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How to measure kyphosis in everyday clinical practice: a reliability study on different methods.

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Abstract

INTRODUCTION: The sagittal plane measures have a relevant role both in Idiopathic Scoliosis (AIS) and in Hyperkyphosis (HK) management. Nevertheless, clinical tools for everyday use are scarce and not adequately studied.

AIM: To assess the repeatability of different methods for the collection of the sagittal profile of patients with spinal deformities during everyday clinics.

METHODS: We performed 4 different studies in 4 different populations of AIS and HK patients. In the first study we reported the normative data and measurement error of the plumbline measures in a general population of 180 adolescents. In the second study we compared the sagittal distances from the plumbline of C7, T12, L3, and Sagittal Index (SI = C7+L3) with the measures of the Video Rasterstereography at the same levels and the angles of kyphosis and lordosis in 100 AIS patients. In the third study we evaluated the intra and inter-rater repeatability and the measurement error of kyphosis and lordosis angles measured with the Inclined in 100 AIS patients. In the last study we evaluated the repeatability of the sagittal distances from the plumbline, by using a 1 mm change instead of 5 mm in a population of 40 patients. Statistical analysis: repeatability has been evaluated according to Bland and Altman, to identify the limits of variation that are clinically significant. Results. Study 1: the normative data were: females: 34 ± 11 mm for C7; 34 ± 15 mm for L3, males: 34 ± 10 mm for C7; 48 ± 10 mm for L3;. Study 2: a coefficient of correlation was calculated in order to compare measures. Study 3: the k value for Inclined varied from fair to good. Study 4: the repeatability was fair for this measure.

CONCLUSION: Some clinical instruments are now available for sagittal plane assessment in AIS and hyperkyphosis. The results of the present study report the limits during measurements in a clinical setting of parameters that are routinely collected by some clinicians.

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