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Elite Collegiate Swimmers do not meet Carbohydrate Intake and Timing Recommendations During Heavy Training

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Athletes require both increased energy and macronutrient intakes to sustain training and to optimize training adaptations for performance benefits. The International Olympic Committee (IOC) and International Society for Sports Nutrition (ISSN) have established recommendations for the nutrient intakes for athletes, the literature has demonstrated that many athletes do not even meet the recommended daily allowance (RDA) of nutrient intakes (USDA) set for the general population. Research shows that female athletes are at an increased risk of nutrient deficiencies. As well, current exploration of within-day energy balance (WDEB) demonstrates that while athletes may achieve end-of-day energy balance, they may present with poor WDEB. Limited research exists evaluating the nutrient timing strategies of endurance athletes, and it is unclear whether athletes meet sport-specific nutrient recommendations. **PURPOSE:** Secondary to our previous WDEB analysis, assess dietary and macronutrient intake as related to RDAs (USDA, and IOC/ISSN), and timing in swimmers. **METHODS:** In elite male and female swimmers ($n=25$; 18-22 yr), we assessed energy intake (EI), energy expenditure (EE), macronutrient intake (fat (FAT), protein (PRO) and carbohydrates (CHO)) and macronutrient timing during two weeks of heavy training. Frequency analysis was utilized to determine the number meeting general and athlete-specific RDAs. Repeated-measures ANOVA was used to assess nutrient timing across sex groups. **RESULTS:** Only 6/25 met FAT intake, 7/25 met CHO intake, and 24/25 met PRO intake IOC/ISSN daily recommendations for athletes. PRO consumption was a larger percentage of total EI in male vs female swimmers ($28 \pm 5\%$ vs $23 \pm 3\%$; $F=2.996$; $p=0.014$). No athletes met CHO recommendations pre-, during-, or post-exercise for the first daily training session. 13/25 met pre-exercise CHO recommendations, while only 6/25 and 11/25 met during and post-exercise CHO recommendations for the second training session, respectively. **CONCLUSION:** Macronutrient intake and timing analysis in elite swimmers indicate significant sex differences between male and female swimmers, and that the majority of athletes meet daily recommendations for PRO, but not CHO intake. Similarly, nutrient timing recommendations for CHO pre-, during-, and post-exercise were only met by at best 52% of athletes. Results suggest that during heavy training, swimmers should prioritize further increased CHO nutrient intake, emphasized around and during sport training. Elite collegiate swimmers do not meet carbohydrate intake and timing recommendations during heavy training. **SIGNIFICANCE/NOVELTY:** This study highlights that during heavy training elite swimmers fail to meet CHO intake requirements and nutrient timing is poor. These findings further emphasize the need for sport specific research to aid healthy performance of athletes.