Relationship of Spinal Curvature with Physical Functions and History of Falls in Elderly Japanese Women

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Purpose: Hyperkyphosis in the elderly is associated with several adverse health outcomes such as diminished physical function and falls. The objective of this study was to evaluate the relationships of spinal curvature with physical function and the history of falls in elderly Japanese women.

Methods: The subjects were 42 elderly women aged 65 to 95 years (mean age 78.0 years). To estimate spinal curvature, we measured the spinal inclination angle, thoracic kyphosis angle, lumbar lordosis angle, and sacral inclination angle. Data were collected based on 5-m walking time, timed up and go test (TUG), one-foot standing time, modified gait abnormality rating scale (GARS-M), Japanese physical performance test, motor fitness scale, fall efficacy scale (FES), and the history of falls in the previous year.

Results: The spinal inclination and lumbar lordosis angle significantly correlated with physical functions. The spinal inclination angle significantly correlated with 5-m walking time, TUG, GARS-M, and FES, the lumbar lordosis angle correlated with TUG, GARS-M, and FES, with adjustment for age, height, weight, and spinal disorders. The thoracic kyphosis angle affected the existence of the fall history.

Conclusion: The spinal inclination and lumbar lordosis angle were significantly related to gait function and the fear of falling. On the other hand, the thoracic kyphosis angle correlated with the history of falls.