

## THE PHYSIOLOGICAL EFFECTS OF SOCCER TRAINING IN ELITE YOUTH SOCCER PLAYERS

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### Introduction

The purpose of soccer training is to improve the technical, tactical, psychological and physical qualities of the soccer player (1). Little research examining the effects of this process upon the physical qualities of elite youth players is available. The present study therefore aims to examine the structure of the training process, quantify training loads and determine the effect upon jump performance, speed, agility, repeated sprint ability and aerobic performance.

### Methods

Seventeen elite youth team soccer players (age  $16 \pm 1$ , body mass  $70.8 \pm 10.7$  kg, height  $1.77 \pm 0.07$  m) completed 7-weeks of inseason soccer training sessions. The daily training activities completed were recorded and then classified into the following categories: warm up, tactical, technical, training games and competitive match play. Training load associated with each training session was estimated using heart rate training impulse (TRIMP), percentage of maximum heart rate (%HRmax) and subjective ratings of perceived exertion (RPE). Assessments were conducted before and after the training phase. The testing consisted of a jump (CMJ), speed (10m, 15m, 30m) and agility test (t-test), a repeated sprint test (6 x 30m) and multistage fitness test.

### Results & Discussion

The daily training sessions were  $75.5 \pm 21.4$  min (mean  $\pm$  SD) in duration. The training activities completed were divided between training games (32%), competitive match play (30%), tactical (17%), technical (10%) and warm ups (11%). Daily TRIMP was  $382.3 \pm 54.8$  and daily session RPE was  $399 \pm 50$ . The mean %HR max associated with each of the training activities was: competitive match play ( $84 \pm 1\%$ ), training games ( $76 \pm 3\%$ ), technical ( $67 \pm 4\%$ ) and tactical ( $65 \pm 4\%$ ). Pre and post testing data indicated that estimated  $\dot{V}O_{2\max}$  increased ( $2.39 \pm 2.79$  ml.kg<sup>-1</sup>.min<sup>-1</sup>) while mean repeated sprint time (pre: 4.37 (0.17), post: 4.52 (0.23) sec) and jump performance (58.6 (5.9) to 55.5 (6.1) cm) reduced as a consequence of training. Speed and agility performance was unchanged over the training period.

### Conclusion

During 7-weeks of inseason soccer activity, the young elite players studied were predominantly involved in competitive match play and training games. The greatest training load was also associated with these activities. The performance test results suggest that conventional soccer training and match play of this nature can improve aerobic performance but not power and speed derivatives in young elite players.

### References

1. Dupont, G. *et al.* (2004). *J Str Cond Res*, 18 (3): 584-589.