Introduction

According to the performance model, during the match the football player made sprints for an average duration of 1.7-4.4 s, with rest time of 1 or 2 minutes (1, 2). 46-70 sprints are performed during 90 minutes; they are approximately 0.5-3.0% of actual played time and represent 1-11% of the total distance (1). From the perspective of the coach, the speed can be considered as a quality deriving from the power, because it is the result of development and use of an amount of qualities that define it as a complicated and complex skill, influenced by three expressive attitudes: strength, rhythm and technique.

The aim of this study was to analyze the performance and running rhythm during sprints of 5, 10, 15 m in elite young football players. In particular it was analyzed and compared the time, the number of steps and speed obtained on a distance of 5 m, and on the first 5 m on sprint of 10 and 15 m.

Methods

In this study we considered 46 elite young football players (Atalanta BC) of age average 12±0.8. Each subject did 3 sprints for each distance of 5, 10 and 15 m; between the 3 sprints they had 2-3 minutes of rest. To evaluate the number of steps, a video analysis was performed; the video was recorded using a camera with a sampling frequency of 50 Hz. The times were tracked with the use of optojump equipped with three photocells polifemo (Microgate, Bolzano, Italy). The first photocell was placed at 5 meters; the seconds were placed at 10 or 15 meters, depending on the distance of the sprint. The player started with the front foot before the starting line and with the back foot inside the optojump area. By the time the player removed the back foot from the ground to make the first step of the sprint, the electric chronometer Racetime (Microgate, Bolzano, Italy) started; the chronometer was connected to the system optojump-photocells polifemo.

For statistical analysis it was considered only the fastest trial. All data was analyzed through Anova for repeated measurements and through Bonferroni post-hoc analysis using SpSS v.17 (SpSS Inc, Chicago, II) software. The significant level was set up to p<0.05.

Results and Discussion

Results are reported in table 1. Comparing the three distances, athletes are faster in the 5m sprint than in the first 5m when they have to cover 10 (p<0.05) or 15 m (p<0.001). Comparing the number of steps on three distances, athletes make less steps in the 5m sprint than in the first 5m when they have to cover 10 or 15 m (p<0.011). If we compare 5 m and 10 m sprint, the number of steps recorded on the first 5 meters was the same.

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TEST | TIME | STEPS | SPEED
--- | --- | --- | ---
5 m | 1.16 ± 0.06 | 4.89 ± 0.26 | 4.34 ± 0.24 | 5/5 vs 5/10** 5/5 vs 5/10** 5/5 vs 5/10**
5 m/10 m | 1.17 ± 0.06 | 4.99 ± 0.22 | 4.28 ± 0.21 | 5/5 vs 5/15** 5/5 vs 5/15** 5/5 vs 5/15**
5 m/15 m | 1.18 ± 0.06 | 5.04 ± 0.24 | 4.24 ± 0.22 | 5/10 vs 5/15 5/10 vs 5/15 5/10 vs 5/15

Table 1. Mean ± ds of the first 5m of each distance. ** Significant difference at p<0.001 and * at p<0.05

Conclusions

From this study, young football players express a better running rhythm to obtain the best performance on short distance, and this result is the same obtained on previous study on young basketball players (3). The players change their own running rhythm based on distance. For this reason it could be useful to train the technique and running rhythm with specific exercises, in order to help the young athletes to optimize the step frequency and length as they proved to be able to run on a shorter distance. These observations should be considered also for on-field rehabilitation of injured foot-ball players.

References