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ADEQUACY OF THE NUTRITIONAL INTAKE IN VOLLEYBALL MALE COLLEGE ATHLETES AFTER RECEIVING NUTRITIONAL COUNSELING

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ABSTRACT:

PURPOSE: To compare the adequacy of nutritional intake in male volleyball athletes after receiving nutritional counseling for two different training sessions.

METHODS: 13 volleyball male college athletes were enrolled. The athletes carried out a training plan which was based on training volleyball only (VO) 4 days/week and volleyball plus resistance training (VR) 2 days/week for 12 weeks. Athletes received nutritional plans according to the nutritional requirements for both VO and VR. We evaluated their food intake with a 24-h dietary recall. This evaluation was performed three times for each training day. The days evaluated were randomly selected during the study. The mean intake for each training type was calculated and compared with the indicated nutritional plan to calculate the % of adequacy. Data were reported as median, minimum - maximum, and compared between training types.

RESULTS: Only 7 athletes completed the study. It was observed that the athletes were closer to 100% of the total energy (ENG) requirement on VO (112.6%, 88.9-140.4) compared to VR (130.4%, 108.4-157.3), although there wasn't a significant difference (p = 0.10). For carbohydrates (CHO), the days of VO were closer to 100% (99.5%, 76.1-123.9) while in VR they were above (110.9%, 85.3-185.3), but not significantly different (p = 0.29). Otherwise, the protein intake (PRO) was adequate on VR (103.4%, 63.2-133.8) compared to VO (81.1%, 58.4-108.7) which were below the indicated and different compared with VR (p = 0.01). Fat intake were well above the indicated amount for both training types, nonetheless there was a significant difference (p = 0.01) between the days of VO (200.9%, 132-293.3), which were closer to the indicated plan than the VR days (280.2%, 176-354.7).

CONCLUSIONS: In this study, subjects showed better adequacy to the indicated plan for protein intake on VR days, the opposite was true for fat intake. Similar adequacy was observed for carbohydrate and energy regardless of the day.

INTRODUCTION

The implementation of a nutrition program for team sports, during a training program, has the goal of improving sports performance during training sessions and/or competitions. In the same way, it seeks to maximize the functional and metabolic adaptations that allow athletes to train harder and recover quickly, aside it allows the athlete to be healthy and injury-free[1].

Although athletes are considered a disciplined and motivated population, several recent studies have suggested that athletes may not meet nutritional recommendations[2] published for some authors[1,3]. However, there is few evidence available to determine if after a nutritional indication there is adherence to these nutritional recommendations, especially during training and/or competition periods[4]. Thus, the purpose of this study was to compare the adequacy of nutritional intake in male volleyball athletes after receiving nutritional counseling for two different training sessions.

METHODS

Subjects

We evaluated 13 volleyball indoor male college athletes aged between 19 and 23 years (Table 1). The athletes carried out a training program which was based on training volleyball only (VO) 4 days/week and volleyball plus resistance training (VR) 2 days/week, for 12 weeks.

Dietary assessment

Athletes received dietary indications according to their nutritional requirements, each athlete received two different dietary indications; one for VO training days and other for VR training days.

We evaluated their food intake with a 24-h dietary recall, to improve the assessment we used food replicas.

Questions about the preparation, nutritional supplements consumption and other behaviors linked to eating habits were asked[5]. This evaluation was performed three times for each type of training. The days evaluated were randomly selected during the study. The adequacy was calculated as:

Adequacy (%) = Mean reported nutrient intake / Indicated nutrient intake * 100

Anthropometry and body composition

We evaluated basic anthropometric measurements; height (SECA 213, SECA, Hamburg, Germany); weight and percentage of body fat (TANITA TBF-410, TANITA, Tokyo, Japan) were performed following an standardized protocol (International Society for the Advancement of Kinanthropometry[6] [ISAK]).

Statistic analysis

General subjects characteristics are expressed as mean ±SD. Data were reported as median, minimum – maximum, then nutrient adequacy was compared by training days using the Mann-Whitney U-test (GraphPad Prism© version 7.02, La Jolla, USA) for Windows®.

RESULTS

Only 7 athletes completed the study. It was observed that the athletes were closer to 100% of the total energy (ENG) requirement on VO (112.6%, 88.9—140.4) compared to VR (130.4%, 108.4—157.3), although there wasn't a significant difference (p = 0.10). For carbohydrates (CHO), the days of VO were closer to 100% (99.5%, 76.1—123.9) while in VR they were above (110.9%, 85.3—185.3), but not significantly different (p = 0.29). Otherwise, the protein intake (PRO) was adequate on VR (103.4%, 63.2—133.8) compared to VO (81.1%, 58.4—108.7) which were below the indicated and different compared with VR (p = 0.01). Fat intake were well above the indicated amount for both training types, nonetheless there was a significant difference (p = 0.01) between the days of VO (200.9%, 132—293.3), which were closer to the indicated plan than the VR days (280.2%, 176—354.7) (Figure 1).

Table 1. Subjects' general characteristics (n= 7).

	Mean ± SD	Minimum – maximum
Weight (kg)	74.4 ±7.7	64.4 - 85.0
Height (cm)	185 ± 6.3	178 - 195
Body Mass Index (kg/m^2)	20.0 ±1.7	17.3 - 21.7
Age (years)	21 ±1.7	19 - 23
Body fat (%)	11.2 ±2.2	6.8 - 13.6

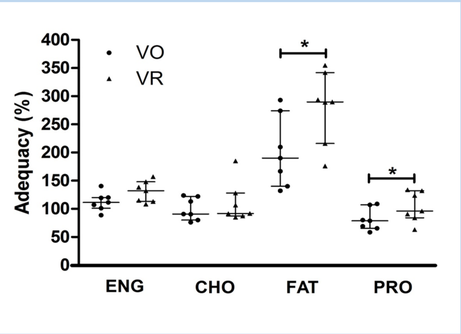

Figure 1. Adequacy of nutritional intake (percentage) for energy and macronutrients compared with the indicated dietary plan for different training sessions; ENG: Energy; CHO: Carbohydrates; PRO: Protein; VO: Volleyball Only; VR: Volleyball plus Resistance training. *: Significant differences between both types of training (p≤0.05).

CONCLUSIONS

In this study, subjects showed better adequacy to the indicated plan for protein intake on VR days, the opposite was true for fat intake. Similar adequacy was observed for carbohydrate and energy regardless of the type of training. However, these results suggest that there is still need to do more studies for determine the causes for adherence to some macronutrients depending the type of training.

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