

TACSM Abstract

The Relationship between Lower Limb and Trunk Muscle Activation and Serving Velocity in NCAA Male Division I Tennis Players

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ABSTRACT

Tennis serve is one of the crucial component of the sport. However, there is limited research on the relationship between lower limb and trunk muscle activation and tennis serve performance. **PURPOSE:** The aim of the present study was to investigate the relationship between trunk and lower limb muscle activation and serving velocity in NCAA male division I tennis players. **METHODS:** Ten male athletes (age: 20.20 ± 1.8 years; height: 177.40 ± 12.7 cm; mass: 75.92 ± 6.5 kg) participated in the study. Pearsons correlation coefficients and a quadratic multiple linear regression model was used to illustrate the relationship between muscle activation and serving velocity. **RESULTS:** Results demonstrated a strong correlation between the peak serving velocity and peak muscle action potential of Rectus Abdominis ($r = .861, p = .012$), Multifidus ($r = .888, p = .027$), and Rectus Femoris ($r = .880, p = .046$). Further, 88.5% variance was accounted in the Serving Velocity ($F = .066; df = 7,2; p < .05$). **CONCLUSION:** It can be concluded that there is a relationship between lower limb and trunk muscle activation and serving velocity with Rectus Abdominis being the most predictive variable. Therefore, exercises which increase Rectus Abdominis strength thereby increasing the activation could be implemented in tennis training in order to enhance the serve performance.