Specific program of endurance training in elite soccer

Ilic Dejan
FC Partizan, Belgrade, SCG

Introduction
It is well known that aerobic power is the most important functional parameter in modern soccer. Evaluation of aerobic power is traditionally presented through the maximal oxygen uptake (VO2 max). The energy contribution from aerobic sources can be estimated to be about 70% of VO2 max for elite players (Bangsbo, 1994), so the main task of fitness coaches is to bring that parameter to the highest level. The purpose of this study is to present one specific program of endurance training with main target to improve VO2max: interval between 3 and 5' on the 90% HRmax with 2-3' rest with 4-11 repetitions (Bompa, 1999) and also to show the specific day by day adaptation through the higher running speed on the same given intensity.

Methods
The soccer squad consisted of 24 male professional players from top Serbian team, took part in this study. After detail medical examination, all the players did the yo-yo test (Bangsbo, 1992) for evaluation of VO2max and also HRmax. On the test, and on the all other training sessions, every player used POLAR S410 HR monitor and for evaluation of training we used Polar precision performance software. The training program was separated in 4 three day microcycles with first high intensity (HI) day, second low intensity (LI) day, and third recovery (REC) day. Specific endurance training was on the morning session and executed on two intensities: HI 90% of HRmax; 6x1000m with 3 min rest period, LI 75% of HRmax; 2x15 min. with 7 min. rest period. Every player had programmed watch with beep signals when he is below or above specific zone. The task for every player was to reach the zone as soon as possible, and to stay in it till the end of interval. Training sessions was performed on the same weather conditions, and on the same track.

Results
On the initial testing, the squad had average VO2max 57.9 ml/kg min. During the training program, all the players showed an average improvement in running speed on 1000m distance in order to reach given HR zone. Maximal improvement was 1'19", and minimal 18". Average improvement per microcycle was: between 1st and 2nd 20" (7.5%), between 2nd and 3rd 11" (4.5%), and between 3rd and 4th 20" (8.6%). After the training protocol, at the retest, the average VO2max was 62.4 ml/kgmin which was about 8% improvement.

Discussion
When we are planning training protocol for increasing VO2max, we must take attention about this. If the players have the same running speed on the same distance (but between 3 and 5'; it is about 1000m), the intensity will decrease. If we want the same intensity, and if we don't have HR monitors, we must change training task.

References