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## P46. A noninvasive tool for postural assessment in young students at school: validation, sensibility, specificity and accuracy.

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### INTRODUCTION

The literature presents several tools and technics for postural evaluation but spine radiographs are still the gold standard method (Kilinc, Yaman & Atay, 2009; Guimarães, Saco & João, 2007). Spine alignment assessment by visual scan is the most known method, however small postural alterations are hard to detect (Singla & Vegar, 2014; Iunes et al., 2009). The aim of this study was to assess the validity, sensitivity, specificity and accuracy of a noninvasive method of postural assessment in adolescents at school.

### METHODS

The sample was composed by 81 subjects aged 14.23 ( $\pm$  3.11). Table 1 presents the sample characteristics.

Table 1

*Sample age, height and mass for males and females*

Variables	Males	Females
N	31	50
Age (years)	14.84 $\pm$ 3.39	13.86 $\pm$ 2.91
Height (cm)	165.48 $\pm$ 17.77	155.46 $\pm$ 11.49
Mass (Kg)	55.32 $\pm$ 15.94	47.20 $\pm$ 12.56

Vertebral column misalignments were detected by an experimental instrument (based in a symetrograph). C7-L5 spinous processes and the intergluteal fold were used as anatomic landmarks to visually detect asymmetries (Fransoo, 2003). Subjects were also clinically inspected by a spine surgeon and made long standing radiographs. The Spearman's correlation test between the experimental data and X-Ray evaluated the validity. The true and false negative and positives cross-tabulation, assessed the test sensitivity, specificity and accuracy.

### RESULTS

Table 2 presents the frequency of postural asymmetries for the experimental test and X-Ray. Table 3 presents the true and false negatives analysis. A significant and positive correlation was observed between the experimental test and X-Ray ( $r_s = 0.763$ ;  $p < 0.001$ ). The instrument sensitivity was 97%, the specificity was 67% and the accuracy 88%.

Table 2

*Frequency and percentage of postural asymmetries in the experimental test and X-Ray*

	Frequency		Percentage	
	Experimental test	X-Ray	Experimental test	X-Ray
Aligned	9	10	11.1%	12.3%
Asymmetry at right	23	15	28.4%	18.5%
Asymmetry at left	26	27	32.1%	33.3%
Bilateral asymmetry	23	29	28.4%	35.8%

Table 3

*True and false negative and positives cross-tabulation analysis*

	True	False
Without postural asymmetries	8	1
With postural asymmetries	70	2

### CONCLUSIONS

A significant and positive correlation confirmed the test validity. The evaluation of true and false negative and positives cases allowed to conclude that the instrument present sensibility, specificity and accuracy for postural analysis at schools.

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