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## Dietary pattern, nutrient intake and physical fitness of selected team game players of Dharwad city, Karnataka

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### Abstract

The present study was undertaken to study the dietary pattern, nutrient intake and physical fitness of selected team game players of Dharwad city, Karnataka. The data was collected under three headings like general background information of the selected sports personnel, baseline information of the selected team games like throwball and volleyball. Players were divided in to three groups as control, experimental 1 and experimental 2. All the groups were assessed for physical measurements, physical performance, nutrient intake. Real match was arranged between control and experimental group to evaluate the field performance. Later only one experimental group was supplemented with carbohydrate rich snack (Carbohydrate-72 g) three days before the competition. On the day of competition experimental group received a carbohydrate (6.75%) electrolyte beverage before, during and after the competition. Physical performance was evaluated using AAHPERD physical fitness test.

The findings revealed that the food consumption pattern and food intake significantly improved and increased due to nutrition intervention. Carbohydrate intake was 65% in both the players. This was further improved due to carbohydrate supplementation to 70%, which was significantly more than control group. The physical performance results revealed significant improvement in the selected fitness tests like strength, agility and endurance. There was significant improvement in the game performance as evaluated by coaches in all the experimental groups than in control groups and experimental groups had won the match. Self evaluation by players showed supplementation was useful for their sports performance. The study concluded that carbohydrate supplementation improved the physical fitness in turn sports performance of selected team game players.

**Keywords:** sports performance, nutrient intake, physical fitness

### Introduction

The nutritional status of an athlete is a major determinant of health, fitness and sports performance. Nutrition plays a central role in adaptation, rehydration, refueling, and repair as well as recovery from injury (Kreider *et al.*, 2010) [2]. As a consequence, for optimal performance it is essential that athletes be in the best possible nutritional and metabolically balanced state. Athletes as well as the general population may be overfed and still be deficient in a wide range of essential nutrients including vitamin A, vitamin B6, vitamin B12, vitamin C, vitamin D, vitamin E, vitamin K, folic acid, iodine, iron, zinc, calcium, magnesium, and selenium. These nutritional deficiencies can be extrapolated to athletes, with some indications that the incidence of some deficiencies may be higher among athletes than in the general population. Examples of nutritional deficiencies that have been specifically reported among athletes include iron, magnesium, sodium, zinc, calcium and vitamin D, vitamin C, vitamin E, and vitamin A (Machefer *et al.*, 2007) [9].

The primary reason for nutritional imbalance is consumption of refined foods and dietary supplements that are high in calories from sugars, starches and fats, and low in vitamins, minerals, trace elements and fiber as the result of the refining and manufacturing processes. The net effect is that athletes may consume an excess or low consumption of food and nutrient intake.

There are no studies available on team games with respect to food and nutrient intake, physical fitness and nutrition education hence the present study is undertaken to study the food and

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nutrition security of sports personnel and the intervention programme which included nutrition education and carbohydrate supplementation is proposed to improve their nutrition knowledge, practice and sports performance with the following objectives.

- To assess the dietary habits and food and nutrient intake of school children who have represented the school in various sports.
- To assess the food and physical fitness performance of selected sports personnel.

### Material and Methods

Methodology adopted in the present study is discussed under the following headings.

#### Selection of the schools and subjects

The selected urban area namely Dharwad city, is located in the middle region of Karnataka, situated in southern part of India. Dharwad city was selected as the area for research work, as it is the official place of the investigator. Out of 25 schools, eight schools were selected randomly, representing 32% of the schools to obtain representative samples of the schools. Permission to carry on the research work was taken from the Principals and Physical Education Teachers.

- Formulation of Questionnaire and Checklist to study the diet and nutrient intake
- Baseline Information

AAHPERD Physical Fitness Tests to assess Physical performance

#### Anthropometric measurements

Anthropometric measurements were selected as they are very

good indicators of nutritional status or nutrition security. Various measurements like height, weight, mid arm circumference, chest circumference, triceps and biceps (skin fold thickness) were selected and used, as per the guidelines of Jelliffe (1966). The details of the measurements are given below.

#### AAHPERD physical fitness tests to assess physical performance

Physical fitness tests indicate performance of the subjects AAHPERD (American Alliance Health Physical Education Recreation and Dance), (AAHPERD Test Manual, 1980). They are wide of sports performance. In the present study five components of physical fitness tests were included by used in the assessment of sports performance. In the present study five components of physical fitness tests were included. they are speed, strength, agility, flexibility and endurance.

### Results and Discussion

#### Dietary pattern of selected male and female sports personnel (Per day)

Table 1 depicts the food intake of selected male and female sports personnel. there is significant difference in the intake food by both the sports players. The adequacy of cereals in male and female players was 72%, 83% respectively; adequacy of pulses was 66% and 66% respectively. Intake of other vegetables and roots and tubers was better than green leafy vegetables. intake of fats and oils and sugar was exceeded the requirements where as fruit and milk consumption was less than the recommended dietary allowances.

**Table 1:** Dietary pattern of selected male and female sports personnel (g/day)

Food (g)	RDA	Male (n=87)		RDA	Female (n=85)	
		Intake	% Adequacy		Intake	% Adequacy
Cereals	420	320±80	72	300	250±56**	83
Pulses	60	40±8	66	60	40±9**	66
Green leafy vegetables	100	50±5	50	100	47±10**	47
Other vegetables	100	55±4	55	100	56±6**	56
Root and tubers	100	45±9	45	100	62±15**	62
Fruits	100	36±8	36	100	42±13**	42
Milk (ml)	500	300±75	60	500	220±47**	44
Fats and Oil	25	42±7	168	30	48±20**	160
Sugar	30	90±20	300	35	50±22**	142
Mean, fish, egg	80	80±20	100	80	54±10**	67

T test results significant at \*\* 0.01 level

#### Nutrition intake of selected sports personnel (Per day)

The nutrient intake of different foods of the subjects was calculated from the data obtained by 24 hr diet recall method using ready reckoner as specified in design of the study. Table 2 reveals nutrient intake of male and female sports personnel.

There is significant difference in the intake of calories, protein and calcium between both the players. the percent adequacy was calculated in comparison with RDA for Adolescents as RDA for adolescent's athletes is not available.

**Table 2:** Nutrient Intake of Selected Sports Personnel (per day)

Nutrient	RDA#	Male (n=87)	% Adequacy	RDA#	Female (n=85)	% Adequacy
Calories (Kcal)	2450	1800±300	73	2060	1700±315**	82
Protein (g)	70	55±7	78	65	45±10**	69
Fat (g)	22	45±5	204	22	37±9	168
Carbohydrate (g)	-	250±35	NA	-	233±45	NA
Iron (mg)	41	12±2	29	28	8.5±3	30
Calcium (mg)	600	400±66	66	600	350±115**	58

#Compared with RDA for adolescents, t test results significant at \*\*0.01 level.

### Overall physical fitness of male and female players

Table 3 shows the mean of physical parameters of male and female players. The speed performance of male players was  $8.25 \pm 0.15$  sec and in female  $9.19 \pm 1.28$ . Lesser the time taken in seconds, better the performance. Performance in speed is better in male than in female. Studied developmental effects on reaction time. As age increased, reaction time increased, with boys having more rapid speed than girls.

Strength performance of male players was  $38.99 \pm 9.64$  cms and female players were  $22.3 \pm 7.5$  cms. Strength differences between the sexes are commonly observed. In prepubescent strength performance, sex role exceptions are believed to be very influential.

The mean flexibility performance of male and female players was  $7.23 \pm 4.78$  and  $8.7 \pm 5.8$ . Girls have better flexibility than boys. Studies have shown that flexibility increases until early adolescence. Reported that the decline begins around 10 years of age for males and 12 years of age for females. Evidence also shows that older adults have less flexibility than younger adults and girls are more flexible than boys.

Agility performance of male players was found to be  $11.09 \pm 0.81$  and girls players was  $12.6 \pm 0.89$ . Studied in primary grade children found a moderately high positive correlation between physical growth and agility performance in boys and girls. Noted that both boys and girls increase in agility performance up to 14 years of age, after which girls seem to decline, which boys rapidly gain in agility performance.

The mean endurance performance of male players was  $902 \pm 120$  whereas female players were  $941 \pm 207$ . There was no difference between both the players in endurance performance. Burke *et al.* (1976) [7] compared males and female who exercised at a heart rate of 75% to 85% of maximum with total distance run held equal. They concluded that the average female expected relative improvement in aerobic power similar to that of male. Reported that trained experienced female runners were similar to that of trained male runners in endurance performance.

Of the five tests conducted, i.e. speed, strength, flexibility, agility and endurance. The AAHPERD physical fitness status given by Edwin (1964), revealed that both the players' fitness performance was at 50th (strength and endurance), 30th percentile (speed) and 25th percentile (flexibility and agility).

**Table 3:** Physical fitness of male and female team game players

Motor components	Male (n=81)	Female (n=72)
Speed (sec)	$8.25 \pm 0.15$	$9.19 \pm 1.28^{**}$
Strength (cms)	$38.99 \pm 9.6$	$22.3 \pm 7.5^{**}$
Flexibility (cms)	$7.23 \pm 4.78$	$8.7 \pm 5.8^*$
Agility (sec)	$11.09 \pm 0.81$	$12.6 \pm 0.89^*$
Endurance (mts)	$902 \pm 120.58$	$941 \pm 207$

T test results significant at  $**0.01$  level,  $*0.05$  level

### Summary and Conclusion

Based on the results of the intervention study, the food and nutrient intake of sports personnel could be improved with appropriate intervention programmes. In the present study, nutrition education as an intervention did improve in the choice of dietary habits, food intake and nutrient intake before during and after the events. Carbohydrate serves as the fuel source for working muscle for most sports. Carbohydrate supplementation no doubt improved selected physical parameters and field match performance among team game players of male and female.

### References

1. Aahperd. Health Related Physical Fitness Test Manual, Reston, Va: Aahperd, 1980.
2. Ablborg G. Substrate turnover during prolonged exercise in man. *Journal of Clinical Invest.* 1974; 53:1080.
3. Abood DA, Black DR, Birnbaum RD. Nutrition education intervention for college female athletes. *International Journal of Sports Nutrition and Exercise Metabolism.* 2004; 14:133.
4. Adamasco C, Claudia D, Silvia C, Alice B, Ester M. Nutrition knowledge and dietary composition in Italian adolescent female athletes and non-athletes. *International Journal of Sports Nutrition and Exercise Metabolism.* 2002; 12(2):142.
5. Aldinger CE, Johnes JT. Healthy nutrition: An essential element of a health-promoting school. WHO Information Series on School Health, Document four, 1998.
6. American College of Sports Medicine, Guidelines for Exercise Testing and Prescription, 4th Ed. Philadelphia, Pailea and Fiebiger, 1991.
7. Burke LM. Energy needs of athletes. *Canadian Journal of Applied Physiology.* 2001; 26:202-219.
8. Kreider RB, Wilborn CD, Taylor L, Campbell B, Almada AL, Collins R ISSN exercise & sport nutrition review: research & recommendations. *J Int Soc Sports Nutr.* 2010; 17:1-35.
9. Machefer G, Groussard C, Zouhal H, Vincent S, Youssef H, Faure H. Nutritional and plasmatic antioxidant vitamins status of ultra-endurance athletes. *J Am Coll Nutr.* 2007; 26:311-316.