



NUTRITION KNOWLEDGE IS ASSOCIATED WITH DIETARY INTAKE IN YOUNG FEMALE CROSS-COUNTRY SKIERS

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INTRODUCTION

Adequate energy availability (Fig. 1) and carbohydrate intake are essential for athletes' performance and health.¹ However, optimizing nutrition may be difficult without adequate knowledge, especially for young athletes.²

PURPOSE

To provide novel information on how nutrition knowledge affects energy availability and carbohydrate intake in young female cross-country skiers.

METHODS

- 19 female skiers (age 16.7±0.7 years) from the Finnish youth national team
- 48-hour weighted food and training logs from 2 to 12 days before, and during a 5-day training camp
- Assessment of energy availability (Fig. 1)
- Carbohydrate intake in relation to body weight. The minimum targets for optimal carbohydrate intake were 6 g/kg/d at home and 8 g/kg/d at camp based on the training volume.¹
- Nutrition knowledge score as the proportion (percentage) of correct answers. About "nutrition recommendations for endurance athletes" was assessed via validated questionnaire²

RESULTS

- 11% of athletes had optimal energy availability at home (mean 33.7 ± 9.6 kcal/kg/d) and 42% at camp (mean 40.3 ± 17.3 kcal/kg/d).
- Nutrition knowledge correlated with EA at home ($r=0.52$, $p=0.023$) (Fig. 2A).
- 74% of athletes failed to meet minimum recommendations for carbohydrate intake at home (mean 5.0±1.2 g/kg/d) and 63% of them at camp (mean 7.1±1.6 g/kg/d).
- Nutrition knowledge correlated with carbohydrate intake at home ($r=0.62$, $p=0.005$) (Fig. 2B) and at camp ($r=0.52$, $p=0.023$) (Fig. 2C).
- There was no association between exercise energy expenditure and nutrition knowledge.

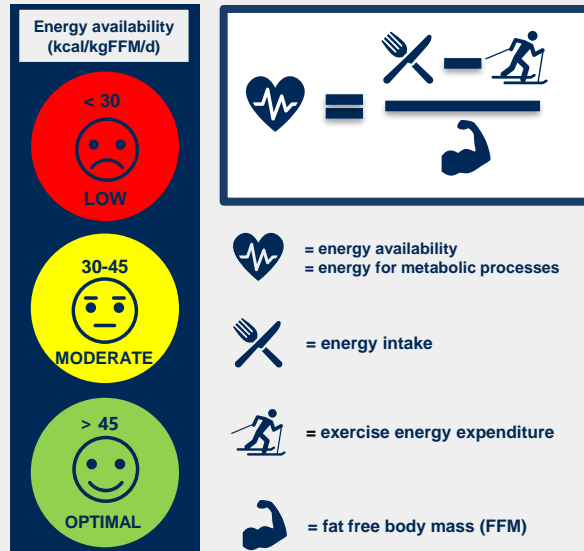


Figure 1. Calculations and cut-off values for energy availability³

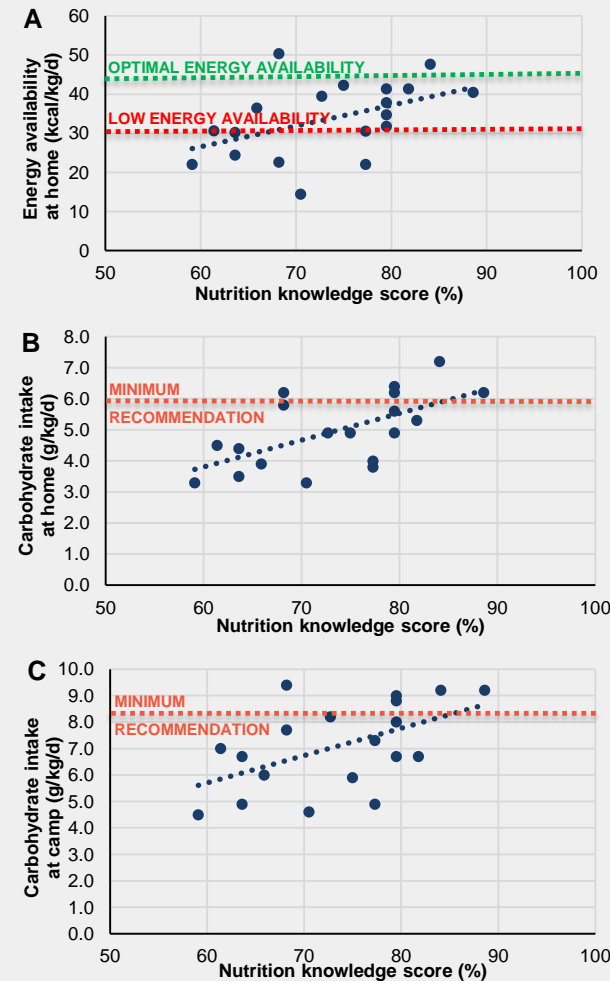


Figure 2. Associations of nutrition knowledge score to energy availability and carbohydrate intake.

CONCLUSIONS

- Young female cross-country skiers had significant difficulties to meet recommended energy availability³ and carbohydrate intake.¹
- The difficulties were more severe at home compared to training camp conditions where meals were served from buffet in prescheduled times.
- Athletes with better nutrition knowledge had higher energy availability and carbohydrate intake. As the exercise energy expenditure was not associated with nutrition knowledge, observations were not explained by training load.

PRACTICAL APPLICATIONS

- Adequate nutrition knowledge and arrangements that reduce athletes' own responsibility to plan, schedule and prepare the meals may help young athletes to meet recommended levels of energy availability and carbohydrate intake.
- As suboptimal energy availability and carbohydrate intake may compromise athletes' performance and health, these findings highlight the importance of enhanced high-quality nutrition education on young endurance athletes.

REFERENCES

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