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## » Journal Abstract

Comparison of aerobic and anaerobic power and leg strength between young distance runners and basketball/soccer players

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The purpose of the study was to compare aerobic power ( $V_{\text{O}_2\text{max}}$ ), anaerobic power (Wingate test), isokinetic peak torque of knee flexor and extensor muscles and calcaneal bone density between young distance runners and soccer/basketball players to determine whether these sports activities were associated with physiological differences. The study groups were high school male distance runners (MDR,  $n=10$ ) and soccer players (SO,  $n=10$ ), and college female distance runners (FDR,  $n=12$ ) and basketball players (BB,  $n=12$ ). Mean  $V_{\text{O}_2\text{max}}$  in  $\text{ml}\cdot\text{min}^{-1}\cdot\text{kg}^{-1}$  of lean body mass was the same in both groups of runners, and significantly lower in BB, but not in SO. Absolute values of peak anaerobic power were significantly higher in BB and SO than in the respective runners' groups. However, when divided by body mass, the difference in peak and mean anaerobic power between SO and MDR was no longer significant. BB and SO had significantly greater flexor and extensor peak torque than the respective runner's group at all velocities, as well as greater bone density estimated from bone stiffness. When divided by body mass, peak torque of knee extensors was not significantly different between BB and FDR. Higher anaerobic power, isokinetic leg strength and bone density in BB and SO than in respective runners probably result from the specific dynamic movements such as sprinting, rapid directional changes, jumping and kicking inherent in these games.

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