**The influence of growth and development on shoulder rotators strength in young male and female elite tennis players.**

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**Abstract**

**Background:** Tennis practice requires a lot of technical, physical and mental qualities that have to be trained from the youngest age. The important number of hours spent on the court can lead, medium-to-long term to strength or flexibility adaptations, even in the youngest players. The current study aimed to explore the developmental consequences of repetitively playing tennis on shoulder range of motion and shoulder rotators’ strength in elite male and female tennis players.

**Methods:** Eigthy four painfree elite tennis players were assessed during preseason between 2009 and 2019. Clinical assessment included internal and external rotation range of motion and forward shoulder posture while maximal internal and external rotators strength were assessed with an isokinetic dynamometer in concentric and in eccentric modes (at 60°/s and 240°/s).

**Results:** In male players, growth and maturation induced an increase in forward shoulder posture. Absolute peak torque and bodyweight peak torque of internal and external rotators in concentric and eccentric mode were also significantly increased during with age while ER/IR concentric ratios were significantly decreased. In the female players, only absolute peak torque of internal and external rotators in concentric mode and eccentric strength of external rotators were significantly influenced by the development.

**Conclusions:** Specific adaptations were found in male and female players with age and practice. The important variability in the results within the different age categories and the gender strengthens the importance of regular screening (and isokinetic evaluations) in young tennis players in order to highlight potential atypical profiles, which could have a negative influence on performance or increase the risk of injuries during the development of the player.

**Keywords:** tennis performance, young players, strength, growth, assessment