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## Fit Facts

# 7th World Congress on Science and Football

By Richard Bucciarelli

**O**n May 26-31, 2011 in Nagoya, Japan, Richard Bucciarelli and Paolo Pacione attended and presented at the 7th World Congress on Science and Football. The event was aimed at individuals who have a specific interest in the scientific study and/or the practical performance of soccer players at either grassroots or the elite professional level. These include academics, full/part-time coaches, strength and conditioning specialists, physiotherapists, and sports medics. The Congress 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:

*'A Longitudinal Analysis of Speed Characteristics for Talented Youth Female Soccer Players: A Pilot Study'*

### Our Research:

Speed, repeated sprint capacity, and high intensity work capacity have all been shown to be important predictors of performance in soccer, in the female game. In Canada, there are over 400,000 female soccer players playing at various different age groups and levels of play. To date, there has been no longitudinal study that examined speed and high intensity running abilities — and specifically the differences in these abilities — between female soccer players at different levels of play in Canada.

Our study was conducted to examine speed and high intensity running ability in elite female soccer players. We conducted fitness tests on 14 female players, from a Regional high



performance centre in Ontario. Data from these players was collected over a three-year time span. The players were further categorized into two different groups: one group that made the junior (U17) National team (four players in total) and another group that remained in the regional program (10 players in total). In the study we compared fitness test scores for players from these two different groups, over the three-year time span. The test protocol used was designed by Mr. Robert Rupf, of the Canadian Sport Centre of Ontario, and Mr. Bucciarelli and Mr. Pacione, and consists of the following tests:

- 20 metre linear sprint test (speed)
- 35 metre linear sprint test (speed)
- 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." National team players were faster (20m sprint), had greater speed endurance (10x20m sprint test) and had better capacity for high intensity work (Yo-Yo test), than lower level players in the U14 age category. There are two possible explanations for this finding:

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 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





Richard Bucciarelli and Paolo Pacione at the 7th World Congress on Science and Football in Nagoya, Japan.

from our study was that while speed, speed endurance and high intensity work capacity levels among lower level female players did not peak at the U14 age group (improvements were made in both the sprint and yo-yo tests), the players still did not reach the levels of their National team counterparts.

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

#### General Implications / Recommendations for Youth Coaches in Canada:

Fitness testing is important for female soccer players at different ages (beyond age 13) and levels of play. Tests selected should be valid for measuring the components of fitness, which have been shown to be important for soccer, including linear speed, speed endurance, power, and high intensity work capacity. The soccer-specific testing protocol developed by Jason Vescovi and Robert Rupf of the Canadian Sport Centre of Ontario, Mr. Pacione and Mr. Bucciarelli, which includes the 20 metre linear sprint, 10 x 20 metre repeated sprint test, counter-movement jump test, and Yo-Yo Intermittent Recovery test, Level 1, contains tests that have been proven to be highly correlated with physical performance on the field, in both male and female soccer players. This protocol has been, and continues to be, validated in studies conducted by the CSCO, using female soccer players at different levels of

play, including Canadian and U.S. college, and North American Professional players. Female players should be assessed a minimum of three times per year to evaluate the effectiveness of training interventions and make adjustments and corrections where needed.

#### Specific Coaching Recommendations:

Coaches of female players at higher levels of play (Provincial and National) should re-evaluate their selection process to determine whether they are showing any bias towards players who are more physically and physiologically developed, especially in

the younger (U14-U17) age categories.

Coaches of female players at lower levels of play (club, academy, and college) should re-evaluate their fitness training programs to ensure that the players are receiving optimal training to elicit gains in speed, speed endurance, and high intensity work capacity.



Richard Bucciarelli is the President of Soccer Fitness Inc., a soccer-specific strength and conditioning company from Toronto. For more information about Soccer Fitness Inc., visit [www.soccerfitness.ca](http://www.soccerfitness.ca).



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