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BANGSBO J, et al.**Physical and metabolic demands of training and match-play in the elite football player.**

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In soccer, the players perform intermittent work. Despite the players performing low-intensity activities for more than 70% of the game, heart rate and body temperature measurements suggest that the average oxygen uptake for elite soccer players is around 70% of maximum (VO_{2max}). This may be partly explained by the 150 - 250 brief intense actions a top-class player performs during a game, which also indicates that the rates of creatine phosphate (CP) utilization and glycolysis are frequently high during a game. Muscle glycogen is probably the most important substrate for energy production, and fatigue towards the end of a game may be related to depletion of glycogen in some muscle fibres. Blood free-fatty acids (FFAs) increase progressively during a game, partly compensating for the progressive lowering of muscle glycogen. Fatigue also occurs temporarily during matches, but it is still unclear what causes the reduced ability to perform maximally. There are major individual differences in the physical demands of players during a game related to physical capacity and tactical role in the team. These differences should be taken into account when planning the training and nutritional strategies of top-class players, who require a significant energy intake during a week.

PMID: 16766496

MeSH terms: Energy Metabolism, Exertion, Fatigue, Glycogen, Heart Rate, Humans, Musculoskeletal System, Oxygen Consumption, Physical Fitness, Research Support, Non-U.S. Gov't, Soccer

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