



# A LONGITUDINAL ANALYSIS OF SPEED CHARACTERISTICS FOR TALENTED YOUTH FEMALE SOCCER PLAYERS: A PILOT STUDY

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## Introduction and Purpose

Previous literature on the growth and development of female soccer players has indicated that peak speed characteristics occur around the age of 16 (Loko J et al, 2003; Vescovi JD et al, 2010). However, these studies were cross sectional, and did not chart the progress of talented players. As a result, pilot work with a youth female soccer group has been started to examine longitudinally the speed characteristics of female youth soccer players, and determine if speed characteristics change over time amongst different levels of players.

## Methods

Female soccer players (N=14) were recruited from a regional high performance center and performed a series of tests for three consecutive years (U14, U15, U16). Longitudinal data was created for a group that made the junior national team (NAT=4), and for those who remained at a regional level (REG=10). The tests performed were as follows.

**20 Metre Linear Sprint (20SPRINT)** – Infrared timing gates were set at the start and finish lines. Athletes began from a stationary position with one foot on the start line and sprinted maximally through the finishing gates. Three trials were performed with the fastest time recorded.

**35 Metre Linear Sprint (35SPRINT)** – Infrared timing gates were set at the start and finish lines. Athletes began from a stationary position with one foot on the start line and sprinted maximally through the finishing gates. Three trials were performed with the fastest time recorded.

**Repeated sprint test (RSA)** – Infrared timing gates were set at each end line 20 metres apart. Athlete performed ten sprints along the 20 metre course with 10 second recovery between each sprint. Time was recorded for each sprint with the mean time for the 10 sprints reported.

**Yo-Yo Intermittent Recovery Test-Level 1 (YO-YO)** – The 20 metre course and 5 metre recovery zone were marked with cones. Athletes traveled out and back on the course keeping pace with audible beeps from the Yo-Yo CD and had 10 seconds recovery between each shuttle (40 metres). A warning was given after the first unsuccessful shuttle and the test was terminated after the second. The final stage completed was recorded.

**Statistics** –A two-way ANOVA was used to compare differences in the tests amongst age groups and playing levels. The Turkey post-hoc test was used to identify significances between groups. The level of significance was set to  $p < 0.05$ . All data are reported as means  $\pm$  SD.

## Results

**Table 1.** Physical characteristics of age groups.

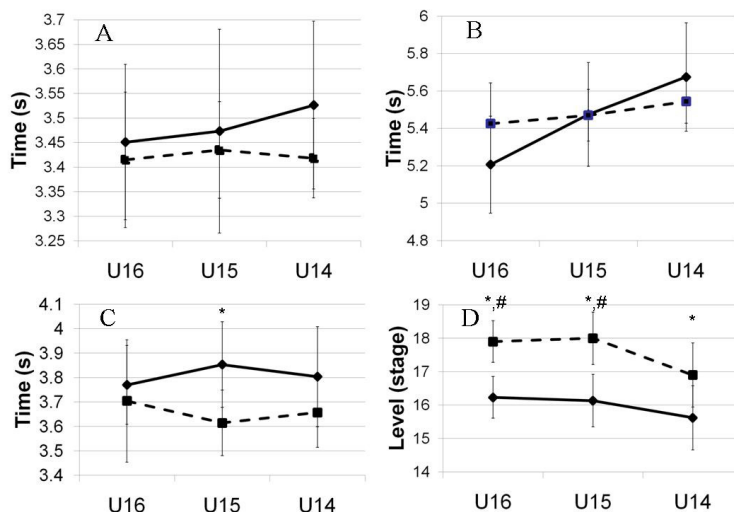
	Height (cm)	Body mass (kg)	BMI (kg•m <sup>-2</sup> )
U14	163.0 $\pm$ 6.4	55.1 $\pm$ 7.7**	20.7 $\pm$ 1.4
U15	163.9 $\pm$ 7.2	57.6 $\pm$ 6.0	21.4 $\pm$ 1.4
U16	165.4 $\pm$ 6.8	62.3 $\pm$ 6.1	22.8 $\pm$ 1.8

\*\*Indicate significant differences between age groups

The U14 players were lighter ( $p < 0.05$ ) than at the U15 and U16 age categories. No differences in height and BMI were observed between the different years of testing, and no differences between NAT and REG were observed.

## Results

**Figure 1.** Performance characteristics of NAT and REG players across different years. A) 20SPRINT time (s). B) 35SPRINT time (s). C) RSA average time (s) D) CMJ height (cm). \*Significant difference between REG and NAT. # U16 and U15 age groups are significantly different from U14 age groups.



No significant differences were observed in 25SPRINT and 35SPRINT between REG and NAT, however, sprint times with NAT players tend to be 4.3% faster at the U14 age. REG players were also 3.4% faster for 35SPRINT at U16 age.

NAT players made no improvements during RSA over the three years observed, but were statistically faster by 6.2% than REG players at U15 age groups ( $p < 0.05$ ).

NAT players reached significantly higher levels in the YO-YO than REG players across the three years tested ( $p < 0.05$ ). Improvements were made by NAT players from the U14 to U15 and U16 age groups.

## Discussion and Conclusions

NAT players reached higher levels consistently during the YO YO test throughout the years analyzed.

NAT players appear faster at earlier ages during short sprints, however, these trends do not improve over the years, whereas for REG players, times for sprints tend to improve.

The ability to perform repeated high intensity sprint bouts appears to be enhanced between the different levels of play at earlier ages, but tends to equalize by the U16 age group.

While top end speed might be an early indicator of a junior national female youth soccer player, high intensity work capacity, seems to be an important physical selection parameter between regional and national junior youth female soccer players.

## Acknowledgements

Thanks is extended to the teams and coaches for participating in this study.