Improving sprint performance in soccer: Effects of training intensity and technique supervision

T. Haugen1,2, E. Tønnessen1, Ø. Øksenholt3, F. L. Haugen3, G. Paulsen1,3, E. Enoksen3, S. Seiler2

1 The Norwegian Olympic Federation of Sports (Oslo, Norway), 2 University of Agder (Kristiansand, Norway), 3 The Norwegian School of Sport Sciences (Oslo, Norway).

Introduction

The importance of sprinting skills in professional soccer is well established, and the need for speed is clear. Numerous intervention studies have been performed over the years in order to enhance sprint performance in soccer players, but no specific training method has emerged as superior. The aim of the present study was two-fold: 1) to compare the effects of training at 90 and 100% sprint speed on maximal sprint performance, repeated sprint ability (RSA) and gait characteristics, and 2) to compare the effects of directly supervised sprint training versus unsupervised training on maximal sprint performance, RSA and gait characteristics in young soccer players.

Methods

In this randomized controlled trial, 52 male soccer players (aged 16-19 years) volunteered to participate. The athletes were playing in the highest junior division level for four different clubs in Norway. They were randomly assigned to four different treatment conditions. A control group (CON) completed regular soccer training according to their teams’ original training plans. Three training groups performed a weekly repeated sprint training session (20-m sprints) in addition to their regular soccer training sessions performed at A) 100% intensity without supervision (100UNSUP), B) 90% of maximal sprint speed with direct supervision (90SUP) or C) 90% of maximal sprint speed without direct supervision (90UNSUP). The duration of the intervention period was seven weeks. Results from soccer specific physiological test results were compared before and after the intervention period.

Figure 1. Individual changes in 15x20-m mean sprint time from pre- to post test.

Figure 2. 95% confidence intervals of mean sprint time for 100UNSUP during the intervention.

Results

No significant within group differences for the performance parameters were observed, except that the 90SUP group improved Yo-Yo IR1 performance from pre- to post-test (p<0.01). No significant between group differences were observed. The 90SUP group improved Yo-Yo IR1 performance by a moderate margin compared to all other groups. The differences in mean sprint time between CON and the other groups were small. The difference in CMJ between 90SUP and 90UNSUP was small. All other effect magnitudes between or within groups were trivial. Finally, when treatment groups were compared (90UNSUP used as reference in ANCOVA analysis), trivial and non-significant differences were observed for all parameters.

Discussion

In the present study, weekly repeated sprint training sessions at maximal or sub-maximal sprint speed were not sufficient to improve performance outcomes for soccer related sprinting performance, when compared to a matched control group assumed to maintain a constant training pattern. Moreover, no differences in performance outcomes were observed between supervised and unsupervised sprint training groups training at 90% maximal sprinting velocity. More frequent training sessions or longer interventions are obviously required, perhaps in combination with other training forms, increasing the risk of training-related constraints to the overall soccer conditioning. Future studies should explore whether it is more effective to structure the players’ weekly soccer training rather than introducing an additional physical conditioning regime. In the absence of evidence supporting the choice of specific training methods at the group level, we suggest that it is essential to diagnose each individual and develop training interventions that target their key physiological and technical weaknesses.