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## Which is the primary factor influencing running stride parameters: age or lower limb strength?

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## **Which is the primary factors influencing running stride parameters: age or lower limb strength?**

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Much still remains unknown about the impact of age, and age-related changes in muscle function, on gait parameters. The aim of this study was to examine the impact of strength on running gait parameters across the adult lifespan. We tested the hypothesis that a greater amount of the variance in peak hip, knee and ankle sagittal plane moments would be explained by peak isometric joint torques as compared to age. Twenty-four healthy adults, ages 20-66 years, completed 5 trials on an overground 20-meter runway at a standardized velocity of  $3.5 \text{ ms}^{-1}$  ( $\pm 5\%$ ). Participants performed maximal isometric plantar flexion and knee extension for three contractions lasting three seconds each. Linear regression analysis between strength, age, and moments were performed. At the ankle, age alone explained 14.4% of the variance in the peak ankle joint moment. There was not a significant increase in the variance explained when strength was added to the model. At the knee, neither age nor strength explained a significant portion of the variance in peak knee moments. However, together age and strength explained 27.9% of the variance in the peak knee moment. No significant associations were found between the hip moments and either knee and ankle strength. These results suggest that other age-related physiological changes may drive changes in gait mechanics more so than maximal torque production. A more dynamic measure of muscle function, such as power or isokinetic torque at varying speeds may have greater predictive value for gait performance.

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