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Trauma- & Hand Surgery

Determination of reference values for spinal posture in children

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- **back pain is an increasing problem in children & adolescents**
- **prevalence approaching that in adults**
- **children´s posture has been of growing concern to parents, teachers and medical professionals**

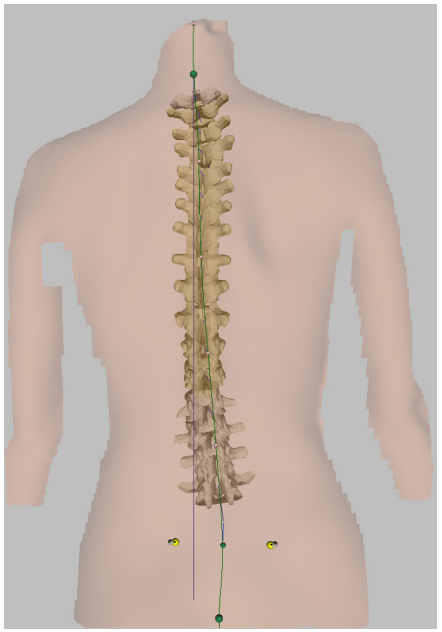
- *Erne C, Elfering A, Eur Spine J 2011*
- *Cardon G, Balague F, Eur Spine J 2004*
- *Troussier B et al, Scand J Rehabil Med 1994*

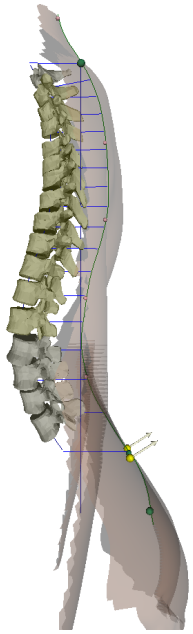
- **childrens posture seems to be impaired compared to previous generations**
- **nevertheless the determination of reference values of children´s posture has received only scant attention**
- **the question of what is „normal“ posture in children remains to be answered**

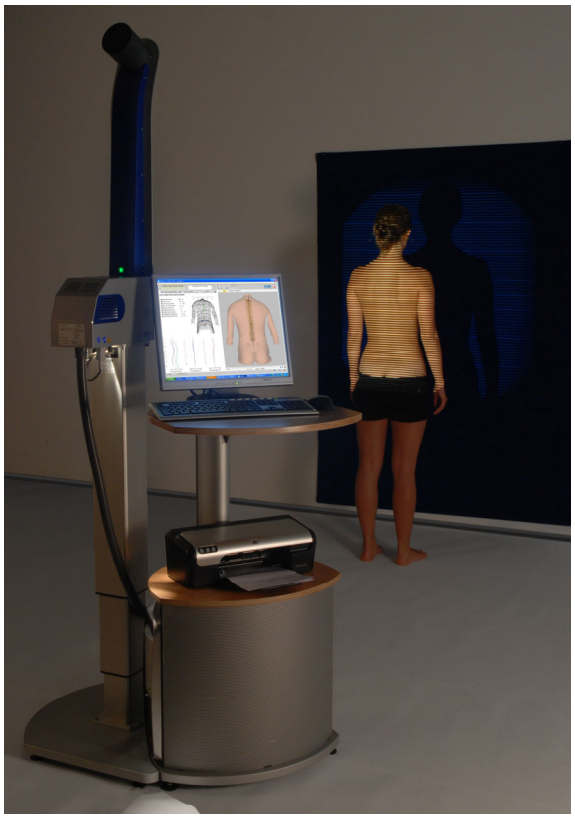
- *Widhe T, Eur Spine J 2001*
- *Mc Evoy MP, Grimmer K, BMC Musculoskeletal Disord 2005*

- **a total number of 345 elementary school pupils (168 girls & 177 boys) were analysed in this study**
- **each child was measured three times with a rasterstereographic system**
- **the following parameters were detected:**
  - kyphotic & lordotic angle
  - trunk inclination & trunk imbalance

- **Rasterstereography:**
  - contact-free, radiation-free & highly reliable
  - based on the principle of triangulation







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- **a mean kyphotic angle of 47.1° (SD ±7.5°) and a mean lordotic angle of 42.1° (SD ±9.9°) was measured**

- **trunk imbalance in girls (5.85 ±0.74 cm) and boys (7.48 ±0.83 cm) varied only little, with boys showing slightly higher values than girls.**

- **the trunk inclination did not show any significant difference between boys and girls**

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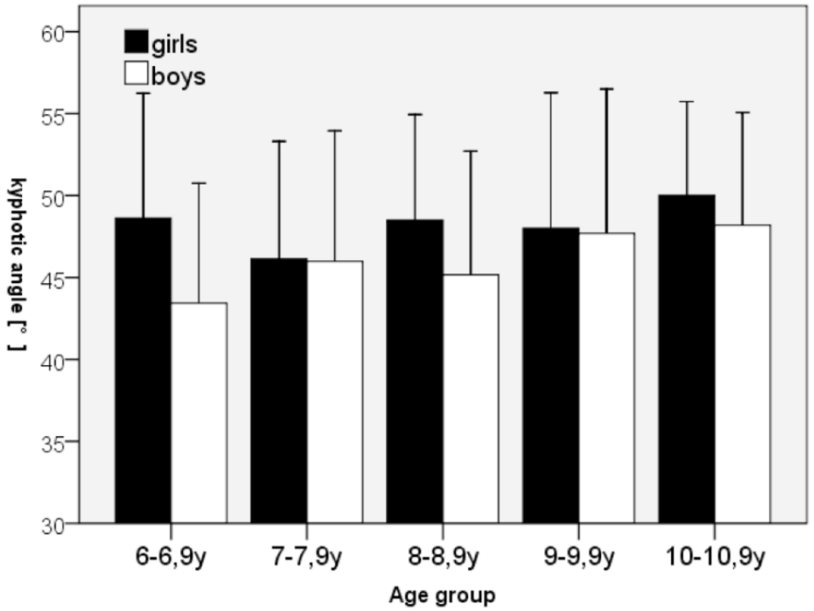
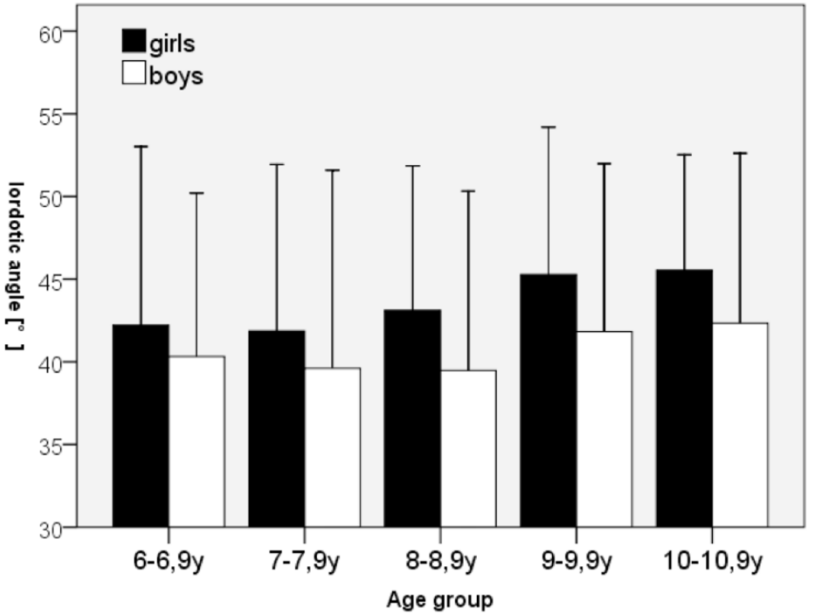
Introduction

Methods

Results

Conclusion





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- **this study provides the first systematic rasterstereographic analysis of spinal posture in children**
- **an age and growth dependent effect on postural parameters was measured, but this effect was small and not significant**
- **there seems to be a wide physiological variation of spinal posture in boys and girls between the ages of six and eleven**

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- **further studies should follow:**
  - to determine the reference values of children during puberty
  - with a larger number of children to gain more reliable data concerning age dependent development


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