Differences in spinal posture and mobility between children/adolescents with obesity and age-matched normal-weight individuals.

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The aim of this study was to cross-sectionally explore the association of obesity with spinal posture and mobility, commonly associated with musculoskeletal problems, by comparing the spinal parameters between 90 obese and 109 normal-weight children and adolescents. A non-invasive electromechanical device, the Idiag M360 (Idiag, Fehraltorf, Switzerland), was used to measure the spinal parameters. An age-and-sex-adjusted two-way analysis of variance (ANOVA) was used to determine postural and mobility differences between the two groups. Children and adolescents with obesity had significantly greater thoracic kyphosis [difference between groups (Δ) = 13.0^0, 95% CI 10.1^0-15.8^0, $p < 0.0001$] and thoracic extension (Δ = 6.50, 95% CI 2.9^0-11.6^0, $p = 0.005$), as well as smaller mobility in thoracic flexion (Δ = 5.0^0, 95% CI 1.2^0-8.8^0, $p = 0.01$), thoracic lateral flexion (Δ = 17.7^0, 95% CI 11.6^0-23.8^0, $p < 0.0001$), lumbar flexion (Δ = 12.1^0, 95% CI 8.7^0-15.5^0, $p < 0.0001$), lumbar extension (Δ = 7.1^0, 95% CI 3.1^0-12.2^0, $p = 0.003$) and lumbar lateral flexion (Δ = 9.1^0, 95% CI 5.5^0-12.8^0, $p < 0.0001$) compared to the normal-weight children and adolescents. These findings provide important information about the characteristics of the spine in children and adolescents with obesity and unique insights into obesity-related mechanical challenges that the spine has to withstand and strategies designed to improve spinal mobility in this young population.