# 28th ECSS Anniversary Congress, Paris/France, 4-7 July 2023

505 Change of Direction Asymmetry Magnitude Decreases According to Chronological Age in Male and Female Elite Youth Tennis Players: Results from an 11-year longitudinal study.

DHondt, J., Chapelle, L., DHondt, E., Clarys, P.

Vrije Universiteit Brussel

### INTRODUCTION:

Functional interlimb asymmetry is inherent and can be exacerbated by practicing sports. Predominantly unilateral sports, such as tennis, can potentially increase the magnitude of functional asymmetry. For example, tennis strokes are more often executed on one side of the court, as players tend to use their forehand more than their backhand, resulting in side-to-side differences in COD (i.e., change of direction) tasks. Given that asymmetry in COD already occurs at an early age, and that functional asymmetry has been reported to affect athletic performance, this study aimed to examine the development of 505 COD asymmetry longitudinally in youth elite tennis players.

#### METHODS:

The development of COD asymmetry was assessed yearly (up to six years of monitoring) in 323 male and 235 female youth elite tennis players (aged 6-13 years) using an 11-year longitudinal cohort study design (i.e., 2012-2022). For the 505 COD test, the time to cover a 5 m sprint, perform a 180° turn (i.e., either to the left or to the right) and a 5 m sprint back was recorded for both directions of rotation. All players conducted three trials per direction and were given at least one minute of rest between trials to ensure sufficient recovery. At all test occasions, the dominant (i.e., overall best result) and non-dominant performance (i.e., best test result of the opposite rotation direction) values were determined. The magnitude of asymmetry was calculated as follows: ([dominant performance value-non-dominant performance value] / dominant performance value)\*100. Linear mixed effects regression models were used to examine the development of performance and asymmetry in the 505 COD according to players' chronological age and sex. To examine the direction of asymmetry as to which 505 COD performance was dominant across the test occasions within players, kappa coefficients were calculated.

**RESULTS:** 

Regardless of sex, both dominant and non-dominant performance values significantly improved (p < 0.001) with increasing chronological age. In both the male and female players, an increase in chronological age was related to a significant decrease in 505 COD asymmetry magnitude (i.e., -0.17 ± 2.83% per year). Regardless of age, the male players showed a significantly lower 505 COD asymmetry magnitude (i.e., -0.30 ± 1.00 %) compared to the female players. The kappa coefficients were slight for the male (i.e., k-value = 0.02) and poor for the female (i.e., k-value = 0.00) youth elite tennis players.

#### CONCLUSION:

While the yearly 505 COD performances improved over time, the magnitude of 505 COD asymmetry significantly decreased among both male and female youth elite tennis players according to their chronological age. The large standard deviation as well as the poor to slight kappa values emphasize the individual and direction-specific character of the 505 COD asymmetry metric. Therefore, an individual and time-bounded approach seems warranted if practitioners deem to examine the (development of) functional asymmetry.

Topic: Sports Medicine and Orthopedics

Presentation

Poster

## European Database of Sport Science (EDSS)

Supported by SporTools GmbH

