

RECOVERY OF MUSCLE GLYCOGEN AFTER A SOCCER MATCH; EFFECT OF A HIGH CARBOHYDRATE DIET

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Many soccer players are suffering fatigue towards the end of a match. Thus, the amount of sprinting and high intensity running are lower in the second compared to the first half (Reilly & Thomas, 1976; Bangsbo 1994) and the amount of high intensity running during the last 15 min of a match is significantly lowered (Mohr et al., 2003). Fatigue at the end of a match is associated with reduced muscle glycogen content and specific fiber type glycogen depletion (Krstrup et al., 2004), which may affect performance for several days after a soccer game. The aim of the present study was to examine whether muscle glycogen synthesis in the days after a soccer match is affected by a protein/carbohydrate rich diet.

Sixteen sub-elite soccer players were divided into a normal (NOR) and a high carbohydrate and specific protein (HCP) diet group. Both groups participated in a competitive match and NOR consumed their normal diet (55, 26 and 18 E% of carbohydrate, fat and protein, respectively) after the match. HCP received a diet consisting of 20 E% protein including lacprodan DI-3065 whey protein hydrolysate, 68 E% CHO and 12 E% fat 72 h after the match. A muscle biopsy was taken before, immediately, 24, 48 and 72 h after the match.

Muscle glycogen was lowered ($p < 0.01$) immediately after compared to before the match. There were no differences in glycogen content between the two groups in the period after the match (Fig. 1). In both groups muscle

glycogen content after 24 h was higher ($p < 0.05$) than immediately after the match but not significantly higher after 48 h.

In HCP muscle glycogen content was higher ($p < 0.05$) after 72 h compared to 24 h and was elevated compared to control (459 ± 18 vs. 409 ± 30 mmol/kg d.w.) indicating that soccer players can benefit from a HCP diet in order to elevate resting muscle glycogen content and thereby maybe delay fatigue development during a soccer match.

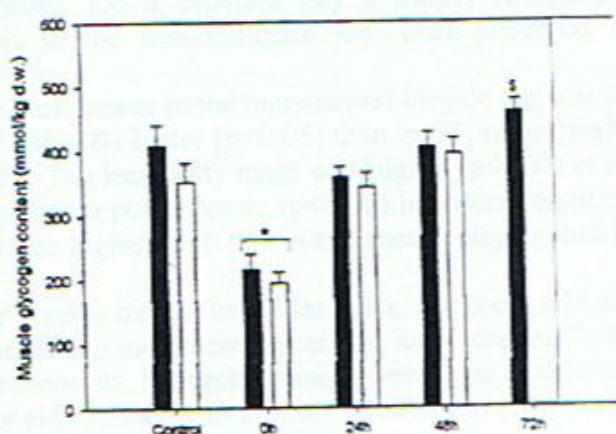


Figure 1. Muscle glycogen content in HCP (closed bars) and NOR (open bars) after a competitive match. *Different ($p < 0.01$) from control, 24 h and 48 h. S Different ($p < 0.05$) from 0 h and 24 h