

Letter to the Editor

CHANGES IN BODY FAT CONTENT OF TOP-LEVEL SOCCER PLAYERS

Dear Editor-in-Chief:

In the recent years, there has been remarkable development in the scope and quality of soccer physiology and medicine. However, there is a shortage of descriptive data concerning the physical and physiological characteristics of soccer players from Eastern Europe while much more literature exists providing information on male Western European and American soccer (Rhodes et al., 1986; Davies et al., 1992). The ideal physiological and anthropometric profile of a successful soccer player was investigated (Mangine et al., 1990) and it has been demonstrated that the game of soccer has become more dynamic, which can be attributed to improvements in the speed and agility of players. Body composition is an important aspect of fitness for soccer as excess adipose tissue acts as dead weight in activities where body mass must be lifted repeatedly against gravity (Reilly, 1996). Several studies have evaluated the seasonal alterations in body composition of different elite athletes (Siders et al., 1991; Morris and Payne, 1996). However, there is no adequate information regarding changes in body fat percentage during entire season i.e. pre-seasonal training and competition period including intervals in top-level professional soccer players. Alterations in body fat have only been investigated at the start and end of the competitive season (Burke et al., 1986). Yet, Ostojic and Zivanic (2001) found that body fat content of top-level Serbian professional soccer players was significantly decreased during the conditioning and competitive period and increased during the off-season. Body mass is likely to change during the course of the competitive season as a result of training. In soccer players seasonal body weight alterations are in response to a significant reduction in fat mass. Burke et al. (1986) and Reilly (1996) suggests that football players can accumulate body fat in the off-season and lose weight more during pre-seasonal training than any other time. However, Ostojic and Zivanic (2001) concluded that there were differing degrees of the effect of training and competition on reducing body fat. Soccer players lost more fat during the competitive phase than conditioning period reaching lowest levels at the end of the season. This was

probably due to intensive training and competition schedule (matches twice-a-week, training sessions every day), dietary habits and psychological effects which require more investigation. Before and after the season, during the interval most soccer players have their fat content and body mass increased, presumably owing to reduced aerobic activity along with nutritional and behavioral changes. In some competitive sports, players with lower body fat percentage invariably have better performance. This occurs because low body fat is a direct reflection of the intensity of training (Reilly, 1996). Davies et al. (1992), Morris and Payne (1996), and Reilly and Keane (1999) have shown this to be true in such different sports such as soccer, rowing or Gaelic football. In addition, Ostojic and Zivanic (2001) reported that in elite Serbian soccer players the main improvements in the sprint times were associated with reduction in body fat percentage. As body fat content decreased during the season, players became faster. Further observations (i.e. learning effects, coordination, estimation of muscle mass) are needed to clarify this point. Nevertheless, these findings should be of interest to soccer coaches because they will help to improve athletes' performance. Periodic measurement of body fat percentage allows the trainer to correct the training regime. In summary, top-level soccer players lose body fat during the conditioning period and competitive season, with reductions being associated with faster sprint times.

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