

## Energy Balance; Nutritional Status and Training Phase for Youth Olympic Swimmers

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### Abstract

**Introduction:** The young athletes' training should be balanced for, adaptation and growth development. This study aimed to compare energy intake and energy output during training in general phase, build a base of aerobic conditioning, foundational strength, and movement technique.

**Methods:** Mixed methods for the qualitative and quantitative design was used. The subjects were six males aged 13-16 yrs, set as team A, whose rank was equal the international games. The record of energy intake was conducted 3 days food record using Mahidol University's INMUCAL (version 3.2). Energy output was collected using 24-hour physical activities and training recalls. Their weight, height, body mass index (BMI for age) and body fat were monitored and recorded. Their diet was recorded with use of showing frequency, means, and standard deviation for the analyses of the mentioned activities.

**Results:** The subjects were aged  $14.7 \pm 1.4$  yrs, height  $174.2 \pm 4.3$  cms, weight  $65 \pm 3.6$  kgs, and BMI for aged (percentile)  $68.2 \pm 18.8$ , percentage of body fat  $10.3 \pm 3.4$ . The energy intake was  $2,153 \pm 313$  kcal/day ( $33$  kcal/kg/day) which was lower than the recommended standard by FINA. Distribution for CHO: FAT: P was 47:33:20. Carbohydrate and protein were lower than the standardized RDA for endurance sport. ( $3.4$  g/kg/day and  $1.2$  g/kg/day). Calcium was lower than standard,  $757 \pm 118$  mg/day. The energy expenditure was  $2,911 \pm 101$  kcal/day.

**Conclusions:** The negative energy balance affected their training adaptation and growth development. They were harmonized with central, peripheral fatigue. Also, the growth rate may be delayed. Coaches and guardians should focus on their meal plan and add on snack meals.

**Keywords:** Energy balance, Nutrition intake, Training phase, Youth swimmers