O370
Evaluation of thoracic flexibility in the sagittal plane with the thoracic stiffness test: Intra and inter-operator reliability

Romano M.[1]
[1]Italian Scientific Spine Institute, Milan, Italy

Introduction: The sagittal measurement of the thoracic spine mobility is fundamental data for the choice of a conservative treatment to be set for a patient with pathologies affecting this portion of the spine. There are no objective and easy-to-perform clinical tests available. The study aims to evaluate the intra- and inter- operator reliability of the Thoracic Stiffness test, a variant of the Shober test [1] used for the lumbar spine. **Methods:** The TST test is performed with the subject in an upright position. Two landmarks are identified on the subject's back at the spinous processes C7 and T12. The distance in cm between the two points is measured.
The subject performs a spinal forced forward and backward bending. The distances between the two landmarks are measured again in the two limit positions. The delta between these measurements and the one taken in the neutral position was calculated. The intra-operator validation was performed by taking the measures described and repeated after 2 hours. It was not possible to repeat the measurements after a longer time because some subjects practised a treatment with exercises that could change the measurements. The inter operator validation was performed with the second assessor who took the blinded measurements immediately after the first. These measurements were performed blinded by two operators on 50 subjects. Data analysis was performed by calculating the interclass correlation and using the Pearson test. The Bland and Altman plots were created.
Results: The C7-T11 measurements in the neutral position were 30.7 ± 3.3 cm on average. Flexion Max
35.4 ± 4.0, Ext. Max 29.0 ± 3.2. The average difference between the Neutral Position and the Maximum Flexion is 4.62 cm. The average difference between the Neutral Position and Maximum Extension was 1.8 cm. The inter operator validation was performed with the second assessor who took the blinded measurements immediately after the first. The average difference between the measurements taken by the two operators was:
Neutral position = 0 Maximum Flex 0.24 cm Maximum extension 0.03 cm. The regression r indices indicate a very strong correlation for all three measures. Neutral position 0.98852. Maximum deflection 0.99218. Maximum extension 0.97452928.
Conclusion: The differences in the blinded measures taken by the two evaluators and the regression indices r show a very strong correlation. The Plots of Bland and Altman also graphically show the same result. The Thoracic Stiffness Test is reliable and allows one to obtain very important information. For patients with sagittal postural dysfunctions, objective data describing the mobility of the thoracic spine in a sagittal plan underlines the need to dedicate an adequate effort to the recovery of flexibility. The same test also allows us to evaluate the variations of the mobility that the conservative program has reached.

Reference:
[1]Murtagh J. Schober's test (modified). Aust Fam Physician. 1989 Jul;18(7):849. PMID: 2764780.