impacts the spine, which in turn influences the position of the head
- The pelvis is the foundation for seated function and the PSIS must be supported in order to achieve
- Determining if a posture is fixed or flexible is vital for selecting appropriate seating solutions.
- The opportunity to trial seating solutions in static and dynamic situations is important for identifying the most effective overall seating solution.

For more information, visit www.invacare.com.

These are the opinions of clinicial staff at Invacare Corporation and proper assessments should be made at the individual patient level. This information is not intended to be, nor should it be considered, medical, billing or legal advice. The physician and other medical care providers are responsible for determining proper product selection and the appropriate billing codes when submitting claims to the Medicare program, and should consult an attorney or other advisor to discuss specific situations in further detail. ©2012 Invacare Corporation. All rights reserved. Trademarks are identified by the symbols TM and ®. All trademarks are owned by or licensed to Invacare Corporation unless otherwise noted. Form no. 12-068 rev.0912





HIP ADDUCTION





Movement of femurs toward midline Can be unilateral or bilateral

POTENTIAL Causes

Sling upholstery without solid seat insert Low or high tone, decreased range of motion and/or strength of hip abductors