Pelvic incidence (PI)

In most instances, sagittal imbalance is due to a shortfall of lumbar lordosis (LL) relative to the pelvic incidence (PI) (i.e. LL is more than 9° below PI), which is designated as flatback syndrome.

The angle between the perpendicular to the sacral plate at its midpoint and the line connecting this point to the middle axis of the femoral heads.

Normal = 50°

Alignment objective:

LL = PI ± 9°

PI is fixed once skeletal maturity is reached.

For ease of measurement, PI=90° - θ

see:

Sacral slope

Pelvic tilt

Overhang of S1

The pelvic incidence appears to be the main axis of the sagittal balance of the spine. It controls spinal curvature in accordance with the adaptability of the other parameters.\(^1\)
Patients with smaller pelvic incidence tended to be restored higher, and those patients with a larger pelvic incidence were more likely to be restored lower. For patients with normal sagittal balance, the surgical outcomes in the treatment of low-grade lumbar degenerative spondylolisthesis with spinal fusion are not correlated with restoration of the lumbar Lordosis ²).

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2200735/

The PI does not change after adolescence, and it directly influences pelvic alignment, including the parameters of pelvic tilt (PT) and sacral slope (SS) (PI = PT + SS), [corrected] overall sagittal spinal balance, and lumbar lordosis.

In the setting of an elevated PI, the spine adapt with increased lumbar lordosis. To prevent or limit sagittal imbalance, the spine may also compensate with increased PT or pelvic retroversion to attempt to maintain an upright posture.

1)

2)