

Macronutrient intakes of recreational endurance athletes prior to, and during, a mountain marathon: an observational study

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The popularity of hill walking/running, both as a leisure-time activity and as a competitive sport, is rising. Participation in endurance events such as mountain marathons is increasing as evidenced by the number of new races of these types being established each year, yet analysis of the nutritional intake and requirements of this group of athletes have received relatively little attention.

Twenty-three participants [19 males, 4 females; age: 18–72 years; BMI: 23.8 (SD: 3.2) kg/m²] entered in the Longmynd Hike [50 mile competition hike; mean completion time: 16.0 (SD: 3.2) h] completed a 7-d food diary prior to the event; and a weighed food inventory of all items consumed during the event. Data on demographics, dietary preparation and race experience were obtained by questionnaires. Anthropometrical measures and physical performance tests (e.g. jump, grip and balance tasks) were performed before and after the race. All data are expressed as means (SD), statistical significance $P \leq 0.05$.

Macronutrient intakes are shown below. No significant differences in nutrient intakes during the event were seen between age groups, gender or experience. Both energy (kJ/kg/h) and CHO (g/kg/h) showed significant positive correlations with performance ($P < 0.05$ and $P < 0.01$, respectively). In addition, CHO (g/kg/h) consumption was positively associated ($P < 0.05$) with post-event static balance scores. Fat and protein showed no significant associations with performance; however, energy from fat (%) was positively correlated with energy density ($P < 0.05$). Repeated measures tests showed no significant changes in nutrient composition of the athletes' diets during the week prior to the event. Both energy (kJ/kg/d) and CHO (g/kg/d) were positively associated with performance ($P < 0.05$), whereas energy from fat (%) showed a negative correlation ($P = 0.001$).

| | | Energy | | CHO | | Fat | | Protein | |
|----------------|------|--------------|---------|--------|------|--------|------|---------|------|
| | | Total (kcal) | kJ/kg/h | g/kg/h | (%) | g/kg/h | (%) | g/kg/h | (%) |
| Food inventory | Mean | 2351.1 | 9 | 0.38 | 65.7 | 0.06 | 24.3 | 0.055 | 10 |
| | SD | 938.2 | 4.4 | 0.22 | 12.6 | 0.04 | 9.5 | 0.05 | 5.2 |
| | | kcal/d | kJ/kg/d | g/kg/d | (%) | g/kg/d | (%) | g/kg/d | (%) |
| 7-d food Diary | Mean | 2515.9 | 147.3 | 4.6 | 49.4 | 1.3 | 32 | 1.4 | 16.8 |
| | SD | 512.1 | 35.7 | 1.1 | 5.4 | 0.4 | 6 | 0.35 | 4.9 |

Comparison of nutrient intakes with those recommended by the American College of Sports Medicine suggest that while fat and protein intakes are within the recommended range (fat 20–35% total energy; protein 1.2–1.4 g/kg/d), CHO intakes both pre-event (recommendation: 6–10 g/kg/d) and during the event (70% of participants consumed less than the recommended 30–60 g/h), may be sub-optimal for performance⁽¹⁾.

1. American College of Sports Medicine, American Dietetic Association and Dieticians of Canada (2009) Nutrition and Athletic Performance. *Med Sci Sports Exerc* 41, 709–731.