



www.aassjournal.com

ISSN (Online): 2322 – 4479

Original Article

Received: 10/05/2014

Accepted: 12/11/2014

Nutrient Intake and Dietary Practices of Elite Volleyball Athletes during the Competition Day

¹Janaka Prasanna Gamage*, ²Angela De Silva

1. Medical Officer, Department of Emergency Medicine, Swan District Health Campus, Australia.
2. Head/Senior Lecturer, Department of Physiology, Faculty of Medicine, University of Colombo, Sri Lanka.

ABSTRACT

Adequate quality and quantity of athletes' competition day diet is critically important for better performance and optimum recovery. The aim of this study was to evaluate the adequacy of nutrient intake and dietary practices of Sri Lankan national volleyball players during a day of a major competition. Dietary practices of 76 athletes (43 males and 33 females) were surveyed using 24-hour dietary recall method. Energy and macronutrient intakes were quantitatively assessed in relation to competition using a computerized nutrition analysis software and local food database. Questionnaire was used to examine supplement intake and fluid intake strategies. The results were compared with current nutrition recommendations for these athletes. Mean daily energy intakes were 2309 ± 365 kcal (30.9 ± 5.7 kcal.kg⁻¹.body weight) in male and 1829 ± 383 kcal (30.8 ± 6.8 kcal.kg⁻¹.body weight) in female athletes. These intake values were 31% and 18% lower than recommended daily energy intake for active Sri Lankan male and female adults, respectively. Daily carbohydrate and protein intakes of all athletes were 5.6 ± 1.0 g.kg⁻¹.day⁻¹ and 0.91 ± 0.37 g.kg⁻¹.day⁻¹, respectively, lower than the recommendations. Total energy, carbohydrate, and protein intake of female athletes were significantly lower than those of males ($p < 0.05$). Frequency of snack intake and calorie content of snacks and main meals in the pre-competition period was sub-optimal. Nutrient intake and dietary practices of national level volleyball players during competition days are sub-optimal and do not meet the current nutrition recommendations. According to the results, it is recommended that athletes use nutrition counselling and strategies for optimizing dietary practices during the competition days.

Key Words: Court Sports, Competition Diet, Volleyball.

Corresponding Author:

Janaka Prasanna Gamage

E-mail: jpgamage@yahoo.com

INTRODUCTION

Proper nutrition practice during the competition days is crucial for optimum athletic performance and post-exercise recovery (1). Primary nutrition goals during the competition are to commence the event in well-fuelled and well-hydrated state and replace energy and fluid losses during and after the event (2). Athletes require higher energy intake due to increased physical demand during the competition day. Current nutrition recommendations encourage athletes to supplement the main meals with snacks rich in nutrients to meet their high energy demands during competitions (1). Quantity, quality, and timing of main meals and snacks taken during the competition days are therefore the main nutritional concern for athletes.

Volleyball is a team sport characterised by intermittent high intensity activities interspersed with rest intervals. This sport measures cardiorespiratory-related parameters such as speed, flexibility, power, agility, and strength (3). Therefore, volleyball athletes demand a combination of both aerobic and anaerobic energy (3). The main energy provider for short-duration high-intensity activities is the phosphagen system (4). However, uncertainty in competition duration assesses an athlete's endurance capacity and aerobic power in longer games (4).

Most of the dietary surveys in volleyball (5-8) and other field sports (9, 10) have been conducted during the training seasons. There are limited data on nutrition practices of team-sport athletes during the actual competition (11, 12) and also on volleyball and other court sports. The purpose of the present study was, therefore, to examine the dietary intake of Sri Lankan national level volleyball players during a day of a major competition and evaluate the adequacy of nutrient content and dietary practices

compared to current nutrition recommendations for athletes.

MATERIALS AND METHODS

Participants. Elite national level volleyball players from nine provinces in Sri Lanka take part in the national volleyball tournament each year. Tournament lasts over 3 days and includes matches between provincial teams. Athletes who took part in the national volleyball championship in 2010 were invited to serve as subjects. All athletes took part in a single match per day and those who played fulltime match (3-5 sets) were recruited into the study. Out of 16 teams, 43 male (age = 24.3 ± 5.1 years) and 33 female (age = 20.2 ± 4.7 years) athletes consented to participate.

Anthropometric assessment. Demographic data include age, gender, and level of play were collected before the competition. Anthropometric and dietary data were gathered the following morning after the day of competition. Data were gathered from male players on the first day and from female players on the second day. Body weight was measured with minimal clothing to the nearest 0.1 kg using a calibrated electronic weighing scale (*Seca® Clara 803*). Standing height was measured to the nearest 0.1 cm using a standard stadiometer (*Seca® 213*). Body Mass Index (wt/ht^2) was also calculated for both males and females.

Dietary assessment. Subsequently, athletes participated in a dietary interview. All food, fluid, and supplement intakes were recorded based on the standard 24-hour dietary recall method. In dietary assessment, data on type, quantity, and timing of all food and fluids taken during the competition day were gathered. In addition, time and duration of the competition was recorded. Standard food models and diagrams were utilized for quantifying the food portion sizes. Athletes also completed a questionnaire, which inquire into commercial nutrition supplement use and

fluid intake strategies during the competition day. Supplement intake questions examined the type, amount, and timing of supplement intake. Fluid intake questions assessed whether athletes followed a pre-planned fluid intake strategy and if not, the indicators for fluid intake.

Data analysis. Food records were analysed using computerized nutrition analysis software (13). Local food items and recipes were analysed by employing local food database (14). Energy and macronutrient (carbohydrate, protein, and fat) compositions were calculated for all meals and snacks taken during the day.

Statistical Analysis. Data were expressed as the mean \pm standard deviation (SD). Independent t-test was used to compare the study variables between male and female groups. Statistical significance was declared when $P < 0.05$. All statistical analyses were completed using SPSS 15 (SPSS, Inc., Chicago, IL, USA).

RESULTS

Anthropometric characteristics for male and female volleyball players are presented in Table 1. There was no statistically significant difference in anthropometric data between males and females.

Table 1. Anthropometric characteristics of the athletes (Mean \pm SD)

	All athletes (n=76)	Male (n=43)	Female (n=33)
Age (years)	22.5 \pm 5.3	24.3 \pm 5.1	20.2 \pm 4.7
Weight (kg)	68.5 \pm 9.9	75.2 \pm 6.7	59.8 \pm 5.9
Height (cm)	173.8 \pm 9.1	178.9 \pm 7.4	167.1 \pm 6.4
BMI (kg.m ⁻²)	22.6 \pm 1.9	23.5 \pm 1.6	21.4 \pm 1.6

BMI: Body Mass Index

Energy and macronutrient intakes during the competition day for male and female athletes are shown in Table 2. Mean daily energy intake was 2309 \pm 365 kcal (30.9 \pm 5.7 kcal.kg⁻¹.body weight) and 1829 \pm 383 kcal (30.8 \pm 6.8 kcal.kg⁻¹.body weight) for males and females, respectively. Female athletes had significantly lower total energy intake than their male counterpart ($P < 0.001$). Mean macronutrient intake for both male and female athletes during the competition day was 5.6 \pm 1.0 g.kg⁻¹.body weight for carbohydrates, 0.91 \pm 0.37 g.kg⁻¹.body weight for protein, and 0.56 \pm 0.18g.kg⁻¹.body weight for fat (Table 2). Daily carbohydrate and protein intake of female athletes were, respectively, 325.8 g.day⁻¹ and 53.9 g.day⁻¹, which are significantly lower than those of males ($p < 0.05$).

Energy, macronutrient composition, and timing of meals and snacks consumed in the pre-competition and post-competition

periods are presented in Table 3. Athletes had a pre-competition meal consisted of 607 \pm 141 kcal 222 \pm 156 minutes before the competition. 65% of athletes had a pre-competition snack 84 \pm 54 minutes before the competition and 49% had a post competition snack 42 \pm 30 minutes after the competition. Only 13% of athletes had a snack consisted of 93 \pm 20 kcal during the competition period. Post-competition meals of these athletes were taken 186 \pm 102 minutes after the competition and consisted of 552 \pm 121 kcal.

18 athletes (23%) used sports nutritional supplements during the competition day. More than half of these athletes (n=10) used commercially available high-energy drinks, including the use of 50% dextrose solution by 8 athletes during the half-time break. Five athletes used creatine and 2 athletes used commercial sports drink before the competition. 97% of athletes had no pre-planned method for fluid intake during the

competition day and their main indicators for fluid intake were thirst and fatigue.

Table 2. Energy and macronutrient intake of athletes (Mean \pm SD)

	All athletes (n=76)	Male (n=43)	Female (n=33)
Energy			
Total (kcal.day ⁻¹)	2100 \pm 441	2309 \pm 365	1829 \pm 383 *
Per BW (kcal.kg ⁻¹ .BW)	30.8 \pm 6.2	30.9 \pm 5.7	30.8 \pm 6.8
Carbohydrate			
Per day (g.day ⁻¹)	379.2	420.5	325.8 *
Per BW (g.kg ⁻¹ .BW)	5.6 \pm 1.0	5.6 \pm 1.0	5.5 \pm 1.1
% of total energy (%)	67.7	68.3	66.8
Protein			
Per day (g.day ⁻¹)	59.8	64.1	53.9 *
Per BW (g.kg ⁻¹ .BW)	0.91 \pm 0.37	0.85 \pm 0.17	0.98 \pm 0.53
% of total energy (%)	11.4	11.1	11.8
Fat			
Per day (g.day ⁻¹)	38.7	41.3	34.9
Per BW (g.kg ⁻¹ .BW)	0.56 \pm 0.18	0.55 \pm 0.17	0.58 \pm 0.20
% of total energy (%)	16.6	16.1	17.2

BW: Body Weight

*Significantly lower than male athletes ($p < 0.05$).

Table 3. Energy, macronutrient composition, and timing of meals and snacks before and after the competition (Mean \pm SD)

	All athletes (n=76)	Male (n=43)	Female (n=33)
Pre-competition meal			
Energy (kcal)	607 \pm 141	646 \pm 146	555 \pm 117 *
Carbohydrate (g; %)	105.4; 65	113.8; 66	94.9; 64
Timing (minutes)	222 \pm 156	204 \pm 144	246 \pm 162
Pre-competition snack			
Taken (%)	65	38	27
Energy (kcal)	149 \pm 88	140 \pm 85	163 \pm 92
Carbohydrate (g; %)	33.2; 84	32.2; 86	34.4; 79
Timing (minutes)	84 \pm 54	78 \pm 48	90 \pm 66
Competition nutrition			
Taken (%)	13	10.5	2.5
Energy (kcal)	93 \pm 20	92 \pm 22	98 \pm 8
Carbohydrate (g; %)	23.2; 93	22.5; 92	26; 99
Post-competition snack			
Taken (%)	49	28	21
Energy (kcal)	191 \pm 109	200 \pm 100	180 \pm 122
Carbohydrate (g; %)	38.2; 75	42.6; 80	33.3; 69
Protein (g; %)	4.1; 9	4.0; 8	4.3; 10
Timing (minutes)	42 \pm 30	42 \pm 36	42 \pm 24
Post-competition meal			
Energy (kcal)	552 \pm 121	606 \pm 108	481 \pm 99 *
Carbohydrate (g; %)	105.6; 72	118.6; 73	90.2; 70
Protein (g; %)	15.1; 11	16.6; 11	14.3; 12
Timing (minutes)	186 \pm 102	186 \pm 96	186 \pm 108

* Significantly lower than male athletes ($p < 0.05$).

DISCUSSION

Energy and macronutrient intake

Energy. Daily energy intake of male and female athletes was 31% and 18% lower than the recommended figures of 3350 kcal and 2240 kcal for active and very active adult Sri Lankan males and females, respectively (15). Similarly, most of the dietary surveys carried out on volleyball (5-8) and other court sports (9) have reported low energy intake by athletes. Low energy intake and its associated risks were higher among female athletes (5, 7, 8, 16). In the present study, we observed a significantly lower energy intake by female athletes compared to their male counterparts ($p < 0.05$).

Carbohydrate. Volleyball comprises of a main anaerobic component. Carbohydrate is therefore the primary fuel source for working muscles. Current recommendation for carbohydrate intake for volleyball athletes in training and competition is $6-10 \text{ g.kg}^{-1} \cdot \text{body weight} \cdot \text{day}^{-1}$ (1, 17). However, mean carbohydrate intake of male and female athletes in this study was only $5.6 \pm 1.0 \text{ g.kg}^{-1} \cdot \text{body weight} \cdot \text{day}^{-1}$, accounting for 67.7% of daily energy intake (Table 2). Female players in volleyball (8, 18) and other court sports (10, 19) have been reported to have a daily intake of carbohydrate as low as $3-4 \text{ g.kg}^{-1} \cdot \text{body weight}$. Carbohydrate intake of female athletes in the present study was $5.5 \pm 1.1 \text{ g.kg}^{-1} \cdot \text{BW}$ (66.8 % of total energy intake) and higher than the reported intake for female volleyball players during the training season (5, 7, 8). However, it should be noted that meeting adequate carbohydrate intake in terms of percentage is mostly due to the popularity of starch-based food practices in Sri Lanka.

Protein. Athletes require a higher protein intake than non-athletes (20). The recommended dietary protein intake for athletic performance is $1.2-1.6 \text{ g.kg}^{-1} \cdot \text{day}^{-1}$ (20, 21). The observed protein intakes in this study for male ($0.85 \pm 0.17 \text{ g.kg}^{-1} \cdot \text{body$

weight) and female ($0.98 \pm 0.53 \text{ g.kg}^{-1} \cdot \text{body weight}$) athletes meet guidelines for sedentary populations but do not meet the increased requirements for elite competition. Papadopoulou, Papadopoulou, and Gallos (2002) and Beals (2002) found similar low protein intakes by Greek and US adolescent female volleyball players during the competition season (6, 8). Protein intake by athletes in the present study was only 11-12% of total calorie intake. This is lower than the protein intake values reported in previous studies, which ranged from 12-16% (5, 7, 8).

Fat. Fat serves as an energy reservoir and a quantitatively important energy source for exercise metabolism. Mean fat intake in this study was only 16-18% of daily energy intake and this is much lower than the recommended 25% for these athletes (16). Previous studies conducted on volleyball players in Greece have found high fat content in their diet ranging from 30-39% of total energy intake (7, 8). High carbohydrate and low fat content of the diet in subjects of the present study is contradictory to the findings of other researchers who reported low carbohydrate and high fat intakes (5, 7, 8). This finding is most likely due to the popularity of starch-based food practices in Sri Lanka.

Pre-competition dietary practices

Pre-competition meal. A high-carbohydrate meal before exercise enhances glycogen storage in liver and muscles (22). A pre-competition meal consisted of 200-300g of carbohydrate is recommended about 3-4 hours before the competition (1, 22). Athletes of in this study had a pre-competition meal containing $607 \pm 141 \text{ kcal}$ with mean carbohydrate content of 105.4 g, which is low and merely 42% of the recommended figure. However, the rate of carbohydrate content was adequate (65%), but low in quantity due to low energy content in the pre-competition meal.

Pre-competition snack. A pre-competition snack approximately an hour before the competition increases liver glycogen stores and provides an alternative source of carbohydrate during exercise (22). Only 65% of athletes in the present study had a pre-competition snack, which contained 33.2 g of carbohydrate on, average. This is much lower than the current recommendations for carbohydrate intake ($1\text{g}\cdot\text{kg}^{-1}\cdot\text{body weight}$) (1). Considering the mean weight of male and female athletes in this study, which is, 68.5 ± 9.9 kg, this value of carbohydrate intake only accounts for nearly 50% of the recommended figure. Even though the snacks had 84% carbohydrate as a fraction, yet again the total energy content of the snack was low.

Nutrition during the competition. Average duration of an international volleyball game ranges from 28 to 149 minutes for women and 36 to 178 minutes for men (23). Mean duration of the competition in this study was 84 ± 18 minutes. It is recommended that athletes take 30-60 g of carbohydrate for events lasting more than 60 minutes in order to maintain muscle glycogen stores and uninterrupted fuel supply (24). However, only 10 athletes (13%) had a snack or some energy source during the match, 8 of whom had a commercially available 50% dextrose solution (50ml vials) during the half-time break. This resulted in higher percentage of carbohydrate in the snack (93%), but lower in energy (93 kcal).

Post-competition snack and meal. Adequate energy and carbohydrate intake are vital for efficient restoration of muscle glycogen after competition (25). Current guidelines on post-competition dietary practices recommend $1-1.2\text{g}\cdot\text{kg}^{-1}\cdot\text{body weight}$ (50-100g) carbohydrate and 15-25 g of high quality protein within 30 minutes after competition (25). In the present study, 49% of athletes had a post-competition snack and only 10 of them (27%) had it within the first 30 minutes. Mean energy content of the snack

was 191 ± 109 kcal with 38.2 g of carbohydrate and 4.1 g of protein in quantity. These amounts of carbohydrate and protein were low and provided only about 50% and 20% of recommended carbohydrate and protein values, respectively. Recommended post-competition meal is similar to that of post-competition snack in terms of nutrient composition. It has been suggested that there may be some advantages in meeting carbohydrate intake targets as a series of snacks during the early recovery phase (25). Post-competition meals of athletes in this study consisted of only 552 ± 121 kcal with 105.6 g of carbohydrate and 15.1 g of protein, which was taken about 186 minutes after competition. Similar to pre-competition snack, carbohydrate and protein content in post-competition meal was inadequate due to low total energy content.

Considering the whole pre and post competition period, 17% of the athletes had no energy source between pre-competition and post-competition main meals. These athletes were fasting for 7.5 ± 1.8 hours, on average, in the competition day.

Nutrition supplement use. Nearly one-fourth of athletes (23%) used commercial sports nutritional supplements during the competition day. We noted that use of high-energy drinks including 50% dextrose solution was a well-established dietary practice among these athletes during the competition day.

Hydration strategy. Maintaining optimum hydration level is vital to prevent performance decline among athletes. We asked athletes whether they had a pre-planned protocol for fluid intake during the competition day or not. Remarkably, 97% of athletes had no pre-planned protocol for fluid intake to maintain their hydration for the competition. Their main indicators of fluid intake were thirst (77%) and fatigue (17%), which are symptoms of significant level of dehydration.

CONCLUSION

Energy, carbohydrate, and protein intake of national volleyball athletes during the competition day were lower than the current recommended values, which do not meet the energy demand for high-intensity activities in volleyball and can hinder their performance and recovery. Low food content of main meals and snacks and low snack intake frequency before, during, and after the match were the two main reasons recognized for not meeting adequate nutrient intake. Poor hydration strategies necessitate further evaluation of hydration status of these athletes. The findings of the present study

highlighted the necessity and importance of training the athletes and coaches on optimum dietary practices during competition day in order to meet their high energy demands. According to the results, it is recommended that athletes use nutrition counselling and strategies for optimizing dietary practices during the competition days.

ACKNOWLEDGMENTS

The authors would like to thank the participating clubs, staff, and players. We also acknowledge the supports and guides from the Sri Lanka Volleyball Federation in all stages of this study.

REFERENCES

- Rodriguez NR, Di Marco NM, Langley S. American College of Sports Medicine position stand. Nutrition and athletic performance. *Med Sci Sports Exerc.* 2009;41(3):709-31.
- Burke L. Training and competition nutrition. In: Burke L, editor. *Practical sports nutrition.* USA: Human Kinetics; 2007. p. 17-26.
- Burke L. Court and Indoor Team Sports. In: Burke L, editor. *Practical sports nutrition.* USA: Human Kinetics; 2007. p. 221-39.
- VanHeest JL. Energy Demands in the Sport of Volleyball. *Handbook of Sports Medicine and Science: Volleyball.* Blackwell Science Ltd; 2008. p. 11-7.
- Anderson DE. The impact of feedback on dietary intake and body composition of college women volleyball players over a competitive season. *Journal of strength and conditioning research / National Strength & Conditioning Association.* 2010;24(8):2220-6.
- Beals KA. Eating Behaviors, Nutritional Status, and Menstrual Function in Elite Female Adolescent Volleyball Players. *Journal of the American Dietetic Association.* 2002;102(9):1293-6.
- Hassapidou MN, Manstrantoni A. Dietary intakes of elite female athletes in Greece. *Journal of human nutrition and dietetics : the official journal of the British Dietetic Association.* 2001;14(5):391-6.
- Papadopoulou SK, Papadopoulou SD, Gallos GK. Macro- and micro-nutrient intake of adolescent Greek female volleyball players. *International journal of sport nutrition and exercise metabolism.* 2002;12(1):73-80.
- Hickson JF, Jr., Schrader J, Trischler LC. Dietary intakes of female basketball and gymnastics athletes. *J Am Diet Assoc.* 1986;86(2):251-3.
- Nowak RK, Knudsen KS, Schulz LO. Body composition and nutrient intakes of college men and women basketball players. *J Am Diet Assoc.* 1988;88(5):575-8.
- Baker LB, Heaton LE, Nuccio RP, Stein KW. Dietitian-observed macronutrient intakes of young skill and team-sport athletes: adequacy of pre, during, and postexercise nutrition. *International journal of sport nutrition and exercise metabolism.* 2014;24(2):166-76.
- Schokman CP, Rutishauser IH, Wallace RJ. Pre- and postgame macronutrient intake of a group of elite Australian football players. *International journal of sport nutrition.* 1999;9(1):60-9.
- Jones & Bartlett Pub. *Nutritionist Pro Nutrition Analysis Software-Version 1.3:* Jones & Bartlett Pub.; 2002.
- Wikramanayake TW. *Food and nutrition.* 3rd ed. University of Colombo, Sri Lanka: Hector Kobbekaduwa Agrarian Research and Training Institute; 1996.
- Department of Nutrition. *Recommended Dietary Allowances for Sri Lankans.* University of Colombo, Sri Lanka: Medical Research Institute, 1998.
- Hawley JA, Dennis SC, Lindsay FH, Noakes TD. Nutritional practices of athletes: are they sub-optimal? *Journal of sports sciences.* 1995;13 Spec No:S75-81.
- Burke LM, Kiens B, Ivy JL. Carbohydrates and fat for training and recovery. *Journal of sports sciences.* 2004;22(1):15-30.

18. Risser WL, Lee EJ, LeBlanc A, Poindexter HB, Risser JM, Schneider V. Bone density in eumenorrheic female college athletes. *Med Sci Sports Exerc.* 1990;22(5):570-4.
19. van Erp-Baart AM, Saris WH, Binkhorst RA, Vos JA, Elvers JW. Nationwide survey on nutritional habits in elite athletes. Part I. Energy, carbohydrate, protein, and fat intake. *International journal of sports medicine.* 1989;10 Suppl 1:S3-10.
20. Tipton KD, Wolfe RR. Protein and amino acids for athletes. *Journal of sports sciences.* 2004;22(1):65-79.
21. Tarnopolsky M. Practice Tips: Protein and amino acid needs for training and bulking up. In: Burke L, Deakin V, editors. *Clinical sports nutrition.* 3rd ed. Australia: McGraw-Hill; 2006. p. 73-111.
22. Burke LM. Preparation for competition. In: Burke L, Deakin V, editors. *Clinical sports nutrition.* 3rd ed. Australia: McGraw-Hill; 2006. p. 355-84.
23. MacLaren D. Volleyball and Basketball. In: Reilly T, Secher N, Snell P, Williams C, Williams C, editors. *Physiology of Sports.* London, UK: Taylor & Francis; 2005. p. 376-409.
24. Maughan RJ. Fluid and CHO intake during exercise. In: Burke L, Deakin V, editors. *Clinical sports nutrition.* 3rd ed. Australia: McGraw-Hill; 2006. p. 385-414.
25. Burke LM. Nutrition for recovery after competition and training. In: Burke L, Deakin V, editors. *Clinical sports nutrition.* 3rd ed. Australia: McGraw-Hill; 2006. p. 415-53.

مقاله اصیل

تاریخ دریافت: ۱۳۹۳/۰۲/۲۰

تاریخ پذیرش: ۱۳۹۳/۰۸/۲۱

تازه‌های علوم کاربردی ورزش

دوره دوم، شماره چهارم

صص ۱۰-۰۱، زمستان ۱۳۹۳

دریافت مواد مغذی و شیوه‌های رژیم غذایی والیبالیست‌های نخبه طی روز مسابقه

۱. جاناکا پراسانا گاماج*، ۲. آنجلا دسیلوا

۱. مسئول پزشکی گروه فوریت‌های پزشکی، پردیس سلامت ناحیه سوان، استرالیا.

۲. مدرس ارشد و مدیر گروه فیزیولوژی، دانشکده پزشکی، دانشگاه کولومبو، سریلانکا.

چکیده

کیفیت و کمیت کافی رژیم غذایی روز مسابقه ورزشکاران بطور حساسی برای اجرا بهتر و بازیافت بهینه اهمیت دارد. هدف از تحقیق حاضر ارزیابی کفایت دریافت مواد مغذی و شیوه‌های رژیمی بازیکنان تیم ملی والیبالیست‌های سریلانکا طی یک روز از یک مسابقه اصلی بود. شیوه‌های رژیمی ۷۶ ورزشکار (۳۳ مرد و ۴۳ زن) توسط روش ثبت رکورد ۲۴ ساعته غذایی مورد بررسی قرار گرفت. انرژی و درشت مغذی‌های دریافتی مرتبط با مسابقه توسط یک نرم‌افزار تحلیل تغذیه کامپیوتری و پایگاه داده غذایی محلی بطور کمی اندازه‌گیری شد. پرسشنامه‌ای برای ثبت راهبردهای دریافت مکمل و مایعات بکار رفت. نتایج با توصیه‌های تغذیه‌ای جاری برای ورزشکاران مورد مقایسه قرار گرفت. میانگین انرژی دریافتی در ورزشکاران مرد 2309 ± 365 کیلوکالری ($30/9 \pm 5/7$ کیلوکالری به ازای هر کیلوگرم وزن بدن) و در ورزشکاران زن 1829 ± 383 کیلوکالری ($30/8 \pm 6/8$ کیلوکالری به ازای هر کیلوگرم وزن بدن) بود. این مقادیر دریافتی به ترتیب ۳۱٪ و ۱۸٪ کمتر از انرژی دریافتی توصیه شده برای بزرگسالان مرد و زن فعال سریلانکایی بود. دریافت روزانه کربوهیدرات و پروتئین همه ورزشکاران به ترتیب $5/6 \pm 1/0$ و $0/91 \pm 0/37$ گرم به ازای هر کیلوگرم وزن بدن در روز بود که کمتر از مقدار پیشنهادی بود. انرژی دریافتی تام، کربوهیدرات و پروتئین دریافتی ورزشکاران زن بطور معناداری پایین‌تر از ورزشکاران مرد بود ($P < 0/05$) فراوانی میان‌وعده دریافتی و کالری محتوی میان‌وعده‌ها و وعده‌های غذایی اصلی در دوره پیش از رقابت زیر حد بهینه بود. دریافت مواد مغذی و شیوه‌های رژیمی بازیکنان تیم ملی والیبالیست‌های مسابقه زیر حد بهینه است و توصیه‌های تغذیه‌ای جاری را برآورده نمی‌کند. بر اساس نتایج پیشنهاد می‌شود که ورزشکاران توصیه‌ها و راهبردهای تغذیه‌ای را برای بهینه‌سازی شیوه‌های آن طی روزهای مسابقه بکار ببرند.

واژگان کلیدی: ورزش‌های محوطه‌ای، رژیم غذایی مسابقه، والیبالیست‌ها.

* - نویسنده مسئول:

جاناکا پراسانا گاماج

پست الکترونیک: jpgamage@yahoo.com

