

# SPORTS AND ENERGY DRINK CONSUMPTION OF PHYSICAL EDUCATION & SPORTS STUDENTS' AND THEIR KNOWLEDGE ABOUT THEM

ARPACI Nesli<sup>1</sup>, TOSUN Selen<sup>1</sup>, ERSOY Gülgün<sup>1</sup>

Hacettepe University Faculty of Health Sciences, Nutrition and Dietetics Department, Ankara, TURKEY

**OBJECTIVE:** Over the last years, sports and energy drink consumption has continued to gain popularity among young people. The ingredients and product purposes of sports and energy drinks are different. Sports drinks are recommended for fluid replacement, however energy drinks are not, but it is not exactly known by consumers, especially athletes and coaches. The purpose of this study is to determine the consumption of sports and energy drinks and the sports student's knowledge about them.

**METHODS:** A total of 153 students (65 females, 88 males) from three university's physical education and sport departments in Ankara were participated to this study. Subjects expected to complete a questionnaire about their personal characteristics, knowledge about sports and energy drinks and their consumption frequency.

**RESULTS:** Mean ages of participants were 22.6 y for females and 21.2 y for males. In regard to the first question, difference of energy and sports drink, 43.1% of participants had known the difference between those drinks. But only 15% of participants reported to have known the ingredients of sports drink, 9.2% of participants known the ingredients of energy drink. Most of students who knows the difference of sports and energy drinks, are consuming this drinks (respectively 69.4% and 71.3%). Sports and energy drinks were drunk by male students more than females (respectively; 81.8 and 78.3%,  $p<0.05$ ). Participants reported that consumption was recommended by coaches and friends'. Consumption frequencies of sports drinks were seldom (34%), twice a week (20%), per week (18%), every day (12%), every other day (12%) and twice a month (4%), energy drinks were seldom (37.1%), per week (24.2%), twice a week (14.5%), twice a month (11.3%), every other day (8.1%) and every day (4.8%). Participants reported that the usage reason of sports drink were because of fluid needs (40.8%), the usage of energy drinks were because of insufficient sleep (10.3%). The majority of energy drink users drinks energy drinks with alcohol (64.5%). The reason behind this was taste (67.5%), consuming more alcohol (15%), to get more pleasure (10%) and its way of serving (7.5%). Male students drinks with alcohol more than female ( $p<0.05$ ).

**CONCLUSIONS:** Results of this study showed that most of the participants do not know the difference between sports and energy drinks and also do not know the ingredients of them. Fluid consumption is important for sports performance. Athletes and students of physical education and sport should know sports and energy drinks better.

**KEY WORDS:** Energy drinks, sports drinks, sports student, consumption.

## Introduction

Sports and energy drink consumption has continued to gain popularity among young people (A.M. Arria, K.M. Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. WISH, 2008). Those drinks have been promoted to boost performance and endurance (BM. Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). The ingredients and product purposes of sports and energy drinks are different; sports drinks are recommended for fluid replacement, energy drinks are not (OM. Meadows, KP. Ryan, 2007). Although sports and energy drinks are target to the 18 to 35 year old consumer and athletes, there has been little researches regarding the consumption patterns of those drinks. The purpose of this study was to determine the sports and energy drinks consumption, prevalence and frequency of energy drink usage and prevalence of adverse side effects and energy drink use dose effects and the sports students' knowledge about them.

## Methods

A total of 153 students (65 females, 88 males) from three university's physical education and sport departments in Ankara were included to this study. Questionnaire was designed that assessed consumption patterns of sports and energy drinks among these students. Subjects expected to complete a questionnaire about their personal

characteristics, knowledge about sports and energy drinks and their consumption frequency. The questions were asked to these students open-ended regarding situations in which physical education and sport students use sports and energy drinks, the most common energy drinks students were using, frequency patterns, using with alcohol and side effects from using energy drinks.

Analyses were performed using SPSS.15 software. Descriptive statistics included means, standard deviations, 95% confidence intervals, and frequency distributions. Pearson  $X^2$  was used to evaluate differences in frequency distribution of responses. An alpha level of 0.05 was used for all statistical.

## Results

Mean ages of participants were 22.6 y for females and 21.2 y for males. In regard to the first question, difference of energy and sports drink, 66 participants (43.1%) had known the difference between those drinks. But only 23 participants (15%) reported to have known the ingredients of sports drink, 14 participants (9.2%) known the ingredients of energy drink. Most of students who knows the difference between sports and energy drinks, are consuming this drinks (respectively 69.4% and 71.3%). Sports and energy drinks were drunk by male students more than females (respectively; 81.8 and 78.3%,  $p<0.05$ ).

Table 1: How and where the students got the recommendation of sports and energy drink consumption

	Sports drink		Energy drink	
	N	%	N	%
Coach	16	32.0	15	24.2
Friend	25	50.0	35	56.5
Advertisement	0	0.0	1	1.6
None	8	16.0	10	16.1
Club working	1	2.0	1	1.6
Parent	0	0.0	0	0.0
Total	50	100.0	62	100

Participants reported that consumption was recommended by coaches and friends (Table 1).

Table 2: Consumption frequencies of sports and energy drink among sports and energy drink users

	Sports drink		Energy drink	
	N	%	N	%
Every day	6	12	3	4.8
Every other day	6	12	5	8.1
Twice a week	10	20	9	14.5
Per week	9	18	15	24.2
Twice a month	2	4	7	11.3
Seldom	17	34	48	37.1
Total	50	100	62	100

Consumption frequencies of sports drinks were seldom (34%), twice a week (20%), per week (18%), every day (12%), every other day (12%) and twice a month (4%),

energy drinks were seldom (37.1%), per week (24.2%), twice a week (14.5%), twice a month (11.3%), every other day (8.1%) and every day (4.8%).

Table 3: Situations of sports and energy drink usage among sports and energy drink users

	Sports drink		Energy drink	
	N	%	N	%
Psychological	5	18.5	3	3.4
Performance	6	22.2	3	3.4
Fluid deprivation	11	40.8	2	2.3
Recovery	4	14.8	0	0.0
Healthy nutrition	0	0.0	0	0.0
Taste	0	0.0	2	2.3
Insufficient sleep	0	0.0	9	10.3
Decrease fatigue	0	0.0	4	4.6
Mix with alcohol	0	0.0	1	1.1
Others	1	3.7	0	0.0

Total	50	100.0	62	100.0
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Participants reported that the usage reason of sports drink were because of fluid needs (40.8%), the usage of energy drinks were because of insufficient sleep (10.3%).

Table 4: Situations of energy drink usage among energy drink users

	N	%
Taste	27	67.5
Consuming more alcohol	6	15.0
Its way of serving	3	7.5
To get more pleasure	4	10.0
Total	40	100.0

Table 5: Frequencies of mixing energy drink with alcohol among energy drink users

	N	%
Always	8	20.0
Generally	12	30.0
Sometimes	9	22.5
Seldom	11	27.5
Total	40	100.0

The majority of energy drink users drank energy drinks with alcohol (64.5%). The reason behind this was taste (67.5%), consuming more alcohol (15%), to get more pleasure (10%) and its way of serving (7.5%). Male students drink with alcohol more than female ( $p < 0.05$ ). The participants who consumed energy drinks did not report and side effect or risky behavior consumption with alcohol.

### Discussion and Conclusion

The consumption of sports and energy drinks has increased markedly in recent years. Although production purpose of those drinks are to enhance performance and endurance, they are not replaceable with each other. Sports drinks were developed a formulation of carbohydrates and electrolytes to enhance athletes performance and prevent dehydration. Commonly available sports drinks contains about 6% to 8% carbohydrates, including glucose, fructose, and sucrose. Some of the newer beverages also includes complex carbohydrates such as maltodextrin. Sports drinks contains important ingredients such as sodium, potassium, and magnesium to maintain fluid/electrolyte balance (BM. Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). Energy drinks also tend to have higher carbohydrate content (e.g., 9% to 10%) than that of sports drinks. Energy drinks have sugar-

containing and sugar free versions (OM. Meadows, KP. Ryan, 2007). Energy drinks tend to have 140 calories per eight ounces compared with approximately 50 calories per eight ounces for sports drinks. Although sports drinks may contain fewer calories per serving than soda and some fruit juices, they may add unnecessary and excessive calories to a child's daily intake unless there is a great expenditure of energy through physical activity. Energy drinks typically contains more calories per serving than do both cola and fruit juices. In addition, energy drinks usually contains high-fructose corn syrup and other unhealthy additives (BM. Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). The result of this study shows that physical education and sports department students do not exactly know differences between these drinks. Energy drinks are promoted for their stimulant effects and claims to offer a variety of benefits including increased attention, endurance and performance, weight loss (KE. Miller, 2008). Smit and colleagues found that energy drinks, improves and/or maintains mood or performance during fatiguing and cognitively demanding task, as compared to placebo (K.E Miller,2008). Caffeine was found to be the primary constituent responsible for these effects. Although there is no human requirement for caffeine, even low doses of caffeine (12.5 to 100 mg) improves cognitive performance and mood (A.M. Arria, K.M.

Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. WISH, 2008). But some studies have found no correlations on either physical or cognitive outcomes (M.C. O'Brien, T.Mccoy, S.D Rhodes, A Wagoner, M.Wolfson, 2008). The main active ingredient in energy drinks is caffeine, although other substances such as taurine, riboflavin, pyridoxine, nicotinamide, other B vitamins, and various herbal derivatives are also present (KE. Miller, 2008). Results from the present study indicated that primary purpose of energy drinks consumption is because of alertness. Energy drinks typically contain 80 to 141 mg of caffeine per 8 ounces, the equivalent of five ounces of coffee or two 12 ounce cans of caffeinated soft drink (A.M. Arria, K.M. Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. Wish, 2008). For comparison, the caffeine content of a 6 oz cup of brewed coffee varies from 77 to 150 mg. However, the FDA approved caffeine and limited the maximum caffeine content of cola-type soft drinks to 0.02% caffeine, or 71 mg/12 fluid oz (A. OTERI, F SALVO, AP CAPUTI, G. CALAPAI, 2007). The acute and long-term effects resulting from excessive and chronic consumption of these additives alone and in combination with caffeine are not fully known (KE. Miller, 2008). Caffeine has been found to have detrimental health consequences (A.M. Arria, K.M. Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. WISH, 2008) Caffeine is also a diuretic that promotes fluid loss. Children and adolescents should be cautioned against drinking caffeinated beverages such as energy drinks while exercising. It is important to note the difference between energy drinks and sports or rehydrating beverages. Sports drinks are designed to restore fluid balance and provide energy during exercise. Caffeine-containing energy drinks have not been formulated to deliver rehydration (BM. Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). High caffeine consumption is associated with chronic daily headaches, particularly among young women (age < 40 years) and among those with chronic episodic headaches and of recent onset (<2 years). Central nervous system, cardiovascular, gastrointestinal, and renal dysfunction have been associated with chronic caffeine ingestion. However, caffeine can have harmful physical consequences (A.M. Arria, K.M. Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. WISH, 2008). In a survey of 795 undergraduate students, self-reported measures of masculinity and risk taking behaviours were positively associated with frequency of energy drink consumption (CJ., Reissing, EC., Strain, RR Griffiths., 2009).Energy drinks are prompted by the potential adverse consequences of caffeine use as caffeine intoxication include nervousness, anxiety, restless, insomnia, gastrointestinal upset, tremors, tachycardia, psychomotor agitation and rare cases, death (BM. Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007).In a survey of 496 college students, 51% reported consuming at least one energy drink during the last month (BM. Malinauskas., VG. Aeby., R F.

Overton, TC. Aeby., KB.Heidal, 2007). There are increasing reports of caffeine intoxication from energy drinks, and it seems likely that problems with caffeine dependence and withdrawal will also increase. The results from this study provide information regarding energy and sports drink consumption habits among physical education and sport departments. Students who use energy drinks did not report any side effects. The combined use of caffeine and alcohol is increasing sharply, which studies suggest may increase the rate of alcohol-related injury (Malinauskas., VG. Aeby., R F. Overton, TC. Aeby., KB.Heidal, 2007). In a survey of 1253 college students, energy drink users were disproportionately male and consumed alcohol more frequently than non- energy drink users (Hj Smit, Jr,Cotton, Sc Hughes, Pj Rogers, 2004). Energy drinks and alcohol are very popular and 16% of students reported energy drinks consumption at least once per week (10). In a survey of 496 college students, 27% reported mixing alcohol and energy drinks in the past month (A.M. Arria, K.M. Caldeira, K.E O'grady, K.B. VINCENT, R.R.Griffiths, E.D. WISH, 2008). A recent survey found that 48.4% of energy drink consumers had mixed these substances with alcohol within more than 3 times in the last month (<http://www.redbull.com.tr>). Another study showed that ingestion of a caffeinated energy drink with vodka reduced participants perception of impairment of motor coordination in comparison to vodka alone, but did not significantly reduce objective measures of alcohol-induced impairment of motor coordination, reaction time, or breath alcohol concentration. Thus, when mixing energy drinks and alcohol, users may not feel the symptoms of alcohol intoxication. This may increase the potential for alcohol-related injury. Indeed, a recent survey of college students found that in comparison to those who consumed alcohol alone, students who consumed alcohol mixed with energy drinks had a significantly higher prevalence of alcohol-related consequences including: being taken advantage of, or taking advantage of another student sexually, riding in an automobile with a driver under the influence of alcohol, or being hurt or injured (KE. Miller, 2008). Findings from our study supports the premise that young people uses energy drinks with alcohol for taste, to consume more alcohol, to get more pleasure and because of its way of serving. On the other hand, there did not any side effect or risky behavior related to consumption energy drinks with alcohol in this study.Results of this study showed that most of the participants do not know the difference between sports and energy drinks and also do not know the ingredients of them. Fluid consumption is important for sports performance. Athletes and students of physical education and sport should know sports and energy drinks better.

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