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Trunk asymmetry in normal juveniles

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Background

Trunk asymmetry in normal adolescents was previously reported [1]. The present study reveals, for the first time, trunk asymmetry (TA) in juveniles and provides data which describes the evolution of trunk asymmetry from early childhood to adolescence.

Materials and methods

The scoliometer readings in both standing and sitting forward bending position (FBP) of 3301 children, (1645 boys, 1656 girls) aged from 3 to 9 years old, were studied. TA was quantified by measuring angle of trunk rotation (ATR) and children were divided in two groups. In group I the ATR was 1° to 6° degrees and in group II $\geq 7^\circ$. STATA 9.0 statistical package was used for the analysis.

Results

71.25% of boys and 73.27% of girls (2.02% more for girls) in *standing* while 81.13% of boys and 80.74% of girls in *sitting* FBP (0.39% more for boys), were symmetric (ATR = 0°).

The symmetry difference at *standing* minus *sitting* FBP for boys and girls was 9.88% and 7.43% (2.45% more for boys) respectively. Severe asymmetry of $\geq 7^\circ$ was found 1.74% for boys and 1.75% for girls at the *standing* and 1.21% and 1.22% at the *sitting* FBP respectively. Analysing ATR by age it appears that significant TA changes take place between 8 – 9 years of age for boys and between 6–7 and 8 – 9 years for girls.

Discussion

Juveniles were found with less trunk asymmetry than adolescents. In the sitting FBP juvenile boys turn 2.45% more symmetric than juvenile girls from standing FBP, a larger percentage compared with the pertinent found for adolescents, indicating different juvenile – adolescent torso dynamics. The asymmetry of $\geq 7^\circ$ was 1.49% less from adolescent boys and 2.17% less from adolescent girls at the standing FBP and 0.41% and 0.99% less at the sitting FBP respectively, [2].

References

1. Grivas TB, Vasiliadis E, Koufopoulos G, Segos D, Triantafyllopoulos G, Mouzakis V: **Study of trunk asymmetry in normal children and adolescents.** *Scoliosis* 2006, **1**:19.
2. Grivas TB, Vasiliadis ES, Polyzois VD, Mouzakis V: **Trunk asymmetry and handedness in 8245 school children.** *Pediatric Rehabilitation* 2006, **9**:259-266.