

Influence of Leg Length, Trunk Length and Hydration Levels on Hamstring Flexibility among School going Adolescents: An Observational Study

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ABSTRACT

Introduction: Hamstring flexibility is an essential component of physical fitness that contributes to posture, reduces musculoskeletal injury risk, and enhances athletic performance in adolescents. While age and physical activity levels are known to affect flexibility, the impact of leg length, trunk length and hydration levels is secondary understood in this population.

Aim: This study aims to investigate the influence of leg length, trunk length and hydration levels on hamstring flexibility among school-going adolescents aged 13 to 17 years.

Materials and Methods: A cross-sectional study was conducted with 250 adolescents (131 males, 119 females). Hamstring flexibility was assessed using the V Sit and Reach Test. Body proportions, including leg and trunk lengths, were measured using standard anthropometric techniques. Hydration status was evaluated with the NIRUDAK scale, which considers fluid intake, urine colour, and physiological markers. Descriptive statistics and Spearman

correlation analysis were used to explore relationships between these variables.

Results: There were weak and non-significant correlations between hamstring flexibility and body proportions, such as leg length and trunk length ($Rho = -0.107$) and ($Rho = -0.108$). However, a significant positive correlation was found between daily water intake and hamstring flexibility ($Rho = 0.474$, $p = 0.001$). Dehydration showed a strong negative correlation with flexibility ($Rho = -0.776$, $p = 0.001$), indicating that increased dehydration levels are associated with reduced hamstring flexibility.

Conclusion: Hydration has a notable impact on hamstring flexibility in adolescents, while leg and trunk length show no significant effect. These findings highlight the importance of adequate hydration for maintaining optimal flexibility and provide insights for educators and clinicians to design effective physical education and rehabilitation programmes.

Keywords: Adolescents, Body proportion, Hamstring muscle