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SOCCERFit-Facts

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Second World Conference on SCIENCE AND SOCCER

On June 8-9, 2010, in Port Elizabeth, South Africa, Richard Bucciarelli attended and presented at the Second World Conference on Science and Soccer. This event is aimed at individuals who have a specific interest in the scientific study and/or the practical performance of soccer players at either grass roots or the elite professional level.

These include academics, full/part-time coaches, strength and conditioning specialists, physiotherapists, and sports medics. The Conference consisted of seminars, presentations, and workshops covering a wide variety of topics, including youth training and talent identification, sport nutrition, coordination and performance mechanics, testing and evaluation of players, and injury prevention.

Our Presentation: Speed and High Intensity Running Ability in Canadian Female Soccer Players:

Our Research:

Speed, repeated sprint capacity, high intensity work capacity, have all been shown to be important predictors of performance in soccer, in both the male and female game. In Canada, there are over 400,000 female soccer players playing in various different age groups and levels of play in soccer. To date, there has been no study that examined speed and high intensity running abilities — and specifically the differences in these abilities — between female soccer players in different age groups and levels of play in Canada. Our study was conducted to examine speed and high intensity running ability in female soccer players. We conducted fitness tests on over 100 female players, at three different age groups (U14, U17 and 18+). The players were further categorized into two different levels of play, either low or high, for each age group. Low level players consisted of club and academy players for U14 and U17, and Canadian college players for 18+. High level players consisted of Ontario Provincial Team players for U14, Canadian National Team players for U17 and 18+. In the study, we compared fitness test scores for players of different ages, and levels of ability. The test protocol used was designed by

Dr. Jason Vescovi and Mr. Robert Rupp, of the Canadian Sport Centre of Ontario, and consists of the following tests:

- 20 metre linear sprint test (speed)
- Counter movement jump test (power)
- 10 x 20 metre sprint test (speed endurance)
- Yo-Yo Intermittent Recovery Test Level 1 (high intensity running capacity)

Our Findings:

Certain findings in our study were somewhat "predictable". Higher level players were faster (20m sprint), had greater speed endurance (10x20 metre sprint test) and had better capacity for high intensity work (Yo-Yo test) than lower level players in the same age category.

There are two possible explanations for this finding:

1. Female players playing at higher levels (Provincial and National teams) are receiving better physical training, combined with more physically demanding competition, and thus are showing greater improvements in physical fitness; or
2. Provincial and National team coaches are selecting players who are bigger, stronger, faster, and more athletic.

While we suspect that both proposed explanations are true, more research into this topic is required before any definite conclusions can be made.

A second, less "predictable" finding from our study was that, among lower level female players, speed, speed endurance and high intensity work capacity levels peaked at the U14 age group (in higher level players there were improvements from U14-U17).

This finding is important, because it suggests that female players who are not participating in Provincial and National Teams — a large proportion of the overall population of female players in Ontario — are not receiving adequate physical training to stimulate improvements in speed, speed endurance, and high intensity work capacity.

Speed & high intensity running ability of female soccer players of different standards of play

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. Athletes performed 10 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 athletes 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 maximum 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.

Discussions 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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