

Prevalence of Migraines in NCAA Division I Male and Female Basketball Players

Chad M. Kinart, MS, ATC; Marchell M. Cuppett, EdD, ATC; Kris Berg, EdD

Objective.—The purpose of this study was to describe the overall prevalence of migraines within National Collegiate Athletic Association Division I men's and women's basketball players. In addition, the prevalence of migraines was determined across gender and ethnic groups for the same sample.

Background.—Although numerous studies have assessed the prevalence of migraines within the general population, college students, professional groups, industrial/work place settings, and overseas populations, little has been done with athletes. To the best of our knowledge, no study of the incidence of migraines in athletes has been previously conducted. It has also been reported that migraines cause depression, insomnia, fatigue, anorexia, nausea, and vomiting, all of which might hinder athletic performance. Sports medicine clinicians and researchers also agree that migraines in athletes are probably underreported and often misdiagnosed.

Methods.—Seven hundred ninety-one Division I men and women basketball players representing 51 colleges and universities were mailed a previously validated survey asking questions about headaches. All surveys were analyzed with a validated diagnostic algorithm consistent with the International Headache Society's (IHS) criteria for headache diagnosis. Descriptive statistics were used to report the prevalence rate for gender and ethnic groups, as well as the entire sample. Chi-square tests were performed ($P = 0.05$) to determine if there were any differences in the prevalence of migraines among gender and ethnic groups.

Results.—Results showed that 2.9% ($n = 23$ of 791) of the total sample was classified as having migraines meeting IHS guidelines. In addition, 0.9% ($n = 3$ of 332) of men and 4.4% ($n = 20$ of 459) of women were classified as having migraines meeting IHS guidelines. Additionally, results showed that women reported migraines ($\chi^2 = 8.140$, $P = 0.004$) more often than men. When comparing the prevalence rates of migraines between ethnic groups, results showed that Caucasians had a rate of 3.3% ($n = 14$ of 429), whereas African Americans had a rate of 3.1% ($n = 9$ of 287). There was no significant difference found between ethnic groups in migraine prevalence ($\chi^2 = 2.491$, $P = 0.2888$).

Conclusions.—In conclusion, it was found that the prevalence of migraines in National Collegiate Athletic Association Division I men's and women's basketball players was generally less than in the general population, that women showed an increased prevalence of migraines when compared with men, and that Caucasians and African Americans did not differ in prevalence of migraines.

Key words: migraines, athletes, survey

Abbreviations: IHS International Headache Society, NCAA National Collegiate Athletic Association

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Migraines are an episodic disorder resulting from abnormal cerebral vascular activity.¹ Migraines have been estimated to affect 8.7 million women and 2.6 mil-

lion men in the United States² at an estimated cost of 6.5 to 17.2 billion dollars a year. Diagnosis rests largely on the evaluation of symptoms that sufferers report retrospectively.³ Because the identification of a migraine relies almost entirely on subjective symptoms reported by patients, the process of definitive diagnosis is very difficult. The Headache Classification Committee of the International Headache Society (IHS)⁴ developed strict guidelines to help physicians and researchers diagnose migraines more objectively.

From the School of Health, Physical Education, and Recreation, University of Nebraska, Omaha, Nebraska.

Address all correspondence to Chad Kinart, FH 024, University of Nebraska at Omaha, 6001 Dodge Street, Omaha, NE 68182-0216.

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Before the guidelines from the IHS became available, researchers and clinicians used different classification systems or created their own. This made diagnosis and comparison between studies very difficult.

Researchers have found a consistent difference in the prevalence of migraines between men and women, but the reason is still unknown why women have an increased prevalence.⁵ Although scientifically unproven at this time, fluctuations in sex hormones during menstruation have been postulated to account for the increased prevalence in women.⁶ Swain and Kaplan⁷ reported that migraines can be triggered by the onset of menses and are traditionally more disabling and less responsive to medical treatment than those triggered by other factors.

It has also been noted that Caucasians differ significantly in their susceptibility to migraines than do African-Americans and Asian-Americans, which probably stems from inherited differences.⁸ Additionally, depression has been linked to the higher prevalence of migraines in Caucasians. It has been reported that Caucasians have a higher prevalence of reported depression than African and Asian Americans.⁸ Certain food products and chemicals have been found to trigger migraines. Stewart, Lipton, and Liberman⁹ report that dietary phenols in certain foods are processed differently within the body between ethnic groups and could help explain some of the difference in prevalence among ethnic groups.

A wide discrepancy in the prevalence of migraines can be found in review of the current literature. This is due to variations in case definitions, study methods, sociodemographic characteristics, and adherence to case definitions when diagnosing.⁹ Few studies use the same methods when determining the prevalence of migraines. With differences being reported within gender, ethnic, geographic, and different-aged populations that can affect the prevalence, studies that are not the same within these parameters will probably yield different results.

Physicians have numerous options when treating migraines. These options include medication and lifestyle modifications such as exercise, which may induce positive changes in migraine patterns. The literature is equivocal on the value of exercise in reducing migraine symptoms. Lambert and Burnet¹ presented

a case study to implicate exercise in the triggering of migraines. They found that a proper warm-up would decrease the chance of an athlete getting a headache/migraine. Effort migraines or headaches have been reported to occur after intense exercise, mainly at higher altitudes and in athletes who are in poor physical condition.¹⁰ Athletes in a state of hypoglycemia may be more susceptible to the onset of migraines. In contrast, work done by Lockett and Campbell¹¹ showed that exercise decreases the amount of pain and distress the patients perceive from the migraine. An extensive review of the literature by Darling¹² revealed that exercise in most patients might be a very useful tool in the reduction of their migraines. One could deduce from Darling's research that if exercise reduces the prevalence of migraines, then one would expect to see a decreased prevalence within an athletic population.

Although numerous studies assessed the prevalence of migraines within the general population, college students, professional groups, industrial/work place settings, and overseas populations, little has been done with athletes.¹¹ It has also been reported that migraines cause depression, insomnia, fatigue, anorexia, nausea, and vomiting,¹³ all of which might hinder athletic performance. Sports medicine physicians agree that athletes in virtually every sport incur migraines. They also agree that the majority of migraines are benign inconveniences that reduce time on the practice/game field and hamper performance.¹⁴ Sports medicine clinicians and researchers also agree that migraines in athletes are probably underreported and often misdiagnosed. Many medications commonly used to treat headaches can negatively affect an athlete's performance. Therefore, treatment choices must take into consideration any physical and/or sensory impairments of the treatment regime.¹⁴ However, there is still a controversy on whether or not exercise helps or causes migraines.

To the best of our knowledge, no study of the incidence of migraines in athletes has been previously conducted. Therefore, the purpose of this study is to describe the overall prevalence of migraines within National Collegiate Athletic Association (NCAA) Division I men and women basketball players. In addition, the prevalence of migraines is described across gender and ethnic groups within the sample.

team during the 1999-2000 season. All subjects were required to be free from chronic illness. This information was self-reported by the subjects. Those subjects currently suffering from chronic illness or concussion-related headaches were excluded. Two hundred teams were randomly selected from all Division I universities that sponsor men's and women's basketball. Informed consent was implied if the athlete filled out and returned the survey. Approval was granted to conduct the study from the University of Nebraska Institutional Review Board prior to the mailing of questionnaires.

Data Collection.—The head athletic trainer at each of the randomly selected Division I universities was mailed surveys to administer to his/her men's and women's basketball teams. The survey (Appendix) was modified slightly from the survey originally validated by Henry et al.¹⁵ in a nationwide survey of the prevalence of migraines in France. Modifications included clarification of wording to minimize confusion of terms. The original survey was found to have sensitivity for the diagnosis of migraine of 95% and a specificity of 75%.¹⁵ Sensitivity refers to the proportion of subjects that correctly test positive for a condition that the test is intended to reveal. Specificity refers to the proportion of individuals that correctly test negative for a condition that the said test is supposed to reveal. All questions were developed from the IHS's criteria for the classification and diagnosis of headaches.⁴ Before completing the survey, athletes were read a brief, generic description of the study and its

purpose by the athletic trainer at their institution. A follow-up letter was mailed to respondents who had not returned their surveys by the specified deadline to elicit a greater return rate.

Data Analysis.—The prevalence of migraines was derived from data provided by correctly returned surveys. The researcher determined if responses in each survey fit the IHS criteria for a migraine using the algorithm (Figure) supplied with the validated survey used by Henry et al.¹⁵ A "yes" answer on a question moved the respondent on to the next decision-making point in the algorithm. Questions answered with a "no" would move the respondent to another point. This process continued until the subject reached an endpoint, which was a diagnosis. To be diagnosed with an IHS migraine, borderline migraine, possible migraine, or a nonmigraine headache, each subject's symptoms had to lead to that specific diagnosis through the algorithm. For example, to be diagnosed with an IHS migraine, several distinguishing symptoms needed to be present including the following: at least five attacks (without aura) or at least two attacks (with aura), headache lasting 4 to 72 hours, unilateral location of pain, pulsating quality, moderate to severe intensity, nausea, vomiting, photophobia, phonophobia, and no other underlying disorder causing the pain.⁴

The diagnosis of a borderline migraine, possible migraine, and nonmigraine headache through the algorithm is more complicated than a diagnosis of an IHS migraine. Diagnosis of an IHS migraine has one distinct path within the algorithm. To come to a diag-

Table 1.—Common Paths to Diagnosis

	IHS Migraine	Borderline Migraine	Possible Migraine	Nonmigraine Headache
Do you have headaches?	Yes	Yes	Yes	Yes
Do you have headaches every day?	No	No	No	No
How long do your headaches last?	4-72 hours	4-72 hours	>72 hours	>72 hours
Location of headaches?	—	—	Alternately	Strictly one side
Throbbing headache?	Yes	Yes	Yes	—
Headaches inhibit daily activity?	Yes	Yes	No	—
Headaches get worse with activity?	—	—	Yes	—
Nausea/vomiting?	Yes	No	—	—
Light sensitivity?	Yes	Yes	Yes	—
Sound sensitivity?	Yes	Yes	Yes	—
More than four lifetime episodes?	Yes	Yes	Yes	No

Table 2.—Characteristic of Subjects

Subjects	% of Total	n	Mean Age	SD	Range
Caucasian	54.2%	429	20.14	1.57	18-29
African American	36.3%	287	20.25	1.44	18-26
Native American	3.7%	29	20.52	1.40	18-23
Other	2.5%	20	20.95	1.43	18-23
Multi-Racial	1.6%	13	19.78	1.30	18-22
Hispanic American	1.4%	11	19.64	0.92	18-21
Asian	0.3%	2	25.50	3.54	23-28
Total	100%	791	20.21	1.53	18-29

nosis of any of the other types of headaches, several different paths for each diagnosis will have been followed. Table 1 depicts the most common paths taken to each of the different classifications used.

Descriptive statistics were used to describe the prevalence rates for each question and for gender and ethnic background as a subsample. Because Caucasians and African Americans accounted for the majority of the sample, all of the remaining ethnic groups were put into the "other" category for data analysis purposes. Chi-square tests were performed ($P=0.05$) to determine if there were differences in the prevalence of migraines between gender and ethnic groups. In addition, chi-square tests were used to analyze dif-

ferences between gender and ethnicity in response to each of the 10 questions.

RESULTS

Seven hundred ninety-one Division I men and women basketball players representing 51 colleges and universities returned correctly completed surveys (a return rate of 13.2% of all possible subjects and of 25% of total schools surveyed). Surveys were sent to 200 randomly selected colleges/universities with 30 questionnaires for each school (15 for men and 15 for women). Descriptive characteristics of all subjects can be found in Table 2.

Fifty-four percent ($n=427$ of 791) of the sample reported to be subject to headaches, whereas 8% ($n=34$ of 427) of those suffering from headaches had them every day. Results for Questions 3 through 10 of the questionnaire can be found in Table 3.

After analyzing the surveys through the algorithm, it was found that 3% ($n=23$ of 791) of the total sample was classified as having IHS migraines. Prevalence rates for all other headache categories, including classification for gender and ethnicity, can be found in Table 4.

Prevalence of Migraines Between Gender.—It was reported for gender groups that 0.90% ($n=3$ of 332) of men and 4.36% ($n=20$ of 459) of women in the total sample were classified as having IHS migraine

Table 3.—Description of Headaches (Questions 3 through 8)

	Number of Responses	%
How long do your headaches last without medication?		
<4 hours	209 of 427	48.5%
>72 hours	6 of 427	1.4%
4-72 hours	131 of 427	30.5%
Do not know	81 of 427	19.9%
What is the usual location of your headache?		
Strictly one side of the head	49 of 427	11.5%
Alternately in the right and left part of head	182 of 427	42.6%
Other location	127 of 427	29.7%
Do not know	69 of 427	16.2%
Throbbing type of headache?	328 of 427	79.8%
Do your headaches inhibit or prevent daily activities?	88 of 427	20.6%
Do your headaches get worse during physical activity?	182 of 427	42.6%
Are your headaches accompanied by nausea and/or vomiting?	67 of 427	15.7%
Headaches accompanied by photosensitivity	192 of 427	44.9%
Headaches accompanied by sensitivity to sound	182 of 427	42.6%

Table 4.—Prevalence of Migraine Classifications (n = 791)

	Classification	Total Population n	%
	IHS migraine	23	2.9%
	Borderline migraine	30	3.8%
	Possible migraine	56	7.1%
	Nonmigraine headache	318	40.2%
	Total	427	53.9%
Men (n = 332)	IHS migraine	3 of 332	0.90%
	Borderline migraine	18 of 332	5.4%
	Possible migraine	10 of 332	3.0%
	Nonmigraine headache	115 of 332	34.6%
	Total	146 of 332	43.9%
Women (n = 459)	IHS Migraine	20 of 459	4.4%
	Borderline Migraine	12 of 459	2.6%
	Possible Migraine	46 of 459	10.0%
	Non-Migraine Headache	203 of 459	44.2%
	Total	281 of 459	61.2%
Caucasian (n = 429)	IHS Migraine	14 of 429	3.26%
	Borderline Migraine	13 of 429	3.03%
	Possible Migraine	26 of 429	6.06%
	Non-Migraine Headache	183 of 429	42.66%
	Total	236 of 429	55.01%
African American (n = 287)	IHS Migraine	9 of 287	3.14%
	Borderline Migraine	14 of 287	4.88%
	Possible Migraine	18 of 287	6.27%
	Non-Migraine Headache	105 of 287	36.59%
	Total	146 of 287	50.87%
Other (n = 75)	Borderline Migraine	3 of 75	4.00%
	Possible Migraine	12 of 75	16.00%
	Non-Migraine Headache	30 of 75	40.00%
	Total	45 of 75	60.00%

(Table 4). The rest of the prevalence figures for all of the different headache classifications can also be found in Table 4.

Women reported that they were subject to migraines more frequently than males ($\chi^2=23.061$, $P<0.001$). Women also reported having their migraines last longer than 72 hours more often than men did ($\chi^2=10.845$, $P=0.001$). In addition, women ($\chi^2=4.602$, $P=0.032$) reported having throbbing headaches more frequently than their male counterparts. Women reported headaches with a hypersensitivity to light ($\chi^2=5.213$, $P=0.022$) and sound ($\chi^2=17.071$, $P<0.001$) more often than men. Lastly, women ($\chi^2=13.149$, $P<0.001$) were found to report having more than four headache attacks in their lifetime more frequently than men did. Women reported more IHS migraines ($\chi^2=8.140$, $P=0.004$), possible migraines ($\chi^2=14.390$, $P<0.05$), and nonmigraine headaches

($\chi^2=7.367$, $P=0.007$) than men. However, borderline migraines were reported more often in men than women ($\chi^2=4.161$, $P=0.041$). Results from all chi-square tests performed on the prevalence of headache disorders between gender can be found in Table 5.

Prevalence of Migraines Between Ethnic Groups.—When comparing the prevalence rates for IHS migraine for various ethnicities, it was found that Caucasians had a rate of 3.26% (n = 14 of 429), whereas African Americans had a rate of 3.14% (n = 9 of 287). Results from all prevalence rate calculations by ethnic group can be found in Table 4.

African Americans reported more throbbing headaches than expected ($\chi^2=81.865$, $P=0.001$). African Americans also reported that their headaches got worse during activity more frequently than other ethnic groups ($\chi^2=6.247$, $P=0.044$). Lastly, it was found that “other” ethnic groups reported that they had ex-

Table 5.—Summary of Chi Square Comparing Incidence by Gender and Ethnicity

	χ^2	P
Classification for gender		
IHS migraine	8.140	0.004*
Borderline migraine	4.161	0.041*
Possible migraine	14.390	0.001*
Nonmigraine headache	7.367	0.007*
Classification for ethnicity		
IHS migraine	2.491	0.288
Borderline migraine	1.619	0.445
Possible migraine	10.034	0.007*
Nonmigraine headache	2.639	0.267

* = $P < 0.05$.

pressed more than four lifetime attacks more often than Caucasians and African Americans did ($\chi^2 = 7.104$, $P = 0.029$). When looking at the prevalence rates between ethnic groups, it was found that all other ethnic groups reported more possible migraines than Caucasians and African Americans did ($\chi^2 = 10.034$, $P = 0.007$). Results from all chi-square tests calculated for prevalence between ethnic groups can be found in Table 5.

COMMENTS

To our knowledge, this is the first study to examine the incidence of migraines in athletes. The purpose of this study was to describe the prevalence of migraines in a sample of NCAA Division I men and women basketball players. The reader should be cautious when interpreting this data due to the low return rate (13.2% of all subjects and 25% of the total schools surveyed). However, because this is the first known study examining the prevalence of migraines in athletes, this descriptive data may serve as a baseline for further research in this area.

Overall Prevalence of Migraines.—Surveys from 791 men and women NCAA Division I basketball players from 51 different colleges/universities across the United States revealed that 2.91% of the total sample was diagnosed as having migraines according to IHS criteria. In contrast, using a similar questionnaire and the same algorithm, Henry et al¹⁵ found that 8.1% of the French population over the age of 15 suffered

from migraines. More similarly, Stang et al⁵ reported from data acquired from the National Health Interview Study conducted in 1989 that the prevalence of migraines was 4.1% among Americans. The main limitations to their study were that migraines were self-reported and were not subject to any diagnostic criteria. Having specific criteria to determine prevalence rates improves the validity of the findings. Without objective criteria when determining a prevalence rate, one would deduce that the rate calculated would be higher due to the inclusion of those who would not be diagnosed with IHS migraines, but rather with borderline migraines, possible migraines, or nonmigraine headaches.

Stewart et al⁹ found the prevalence of migraines in the United States to be 7.56%. The researchers used the IHS diagnostic criteria in a self-administered mailed questionnaire. A summary of prevalence rates of migraines for studies reviewed may be found in Table 6.

With the exception of the study conducted by Stang et al,⁵ it was noted that the respondents of the present study showed a decreased prevalence of migraines when compared with the general population of the United States. Interestingly, the prevalence rate of handlers, helpers, and laborers was similar with that of the athletes in this study. These occupations are physically demanding and, therefore, it is logical to expect them to have a prevalence rate of migraines similar to athletes. One reason for the consistency in prevalence may be due to the increased concentration of β -endorphins, serotonin, β -lipotropin, and adrenocorticotrophic hormones in athletes. It has been reported that exercise or heavy physical activity increases β -endorphins and other hormones that elevate the pain threshold.¹⁶

Another reason why athletes might see a decreased prevalence of migraines compared with the general population is due to natural selection. The current sample in this study, NCAA Division I men and women basketball players, are faced with great demands physiologically as well as psychologically. Neusub et al¹⁶ reported that aerobic endurance was reduced in both men and women who suffer from headache/migraine sufferers. In addition, it was found that women who suffer from headache/migraine showed an increase in body fat and a decrease in flexibility when compared with healthy controls.¹⁶

Table 6.—Meta-Analysis of Prevalence Studies

Study	Year	N Size	Overall	Men	Women	Caucasians	African Americans
Present study	2000	791	2.91%	0.90%	4.36%	3.26%	3.14%
Henry	1992	4,204	8.1%	4.00%	11.9%	—	—
Stang	1993	116,929	4.1%	2.32%	5.77%	—	—
Stewart	1992	20,468	7.56%	5.70%	17.6%	7.72%	5.9%
Stewart	1996	12,328	—	8.20%	19.00%	20.40% (women) 8.6% (men)	16.20% (women) 7.20% (men)
Linnet	1989	3210	5.30%	3.00%	7.4%	—	—

Prevalence of Migraines by Gender.—Our results showed that 0.90% of men and 4.36% of all women were classified as having migraines ($\chi^2=8.140$, $P=0.004$). Women reported more possible migraines ($\chi^2=14.390$, $P=0.001$) and nonmigraine headaches ($\chi^2=7.367$, $P=0.007$) than men did. However, borderline migraines were reported more often in men than women ($\chi^2=4.161$, $P=0.041$). Stang et al⁵ reported similar ratios. They found that 2.32% of men and 5.77% of women have migraines. Linnet et al¹⁷ reported that 3.0% of men and 7.4% of women were subject to migraines.

Celentano et al¹⁸ proposed a theory that women may experience migraines differently from men. Part of this theory resides in the fact that they found differences in the perception of symptoms that accompany their migraines. Men, more often than women, were reported to interpret their headaches as “just part of normal life.” Women may also be more attentive to the symptoms of their migraines than men. In addition, women were twice as likely to seek the care of a physician for their headaches as opposed to men.¹⁸

Prevalence of Migraines in Ethnic Groups.—Results of this study showed that 3.26% of Caucasians and 3.14% of African Americans were classified as having migraines. Stewart et al⁸ found that 7.72% of Caucasians and 5.9% of African Americans suffered from migraines. In an additional study, Stewart et al⁹ found that Caucasian men and women had a migraine prevalence of 8.6% and 20.4%, whereas African American men and women had rates of 7.2% and 16.2%, respectively.

When comparing prevalence rates among ethnic groups, it was found that all other ethnic groups reported more possible migraines than Caucasians and

African Americans ($\chi^2=10.034$, $P=0.007$). The prevalence rate for IHS migraines between ethnic groups was not significantly different. This is a departure from what the literature generally reports. One reason for this might be that the current study’s sample is very specific and homogeneous. Many studies cited here report prevalence across a wide range of ages and socioeconomic classes.

Other Findings.—Although not a primary purpose of the study, the following observations were noted during data collection and analysis. Results showed that 7.96% ($n=34$ of 427) of those subjects reporting that they were subject to headaches (question 2) said the headaches occurred every day. This was interesting to note because even though these subjects were not diagnosed with migraines, this represents a large number of athletes with this type of symptom. Regardless of being diagnosed with migraines due to having daily headaches, this presents sports medicine professionals with the problem of athletes with pain and disability similar to that of migraineurs. This cannot be ignored or downplayed just because the athlete has not been diagnosed as a migraineur. The patient with chronic headache may suffer many of the same physical and mental deficits when having a headache as migraineurs do.

This study also showed that 42.6% of those complaining of headaches recorded that they became worse with physical activity. In addition, 44.9% and 42.6% of those subject to headaches reported an abnormal sensitivity to light and sound, respectively. These are important findings in that almost one-half of the sample complaining of headaches had a symptom that could impact their performance. If these complaints are not taken seriously, these nonmigraine-suffering ath-

letes might be at a disadvantage comparable with that of a migraineur.

Lastly, it was found that only 32% of those subject to headaches reported that they had more than four lifetime attacks. This finding is interesting in that it shows a limitation to the findings above. Only about one-third of those suffering from headaches (question 1) had experienced more than four lifetime attacks. That leaves about two-thirds of the sample that had experienced less than four episodes over their lifetime. Therefore, even though almost one-half of the headache-experiencing sample had their episodes worsen with physical activity or experience phono/photophobia, a large majority of them had less than four headaches/migraines over their lifetime, and they were thus excluded from the criteria of IHS migraines.

Several limitations occurred in this study. First of all, only NCAA Division I athletes were used. Because this level of basketball is very competitive, it would be logical to assume that if an athlete were predisposed to a problem like migraines on frequent basis, he/she would not make it to this level.

Second, it was noted that several schools only had those who were subject to migraines/headaches complete the questionnaire, instead of everyone on the cur-

rent roster. The prevalence might have been over-reported due to the exclusion of healthy subjects.

In addition, the return rate was only 13% of all questionnaires sent. This included 25% of all colleges that were included in the study. Even though the number of subjects in this study was 791, the reader should be cautioned in drawing generalizations to a larger population. Further research with larger populations is needed in this area.

Another limitation was that Caucasians (n = 429 of 791) and African Americans (n = 287 of 791) made up 90.5% of the total sample size. All other ethnic groups combined (n = 75 of 791) comprised only 9.5% of the sample. Therefore, the comparisons made with all other ethnic groups combined should be viewed with caution.

In conclusion, it was found that the prevalence of migraines in NCAA Division I men and women's basketball players was generally less than in the general population, that women showed an increased prevalence of migraines when compared with men, and that Caucasians and African Americans did not differ in prevalence of migraines.

Based on the results of this study, it is recommended that further research be conducted regarding

Appendix—Survey Instrument

This survey is going to ask you questions about features and characteristics of headaches. Please answer all of the following questions to the best of your knowledge. Please note that you are under no obligation to complete this survey. If you choose to go forward, you are implying your consent for the following information to be used in this study. Your name and any other identifiers will not be attached to any of your answers, and therefore all information collected from the surveys will be confidential.

Gender: Male Female
 Race: Caucasian Asian African-American Mexican-American
 Native-American Multi-Racial Other

Answer all questions to the best of your ability. Thank you for your cooperation!

Circle the answer that applies to you the most.

Age - _____

1. Are you subject to headaches? Yes No (if no, don't complete the rest of the survey)
 2. Do you suffer from headaches every day? Yes No Do not know
 3. How long do your headaches last without medication?
 Less than 4 hours 4-72 hours Greater than 72 hours Do not know
 4. What is the usual location of your headache? Strictly on side of the head Alternately in right and left part of head
 Other location Do not know
 5. Throbbing type of headache? Yes No Do not know
 6. Do your headaches inhibit or prevent daily activities? Yes No
 7. Do your headaches get worse during physical activity? Yes No
 8. Are your headaches accompanied by nausea and/or vomiting? Yes No
 - 9a. Are your headaches accompanied by an abnormal sensitivity to light? Yes No
 - 9b. Are your headaches accompanied by an abnormal sensitivity to sound? Yes No
 10. Have you had more than four attacks in your lifetime? Yes No
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the prevalence of migraines in athletes and the impact on athletic performance. One suggestion would be to add to the current study by increasing the sample size, including other sports, and adding NCAA Division II/III, National Association for Intercollegiate Athletics, and junior colleges into the sample. This would provide a better overall picture of the prevalence of migraines within competitive athletes.

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