Eshraghi *et al. Scoliosis* 2009, **4**(Suppl 2):O5
http://www.scoliosisjournal.com/content/4/S2/O5

Scoliosis

ORAL PRESENTATION Open Access

Static & dynamic balance of schoolgirls with hyperkyphosis

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From 6th International Conference on Conservative Management of Spinal Deformities
Lyon, France. 21-23 May 2009

Objective
The purpose of this study was to examine the effects of hyperkyphosis on static and dynamic balance control in school-aged girls.

Background
Biomechanical factors such as spinal deformity can result in balance control disorders. Many studies have shown balance control disorders in scoliotic subjects.

Materials and methods
In a comparative study, a Bertec force platform was used to record center of pressure (COP) data. Ten female adolescents with hyperkyphosis (mean age: 13.9 years, mean Cobb angle 52°) were compared to 14 age-matched controls (average age 14.8 years) in static and dynamic balance tests. In static tests, we used two visual conditions (eyes open and closed) and the subjects were asked to perform the tests on their dominant limbs and on both limbs. Dynamic tests included forward, right and left reach, using a standard reach device.

Results
Statistical analysis showed no significant difference in static balance tests. But in dynamic tests, significant differences were seen between the normal and hyperkyphotic subjects. The mean value of each parameter was higher in normal subjects in right and left reach tests, performed with right and left hand respectively ($p < 0.05$).

Conclusion
The present results reveal that hyperkyphotic subjects might have less range of motion in lateral trunk movements and hence less limit of stability than normal subjects, since they probably showed poorer performance than normal controls in order to keep their balance.

Published: 14 December 2009

doi:10.1186/1748-7161-4-S2-O5
Cite this article as: Eshraghi *et al.*: Static & dynamic balance of schoolgirls with hyperkyphosis. *Scoliosis* 2009 **4**(Suppl 2):O5.

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