

SPEED & HIGH INTENSITY RUNNING ABILITY OF FEMALE SOCCER PLAYERS OF DIFFERENT STANDARDS OF PLAY

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Introduction and Purpose

High intensity running during soccer matches has been linked with performance on field-based tests in female soccer players (Krustrup et al., MSSE, 2005). Additionally elite soccer players achieve faster linear sprint speeds compared to sub-elite players (le Gall et al, J Sports Sci, 2010). However, few data exists detailing the linear sprint and high intensity running of female soccer players of different standards of play across various age groups. The purpose of this study was to examine the various types of sprint ability of female soccer players.

Methods

Female soccer players (N=106) were recruited from local clubs (CLUB, N=47), as well as regional and national teams (HIGH, N=59). Athletes were classified into three age groups: 14 years and younger (U14, N=39), 17 years and younger (U17, N=34), and 18 years and older (SR, N=33).

20 Metre Linear Sprint (SPRINT) – 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) – Athletes traveled out and back on the 20 metre 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. Total distance the athlete covered was recorded.

Countermovement Jump (CMJ) – Jump height was determined using an electronic timing system (OptoJump Next). Athletes stood with hands on their hips and following a crouching action immediately jumped vertically for maximal height. Flight time was converted into jump height. Three trials were performed with the highest jump recorded.

Statistics – A one-way ANOVA was used to compare the physical characteristics of each age group. A two-way ANOVA was used to compare differences in the tests amongst age groups and playing levels. Turkey's 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.

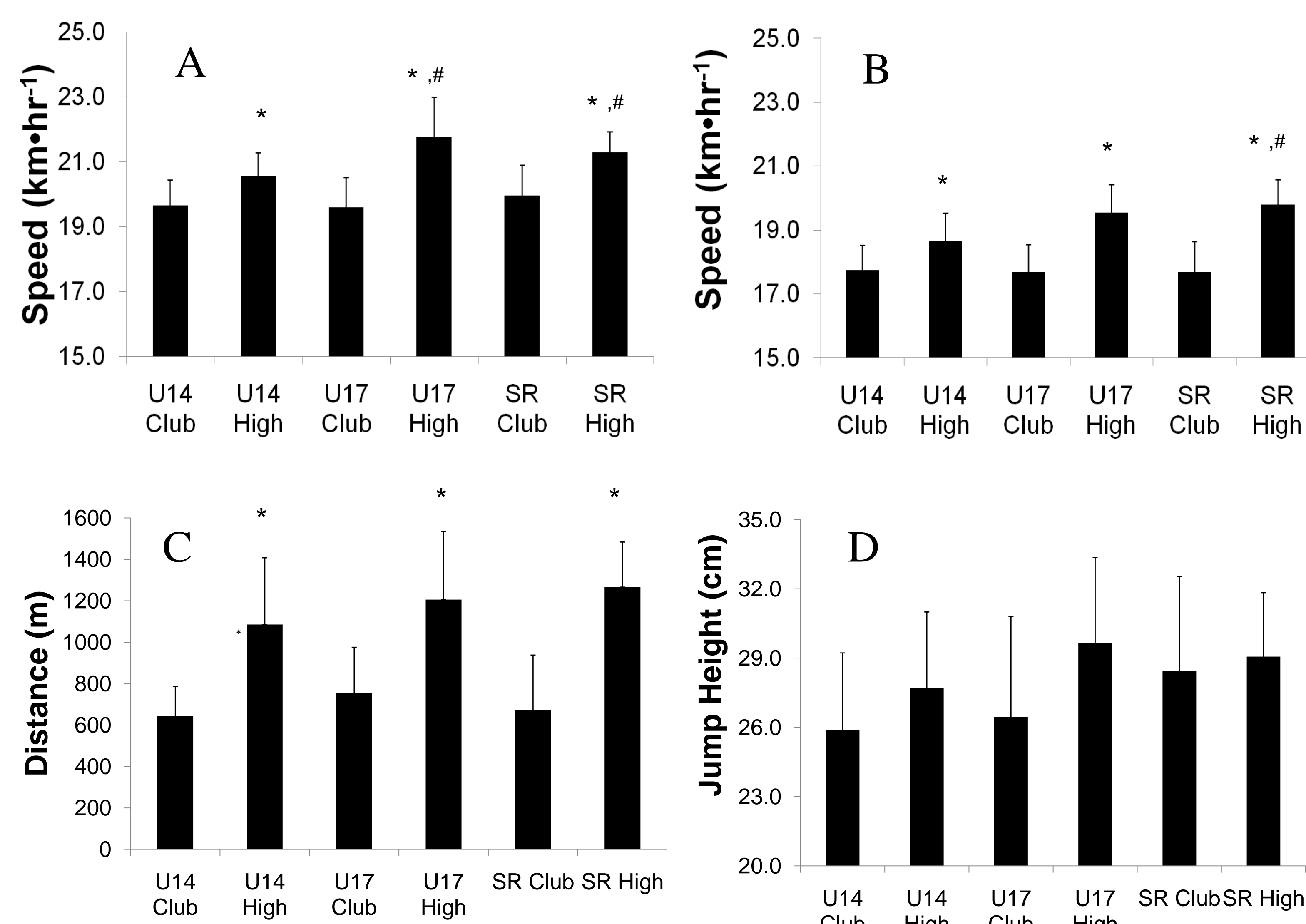
	Age (yrs)	Height (cm)	Body mass (kg)	BMI (kg•m ⁻²)
U14	13.3 \pm 0.6*	159.6 \pm 7.7*	51.5 \pm 8.4*	20.1 \pm 2.3
U17	16.8 \pm 0.5**	164.1 \pm 6.2	60.2 \pm 5.4	22.4 \pm 2.0
SR	22.5 \pm 2.9	166.5 \pm 7.2	63.5 \pm 9.1	22.8 \pm 2.3

*Significant difference compared to U17 and SR. **Significant difference compared to SR.

The U14 players were shorter (2.7% and 4.1%, $p < 0.05$) and lighter (14.5% and 18.9%, $p < 0.05$) than U17 and SR, respectively. No differences in height and body mass were observed between U17 and SR players.

Results

Figure 1. Performance characteristics of HIGH and CLUB players across age groups. A) 20 metre sprint speed (km•hr⁻¹). B) Mean RSA speed (km•hr⁻¹). C) YO-YO distance (m). D) CMJ height (cm). *Significant difference between HIGH and CLUB for respective age group, # HIGH age groups that are significantly different from U14 HIGH.



HIGH U14, U17, and SR demonstrated greater 20 metre sprint speed (4.4%, 10%, and 6.2% respectively) compared to their CLUB counterparts. HIGH U17 and HIGH SR were 6% and 3.4% faster than HIGH U14 ($p < 0.05$). No differences were observed between U17 and SR age groups.

Mean RSA speed was 6.9%, 9.5%, and 10.7% greater in HIGH athletes compared to CLUB players in each age group ($p < 0.05$). HIGH SR were 3.7% faster than HIGH U14 ($p < 0.05$).

The YO-YO distance were greater in HIGH athletes compared to CLUB athletes. HIGH U14, U17, and SR covered 40.8%, 37.5%, and 46.9% greater distance than their CLUB counterparts ($p < 0.05$). There were no significant differences across age groups within each standard of play.

No significant differences in CMJ height were observed between levels of play and age groups ($p > 0.05$).

Discussion and Conclusions

HIGH female soccer players are faster, possess greater speed endurance and have a greater capacity for high intensity work than CLUB players.

HIGH female soccer players tend to show peak performance in sprint speed. High intensity performance (RSA and Yo-Yo) is improved slightly from HIGH U17 to SR levels.

Explosive qualities did not differ significantly between HIGH and CLUB although the trend suggests this might be the case.

CLUB players have similar scores regardless of age group suggesting training methods at this level are inadequate to stimulate improvements in these performance qualities.

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