This model predicts curve progression in Adolescent Idiopathic Scoliosis patients. The outcome is predicted in terms of the "Final Cobb angle".

This model was developed using data from 193 patients with idiopathic scoliosis. The model was trained on data from 144 subjects and tested on data from 49 subjects. The expected prediction error is 4.6 degrees. The patients were aged 12.7 ± 1.7 years (range 10-17.8) and had major Cobb angles of 48.9± 13.9°. All patients did not undergo surgery for spine curve correction.

All data was obtained from a single center; the model’s performance on patients from other centers, or patients with features out of the range specified in the table above, is unpredictable. Please test the model using retrospective data from your own center. We hope to encourage the eventual use of prediction models such as this in clinical practice. We appreciate any feedback.

If you use this model, please cite our paper:

|  |  |  |
| --- | --- | --- |
| **Features** | **Description** |  |
| Initial Cobb angle | Cobb angle is the angle measured between the lines which are above the most tilted vertebrae superior to the apex and below the most tilted vertebrae inferior to the apex |  |
| Flexibility (%) | The flexibility is calculated as the percent change in cobb angle between the standing radiograph and the side bending radiograph |  |
| Lumbar lordosis angle | Lordosis and Kyphosis angles are measured from lateral radiographs  Lordosis angle is the angle between the superior endplate of L1 and the inferior endplate of L5  Kyphosis angle is the angle between the superior endplate of T2 and the inferior endplate of T12 |  |
| Age at prediction (years) | Age of the patient at which the prediction is made |  |
| Number of levels involved | The number of vertebral levels involved in the major curve. In the figure on the right, seven levels are involved in the curve |  |
| Risser"+" stage at first-time point | Risser + staging system is an eight-point system  describes the pattern of ossification of the iliac apophysis and subsequent fusion of the apophysis to the ilium.  It combines the conventional Risser staging system with triradiate cartilage maturity assessment.  The Risser+ system consists of grade:  0- (open TRC)  0+ (Closed TRC),  Risser 1 :25% coverage  Risser 2: 50% coverage  Risser 3: 75% coverage  Risser ¾: 100% coverage  Risser 4: Start of fusion  Risser 5: complete fusion    For further details, please refer to:  Troy, Michael J., Patricia E. Miller, Nigel Price, Vish Talwalkar, Fabio Zaina, Sabrina Donzelli, Stefano Negrini, and M. Timothy Hresko. "The “Risser+” grade: a new grading system to classify skeletal maturity in idiopathic scoliosis." *European Spine Journal* 28, no. 3 (2019): 559-566.  (Link)  https://link.springer.com/article/10.1007/s00586-018-5821-8 |  |