THE TEMPORAL DATA IN THE SPEED RUN AND SOME SPECIAL TRAINING EXERCISES

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INTRODUCTION
Run special exercises have some biomechanical parameters similar to the race movement. It is very important for the coach to know the data regarding the contact phase, the flight phase and the ratio between the contact time and the time of the step (contact+flight), that the literature defines in the speed run (SR) about 40%-60% (1). The SR is the most studied movement in the track and field, but special exercises have not been very investigated (2).

AIM
The purpose of this study is to compare the temporal data in the SR and 3 special exercises; bounding run (BR), skipping (S) and run with blocked knee (BK).

METHODS
11 (7 man, 4 woman) of middle level athletes (personal record 100m; 11.10 ±0.60s for men; 12.30±0.14s for women) were analysed with Vicon Motion System 460 (sampling frequency of 100/150 Hz, resolution of 300000 pixel, numbers of cameras, 6-8). Each athlete performed 3 trials for each exercise.

To get the data a marker set of Helen-Hayes model have been used with 36 markers of 14 mm.

The data collected are: contact time (CT), flight time (FT), step time (CT+FT) and the ratio between CT and step time (CT/Step).

RESULTS
The temporal data of SR confirm the literature data; the average CT is 0.10s and the FT is 0.15s (in literature this time is shorter, 0.13s, 2).

The BR and the BK show the greatest value of CT (respectively 0.15s, 0.16s); the BR presents also the biggest FT (0.28s in BR, 0.19s in BK).

In the S there are the more similar data to the run in FT (0.14s), but the CT is longer than this (0.13s).

All the special exercise values show a significant difference (p<0.05) compared to the same data of the SR, except the FT of S. It is interesting to notice that between man and woman there is no difference, except for the FT of BR (0.30s in males, 0.27s in females); this is obviously due to the fact that the FT proceeds from the power of the support leg push off.

Very useful to understand the special exercises is the ratio CT/Step time. In literature and in this study the ratio in SR is about 40%. In BR the same ratio is about 48%, in S 36% and in BK 45%; all differences are significant. Also in this value males and females show a significant difference in BR.

CONCLUSIONS
The studied exercises are not able to train the short contact time like the run can do. The skip is helpful to train the FT and the step rate; the BR is good for the training of push off; the BK can be favourable for the stiffness, because the ratio CT/Step is similar to SR and the support phase is loaded only on the ankle.

REFERENCES

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