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An analytical study of energy intake and expenditure of judokas and long distance runners

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Abstract
The present study was an analytical study of energy intake and expenditure of Judokas and Long Distance Runners. The study was delimited to those twenty (N=20) Judokas and Long Distance Runners of Punjabi University Patiala who have at least participated at the inter-university level competition. It was found that the energy intake was more in Long Distance Runners as compared to Judokas and the energy expenditure was more in Long Distance Runners as compared to Judokas.

Keywords: energy intake, expenditure, judokas, long distance runners

Introduction
To keep our body cells running properly, they must be supplied with correct amount food having required chemicals in ratio of the food. The chemicals in food which our body needs are called nutrients. The nutrients include proteins, carbohydrates, fats, vitamins and minerals. These nutrients are chemical substances which are present in the food we eat daily. Nutrition is the science that deals with food and its uses by the body. The science of nutrition has a great value for its ultimate goal, the development and maintenance of strong, study bodies. It is the science of foods and their relation to health. It has an immediate objective for the determination of what components of foods are needed for health and how much of each dietary essentials are required for infants, children, adolescents and athletes.

The energy needs and diet schedule for an athlete also varies because of difference in the factors like age, sex, body size, duration and severity of training, climatic conditions, types of sports\games, occupation and physical activity patterns. In sportsmen this factor is more important as there are wide variations in the energy needs between individuals of different sports activities. Athletic performance improves with wise nutrition and crumbles with nutritive deficiency. Knowledge of food and nutrition has a direct bearing on the maintenance of sound health of an individual. The energy balance requires the understanding of facets of energy expenditure and energy intake. The knowledge of caloric intake just like caloric expenditure is very important. An athlete or coach must be familiar with the planning of diet from the view point of nutrient requirement of his body.

For every Kg of body weight 1.3 calories of energy is required every hour. (An athlete weighting 50 Kg would require 1.3 x 24 hours x 50 Kg = 1560 calories/day). For each hour of training you require 8.5 calories of energy for each Kg of body weight. (For a two hour training session our 50 Kg athlete would require 8.5 x 2hrs x 50 Kg = 850 calories). An athlete weighting 50Kg who trains for two hours would require an intake of approx 2410 calories (1560 + 850).

Compared with the general population, endurance athletes and those involved in strength or speed events, such as weight lifters or sprinters, have increased protein requirements. It has been estimated that non-athletes require 0.75g protein/kg body weight/day, whereas endurance athletes need 1.2g to 1.4g/kg/day and strength and speed athletes 1.2 to 1.7g/kg/day. However, these intakes can easily be achieved through a normal balanced diet that meets an athlete's energy requirements and protein or amino acids supplements are not necessary. Indeed, extra protein intake above requirements has no advantage for either performance or muscle size.

Methodology
The present study was an analytical study of energy intake and expenditure of Judokas and Long Distance Runners. The study was delimited to those twenty (N=20) Judokas and Long Distance Runners of Punjabi University Patiala who have at least participated at the inter-university level competition. The age of all subjects was ranging between 17 to 25 years.

The players selected for sample were provided Performa of daily energy intake and energy expenditure chart. For determining the caloric intake, a record of everything eaten and drink along with the specific amount has recorded. A food database had been prepared of different Indian foods about 50 commonly used recipes and for determining the caloric expenditure every activity done by the player in the whole day e.g. walking, running, exercising etc. has recorded.

For determining the total daily caloric/energy intake and expenditure for 7 days was recorded and thus total caloric intake and expenditure in Kcal/day had been found.

As per the nature of the study the investigator used ANOVA and t-test to find out the nutritional status of Judokas and Long Distance Runners.

Analysis and Discussion
Data has been analyzed to test the mean as well as comparison of energy intake and expenditure of Judokas and Long Distance Runners. Comparative analysis of the selected variables have statistically analyzed by applying ANOVA and t-test.

Table 1: Mean, S.D. and 't' ratio for Calories Intake of Long Distance Runners and Judokas

Group	Total No. of observations	Mean	S.D.	t-ratio
Long Distance Runners	10	5118.1	94.58	84.16**
Judokas	10	3732.8	100.09	

** Significant at 0.01 and 0.05 level
No of observations = No. of days x No. of subjects

In Table 1, the mean scores show that the energy intake of Long Distance Runners and Judokas (5118.1 and 3732.8) respectively. Thus the result indicates that the energy intake was more in Long Distance Runners as compared to Judokas. When 't' value was calculated (t = 84.16, significant at both the levels of significance i.e. 0.05 and 0.01 respectively), it gives significant difference in the caloric intake between Long Distance Runners and Judokas.

Table 2: Mean, S.D. and't' ratio for Calories Expenditure of Long Distance Runners and Judokas

Group	Total No. of observations	Mean	S.D.	t-ratio
Long Distance Runners	10	5462.6	96.97	112.9**
Judokas	10	3390.6	118.99	

** Significant at 0.01 and 0.05 level
No of observations = No. of days x No. of subjects

In Table 2, the mean scores show that the energy expenditure of Long Distance Runners and Judokas (5462.6 and 3390.6) respectively. Thus the result indicates that the energy expenditure was more in Long Distance Runners as compared to Judokas. When 't' value was calculated (t = 112.9, significant at both the levels of significance i.e. 0.05 and 0.01 respectively), it gives significant difference in the caloric expenditure between Long Distance Runners and Judokas.

The statistical analysis of data shows that the calories intake and also expenditure of long distance runners is more than other groups of Athletes or players. Energy intake depends upon the duration of activity and intensity of exercise. Long duration exercise needs high intake of energy. Long distance runners perform activities for long period of time. They burn more calories as so their intake and expenditure is high. Cathy *et al.* (1992) [4] conducted a study on daily energy expenditure and nutrient intake of male athletes who run more than 70 km/wk and find that their energy intake is less than energy expenditure. His results are relevant to this study because this study also shows that the energy intake of Long Distance Runners was less than energy expenditure.

Results also shows that the calories intake and expenditure of Judokas is low in comparison to Long Distance Runners. Energy intake depends upon the duration of activity and intensity of exercise. Short duration exercise needs less intake of energy. They consume less energy due to low intensity of exercise because they don't need high energy in their specific work. They also need less no. of calories because they do not need high strength and Aerobic capacity in comparison to long distance runners.

When 't' value of the caloric intake between Long Distance Runners and Judokas was calculated (t = 84.16, significant at both the levels of significance i.e. 0.05 and 0.01 respectively), it gives significant difference in the caloric intake between Long Distance Runners and Judokas. Calculated 't' value of the caloric expenditure between Long Distance Runners and Judokas was 112.9 and it gives significant difference in the caloric expenditure between Long Distance Runners and Judokas. So our last hypothesis of the study that there will be significant difference in energy intake and energy expenditure of Long Distance Runners and Judokas is accepted.

Conclusion

- The energy intake was more in Long Distance Runners as compared to Judokas.
- The energy expenditure was more in Long Distance Runners as compared to Judokas.

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