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Perception of Athletes on the Effects of Energy Drinks on Sports Performance in the University of Ilorin

Surajudeen, Tosho Bakinde [1]

[1] Department of Human Kinetics Education, Faculty of Education, University of Ilorin, Ilorin Nigeria

Email: bakinde41@gmail.com

Abstract

The purpose of this study was to determine the perception of athletes on the effects of energy drinks on sports performance in the University of Ilorin. The respondents for the study were seventy-six athletes who represented the University of Ilorin in the 2014 Nigeria University Games (NUGA) held at Obafemi Awolowo University, Ile-Ife. The research design adopted descriptive research design of the survey type. Researcher designed questionnaire was used for data collection. The findings of the research revealed that consumption of energy drinks does not have any effect on the speed during competitions as perceived by athletes in the University of Ilorin and consumption of energy drinks does not have any effect on sleep disturbances as perceived by athletes in the University of Ilorin. It was concluded that consumption of energy drinks does not have any negative effects on the speed of the athletes in university of Ilorin. It was recommended that coaches, trainers and physical instructors should enlighten their athletes and trainees on the effects of energy drinks on the body.

Keywords: Athlete, Caffeine, Energy Drink

INTRODUCTION

Sporting events today serve as one of the means of generating finance and also getting the needed physical fitness for the body to function at maximum efficiency. Athletes are people who compete or take part in any sporting activity and for this reason; they are most times goal driven in nature. Most coaches and trainers push athletes to their very limit in order to get their full potentialities and most of the time focus more on athletes who can deliver and is capable of the task ahead. Most athletes for this reason do various things in order to perform more efficiently than others and this has led to various activities. Apart from the taking in of drugs by some athletes to improve sport performance, consumption of energy drinks are also perceived by most athletes to cause improved sports performance.

The term "energy drink" is usually defined differently based on an individual's point of view. Most people understand energy drink as anything in form of liquid taken into the body system orally to improve performance. People often ignore the ingredients that make up this energy drinks and their functions in the body. In Nigeria today, alcoholic drinks are often classified under energy drinks, most of which includes alomo bitters, dry gin, ogogoro, shekpe etc.

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There are safety concerns about energy drinks alongside marketing claims of physiological and behavioural benefits (Malinauskas, Aeby, Overton &Hedal, 2007). People use energy drinks for diverse reasons but for the purpose of this research, the consumption pattern of energy drinks among athletes of University of Ilorin as well as its perceived benefits and side effects on sports performance will be discussed on. An energy drink is a type of beverage containing stimulant drugs, chiefly caffeine, which is marketed as providing mental and physical stimulation. They may or may not be carbonated and many also contain sugar and other sweeteners, herbal extracts and amino acids. There are many brands and varieties of energy drinks.

Most athletes want to be exceptional in sports performance hence they do everything possible to come out top. They take energy drinks just to improve or accelerate performance without even knowing the side effects of this so called ‘’beverages’’. An athlete’s body response to energy drink may be different from that of another athlete because of the difference in body composition and other factors. People often confuse the difference between energy drinks and sports drinks, but they are not sports drinks at all. These beverages’ effects when combined with exercise are not well studied, and have limited federal regulations. Energy drinks are marketed for their stimulant effect on the mind and body. They are essentially soft drinks with high levels of sugar, caffeine, taurine, ginseng and B vitamins. There are many research studies that have examined athletic performance and cognitive performance benefits with consumption of an energy drink prior to or during an activity. The types of activities that have been researched are quite varied and include: cycling time trials, simulated soccer, resistance training, simulated golf, simulated driving and firefighting. Many studies found performance benefits while many did not (Forbes,Cardow, Little, Magnus, &Chilibeck, 2007).

According toMalinauskas, Aeby, Overton &Hedal (2007), the largest most widely known energy drink company is Red Bull. They have supported much of the research on energy drinks both monetarily and by creating and providing sugar-free and placebo versions of their drinks for scientific testing. There is a challenge when testing energy drinks due to its many different ingredients, although caffeine is the primary active ingredient. There may be interactions between ingredients, where one ingredient may enhance the effect of another or cancel put such effect. Other forms of energy drinks include; Gatorade, Power Horse, Lucozade Sport etc.

There are positive as well as adverse effects associated with the consumption of energy drinks. Most of the positive effects include; increased time to exhaustion, increased aerobic and anaerobic performance, decreased perceived effort, and increased mental focus, alertness, and concentration. Some claim increased metabolism for weight loss. The adverse effects linked to energy drinks include; dehydration, sleep disturbances, just to mention a few. According to Fitzgerald (2011), there is some evidence that consuming low-calorie energy drinks may promote a small amount of additional fat loss when combined with a weight loss program. It is interesting to note that while caffeine is well known to boost exercise performance; most sports drinks do not contain it, while most energy drinks do. It is just as well that most sports drinks do not contain caffeine however, because the ergogenic effect of caffeine disappears with habituation. So a sports drink with caffeine will work really well for the first time used and not quite as well the second time (Fitzgerald, 2011).

Today, emphasis is placed on the development of highly skilled athletes that can perform from the beginning of a game to the final seconds during overtime periods. Athletes because of this always want to prove their worth to their coaches and trainers and for this reason they do

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everything possible to overpass their colleagues. These things they do are varied from the use of performance enhancement drugs to the use of stimulants, energy drinks and lots more just to accelerate and increase performance (Finnegan, 2005). According to Finnegan (2005), they do this without knowing the adverse effects of this substances and beverages. Worldwide, the market for so called energy drinks has grown exponentially in the last decade.

Malinauskas, Aeby, Overton &Hedal (2007) stated that energy drinks are intended for young adults but that little formal research is available accurately describing the multi-billion dollar energy drink industry's actual clientele. The primary targets of the industry's marketing campaigns are young adults, and college athletes who are frequent consumers of the products. Campaigns promote consumption of energy drinks to enhance performance and suggest their addition to cocktails. Studies have shown college athletes eager to maximize performance. In addition, recent research about energy drinks and athletic performance is reviewed. The caffeine content of a single serving of energy drink (8 to 12 floz) can range from 72 to 150 mg; however, many bottles contain 2-3 servings, raising the caffeine content to as high as 294 mg per bottle. In comparison, the caffeine content, per serving (8 fl oz.), of brewed coffee, tea, and cola beverages ranges between 134-240 mg, 48-175 mg, and 22-46 mg respectively. Malinauskas, Aeby, Overton &Hedal (2007) opined that consumption of up to 400 mg caffeine daily by healthy adults is not associated with adverse effect. However, groups that are atrisk, such as women of reproductive age and children, should limit their daily consumption of caffeine to a maximum of 300 mg for the former and 2.5 g/kg body weight for the latter; thus they may need to avoid consuming energy beverages with a higher caffeine content.

Almost any drink that calls itself an energy drink contains caffeine and sugar and most contain high levels of both; additionally most contain some sort of herbal substance found in dietary supplements and traditional herbal medicines, some of which may not be effective, or even safe. Such herbal supplements added to energy drinks include ginkgo biloba, kava kava, and taurine; other energy drinks also contain ma huang, also known as ephedra, and guarana, a seed extract which itself contains caffeine. The Food and Drug Administration(FDA) has never approved of many of the herbs and other substances in the new products as allowable additives, but it has never been followed (Scholey&Kennedy 2008). Although the problem of energy drink consumption is not limited exclusively to University of Ilorin athletes, the athlete setting and lifestyle in combination with targeted marketing of energy drinks towards adolescents and emerging adults may contribute to high risk of energy drink use among athletes especially in tertiary institutions. This study therefore seeks to find out the perception of athletes on the effects of energy drinks on sports performance in the University of Ilorin.

MATERIAL AND METHODS

The descriptive research design of the survey type was adopted to assess and determine the perception of athletes on effects of energy drinks on sports performance in University of Ilorin. The population for the study was all undergraduate athletes of the University of Ilorin. These athletes represent the school at any sporting competition organized within or outside the University and they are spread across various faculties and departments within the University of Ilorin. The sample was purposively selected and consisted of all athletes who represented the University of Ilorin in eight (8) different sports played at the 2014 Nigerian University Games

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(NUGA) held at Obafemi Awolowo University (O.A.U). A total of seventy six(76) athletes represented the University of Ilorin in the 2014 Nigeria University Games (NUGA). The research instrument used to generate data was the questionnaire. The questionnaire was developed by the researcher in order to extract information from the athletes concerning their perception on the effects of energy drinks on sports performance. To ensure the validity of the instrument, a draft of the self-developed questionnaire as well as the research questions was given to the supervisor and other experts in the Department of Human Kinetics Education, University of Ilorin to establish the face, content and construct validity as well as its adequacy. The data collected were analyzed with the use of descriptive and inferential stastitics statistics frequency counts and percentage were used to answer the research question while chi-square was used to test the hypotheses at 0.05 alpha level.

RESULTS

Demographic Data Analysis

The demographic data of the respondents were analyzed using frequency counts and percentages.

Table 1: Demographic information of the respondents by Age, Gender, Sports and Academic Level.

S/N	VARIABLES	FREQUENCY	PERCENTAGE (%)
1	**Age:**		
	18-20 years	13	17.1
	21-23 years	46	60.6
	24-26 years	17	22.3
	Total	**76**	**100**
2	**Gender:**		
	Male	46	60.6
	Female	30	49.4
	Total	**76**	**100**
3	**Sports:**		
	Athletics	17	22.3
	Badminton	8	10.5

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S/N	VARIABLES	FREQUENCY	PERCENTAGE (%)
	Basketball	23	30.3
	Chess	4	5.2
	Judo	4	5.2
	Taekwondo	6	8.0
	Swimming	9	12.0
	Squash	5	6.0
	Total	**76**	**100**
4	**ACADEMIC LEVEL:**		
	100 LEVEL	**0**	**0**
	200 LEVEL	**28**	**36.8**
	300 LEVEL	**28**	**36.8**
	400 LEVEL	**20**	**26.4**
	TOTAL	**76**	**100**

Table one shows 13 (17.1%) respondents are within 18-20 years of age, 46 (60.6%) respondents are within 21-23 years of age while 17 (22.3%) respondents are within 24-26 years of age, 46 (60.6%) respondents are Male while 30 (39.4%) are Female, 17 (22.3%) respondents are athletes of Athletics, 8 (10.5%) respondents are athletes of Badminton, 23 (30.3%) respondents are athletes of Basketball, 4 (5.2%) respondents are athletes of Chess, 4 (5.2%) respondents are athletes of Judo, 6 (8.0%) respondents are athletes of Taekwondo, 9 (12.0%) respondents are athletes of Swimming while 5 (6.5%) respondents are athletes of Squash, 0 (0%) respondents are from 100 level, 28(36.8%) respondents are from 200 level, 28(36.8%) respondents are from 300 level and 20 (26.4%) respondents are from 400 level.

Hypothesis One

H_o: There is no significant perceived effect of energy drink consumption on the speed of athletes during competition in the University of Ilorin.

H_1: Not H_o

Table 2: Chi-square analysis showing thesignificant perceived effect of energy drink consumption on the speed of athletes during competition in the University of Ilorin.

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Items	SA	A	D	SD	df	Cal. Value (X^2)	Table Value	Remark
a1	29	34	7	5				
a2	28	31	14	2				
a3	30	33	8	4				
a4	33	26	11	5	9	6.1923	16.92	H_oAccepted
Total	**120**	**124**	**40**	**16**				

The table above indicates that the calculated chi-square value of 6.1923 is less than the table value of 16.92 at 0.05 alpha level with degree of freedom of 9. Therefore the null hypothesis $H_o$is accepted and not rejected. This means that consumption of energy drinks does not have significant perceived effects on the speed of athletes during competitions in the University of Ilorin.

Hypothesis Two

H_o: There is no significant perceived effect of energy drink on sleep disturbances of athletes in the University of Ilorin.

H_1: Not H_o

Table 3: Chi-square analysis showing the significant perceived effect of energy drink consumption on sleep disturbances of athletes in the University of Ilorin.

Items	SA	A	D	SD	df	Cal. Value (X^2)	Table Value	Remark
b1	38	26	9	2				
b2	24	35	12	4				
b3	21	26	24	4				
b4	26	31	10	8	9	22.801	16.92	H_oRejected

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Total	**109**	**118**	**55**	**18**				

The table above indicates that the calculated chi-square value of 22.801 is greater than the table value of 16.92 at 0.05 alpha level with degree of freedom of 9. Therefore the null hypothesis $H_o$is rejected and not accepted. This means that consumption of energy drinks has significantperceived effects on sleep disturbances of athletes in the University of Ilorin.

Hypotheses Three

H_o: There is no significant perceived effect of energy drink consumption on dehydration of athletes during performance in the University of Ilorin.

H_1: Not H_o

Table 4: Chi-square analysis showing the significant perceived effect of energy drink consumption on dehydration of athletes during performance in the University of Ilorin.

Items	SA	A	D	SD	df	Cal. Value (X^2)	Table Value	Remark
c1	39	21	9	6				
c2	30	33	6	6				
c3	21	34	14	6				
c4	20	32	18	5	9	19.6273	16.92	H_oRejected
Total	**110**	**120**	**47**	**23**				

The table above indicates that the calculated chi-square value of 19.6273 is greater than the table value of 16.92 at 0.05 alpha level with degree of freedom of 9. Therefore the null hypothesis H_o is rejected and not accepted. This means that consumption of energy drinks hassignificant perceived effects on dehydration of athletes during performance in the University of Ilorin.

Hypotheses Four

H_o: There is no significant effect of energy drink consumption on cardiovascular endurance of athletes in the University of Ilorin

H_1: Not H_o

Table 5: Chi-square analysis showing the significant perceived effect of energy drink consumption on cardiovascular endurance of athletes in the University of Ilorin.

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Items	SA	A	D	SD	df	Cal. Value (X^2)	Table Value	Remark
d1	26	33	8	8				
d2	33	30	8	4				
d3	22	34	15	4				
d4	37	19	11	8	9	15.3492	16.92	H_oAccepted
Total	**118**	**116**	**42**	**24**				

The table above indicates that the calculated chi-square value of 15.3492 is less than the table value of 16.92 at 0.05 alpha level with degree of freedom of 9. Therefore the null hypothesis $H_o$is accepted and not rejected. This means that consumption of energy drinks does not have significant perceived effects on cardiovascular endurance of athletes in the University of Ilorin.

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Discussion of Findings

The result of this study showed that there is no significant effect of energy drink consumption on the speed during competitions as perceived by athletes in the University of Ilorin. Energy drinks are more frequently consumed by athletes prior to competitions with a view of improving their performance (Finnegan, 2005). In view of these findings, the null hypothesis that there is no significant effect of energy drink consumption on speed during competitions as perceived by athletes in the University of Ilorin was accepted and conclusion was reached that that the improvement of performance perceived by athletes in the University of Ilorin in relation to energy drinks does not include enhanced speed.

The results of this study also show that there is significant effect of energy drink consumption on sleep disturbances as perceived by athletes in the University of Ilorin. Caffeine in energy drinks provide increased mental alertness, improved memory and enhanced mood. Even low doses of caffeine (12.5 to 100 mg) have been found to improve cognitive performance and mood. On the other hand, caffeine has been found to have detrimental health consequences (Heckman & Melanie, 2010). In view of these findings, the null hypothesis that there is no significant effect of energy drink consumption on sleep disturbances as perceived by athletes in the University of Ilorin was rejected and conclusion was reached that consumption of energy drinks causes sleep disturbances as perceived by athletes in the University of Ilorin.

Also from this study, results show that there is significant effect of energy drink consumption on dehydration during performance as perceived by athletes in the University of Ilorin. Energy drinks contain large amounts of caffeine and because caffeine is a diuretic, it can contribute to dehydration and large amounts of sugar in energy drinks have been known to cause diarrhea and other gastrointestinal upsets which certainly will not improve anyone's performance (Higgins, 2007). In view of these findings, the null hypotheses that there is no significant effect of energy drink consumption on dehydration during performance as perceived by athletes in the University of Ilorin was rejected and conclusion was reached that there is significant effect of energy drink consumption on dehydration during performance as perceived by athletes in the University of Ilorin.

Lastly from this study, results also show that there is no significant effect of energy drink consumption on the cardiovascular endurance as perceived by athletes in the University of Ilorin. The effects of energy drinks on exercise have been investigated in a small number of studies. Studies investigating the use of energy drinks generally found an improvement in endurance abilities (Riesenhuber, Boehm, Posch&Aufricht, 2006). In view of these findings, the null hypothesis that there is no significant effect of energy drink consumption on cardiovascular endurance as perceived by athletes in the University of Ilorin was accepted and conclusion was reached that the improvement of performance perceived by athletes in the University of Ilorin in relation to energy drinks does not include cardiovascular endurance.

Conclusion

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The study concluded that consumption of energy drinks does not have any effect on the speed of athletes during competitions. The study therefore recommended that, athletes should be Counselled and educated on the adverse effects of energy drinks for performance enhancements. They need to be exposed on some mental skills technique of performance enhancement apart from physical training.

REFERENCES

Aeby, V.G., Malinauskas, B.M., Overton, R.F. &Hedal, K., (2007). A Survey of Energy Drink Consumption Pattern among College Students. *Nutrition Journal*, 6(3), 35

Alford, C., Cox, H. &Wescott, R., (2011). The Effects of Red Bull Energy Drink on Human Performance and Mood. *Amino Acids*, 21:35-150.

American College Health Association, (2007). American College Health Association National College Health Assessment Spring 2006 Reference Group Data Report (abridged). *Journal of American College Health*, 55(2), 195-206.

Bichler, A., Swenson, A. & Harris, M.A., (2006). A Combination of Caffeine and Taurine has no Effect on Short Term Memory but Induces Changes in Heart Rate and Mean Arterial Blood Pressure. *Amino Acids*, 31, 471-476.

Birdsall, T.C., (2009). Therapeutic Applications of Taurine. *Altem Med.,* 3, 128-136.

Chandrasekaran, S., Rochtchina, E. & Mitchell, P., (2005). Effects of Caffeineon Intraocular Pressure. *The Blue Mountains Eye Study*, 14, 504-507.

Clauson, K.A., Shields, K.M., McQueen, C.E. &Persad, N., (2008). Safety Issues Associated with Commercially Available Energy Drinks. *Pharmacy, Today*, 14, 52-64.

Daramola, S.O., (2006). Research and Statistical Methods in Education Revised Edition. *Banitex Printing and Publishing Ilorin.*

Fagbohungbe, O.B., (2010). The Basic Research Methodology in Education. *Kole Consult Lagos.*

Ferreira, S.E, de Mello, M.T., Pompei, S. &DeSouza-formgoni, M.L., (2006). Effects of Energy Drink Ingestion on Alcoholic Intoxication. *Alcohol Clinical Research*, 30, 589-605.

Finnegan, D., (2005). The Health Effects of Stimulant Drinks. *Nutrition Bulletin*, 28, 147-155.

Forbes, S.C., Cardow, D.G, Little, J.P., Magnus, C. &Chilibeck, P.D., (2007). Effect of Red Bull Energy Drink on Repeated Wingate Cycle Performance and Bench-Press Muscle Endurance. *International Sports Journal on Nutrition and Exercise Metabollism*, 17, 433-444.

DOI: https://doi.org/10.21009/JIPES.092.03

Jennifer, M.S. & Katherine, R.D., (2010). Relaxation Drinks: Does Calm Come In A Can? *Mayo Clinic*, 21, 115-200.

Kavita, M.B, Richard, J.C. & William, W., (2008). "Energy Drinks: The New Eye-Opener for Adolescents". *Clinical Pediatric Emergency Medicine*, 214, 56-78.

Marczinski, C.A., Fillmore, M.T. &Bardgett, M.E., (2011). Effects of Energy Drinks Mixed with Alcohol on Behavioural Control. *Alcoholism, Clinical and Experimental Research*, 35, 5-20.

Mort, J.R. &Kruse, H.R., (2008). Timing of Blood Pressure Measurement Related to Caffeine Consumption. 42, 105-110.

O'Brien, M.C., McCoy, T.P., Rhodes, S.D., Wagoner, A. &Wolfson, M., (2008). Caffeinated Cocktails: Energy Drink Consumption, High Risk Drinking and Alcohol Related Consequences Among College Students. *Academy Emergency Medicine*, 15, 453-460.

O'Dea, J.A., (2011). Consumption of Nutritional Supplements among Adolescents: Usage and Perceived Benefits. *Health Education Research*, 18, 98-107.

Pollak, C.P. & Bright, D., (2007). Caffeine Consumption on Weekly Sleep Patterns in US Seventh-, Eight-, and Ninth-Graders. *Pediatrics*, 111, 42-46.

Ragsdale, F.R., Gronli, T.D., Batool, N., Haight, N.,Mehaffey& McMahon, E.C., (2010). Effect of Red Bull Energy Drink on Cardiovascular and Renal Function. *Amino Acids*, 38, 193-200.

Ratliff-crain, J. & Kane, J., (2007). Predictors for Altering Caffeine Consumption During Stress. *Addictive Behaviour*, 20, 509-516.

Reyna, L.A. & Horne, J.A., (2010). Efficaccy of a "Functional Energy Drink" in Counteracting Driver Sleepiness. *Physiological Behaviour*, 75, 331-335.

Riesenhuber, A., Boehm, M., Posch, M. &Aufricht, C., (2006). Diuretic Potential of Energy Drinks. *Amino Acids*, 31, 81-83.

Savoca, M.R., Evans, C.D., Wilson, M.E., Harshfield, G.A. & Ludwig, D.A., (2008). The Association of Caffeinated Beverages with Blood Pressure in Adolescents. *Pediatric Adolescent Medicine*, 158, 473-477.

Scher, A.L., Stewart, W.F. & Lipton, R.B., (2005). Caffeine as a Risk Factor for Chronic Daily Headache: A Population Based Study. *Neurology*, 63, 2022-2027.

Scholey, A.B. & Kennedy, D.O., (2008). Cognitive and Physiological Effects of an "Energy Drink": An Evaluation of the Whole Drink and of Glucose, Caffeine and Herbal Flavouring Fractions. *Psychopharmacology*, 176, 320-325.

DOI: https://doi.org/10.21009/JIPES.092.03

Smith, A., (2009). Effects of Caffeine on Human Behaviour. *Food Chemical Toxicol*, 40, 1243-1255.

Smith, H.J., Cotton, J.R., Hughes, S.C. & Roger, P.J., (2005). Mood and Cognitive Performance Effects of "Energy" Drink Constituents: Caffeine, Glucose and Carbonation. *Nutritional Neuroscience*, 7, 127-139.

Steinke, L. &Lanfear, D., (2009). Effect of "Energy Drink" Consumption on Haemodynamic and Electrocardiographic Parameters in Healthy Young Adults. *Ann Pharmacoter*, 43, 596-602.

Winston, A.P., Hardwick, E. &Jaberi, N., (2005). Neuropsychiatric Effects of Caffeine. *Advance Psychology*, 11, 432-439.

Zhang, M., Bi, L.F., Fang, J.H., Su, X.L. &Kuwamori, T., (2006). Beneficial Effects of Taurine on Serum Lipids in Overweight or Obese Non-Diabetic Subjects. *Amino Acids*, 26, 267-271\

DOI: https://doi.org/10.21009/JIPES.092.03