International Journal of Academic Research and Development
ISSN: 2455-4197
Impact Factor: RJIF 5.22
www.academicsjournal.com
Volume 3; Issue 2; March 2018; Page No. 978-981

Effect of commercial energy drinks on the depletion of blood lactate of inter university level cyclists

Dr. Nishan Singh Deol[1], Mangaldeep Singh[2]
[1] Professor and Head, Department of Physical Education, Punjabi University, Patiala, Punjab, India
[2] Research Scholar, Department of Physical Education, Punjabi University, Patiala, Punjab, India

Abstract
Cycle sport is competitive physical activity using bicycles. There are several categories of bicycle racing. in bicycle short races produce lot of fatigue in muscles such as lactic acid and muscle stiffness. To find the exact effect the study conducted to determine the effect of commercial energy drinks on the depletion of blood lactate of interuniversity level cyclists. The design of the study was pre – post control group. This experimental study was carried out on 40 fit male cyclists who participated in all India inter university championship and cyclists divided into four equal groups. they were given a standardize energy drink such red bull group, gatorade group, rio group and control group, before the exercise researcher check the pre-examination on lactic acid variable. After performing they schedule cyclists was post examined on the lactic acid variable by using lactate pro portable blood lactate analyzer. For the results of the investigation analysis of covariance was used to find out mean differences between pre and post- test with the help of statistical package for the social sciences (spss) 16.0. the findings on pre-test mean values on blood lactate acid of red bull group, gatorade group, rio group and control group was 2.950, 2.860, 3.220 and 3.310 respective. the obtained 'f' ratio of 1.652 for pre-test scores is less than the table value of 2.87 for df 3 and 36 required for significance at.05 level of confidence on blood lactate acid and the post-test mean values on blood lactate acid of red bull group, gatorade group, rio group and control group was 4.560, 5.250, 4.650 and 4.707 respectively. The obtained "f" ratio of 1.274 for post-test scores is less than the table value of 2.87 for df 3 and 36 required for significance at.05 level of confidence on blood lactate acid. The result of the study shows that there was an insignificant effect of drinking gatorade group, rio group, red bull group and control groups on blood lactate acid. After that the F-ratio was found to be significant, the Scheffe's post-hoc test for differences between the paired adjusted final means is use in this investigation. The mean difference.690 between Group- gatorade and Group-rio was found significant in favour of Group- gatorade. However, the differences for the remaining paired means were not significant.

Keywords: cement emissions, environmental pollution, atmospheric changes, human health

Introduction
Sport is generally recognized as system of activities which are based in physical athleticism or physical dexterity, with the largest major competitions such as the Olympic Games admitting only sports meeting this definition **(**The Olympic Movement).
Blood boosters (blood doping agents) increase the oxygen-carrying capacity of blood beyond the individual's natural capacity. They are used in endurance sports like long-distance running, cycling, and Nordic skiing. Recombinant human erythropoietin (rhEPO) is one of the most widely known drugs in this class (Momaya, 2015). An energy drink is a type of beverage containing stimulant drugs, usually including caffeine, which is marketed as providing mental and physical stimulation. They may or may not be carbonated and many also contain sugar or other sweeteners, herbal extracts, taurine, and amino acids. They are a subset of the larger group of energy products, which includes bars and gels, and distinct from sports drinks, which are advertised to enhance sports performance. There are many brands and varieties of energy drinks.

Methodology & Procedure
Selection of subjects
For the purpose of the study 40 male cyclists was select as subjects who participated in All India Inter University Championship and cyclists divided into four equal groups such as red bull group, gatorade group, rio group and control group. The subjects were thoroughly acquainted with the testing procedure as well as the purpose and significance of the study. A thorough orientation of requirements during the testing procedures and performance test was made for successful completion of study. The selected samples were requested by the scholar to cooperate and to participate with utmost sincerity. Everything regarding the tests was made clear.

Protocol of the study
The researcher checks the cyclists' pre-examination on lactic acid variable on red bull group, gatorade group, rio group and control group and after performing they schedule cyclists was post examined on the lactic acid variable by using lactate pro portable blood lactate analyzer.

Table 1

No. of days	Energy drinks	
day 1	no drink	
day 2	no drink	
day 3	no drink	
day 4	drink 1	gatorade
day 5	drink1	gatorade
day 6	drink1	gatorade
day 7	no drink	
day 8	drink 2	red bull
day 9	drink 2	red bull
day 10	drink 2	red bull
day 11	no drink	
day 12	drink 3	rio
day 13	drink 3	rio
day 14	drink 3	rio

Selection of variables

Blood Lactate: It was measured with the help of Lactate pro portable blood lactate analyzer in millimolar.

Statistical Technique: Analysis of covariance was used to find out mean differences between pre and post- test after that the Scheffe's post-hoc test for differences between the paired adjusted final means with the help of statistical package for the social sciences (spss) 16.0.

Results

Table 2: Analysis of covariance of the data on blood lactate acid as measured by pro portable blood lactate analyzer amid male cyclists pre- test, post – test and adjusted post - test of different experimental and control groups

Test	Gatorade Group	Rio Group	Red Bull Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre – Test									
Mean	2.860	3.220	2.950	3.310	Between	.412	3	.412	1.652
S. D	.3026	.7330	.2635	.3725	Within	1.008	36	.336	
Post – Test									
Mean	4.560	5.250	4.650	4.700	Between	1.033	3	1.033	1.274
S. D	.9489	.7184	.5126	.6488	Within	1.951	36	.650	
Adjusted Post – Test Mean									
Mean	4.643	5.200	4.700	4.707	Between	1.951	3	.650	1.274
S. D	.233	.229	.229	.233	Within	17.870	35	.511	

*Significant at.05 level of confidence. F.05 (3, 35 and 36) = 2.87

The table no. -2 show that the pre-test means values on blood lactate acid of gatorade group, rio group, red bull group and control groups are 2.860, 3.220, 2.950 and 3.310 respectively. The obtained 'F' ratio of 1.652 for pre-test scores is less than the table value of 2.87 for df 3 and 36 required for significance at.05 level of confidence on blood lactate acid.

The post-test means values on blood lactate acid of gatorade group, rio group, red bull group and control groups are 4.560, 5.250, 4.650 and 4.707 respectively. The obtained "F" ratio of 1.274 for post-test scores is less than the table value of 2.87 for df 3 and 36 required for significance at.05 level of confidence on blood lactate acid.

The adjusted post-test means on blood lactate acid of gatorade group, rio group, red bull group and control groups are 4.643, 5.200, 4.700 and 4.707 respectively. The obtained "F" ratio of 1.274 for adjusted post-test means is less than the table value of 2.87 for df 3 and 35 required for significance at.05 level of confidence on blood lactate acid**.**

The results of table no. -2 indicated that there was an insignificant effect of drinking Gatorade group, Rio group, Red Bull group and control groups on blood lactate acid.

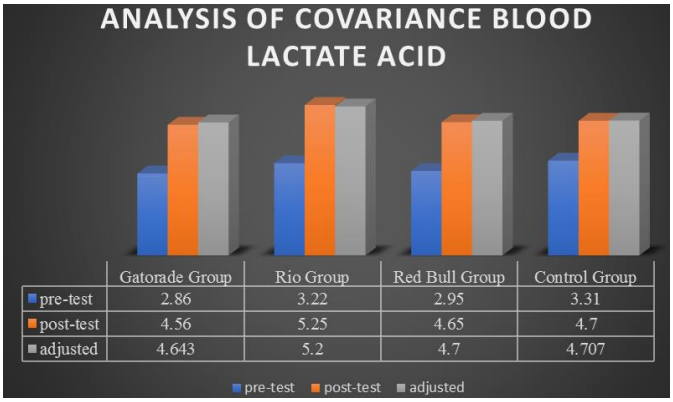

Fig 1: The pre, posttest and adjusted post-test mean values of Gatorade group, Rio group, Red Bull group and control groups on blood lactate acid were graphically represented with figure no - I.

Since the F-ratio was found to be significant, the Scheffe's post-hoc test for differences between the paired adjusted final means is use in this investigation. The ordered paired adjusted final means and difference between means for Gatorade group, Rio group, Red Bull group and control groups on blood lactate acid are presented in following tables and figures.

Table 3: The scheffe's test for the differences between paired means on blood lactate acid

Gatorade Group	Rio Group	Red Bull Group	Control Group	Mean Differences	Confidence Interval Value
4.643	5.200	-	-	.690*	.228
4.643	-	4.700	-	.090	.228
4.643	-	-	4.707	.230*	.228
-	5.200	4.700	-	.600*	.228
-	5.200	-	4.707	.460*	.228
-	-	4.700	4.707	.140	.228

* Significant at.05 level of confidence.

Table no.- 3 reveals that the three experimental groups (gatorade group, rio group and red bull group) on blood lactate acid were significantly different in their adjusted final means when compared to the adjusted final mean of control group. The mean difference.690 between Group- gatorade and Group-rio was found significant in favour of Group- gatorade. However, the differences for the remaining paired means were not significant.

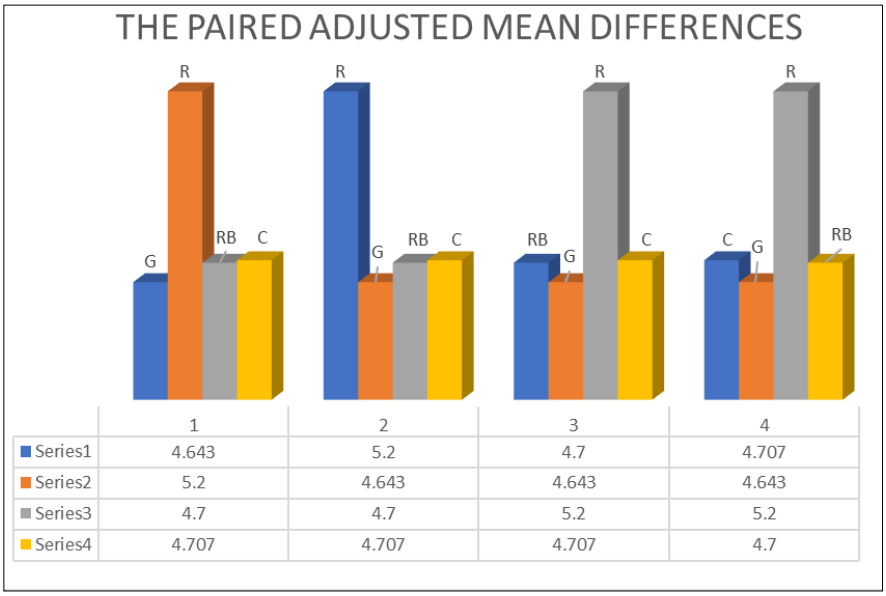

Fig 2: The scheffe's post-hoc test for the significance of differences between the paired adjusted final mean values of gatorade group, rio group and red bull group and control groups on blood lactate acid was graphically represent in figure.

Discussion of the findings

The present study was designed to scrutinize the effect of commercial energy drinks on the depletion of blood lactate of interuniversity level cyclists. A total ten (N=40) male cyclists between age group of 18- 25 years from Punjabi University Patiala were selected as subjects. To know the effect of commercial energy drinks researcher had selected following one Exercise Physiological variables as:

Based on the statistical analysis of data following findings was drawn by the researcher:

Blood Lactate

The result of the study revealed that blood lactate (Gatorade energy, Rio energy and Red bull energy drink) significantly difference in control and experimental group (Pre and Post-test) of commercial energy drinks on biochemical profile of male cyclists. These results of the study confirmed the findings of (Hassin and Ahmed, 2016) who also reported the results showed that glucose and blood lactate was increased in experimental group. Moreover, the function after drinking carbohydrate was better and drinking prevents the lack of blood sugar significantly.

References

1. Zelikovski A, Kaye CL, Fink G, Spitzer SA, Shapiro Y. The effects of the modified intermittent sequential pneumatic device (MISPD) on exercise performance following an exhaustive exercise bout, Br J Sports Med. 1993; 27(4):255-259.
2. Abian-Vicen J1, Puente C, Salinero JJ, González-Millán C, Areces F, Muñoz G, Muñoz-Guerra J, *et al.* A caffeinated energy drink improves jump performance in adolescent basketball players. Amino Acids. 2014; 46(5):1333-41. doi: 10.1007/s00726-014-1702-6. Epub.
3. Ahmaidi S1, Granier P, Taoutaou Z, Mercier J, Dubouchaud H, Prefaut C. Effects of active recovery on

plasma lactate and anaerobic power following repeated intensive exercise, Med Sci Sports Exerc. 1996 Apr. 1996; 28(4):450-6.
4. Alessandro Moura Zagatto, Marcelo Papoti, Fabrízio Caputo. Olga de Castro Mendes5, Benedito Sergio Denadai3,Vilmar Baldissera, Claudio Alexandre Gobatto Comparison between the use of saliva and blood for the minimum lactate determination in arm ergometer and cycle ergometer in table tennis player, Rev Bras Med Esporte. 2004; 10(6).
5. Bond V1, Adams RG, Tearney RJ, Gresham K, Ruff W. Effects of active and passive recovery on lactate removal and subsequent isokinetic muscle function, J Sports Med Phys Fitness. 1991; 31(3):357-61.
6. Brooks GA. Current concepts in lactate exchange, Med Sci Sports Exerc. 1991; 23(8):895-906.
7. Brooks GA. Intra- and extra-cellular lactate shuttles. Med Sci Sports Exerc. 2000; 32(4):790-9.
8. C.R Bridges. The effect of hypoxia on oxygen consumption and blood lactate levels of some marine crustacean, Comparative Biochemistry and Physiology Part A: Physiology. 1980; 65(4):399-409. https://doi.org/10.1016/0300-9629(80)90051
9. Candow, DG, Kleisinger, AK, Grenier, S, Dorsch, KD. Effect of sugar-free Red Bull energy drink on high-intensity run timeto- exhaustion in young adults, J Strength Cond Res. 2009; 23(4):1271-1275.
10. Carter H1, Jones AM, Doust JH. Effect of incremental test protocol on the lactate minimum speed", Med Sci Sports Exerc. 1999; 31(6):837-45.