INTRODUCTION

It has been suggested that some measures of trunk deformity obtained in digital photography can be useful in the assessment of trunk deformity.

Qiu.EurSpineJ.2009
Qiu.Spine 2010 y
Saad.JBodyMovTher.2012

The relationship between these measures and patients’ self-image perception has not been established.

OBJECTIVE

To assess the validity of a clinical assessment tool of the trunk deformity based on photographs as compared to self-assessed appearance questionnaires.
Study design: Transversal study.

Inclusion criteria:

- Idiopathic Scoliosis (IE) ≥ 25°
- Age between 12 and 40 years old.

Method:

- Front and back digital photographs on standing position were obtained.
- All patients completed SRS-22; SAQ; QLSDP and TAPS questionnaires.

Shoulder, armpit and waist angles in addition to trunk asymmetry indices were calculated on front and back photographs with Surgimap® software.

Statistical analysis: The Pearson correlation coefficients (r) were used to estimate concurrent validity between both methods.
PHOTOGRAPHY MEASUREMENTS

**Trapezium angle “right/left” (TA):** The angle between the horizontal line and the line of external trapezius muscle profile.

**Shoulder height angle (SHA):** A line drawn between the left and right acromion process, and the angle of this line to the horizontal.

**Armpit height angle (AHA):** A line drawn between the left and right superior part of the armpit, and the angle of this line to the horizontal.

**Waist height angle (WHA):** A line drawn between the deepest part of left and right waist, and the angle of this line to the horizontal.

**Waist angle “right/left” (WA):** The angle subtended by lines drawn through the upper end of waist to the center of waist and the center of waist through the lower end of waist.

**Right to left ratio at armpit level (a/b) (RADRL):** Distance of a line drawn from the superior part of armpit angle to plumb-line. Ratio right/left of these distances.

**Right to left ratio at waist crease (c/d) (RWDRL):** Distance of a line drawn from the deepest point of waist angle to plumb-line. Ratio right/left of these distances.
RESULTS

DESCRIPTIVES

N=80 patients (40 Cobb < 45° and 40 Cobb >45°)

** There was a significative difference between Cobb angle magnitudes and questionnaire punctuations between both study groups.

Average age: 20.31 ± 8.62 y.o

68 women and 12 men

Mean Cobb angle : 45.9° (range 25.1° to 77.2°)
RESULTS

RELIABILITY ANALYSIS

Intra-rater reliability range between 0.56 and 0.97 depending on the variable.
Inter-rater reliability range between 0.62 and 0.95 depending on the variable.

All variables have a good to excellent reliability

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>BACK</th>
<th>FRONT</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTA</td>
<td>0.83</td>
<td>0.73</td>
</tr>
<tr>
<td>LTA</td>
<td>0.77</td>
<td>0.67</td>
</tr>
<tr>
<td>SHA</td>
<td>0.64</td>
<td>0.62</td>
</tr>
<tr>
<td>AHA</td>
<td>0.72</td>
<td>0.71</td>
</tr>
<tr>
<td>WHA</td>
<td>0.82</td>
<td>0.85</td>
</tr>
<tr>
<td>RWA</td>
<td>0.90</td>
<td>0.79</td>
</tr>
<tr>
<td>LWA</td>
<td>0.79</td>
<td>0.73</td>
</tr>
<tr>
<td>RADRL</td>
<td>0.94</td>
<td>0.95</td>
</tr>
<tr>
<td>RWDRL</td>
<td>0.95</td>
<td>0.92</td>
</tr>
</tbody>
</table>
## RESULTS

### CORRELATION ANALYSIS

<table>
<thead>
<tr>
<th></th>
<th>WAIST HEIGHT ANGLE (WHA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BACK</td>
</tr>
<tr>
<td><strong>TAPS</strong></td>
<td>-0.35</td>
</tr>
<tr>
<td></td>
<td><em>p &lt; 0.002</em></td>
</tr>
<tr>
<td><strong>SAQ-Total</strong></td>
<td>0.29</td>
</tr>
<tr>
<td></td>
<td><em>P &lt; 0.01</em></td>
</tr>
<tr>
<td><strong>SAQ-Appearence</strong></td>
<td>0.35</td>
</tr>
<tr>
<td></td>
<td><em>p &lt; 0.002</em></td>
</tr>
<tr>
<td><strong>SRS-22 Self-Image</strong></td>
<td>-0.23</td>
</tr>
<tr>
<td></td>
<td><em>p &lt; 0.05</em></td>
</tr>
</tbody>
</table>
No other significant correlations were found between digital photography measures and questionnaire punctuations.
1. Small sample.
   Good stratification.
   Patients with greater deformity had worst punctuations on self-image perception scales and quality of life questionnaires.

2. We do not perform a photography on anterior trunk flexion position →
   Scoliometer has good correlation with radiology (0.22-0.59).
   Asher → No correlation was found between scoliometer and SRS-22
   Asher. Spine. 2004
CONCLUSIONS

Waist height angle measured with digital photography is moderately correlated with perceived trunk appearance with an inter-rater reliability of 0.82.

Right trapezium angle is the measure on shoulder area that better correlate with quality of life.

Trunk asymmetry is poorly correlated with self-assessed appearance. No significant correlations have been found.

Picture scales are better correlated with photographs than verbal rating scales.
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