

[J Sports Med Phys Fitness](#). 2014 Jul 7. [Epub ahead of print]

## Acute effects of two different initial heart rates on testing the Repeated Sprint Ability in young soccer players.

[Ruscello B](#)<sup>1</sup>, [Briotti G](#), [Tozzo N](#), [Partipilo F](#), [Taraborelli M](#), [Zeppetella A](#), [Padulo J](#), [D'Ottavio S](#).

### Abstract

#### AIM:

to investigate the acute effects of two different initial heart rates intensities when testing the repeated sprint ability (RSA) performances in young soccer players.

#### METHODS:

since there are many kinds of pre-match warm-ups, we chose to take as an absolute indicator of internal load the heart rate reached at the end of two different warm-up protocols (~90 vs. ~60% HRmax) and to compare the respective RSA performances. The RSA tests were performed on fifteen male soccer players (Age: 17.9±1.5 yrs) with two sets of ten shuttle-sprints (15+15m) with a 1:3 exercise to rest ratio, in different days (randomized order) with different HR% (60 & 90% HRmax). In order to compare the different sprint performances a Fatigue Index (FI%) was computed, while the blood lactate concentrations (BLa) were measured before and after testing, to compare metabolic energy.

#### RESULTS:

significant differences among trials within each sets ( $P < 0.01$ ) were found. Differences between sets were also found, especially comparing the last five trials for each set (Factorial ANOVA;  $P < 0.01$ ), effect size values confirming the relevance of these differences. Although the BLa after warm-up was higher (36%) between 90% vs. 60% HRmax, after the RSA test the differences were considerably low (7%).

#### CONCLUSION:

Based on physiological information's this methodological approach (testing with initial 90%HRmax) reflects more realistically the metabolic background in which a soccer player operates during a real match. This background may be partially reproduced by warming up protocols that, by duration and metabolic commitment, can reproduce conveniently the physiological conditions encountered in a real game (e.g. HRmax≈85--95%; BLa→ 4 mmol/L).