

The Effect of Carbohydrate Drinks on Glucose, Lactate and Functional Test of Men Football Referees

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Abstract:

The aim of this thesis was to study the effect of carbohydrate drinks on Glucose, Lactate and functional test of men football referees. The research was semi-experimental which has been done on 16 men referees. The test was performed in two sessions with one week off. The experimental group drank 200 ml carbohydrate drink and the control group drank water as the same. After and before the test, the participants' blood sample was collected. The data were analyzed using dependent t-test in the significance of $p < 0.05$. The results showed that glucose, lactate was increased in experimental group. Moreover, the function after drinking carbohydrate was better and drinking prevents the lack of blood sugar significantly.

Key words: carbohydrate drinks, Glucose, Lactate, functional football referees

1. Introduction

Today for supply of fluid required for athletes before physical activity during exercise or after it is applied in various ways. Although one of the main reasons for early fatigue during prolonged exercise decreases muscle and liver glycogen is mentioned, but also the loss of body fluids leads to dehydration, may be due to other important fatigue. Dehydration will ruin the performance and reduces exercise capacity (21). Note the prolonged exercise, especially in hot weather, reducing water and mineral salts such as sodium, chloride and potassium with sweat, in which the sodium reabsorption of water from all directions is very important (11). Due to water loss through sweat to cool the body in all physical activities, need water and food digestion does not occur without water as well. Water, ventilation and cooling of a body through exercise and severe activity is more important than food. Depending on the intensity and duration of exercise, drink water during exercise is important. Dehydration and lack of compensation does not push it to heart, pumping blood to the heart problems. And the release of heat generated during exercise is more difficult. With a loss of 1% of body weight through dehydration, heart rate 5 to 8 beats per minute and the body temperature rises by 3 ° C (16).must not be excessive in its use (1). Perform the optimum level of performance of athletes in a competition is one of the main objectives. Football arbitration as an alternate activity requires permanent changes. Metabolism high and high energy demand in training and competition, by absorption of adequate nutrients is possible. Among these carbohydrates, water and electrolytes, which are the requirements of the material intensity and duration of exercise, size, and condition of the body, the sweating, the type of coverage depends on the environmental conditions. Athletes generally recognize this fact by drinking fluids during exercise that lasts more than 60-40 minutes, improves performance (19). 20% of the activities of

football referees in the competition, is relatively severe, the pressure causes anaerobic fuel in sugars and increased levels of blood lactate, these values can be used as an indicator of aerobic and anaerobic fitness. In professional competitions, referees, soccer elite, high levels of lactate density in critical moments of the race experience, which reaches more than seven millimeters per liter. Several studies have been conflicting show results regarding the effect of drinks carbohydrates in sports. NasrAbadi (1383) showed that five percent of consumption of carbohydrate per kilogram of body weight of five ml had no effect on blood glucose levels (5). And in 1988 saw the Kerkendal players before the game and during the halftime break of 5% glucose solution were drunk, running faster, more distance walked and were active for a longer time without feeling tired (14), in While Sergi et al. (2004) observed that the experimental group with seven percent of the electrolyte solution to drink - carbohydrate in the 15-minute time intervals during the 90-minute football match, glucose and lactate concentration was higher at the end of the first half and second (20). Due to the different results of this research and similar studies, on the impact of drinking carbohydrate sports activities in present research try that affect beverage consumption of carbohydrates (5% glucose) are sodium, potassium, glucose, lactate and practical tests Judges man Football examined.

2. Method

The semi-empirical study on 32 male soccer referees was in Borujerd city. Among them, 16 people matched for age, weight and fitness were similar to the non-random selection of the sample was formed. And then randomly assigned to two experimental and control groups. All subjects of the questions on the questionnaire with at least 3 years of arbitration in sport was soccer. The history of blood diseases, heart andno, not

smoking and not taking a particular drug during the study. With collaborators meeting participants to assess preparedness and familiarity with the exam was held. All participants were asked to measure the index of the top 17 in the stadium and to attend their test order that 48 hours before sampling not have any physical activity. The test was repeated twice within a week before the start of the test subjects rested 30 minutes. In the second session during the break, the first stage of blood collection (pre-test) than they do, the researchers then divided the participants into four groups for periodic physical exams that were taken. Immediately after completion of the test, blood samples were taken from each four (post-test). In the test subjects ran 24 times for 30 seconds and a distance of 150 meters between each 30 seconds of rest was just walking slowly. Information received from each subject were recorded in the form of data collection. Initial blood samples after they were taken over by laboratory scientist, was brought to our laboratory to laboratory sciences on their next steps to be taken by operators. 15 minutes before the test, the experimental group members electrolyte solution - carbohydrate (glucose 5%, 200 ml) and the control group, the tap water consumed. (Both kinds of solutions in terms of dosage, time-consuming and colors were similar). In this study, the Kolmogorov-Smirnov, Levin test, Student's t-test for dependent and independent ($p < 0/05$) were used.

3. Results

In the experimental group, a significant increase compared to mean pre-test and post-test. In the control group the results showed no significant difference between the two phases. A comparison of blood glucose between control and experimental groups, showed a significant difference (Table 1).

Table 1: Comparison of changes in blood glucose control and experimental groups

Significant level	T-dependent	Moment of (%) change	post-test	pre-test	Blood (mg/dl) glucose	
0.004	-4.28	+35.43	105.3± 18.9	77.75±11.5	experimental	
0.22	-1.36	+12.59	95.25 ± 21.7	84.6 ± 13.4	control	
					-2.67	T-independent
					0.04	Significant level

According to the information in table 2, the experimental and control groups Comparison of pre- and post-test showed that blood lactate levels after consumption of carbohydrates increased the rate of change was significant. But compare the blood lactate changes between control and experimental groups, did not show significant differences (Table2).

Table 2: Comparison of blood lactate changes in both control and experimental groups

Significant level	T-dependent	Moment of change (%)	post-test	pre-test	Blood (mg/dl)lactate	
0.0001	-8.43	+443.6	67.25 ± 18.4	12.37 ±0.92	experimental	
0.0001	-10.03	+384.6	66 ± 14.3	13.62 ± 6.1	Control	
					-0.3	T-independent
					0.77	Significant level

The experimental group, compared to averages of pre-test and post-test showed that performance was significantly improved after consumption of carbohydrate drinks. The control group pre-test and post-test results compared to the control group showed no significant difference between the two phases. A

comparison of performance between the experimental and control groups, showed significant differences (Table 3).

Table 3: Comparison of changes in performance in both control and experimental groups

Significant level	T-dependent	Amount of (%) change	post-test	pre-test	performance (seconds)
0.0001	9.42	- 3.58	29 ± 0.93	± 1.1 30.04	experimental
0.81	-0.25	+0.07	± 0.76 30.26	± 0.73 30.24	Control
-7.71					T-independent
0.0001					Significant level

4. Discussion

In this study, the effect of carbohydrate drink (5% glucose) to glucose, lactate and practical tests man football referees were investigated. In this study, we tried as much as possible net effect of physical activity on variables to be determined and the impact of other factors such as changes in anthropometric, age and feeding to a minimum. The results showed that football referees response to carbohydrate consumption in a number of other factors were significantly different in some significant differences were observed.

According to information contained in the experimental group, blood glucose levels after consumption of carbohydrate drinks to the 4.4% increase was significant. In the control group the results showed no significant difference between the two phases. A comparison of blood glucose between control and experimental groups, showed a significant difference ($0/04 = P$). The results are similar to results GhasemNian (1390), which saw a significant increase in blood glucose (4) Taking carbohydrates, blood glucose levels and hepatic glucose oxidation increases and consumption decreases. As a result, the

liver and muscle glycogen depletion delays; therefore, plays an important role in increasing athletic performance (1). No (1389), cross-border (1390) showed that carbohydrate consumption has a significant effect on blood glucose (6,3) but NasrAbadi (1383) and Daris (2000) did not report a significant increase or decrease (5,10) the failure to comply may result in the type of training, subjects are used solution and sex. Daris, with 65 percent of the aerobic exercise on a treadmill for 90 minutes on 8 male runner associated with the consumption of electrolyte solution - carbohydrate 9/6 percent of the volume of 150 and 350 ml per hour at intervals of 20-15 minutes was studied.

The experimental group, blood lactate levels were significantly increased after consumption of carbohydrate drinks (0001/0 = P). In the control group, the results showed a significant increase between the two phases. A comparison of blood lactate between the experimental and control groups, the difference was not significant (77/0 = P). It is believed that fatigue due to local metabolic factors such as lactic acid and depletion of energy resources phosphagen and possibly an increase in blood lactate indicate increased fatigue (15). Another possible reason for the age and level of physical fitness can be a possible reason for the lack of impact on the levels of lactic acid as a carbohydrate solution. Increased lactate immediately after exercise can be a proof of efficiency, high intensity exercise and carbohydrate drink during the fatigue factor should be noted, however, the role of organisms that affect the absorption and excretion of lactate noted (12). The results of the investigation Amrinder (2011) and Bigam (2015) that showed increased lactate levels after consumption of carbohydrates is consistent (7,8). Instead afterglow Research (1390) and Riley (2006), inconsistent (2,18). The failure to comply may result in the type of training and the type of solution is used and sex subjects. Afterglow study on 20 male volunteers were students in physical education. All the ten

people in three stages with 4 days rest between stages were examined, in the first stage after taking Red Bull (6 ml per kg), in the second round after consumption of simple sugars was isokaller (6 ml per kg) and in the third stage after a placebo. The test consists of Wingate anaerobic test was 30 seconds in all three phases, the same way it was done 40 minutes after the drink.

The performance of the experimental group after taking carbohydrate drinks to the 3/58 percent showed significant improvement ($P=0/0001$). In the control group the results showed no significant difference between the two phases ($P=0/81$). A comparison of performance between the experimental and control groups, no significant differences were found ($0001/0 = P$). That the results HorensBai et al. (2011) that improve the performance of athletes was similar after drinking carbohydrates (13). It can be said that due to the relative superiority of carbohydrate electrolyte solution, perhaps due to the presence of glucose, because due to the high osmotic pressure caused by the small intestine to absorb more fluids than water, which is an important factor in preventing dehydration disadvantages, and preserve delay the onset of fatigue and conserving blood glucose levels of muscle glycogen (1). It appears that carbohydrate electrolyte drinks are better than water during exercise keeps the blood circulation and cause heart attacks and partly adjusted to maintain blood glucose levels and this causes delays thereby reducing perceived exertion and fatigue decreased heart rate during exercise and performance excellence experimental group compared to the control group (5). Kelly et al (2006) showed that the effect of a 6% carbohydrate drinks on young basketball players improve speed of execution and delivery performance in the experimental group than the control group who had drunk the water (9).

5. Conclusion

One of the determining factors in the implementation of activities, particularly prolonged and intense exercise, muscle glycogen is adequate access to water and electrolyte balance of the body (homeostasis) through nutritional strategies is possible. Lack of attention to this issue, because of the imposition of environmental effects on the body, resulting in a reduction or depletion of reserves and the balance of water and electrolytes through profuse sweating, fatigue and performance decline not only occur, but athlete risks caused by heat (high increase in body temperature) such as heatstroke is placed. Thus, according to scientific principles and studies, drinks containing carbohydrates and electrolytes, especially with respect to accelerate the absorption of water, avoid fatigue, the continuation and implementation of optimal access to energy is recommended. Many factors increase or decrease in athletic performance as well as the process of fatigue involved. But one of the important fundamental factors in fatigue and maintain keep performance of athletes carbohydrate depletion. Sugar is one of the most important factors is the success of athletes. In ways that fatigue, reduced performance, and finally executed during the run, the result of depletion of carbohydrate the body (11). Carbohydrate intake during exercise by maintaining plasma glucose concentration, improve performance and increase carbohydrate oxidation (17). The results showed that 5% glucose solution of sugar helps prevent and significantly affect performance. However not be used as independent variables reduces fatigue index (lactic acid).why in any two group index increased fatigue. This is also possible that much fatigue as a result of factors other than the impact of nutritional interventions, such as acidosis caused by the anaerobic glycolysis. It is possible that improved performance in research on the effects of the central (CNS) carbohydrate supplementation caused. In general, based on the findings of

this study can be said consumption of carbohydrates, 5% positive impact on the performance of judges.

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