

# Correction of the Spinal Deformities



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## Introduction

No matter, neither the etiology neither the ways in which of treatment non-surgical or surgical, the correction of the spinal deformities is appreciated mainly on radiological purely angular measurements as well as morphological as functional on SF36 or Oswestry or other scores. The spinal community is sort of hooked on these angular measurements returning from Cobb Angle AP and mesial projections, ignoring most of the time the Horizontal plane (this isn't thought-about because the form given by one CT Scan cut, however by the spile up from head to feet of the serial lots of the form. The percentage of correction of the Cobb angle remains the "Gold standard" needed for any trendy publication on this subject. often this fashion of evaluating is appropriate and reliable however typically this race to induce the simplest Cobb angle isn't the optimum one for the patient either like a shot when the correction or most frequently with some a lot of or less delayed follow up.

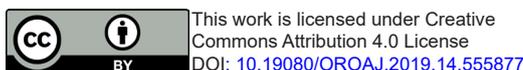
To address this drawback, it's necessary to contemplate within the 3D (space) and even 4D (time), some basic ideas today accepted by the whole community: \*The consecutive plenty of the varied components of the body notice from head to feet a spile up on the gravity line and later a sequence of balance with a specific importance of the Pelvic vertebrae. (Entire pelvis considered as a unique vertebra, intercalary bone adjusting the alignment between the lower limbs and trunk structures permanently as in standing or sitting position), as well as the cephalic vertebra (entire head considered as a unique vertebra). Their relative position in space can regulate the alignment of the

body working like a reverse pendulum with the weight located in the upper part.

\*Do not confuse alignment, which is static and balance which is dynamically dependent mostly from neurological structures relative to Neuro muscular behavior as well as cognition and central nervous system \*This drive to the concept of "Cone of Economy" where these bone and joint axial structures with their surrounding mass of variable tissues or appendix (upper limbs, for example) remain in the "small cone" area using less muscle power to stand as they use abundant when they are outside the small cone during motion or exercises. This concept explains the phenomenon of Compensation or Adaptation of the poster (especially at the level of the lower limbs) in order to try to maintain the body within this "economical" small cone.

It is also the biomechanical explanation of the so frequent PJK observed on rigid fusion & instrumentation done extensively along the spine in order to correct spinal deformities especially in adult spine surgery. The consequences of this vision are (before any attempt to treat spinal pathologies by casting, bracing, or any surgery with or without instrumentation and fusion):

- i. To check the passive as well as the active capacities of the various segments of the spine to realign properly.
- ii. To try to reduce as least as possible the extension of rigidity of the spine, leaving an extreme mobility segments above and below the fusion mass in order to allow as much compensation as possible.



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