



## Exercise Biochemistry Review

---

Proceedings of IBEC 2018, Beijing, China, October 23-25  
PO-085

### Investigation and assessment of nutritional status among Chinese elite artistic swimming athletes

Liang Li<sup>1</sup>, Jianfang Xu<sup>1</sup>, Huayu Fang<sup>2</sup>, Xiaojing Wang<sup>2</sup>  
1.China Institute of Sport Science  
2.Qufu Normal University

**Objective** The sport of artistic swimming is unique which requires a mixture of endurance, power, acrobatics, flexibility, and eurhythmics to produce an artistic performance. Optimal nutrition plays an important role in attaining high level of achievements for artistic swimming athletes, a poor nutritional status will significantly affect their health, athletic performance and post-exercise recovery. However, the assessment of nutritional status among artistic swimming athletes is very lack. The purpose of present study was to assess the nutritional status of Chinese elite artistic swimming athletes and provide suggestions for them to modify their dietary structures.

**Methods** During the summer training season before the 17<sup>th</sup> FINA World Championships, 17 Chinese elite artistic swimming female athletes participated in this study. After an overnight fast, the anthropometric data including height, weight, BMI, body fat percentage (BF%), and waist/hip ratio were collected in the early morning around 7 a.m. before breakfast. The 24 hours dietary recall was used to collect dietary intake data of individuals, the athletes were required to record their daily dietary intake in the structured questionnaire for 2 work days and 1 weekend day. During data processing, the cooked foods were converted into raw amounts of each food material by standardized recipe method, and the nutritive value was calculated by using a dietary nutrients analysis software.

**Results** The athletes were  $19.6 \pm 1.7$  years old and their training age was 10-12 years. The athletes' BMI was  $18.3 \pm 1.4$  kg/m<sup>2</sup>, their BF% and waist/hip ratio was  $16.6 \pm 2.6\%$  and  $0.85 \pm 0.02$  respectively. Even the athletes' body composition level was in the normal range, the BMI and BF% were lower than Russia and Spain artistic swimming athletes. The daily energy intake was  $1528 \pm 276$  kcal which was composed of  $435 \pm 50$  kcal breakfast,  $477 \pm 62$  kcal lunch,  $402 \pm 49$  kcal supper, and  $214 \pm 22$  kcal snacks. However, the energy intake was much lower than the recommendation of 3500 kcal/day. Carbohydrates provided approximately 51% of total energy which was lower than the practical demands, but both fats and proteins provided more energy (31.3% and 17% respectively) than the recommendations. In addition, the supplementation of many important vitamins and minerals, except vitamin E and sodium, were not reached the recommended level, for example, the consumption of vitamin C and calcium was only  $46 \pm 12$  mg and  $430 \pm 72$  mg per day.

**Conclusions** The data showed that the nutritional status was unsatisfactory among Chinese elite artistic swimming female athletes, the dietary energy intake and many important vitamins and minerals were much lower than the recommendations. In order to keep healthy and increase the exercise performance, it was suggested that the artistic swimming athletes should modify their dietary structures to supply more energies, vitamins and minerals according to their physical conditions and training arrangements.