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Effect of Carbohydrate Intake of Selected Motor Ability on University Players Performance

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Abstract

The aim of this study is to find out the effect of carbohydrate consumption on the performance of motor ability of university players. To achieve the purpose of the study, twenty male university players were selected randomly from Lakshmibai national institute of physical education, Gwalior. The selected subjects were divided into two groups of ten each. Group I underwent 10 days carbohydrate consumption. The criterion variables selected for the present study are agility, medicine ball throw, standing broad jump, jump and reach test and cardio-respiratory endurance. The experimental group underwent carbohydrate consumption for 10 days with the gap of 24 hours. The study was evaluated on the basis of collected data assessed by "Paired t test" and T-ratio". The level of significance was fixed at 0.05. The result of the study showed that carbohydrate consumption for 10 days with the gap of 24 hours significantly improved agility (t=6.622), medicine ball throw (t=6.333*), standing broad jump (t=11.19*), jump and reach test (t=5.832*) and cardio-respiratory endurance (t=4.265*) since the calculated value of t (2.00) for the selected degree of freedom and level of significant whereas no significant between-group differences were noted in control group. It is concluded that carbohydrate consumption for 10 days with the gap of 24 hours is effective enough to improve motor ability of university players.*

Introduction

The history of man to a large extent has been a struggle to obtain food. Until turn of the century science of nutrition had a limited range. (Park K; 2007). Carbohydrates are the main source of energy in all activities. They provide quick energy to the body and are not stored in the body for long. A carbohydrate is the most easily digested food. The primary function of carbohydrates is to provide energy for the body, especially the brain and nervous system. The body breaks down starches and sugars into substances called glucose that is used for energy by the body (Dr. Anand S. 2005). Carbohydrates reserve

(glycogen) of a human adult is about 500 grams. This reserve is rapidly exhausted when a man is fasting (Park K;2007). Each teaspoon of sugar contains 17 calories, this amount to 2, 31,000 calories or 66 pounds of potential body fat if the energy is not used as fuel for daily living (Dumphy M;2001). During muscular exercise, carbohydrates and lipids represent the major part of the substrates used for the production of energy. (Glisenzinsk D and et. al. ;2008). Sprint performance is significantly improved when a carbohydrate/protein supplement is ingested during repeated bouts of short duration, high-intensity cycling. (Harmon J.H. and et. al., 2007). Both muscle glycogen and plasma glucose are oxidised by skeletal muscles to supply energy during prolonged exercise. Although the underlying mechanism are uncertain. There appears to be a gradual shift from intramuscular glycogen towards blood borne glucose as the predominant carbohydrate energy source as exercise proceeds and as a muscle glycogen is depleted. (Coyle E.F and et. al.; 1993).

Subjects and Methods

Simple random sampling technique was used to select the sample. All the subjects are residing in the university hostel and although they belonged to difference classes, are habitual of fairly heavy work. It is reasonable to assume that they were seasonably well condition.

Sampling

20 male students of LNIPE were randomly selected as the subjects for this study. The age group was ranged from 17 to 25 years.

Study Tools

The research scholar has gone through all the scientific literature pertaining to the effect of carbohydrate consumption on motor fitness components from books, journals, periodicals, available in the library of Lakshmibai National Institute of Physical Education, Gwalior keeping the feasibility in mind especially in case of availability of instruments.

- The following variables are selected
- Agility
- Medicine Ball throw
- Standing Broad Jump
- Jump and reach Test
- Cardio respiratory endurance

Method of Carbohydrate Consumption

20 gram carbohydrate powder intake in liquid form (as mixing in 200 ml. of water) and was given during evening session before normal daily sports activities

for 10 days with the gap of 24 hours.

Collection of Data

There were two groups of 10 subjects in each pre-test was taken on selected motor fitness components of both groups. Then carbohydrate consumption to the experimental group and on the other hand pacebo was given to the control group for the duration of 10 days. After that post-test of both the groups was conducted on the same components.

The testes used were explained to the subjects prior to their administration. The subjects were given chance to practice the tests and made them familiar to the test being used.

Statistical Analysis

The study was evaluated on the basis of collected data assessed by "Paired t test" and T-ratio". The level of significance was fixed at 0.05.

Results

The study was conducted to determine the effect of carbohydrate consumption on the performance of agility, medicine ball throw, standing broad jump, jump and reach test and cardio respiratory endurance. The statistical analysis of data collected on twenty (N=20) subjects. The results pertaining to the motor ability performance in experimental group and control (placebo group) are presented in Table 1. Significant between-group differences were found in agility (t=6.622*), Medicine ball throw (t=6.333*), Standing broad jump (t=11.19*), Jump and reach test (t=5.832*) and cardio-respiratory endurance (t=4.265*) since the calculated value of t (2.00) for the selected degree of freedom and level of significant whereas no significant between-group differences were noted in control group, since the calculated value of t is smaller than tabulated value of t (2.00) for the selected degree of freedom and level of significance. The graphical representation of t-value of motor ability in experimental and control groups (n= 20 each) of carbohydrate consumption is exhibited in figure 1.

Table 1

Mean values (±SD) of motor ability of experimental and control groups (n = 10 each) before (Pre) and after (Post) carbohydrate consumption (experimental group only).

	Experimental group			Control group		
Variables	Pre	Post	t-value	Pre	Post	t-value
Agility (A)	6.540 ± 0.26	6.345 ± 0.22	6.622*	6.520 ± 0.13	6.525 ± 0.13	0.224
Medicine Ball Throw (MBT)	11.19 ± 0.96	11.88± 0.96	6.333*	11.54± 1.14	11.41±1.15	0.691
Standing Broad Jump (SBJ)	2.589 ±0.10	2.682 ±0.10	11.19*	2.588 ± 0.11	2.591 ± 0.10	0.880

Jump and Reach Test (JRC)	75.50 ± 7.51	79.10± 7.16	5.832*	70.65 ± 4.39	71.45 ± 4.39	1.848
Cardio-respiratory Endurance (CRE)	1761.1 ± 137.4	1855.9 ± 159.5	4.265*	1597.5 ± 236.2	1647.3 ± 211.7	1.713

****** Significantly (p<0.005) different from the respective 'Pre' value***

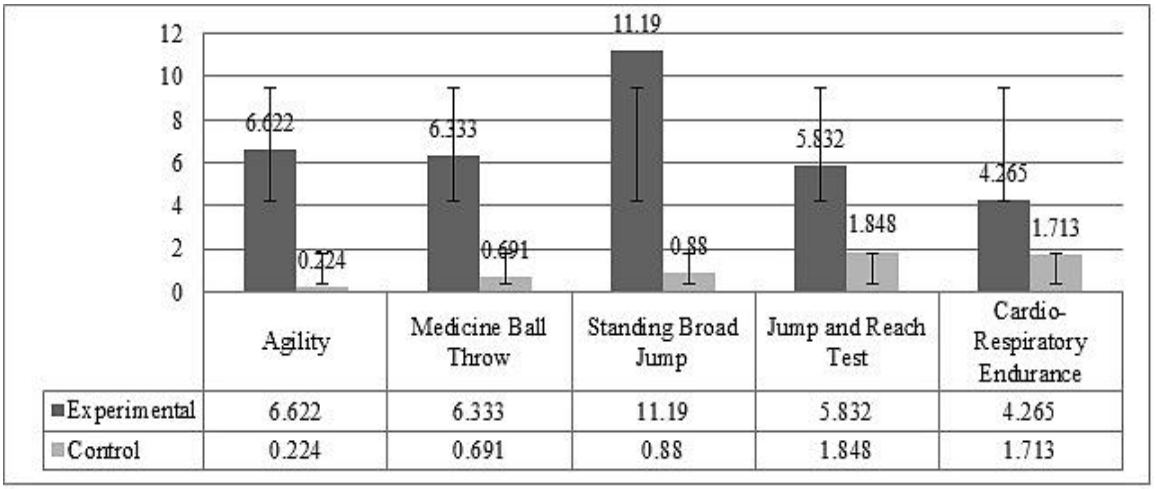

Figure 1. Graphical representation of t-value of motor ability in experimental and control groups (n= 20 each) of carbohydrate consumption

Discussion

Physical and physiological responses to nutrition component, including carbohydrate ingestion have been well studied by many researchers. It may be expected to positively improve many motor abilities. In a previous study of carbohydrate ingestion, the authors speculated that improvement in endurance performance (Caitlin C. and et al ,2008). Carbohydrate ingestion shown to be one of the most effective methods for improvement sprint performance immediately following 90 minute of running at 70-80% of maximal heart rate reserve on thirty young active men allocated randomly to 2 carbohydrate (CHO, N=15) and placebo (PL, N=15) groups. The results suggested that carbohydrate, protein, and fat metabolism during exercise after oral carnitine supplementation in humans on 20 non-vegetarian active meals and through data found that 2 weak of L-carnitine L-tartrate (LC) supplementation does not affect fat, carbohydrate and protein contribution to metabolism during prolonged moderate-intensity cycling exercise, it indicates that the oral LC supplementation might have the potential to reduce the metabolic stress of exercise or warrants further investigation (Broad E.M. and et al. 2008). Therefore, more studies are needed to determine the result of

carbohydrate ingestion and how it affects motor ability. The experimental findings of this study indicate that the significant between-group differences were found in the carbohydrate ingestion on motor ability that is, agility (t=6.622), medicine ball throw (t=6.333), standing broad jump (t=11.19), jump and reach test (t= 5.832) and cardio-respiratory endurance (t=4.265) and non-significant between-group differences were found in control group on agility (t=0.224), medicine ball throw (t=0.691), standing broad jump (t=0.88), jump and reach test (t= 1.848) and cardio-respiratory endurance (t=1.713)whereas, no significant changes were noted in the control group. These finding are supported by Carlson, Green S and Schumm.

Conclusion

From the result of the study following conclusions may be drawn that there was a significant between-group differences were found in the carbohydrate ingestion on motor ability that is, agility (t=6.622), medicine ball throw (t=6.333), standing broad jump (t=11.19), jump and reach test (t= 5.832) and cardio-respiratory endurance (t=4.265) and non-significant between-group differences were found in control group on agility (t=0.224), medicine ball throw (t=0.691), standing broad jump (t=0.88), jump and reach test (t= 1.848) and cardio-respiratory endurance (t=1.713)whereas, no significant changes were noted in the control group.

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