

Postural Rating Scale

The Postural Rating Scale (PRS) is a tool to systematically quantify an individual's posture in order to inform clinical assessment, treatment and progression. Three regions of the spine and the shoulder and pelvic girdles are graded on a simple scale based on broad anatomical variations. These were chosen to be easily and repeatedly identified and example photographs for each point on the scales are provided to enhance standardised grading. The scores for each of these regions are then summed to produce an overall PRS score.

Equipment required

- A wall with a grid of 20 x 20cm squares large enough to accommodate the height of the patients to be assessed
- A square of lines placed on the floor to allow consistent positioning of patients in relation to the grid (figure 1).
- If photographs of patients are being taken, the camera should be positioned on a tripod 2.3m from the wall. The camera must be perpendicular to the wall. Once validity of the tool has been determined a live version could be used that would not include photographs.

Patient positioning for assessment

Posture is assessed in the sagittal and coronal planes and requires observations from the left, right, anterior and posterior. In order to ensure accurate anatomical observation the following clothes are suggested; shorts only for males, shorts and vest tops for females.

For the sagittal views (left and right) the patient should be asked to stand close to the wall with the toes of both feet up to a line marked on the floor that is perpendicular to the wall. They should adopt their normal standing posture with the feet shoulder width apart. Once the assessment of one side has been made the patient should be asked to turn around and position their feet up to the other line placed perpendicular to the wall (figure 1).

For the coronal views (anterior and posterior) the patient should stand facing the wall with the toes of both feet up to a line placed 50cm away from and parallel to the wall. They should adopt their normal standing posture with the feet shoulder width apart. Once posterior assessment has been made the patient should be asked to turn around to face the wall and position their feet to the line placed 20cm from the wall.

If posture is to be assessed via photographs, one image should be taken of each of the four views described above. The images should be taken in portrait orientation and the zoom should be adjusted to ensure that the patient fills most of the height of the image. The camera should be focused so that the image is as clear as possible and all relevant anatomical features can be identified from the image. On the photos, a virtual plumb line (VPL) using any picture management software (for example, Preview for Mac) can be drawn to improve validity of scoring.

Assessment

The patient should be observed in each of the positions described above (either 'live' or via photographs) and a score between -2 and +2 given for each of the following criteria.

Is the Cervical spine aligned? (Assessed in the sagittal and coronal planes)

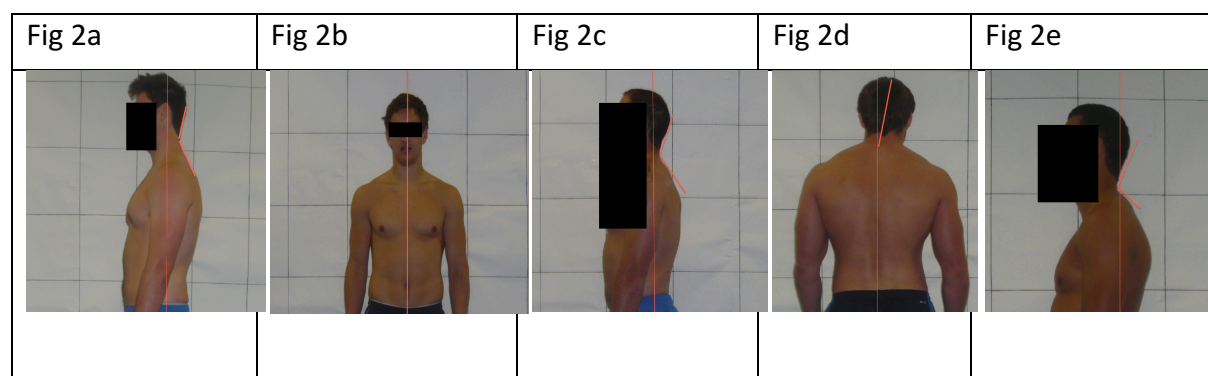
-2	-1	0	1	2
Convex <0°-30° Cervical angle and mid line deviation	Convex <0°-30° Cervical angle or mid line deviation, but not both	Cervical Angle of 30-60°	Convex >60°- 90° Cervical angle or mid line deviation, but not both	Convex >60°-90° Cervical angle and mid line deviation

Cervical angle is defined as convexity of the spine in relation to the cranium as taken from the cervico-thoracic junction and is assessed in the sagittal plane from the left or the right.

The VPL can then be used to give relative context of the convexity of the cervical spine and approximate values scored.

Mid line deviation is defined as a movement of the spine away from the mid line either involving a lateral shift or rotation of the spinal segments. It is assessed in an anterior view by observing the head position (as determined by mouth position in relation to VPL) and a posterior view by observing the alignment of the cervical spine in relation to a VPL.

Figures 2a-e are examples of each of the anatomical features outlined above.



Is the shoulder girdle perpendicular to the spine and the arm? (Assessed in the sagittal and coronal planes)

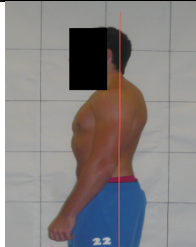
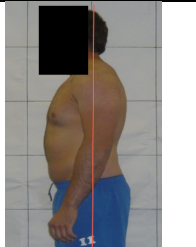
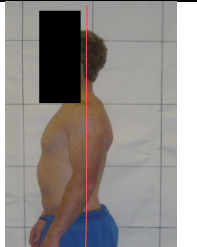
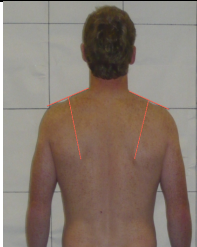
-2	-1	0	1	2
Downward rotation of the shoulder girdle & Humerus rests anteriorly	Downward rotation of the shoulder girdle & Humeral	Shoulder girdle straight and perpendicular to spine.	Parallel shoulder girdle & Humeral head neutral	Upward rotation of the shoulder girdle & Humerus rests

in relation to VPL	head neutral in relation to VPL	Humeral head in line with plumb line etc....	in relation to VPL	posteriorly in relation to VPL
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Mal-rotation of the shoulder girdle is defined as either upward or downward rotation of the scapula in relation to the rib cage. The angle taken from the top of the trapezius is greater or less than 90° when viewed coronally on one or both shoulders.

Humeral head position is assessed in the sagittal plane and in relation to a VPL dropped from the middle of the acromion.

Figures 3a-e are examples of each of the anatomical features outlined above.

Fig 3a	Fig 3b	Fig 3c	Fig 3d	Fig 3e
				
Anterior humerus	Posterior humerus	Midline	MalRotated Scapula	Normal Rotated Scapula

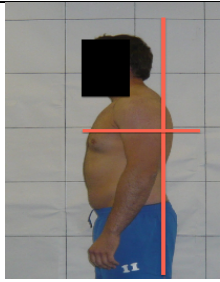
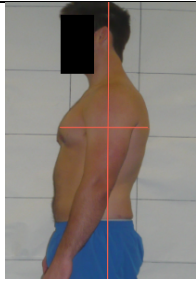
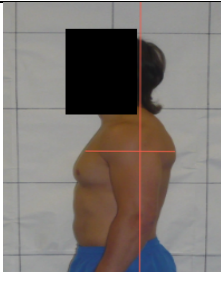
Is the Thoracic spine aligned? (Assessed in the sagittal and coronal planes)

Excessive thoracic angle is assessed in the sagittal plane and classified as more than 70° of the body in front of a VPL drawn from the lateral malleolus vertically to the top of the photograph and a perpendicular line taken from the VPL at the point of greatest kyphosis.

Flattened thoracic angle is assessed in the sagittal plane and classified as more than 50° on the body behind a VPL drawn from the lateral malleolus vertically to the top of the photograph and a perpendicular line taken from the VPL at the point of greatest kyphosis.

Mid line deviation is defined as a movement of the spine away from the mid line either involving a lateral shift or rotation of the spinal segments. It is assessed in an anterior view by observing the trunk position (as determined by umbilicus) and a posterior view by observing the alignment of the thoracic spine in relation to a VPL (as an imaginary line is drawn up the spinous processes).

Figures 4a-e are examples of each of the anatomical features outlined above.

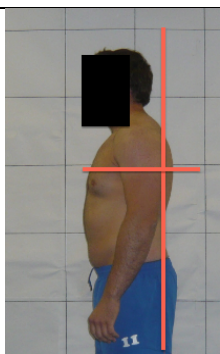
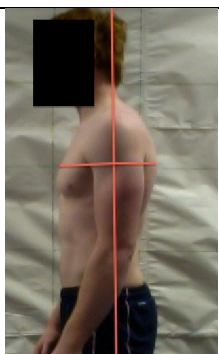
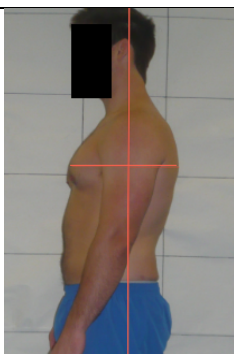
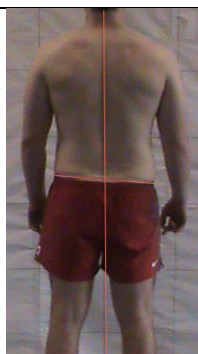
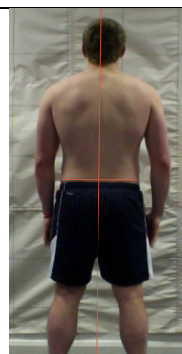
Fig 4a	Fig 4b	Fig 4c	Fig 4d	Fig 4e
				
Excessive	Flattened	Normal	Scoliosis (Post)	Scoliosis (Ant)

-2	-1	0	1	2
Flattened Thoracic angle and positive scoliosis	Flattened Thoracic angle and No scoliosis	Angle of Thoracic normal	Excessive Thoracic angle and No scoliosis	Excessive Thoracic angle and positive scoliosis

Is the Lumbar spine and Pelvis aligned? (Assessed at the level of the belt line in the sagittal and coronal)?

Excessive lumbar angle is classified as more than 70% of the body in front of the plumb line and flattened lumbar angle is classified as more than 30% on the body behind the plumb line in the sagittal view.

Figures 5a-e are examples of each of the anatomical features outlined above.

Fig 5a	Fig 5b	Fig 5c	Fig 5d	Fig 5e
				
Excessive	Flattened	Normal	PSIS Assymetry	PSIS Symmetry

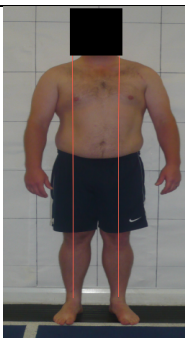
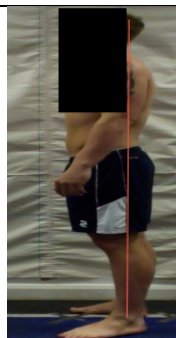
PSIS asymmetry is defined as a non exactly perpendicular line taken from the VPL in a coronal view, when lines are taken from the belt line of the garment being worn and the VPL through the middle of the Sacrum.

-2	-1	0	1	2
Flattened Lumbar angle and PSIS asymmetry	Flattened Lumbar angle and PSIS symmetry	Angle of Lumbar normal	Excessive Lumbar angle and PSIS symmetry	Excessive Lumbar angle and PSIS asymmetry

Is there any valgus or varus through the lower limbs?

Are the lower limbs aligned with the pelvis? (Assessed in the sagittal and coronal place by observing the relative position of the feet in relation to nipple line. A VPL from the front of the ankle talocrural joint should be in close proximity to the ACJ, if it falls lateral to the ACJ it is valgus mal-alignment and if the talocrural VPL falls closer to SCJ then the mal-alignment can be considered varus. Hip external/internal rotation and the anterior or posterior position of the femur relative to a plumb line drawn from the lateral malleolus provides indication relative rotation of the lower limbs. If the VPL is posterior to the greater trochanter then the rotation on the hip is external and if the VPL is level or anterior to the greater trochanter then the rotation is internal.

Figures 6a-e are examples of each of the anatomical features outlined above.

Fig 6a	Fig 6b	Fig 6c	Fig 6d	Fig 6e
				
Valgus	Varus	Normal	External Rotation	Internal Rotation

-2	-1	0	1	2
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Hip Int/External Rotation	Valgus with No Hip Rotation	Symmetry	Varus with No Hip Rotation	Varus with Hip Int/External Rotation
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The classification of the PRS is -12 through to +12. Gross deviation is -/+12 to -/+8 and Moderate -/+7 to -/+4 and Minimal from 0 to -/+3. The individual components will highlight specific areas that may prove clinically relevant when taken in conjunction with the remainder of the clinical history.