

Article

Sagittal Balance in Children: Reference Values of the Sacral Slope for the Roussouly Classification and of the Pelvic Incidence for a New, Age-Specific Classification

Stefano Negrini ^{1,2} , Fabio Zaina ³ , Claudio Cordani ^{2,*}  and Sabrina Donzelli ³ 

¹ Department of Biomedical, Surgical and Dental Sciences, University “La Statale”, Via della Commenda 10, 20122 Milan, Italy; stefano.negrini@unimi.it

² IRCCS Istituto Ortopedico Galeazzi, Via R. Galeazzi 4, 20161 Milan, Italy

³ ISICO (Italian Scientific Spine Institute), Via R. Bellarmino 13, 20141 Milan, Italy; fabio.zaina@isico.it (F.Z.); sabrina.donzelli@isico.it (S.D.)

* Correspondence: claudio.cordani@grupposandonato.it

Abstract: Background: The Roussouly classification, based on the functional parameter sacral slope (SS), describes the normal sagittal balance in adults and has proved useful for surgery. Reference values in children should be defined, since they are an important treatment target of conservative treatment. Moreover, during growth, there are few correlations between sagittal parameters, and we hypothesize that a new classification based on the anatomical parameter pelvic incidence (PI) could also be useful. We performed a cross-sectional study to identify the reference values for the Roussouly classification during growth and to develop a new classification based on PI in children. **Methods:** Correlations between sagittal parameters and age were searched in 222 healthy subjects at the first consultation (6–18 years old). A new classification, based on PI, and comprising three types, is defined and compared to the Roussouly classification. **Results:** With age, correlations among sagittal balance parameters increase, as well as SS and PI, but with different cut-offs. The distribution of Roussouly types do not correspond to that in adulthood; thus, we defined new reference cut-offs. We defined a PI-based classification in three types, not overlapping Roussouly's. We found a uniform and balanced distribution of cases among the nine possible combinations. **Conclusions:** In children, we need to use new thresholds for the Roussouly types. The new classification based on PI is correlated with the Roussouly classification, but it is also clearly different. Future studies will determine its validity.

Keywords: scoliosis; spinopelvic parameters; growing age; conservative treatment; orthopedics; rehabilitation



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