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Assessing flexibility in adolescents: what does back-saver sit-and-reach test actually measure?

by

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Objective: Angular kinematic analysis is a useful and accurate method to measure angles and assess indexes of flexibility. The objective of the current study is to examine the participation of the main body joints involved in the back-saver sit-and-reach (BSSR) test and to study the validity of the BSSR test, using angular kinematic analysis in adolescents.

Methods: A total of 138 adolescents (81 boys and 57 girls; average age 14.46 ± 1.69 years) volunteered to participate in this study. While the participants were performing the BSSR test (2 attempts, best score retained), hip, lumbar and dorsal angles were calculated by angular kinematic analysis. Previously, anatomical points in greater trochanter, vertebras L5, D12 and C7 were marked in the skin by an experienced physiotherapist and a standardized warm-up was realized. Stepwise lineal regression models were used to analyse the influence of the hip, lumbar and dorsal angles in the BSSR test score, after adjustments for sex and age.

Results: The hip angle independently explained a 42% (P<0.001) of the variance in the BSSR test. The lumbar angle additionally explained a 30% (P<0.001) of the variance in the BSSR test. The dorsal angle added a 4% (P<0.001), explaining all together a 81% of the variance in the BSSR test.

Conclusions: The results suggest that hip is the main body joint involved in the BSSR test in adolescents, followed by lumbar spine. The BSSR can be considered an appropriate and valid test for assessing hip and lumbar spine flexibility at these ages.

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