



Received: 08-07-2022

Accepted: 18-08-2022

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Attitudes Toward Native Americans and First Nations People Among Athletic Trainers: A Pilot Study

¹ SA Cage, ² LE Trail, ³ BJ Warner, ⁴ AP Jacobsen, ⁵ LK Warner, ⁶ DM Gallegos

^{1, 2, 6} The University of Texas at Tyler, United States

^{2, 4, 6} UT Health East Texas, United States

³ Grand Canyon University, United States

⁴ The University of Texas Health Science Center at Tyler, United States

⁵ Creighton University, United States

Corresponding Author: SA Cage

Abstract

Current literature suggests that Native Americans and First Nations people experience health care disparities relative to other ethnic and racial groups. Previous studies have shown that there are healthcare disparities experienced by this population. As healthcare providers who will potentially treat pediatric or young adult Native American and First Nations patients, it is important to understand the attitudes of athletic trainers toward this population. Therefore, the purpose of this pilot study was to describe the attitudes and opinions of athletic trainers toward Native Americans and First Nations people. A secondary purpose was to provide feedback and future suggestions for the use of the scale with healthcare providers. A total of 42 credentialed athletic trainers participated in this study (age = 39 ± 14 years, certified experience = 16 ± 14 years). Participants were sent an email containing a link to an electronic survey that gathered data on demographics, and Attitudes Toward Native Americans Scale scores, which uses a 6-point scale to assess the level of agreement of both positive and negative statements towards Native American and First Nations people. Measures of central tendency (means, standard deviations, frequencies) were calculated where

appropriate. Pearson Correlations were used to assess correlations between age, years of experiences, the total score on the Attitudes Toward Native American Scale and the scores on individual questions on the Attitudes Toward Native American Scale. Independent samples t-tests were performed to assess for differences in attitudes based on gender, race, ethnicity, setting, and level of education. The data analysis yielded 65 significant correlations. In general, athletic trainers who agreed with a positive statement about Native Americans and First Nations people were more likely to agree with positive statements. Athletic trainers who agree with a negative statement about Native American and First Nations people were more likely to agree with other negative statements. There were no significant differences between groups on total score on the Attitudes Toward Native American Scale, or specific statements on the scale. Future research should examine athletic trainers' knowledge contemporary, historical, and sports medicine issues specific to Native American and First Nations patients. Future research should also examine the causes of the correlations found in this pilot study and attempt to assess a large sample of the athletic training population.

Keywords: NCAA, Athletic Trainers, Pearson Correlations, Demographic

1. Introduction

In current literature, it has been recognized that Native Americans and First Nations people are an understudied and poorly served demographic within the United States ^[1]. This information become especially concerning when considering the healthcare disparities experienced by Native Americans and First Nations people. Previous studies have highlighted healthcare disparities in Native American and First Nations patients suffering from kidney failure, disordered eating, and cancer ^[2-5]. In fact, Native American and First Nations patients have the worst five-year cancer specific survival of all racial groups ^[4]. Some have suggested that these disparities can be attributed to cultural beliefs held by the patient population ^[2]. However, there is evidence that Native American and First Nations patients may not have access to the same level of healthcare as other racial and ethnic groups ^[6]. Additionally, there is evidence to suggest that the conscious and unconscious attitudes of healthcare providers can affect the outcomes of the patients they treat.

Previous research on implicit and explicit biases has shown evidence that stereotypes, attitudes, and emotions toward a demographic population can negatively affect patient outcomes [7-10]. Studies have shown that healthcare providers with implicit biases are more prone to making errors when diagnosing patients from racial and ethnic minorities [11]. Additionally, these biases have shown a negative impact on treating patients [12, 13]. This information has compelled hospital systems to include mitigating bias during diagnosis and treatment on quality control checklists [14, 15]. There does not appear to be any literature on this topic in the athletic training profession. However, as healthcare providers it is reasonable to assume that athletic trainers are vulnerable to the influence of negative biases and attitudes in their clinical practice. This becomes of particular interest for athletic trainers because Native American and Alaska Native youths are three times as likely to experience suicidal ideations, feelings of being unsafe at school, and the need for medical treatment following a fight [16]. Native American and Alaska Native youths are also two times as likely to experience a need for assistance with illegal drug use and violence at school, experiences of rape, assault, and pregnancy [16]. Given that athletic trainers often work with a primarily pediatric and young adult patient population, these figures warrant further investigation into the clinical practice of athletic trainers when treating Native American and First Nations patients.

As previously mentioned, studies have shown there are disparities in healthcare outcomes for Native Americans and First Nations people. Despite these findings, there is a paucity of research related to attitudes of athletic trainers and other healthcare providers toward Native Americans and First Nations people. In fact, there is little literature on the attitudes of any population toward Native Americans and First Nations people [17]. In 2016, Thomas *et al* developed the Attitudes Toward Native Americans Scale [17]. Through their research, the authors were able to identify questions to remove from the scale to describe the attitudes of individuals more accurately toward Native Americans and First Nations people [17]. However, the previously mentioned study assessed attitudes of the general population rather than healthcare providers. Therefore, the purpose of this pilot study was to describe the attitudes and opinions of athletic trainers toward Native Americans and First Nations people. A secondary purpose was to provide feedback and future suggestions for the use of the scale with healthcare providers.

2. Methods

2.1 Design

This study was conducted using a cross-sectional design using an electronic survey for data collection.

2.2 Participants

Participants were recruited by emailing athletic training staffs at NCAA Division I, II, and III institutions, and emailing the members of the East Texas Athletic Trainers' Association. A total of 42 athletic trainers opened and completed the survey (age = 39 ± 14 years, certified experience = 16 ± 14 years). Demographic information for the participants is presented in Table 1. All participants were informed of the survey's purpose and aims at the start of the

survey and consented to participate.

Table 1: Totals and percentage for participant demographic information

Demographic Factor	Criteria	Responses
Gender	Male	22, 52.4%
	Female	20, 47.6%
Employment Setting	Secondary School	12, 28.6%
	College/University – Clinical	16, 38.1%
	College/University – Academic	1, 2.4%
	College/University – Split	5, 11.9%
	Appointment	6, 14.3%
	Clinic/Hospital Professional Sports	2, 4.8%
Are you Hispanic/Latino(a)?	Yes	3, 7.1%
	No	38, 90.5%
	Prefer not to answer	1, 2.4%
What Race do you consider yourself?	White	38, 90.5%
	Black or African American	1, 2.4%
	Asian	2, 4.8%
	Other	1, 2.4%
Highest Level of Education	Professional Bachelor's Degree	
	Professional Master's Degree (MAT, MSAT)	9, 21.4%
	Post-Professional Master's Degree in Athletic Training	10, 23.8%
	Post-Professional Master's Degree not in Athletic Training	2, 4.8%
	Clinical Doctorate (DAT, DPT)	17, 40.5%
	Academic Doctorate (PhD, EdD)	2, 4.8%
		2, 4.8%

2.3 Data collection

An email was sent to the athletic trainers in the East Texas Athletic Trainers' Association membership database, and to athletic trainers in the state of Texas whose contact information was publicly available on their NCAA institution's website. The email invited all prospective participants to participate in an electronic survey via a link from a web-based server (Qualtrics Inc., Provo, UT) in August 2022. The invitation contained information about the authors, the purpose and aims of the study, and assurances that the participants could quit the survey at any time. A follow-up email was sent to program directors a week after the initial email, and the survey was left open for a week prior to the survey being closed for statistical analysis to begin.

2.4 Instrument

Following the informed consent and demographics section, the instrument contained statements taken from the Attitudes Toward Native Americans Scale to gather information regarding the participants' knowledge and attitudes toward Native Americans and First Nation people. Participants were asked to answer 20 questions on a scale of "Strongly Disagree" to "Strongly Agree". Questions indicating positive attitudes were scored on a scale of 1 (Strongly Disagree) to 6 (Strongly Agree). Questions indicating negative attitudes were scored on a scale of 1 (Strongly Agree) to 6 (Strongly Disagree). The statements included from the scale are listed in Table 2.

Table 2: Attitudes toward Native Americans scale statements

Statement (Answered on a scale of “Strongly Disagree” to “Strongly Agree”	
1.	Native Americans tend to live in a way that is in tune with nature (e.g., live off the land, hunt for food, etc.) more than other Americans.
2.	Native Americans hold on to their traditions more than they should in this day and age. *
3.	Native Americans tend to treat others with kindness.
4.	Native Americans tend to work harder than most other racial groups.
5.	It makes sense that Native Americans have a large sense of pride.
6.	Native Americans tend to be more spiritual than other social groups.
7.	Compared to other groups, Native Americans lack skills and education. *
8.	Native Americans are more cliquy than other minority groups. *
9.	It is unusual to hear a Native American person speak many words at a time. *
10.	Native Americans have been treated poorly given their inherent worth as humans.
11.	Native Americans should have more rights than they currently do given their status as the original Americans.
12.	Native Americans are naturally more peaceful in their interactions with other groups.
13.	Native Americans are wiser than other Americans.
14.	Discrimination against Native Americans is no longer a problem in the United States. *
15.	Over the past few years, Native Americans have gotten more economically than they deserve. *
16.	Over the past few years, the government and news media have shown more respect to Native Americans than they deserve. *
17.	If I had a chance to introduce Native American visitors to my friends and neighbors, I would be pleased to do so.
18.	Using a Native American as a mascot is acceptable. *
19.	Native Americans tend to have more rigid gender roles than other cultural groups. *
20.	On average, Native Americans feel more affiliation to their tribal memberships than to the United States of America. *

*Questions that were reverse scored during data analysis

Ultimately, the survey consisted of 28 questions. These questions included: one question regarding informed consent, five multiple-choice and two fill in the blank questions on demographics, and 20 multiple choice questions from the Attitudes Toward Native Americans Scale.

2.5 Statistical Analysis

Data were downloaded and analyzed using commercially available statistics software (SPSS Version 28, IBM, Armonk, NY). A total of 42 completed responses were included in the data analysis. Since the validated instrument reverses the Likert scale for select questions, statistical analysis was run as such. Table 2 denotes which questions were reverse scored. Measures of central tendency (means, standard deviations, frequencies) were calculated where appropriate. Pearson Correlations were used to assess correlations between age, years of experiences, the total

score on the Attitudes Toward Native American Scale and the scores on individual questions on the Attitudes Toward Native American Scale. Strength of effects sizes for any significant correlations was established as 0.00-0.09 = Negligible, 0.10-0.29 = Low, 0.30-0.49 = Moderate, 0.50-1.0 = High. Independent samples t-tests were performed to assess for differences in attitudes based on gender, race, ethnicity, setting, and level of education.

3. Results

3.1 Attitudes toward Natives Americans and First Nations people

When looking at the responses of all participants, several correlations were statistically significant. Significant correlations related to demographic information are included in Table 3. Significant correlations between statements are included in Table 4.

Table 3: Significant correlations related to demographic information

Factors	Correlation	Strength
Age and Statement 2	$r(40) = -.315, p = .042$	Low negative
Age and Statement 7	$r(40) = -.358, p = .02$	Low negative
Age and Statement 16	$r(40) = -.316, p = .041$	Low negative
Years Experience and Statement 7	$r(40) = -.349, p = .023$	Low negative
Years Experience and Statement 16	$r(40) = -.305, p = .05$	Negligible negative

Table 4: Significant correlations between statements

Factors	Correlation	Strength
Statement 1 and Statement 4	$r(40) = .498, p < .001$	Low positive
Statement 1 and Statement 5	$r(40) = .323, p = .037$	Low positive
Statement 1 and Statement 10	$r(40) = .317, p = .041$	Low positive
Statement 1 and Statement 11	$r(40) = .377, p = .014$	Low positive
Statement 2 and Statement 7	$r(40) = .506, p < .001$	Low positive
Statement 2 and Statement 9	$r(40) = .574, p < .001$	Moderate positive
Statement 2 and Statement 16	$r(40) = .387, p = .011$	Low positive
Statement 3 and Statement 5	$r(40) = .408, p = .007$	Low positive
Statement 3 and Statement 12	$r(40) = .500, p < .001$	Low positive
Statement 4 and Statement 5	$r(40) = .554, p < .001$	Moderate positive
Statement 4 and Statement 6	$r(40) = .630, p < .001$	Moderate positive
Statement 4 and Statement 10	$r(40) = .414, p = .006$	Low positive

Statement 4 and Statement 11	$r(40) = .366, p = .017$	Low positive
Statement 4 and Statement 12	$r(40) = .319, p = .04$	Low positive
Statement 4 and Statement 13	$r(40) = .452, p = .003$	Low positive
Statement 4 and Statement 14	$r(40) = .331, p = .033$	Low positive
Statement 4 and Statement 17	$r(40) = .356, p = .021$	Low positive
Statement 5 and Statement 6	$r(40) = .427, p = .005$	Low positive
Statement 5 and Statement 10	$r(40) = .440, p = .003$	Low positive
Statement 5 and Statement 11	$r(40) = .360, p = .019$	Low positive
Statement 5 and Statement 12	$r(40) = .424, p = .005$	Low positive
Statement 5 and Statement 14	$r(40) = .519, p < .001$	Low positive
Statement 5 and Statement 17	$r(40) = .395, p = .01$	Low positive
Statement 6 and Statement 11	$r(40) = .471, p = .002$	Low positive
Statement 6 and Statement 12	$r(40) = .411, p = .007$	Low positive
Statement 6 and Statement 13	$r(40) = .536, p < .001$	Low positive
Statement 6 and Statement 20	$r(40) = -.493, p < .001$	Low negative
Statement 7 and Statement 8	$r(40) = .452, p = .003$	Low positive
Statement 7 and Statement 16	$r(40) = .445, p = .003$	Low positive
Statement 8 and Statement 11	$r(40) = .335, p = .03$	Low positive
Statement 8 and Statement 14	$r(40) = .569, p < .001$	Moderate positive
Statement 8 and Statement 16	$r(40) = .398, p = .009$	Low positive
Statement 8 and Statement 18	$r(40) = .359, p = .02$	Low positive
Statement 8 and Statement 19	$r(40) = .545, p < .001$	Low positive
Statement 9 and Statement 13	$r(40) = -.338, p = .029$	Low positive
Statement 9 and Statement 14	$r(40) = .414, p = .006$	Low positive
Statement 9 and Statement 15	$r(40) = .558, p < .001$	Moderate positive
Statement 9 and Statement 16	$r(40) = .337, p = .029$	Low positive
Statement 10 and Statement 11	$r(40) = .485, p = .001$	Low positive
Statement 10 and Statement 13	$r(40) = .442, p = .003$	Low positive
Statement 10 and Statement 14	$r(40) = .369, p = .016$	Low positive
Statement 10 and Statement 18	$r(40) = .397, p = .009$	Low positive
Statement 11 and Statement 12	$r(40) = .326, p = .035$	Low positive
Statement 11 and Statement 13	$r(40) = .331, p = .032$	Low positive
Statement 11 and Statement 14	$r(40) = .431, p = .004$	Low positive
Statement 11 and Statement 15	$r(40) = .314, p = .043$	Low positive
Statement 11 and Statement 16	$r(40) = .397, p = .009$	Low positive
Statement 12 and Statement 13	$r(40) = .307, p = .048$	Low positive
Statement 12 and Statement 18	$r(40) = .317, p = .041$	Low positive
Statement 13 and Statement 20	$r(40) = -.335, p = .03$	Low positive
Statement 14 and Statement 15	$r(40) = .617, p < .001$	Low positive
Statement 14 and Statement 16	$r(40) = .507, p < .001$	Low positive
Statement 14 and Statement 18	$r(40) = .422, p = .005$	Low positive
Statement 14 and Statement 19	$r(40) = .403, p = .008$	Low positive
Statement 15 and Statement 16	$r(40) = .584, p < .001$	Moderate positive
Statement 15 and Statement 17	$r(40) = .314, p = .043$	Low positive
Statement 15 and Statement 18	$r(40) = .326, p = .035$	Low positive
Statement 16 and Statement 17	$r(40) = .353, p = .022$	Low positive
Statement 17 and Statement 20	$r(40) = .425, p = .005$	Low positive
Statement 19 and Statement 20	$r(40) = -.353, p = 0.22$	Low negative

There was no significant difference in attitudes toward Native Americans and First Nation people based on gender, race, setting, and level of education.

4. Discussion

The purpose of this pilot study was to describe the attitudes and opinions of athletic trainers toward Native Americans and First Nations people. A secondary purpose was to provide feedback and future suggestions for the use of the scale with healthcare providers.

Our findings indicated several significant correlations between age, years of experience, and different statements from the Attitudes Toward Native Americans Scale. There was a low negative correlation between age Statement 2, a low negative correlation between age and a low negative correlation between age and Statement 7, and a low negative correlation between age and Statement 16. This suggested that older athletic trainers might be more likely to believe Native Americans and First Nations people hold to their

traditions more than they should, lack skills and education compared to other groups, and have been shown more respect by the government and media than they deserve. Low negative correlation between years of experience and Statement 7. This suggested that athletic trainers with more experience were more likely to believe that Native Americans and First Nations people lack skills and education compared to other groups.

In total, we observed 60 significant correlations between statements on the Attitudes Toward Native American Scales. The entirety of these correlations can be viewed by cross referencing Table 2, Table 3, and Table 4. In general, athletic trainers who agreed with a positive statement about Native Americans and First Nations people were more likely to agree with other positive statements. Athletic trainers who agreed with a negative statement about Native Americans and First Nations people were more likely to agree with other negative statements. Out of the 60 correlations between statements, six were moderate, 52 were low, and

two were negligible. The moderate correlations revealed athletic trainers who believed that Native Americans and First Nations people hold to their traditions more than they should were more likely to believe it was unusual to hear a Native American speak more than a few words. Athletic trainers who believed that discrimination against Native Americans is no longer a problem were more likely to believe that Native Americans have received more economically than they deserved. Athletic trainers who believed that Native Americans have received more economically than they deserve were more likely to believe that Native Americans have been shown more respect by the government and media than they deserve. Athletic trainers who believed Native Americans received more economically than they deserved were more likely to believe that it was unusual to hear a Native American speak more than a few words. Athletic trainers who believed Native Americans work harder than most other racial groups were more likely to believe that it makes sense for Native Americans to have a large sense of pride. Athletic trainers who believed Native Americans work harder than most other racial groups were more likely to believe that Native Americans tend to be more spiritual than other groups.

While correlation does not necessarily mean causation, these findings suggest a need for future research on athletic trainers' knowledge and attitudes toward Native American and First Nations patients. Future research should aim to assess athletic trainers' knowledge of Native American and First Nations contemporary issues, Native American and First Nations historical issues, and sports medicine issues related to Native Americans and First Nations patients. This information will likely provide a more holistic view of the attitudes and knowledge of athletic trainers toward Native American and First Nations patients. By collecting this information, a more complete instrument may be able to be used to collect information on attitudes and knowledge of Native American and First Nations patients among other healthcare professionals as well.

A possible limitation of this study was the number of participants. However, this is a similar limitation that other survey-based studies on athletic trainers have encountered [18-20]. Given that this survey-based study was designed to collect pilot data, the authors intend to use a modified version of the survey with a larger sampling of athletic trainers to provide more generalizable conclusions. Another limitation was that the data gathered did not allow the authors to determine causations. When performing this pilot study, the authors were focused on finding correlations that warranted further examination as well as examining the utility of the instrument for assessing attitudes among athletic trainers.

To the authors' knowledge, this is the first study to use the Attitudes Toward Native Americans Scale with athletic trainers. Future research should examine the causes of the correlations found in this pilot study. Future research should also attempt to assess larger populations of athletic trainers. In conclusion, this study did not find significant differences based on demographics regarding attitudes toward Native American and First Nations people among athletic trainers. There were, however, multiple significant correlations between age, years of experience and specific statements on the Attitudes Toward Native Americans Scale. There were also significant correlations between statements on the scale when assessed with other statements on the scale. In general,

individuals who agreed with a positive statement on the scale were more likely to agree with other positive statements. Given the lack of research on healthcare for Native American and First Nations patients in athletic training, there is a need for further examination of attitudes and knowledge of Native American and First Nations patients among athletic trainers.

5. Dedication

This manuscript is dedicated in memory of Agnes Benedict Trail.

6. References

1. Reynolds AL, Sodano SM, Ecklund TR, Gukyer W. Dimension of acculturation in Native American college students. *Measurement and Evaluation in Counseling and Development*. 2012; 45(2):101-112.
2. Keddis M, Finnie D, Kim WS. Native American patients' perception and attitude about kidney transplant: A qualitative assessment of patients presenting for kidney transplant evaluation. *BMJ Open*. 2019; 9:e024671.
3. Lynch WC, Eppers KD, Sherrodd JR. Eating attitudes of Native American and White adolescents: A comparison of BMI- and age-matched groups. *Ethnicity & Health*. 2004; 9(3):253-266.
4. Patel SH, Northfelt DW, Mathews TE, Omar FM, Martinez ED, Okamoto JM. Understanding Native American/Alaska Native attitudes toward radiation therapy. *International Journal of Radiation Oncology*. 2019; 105(15):E448-E449.
5. Roh S, Brown-Rice KA, Lee KH, Lee YS, Yee-Melichar D, Talbot EP. Attitudes toward mental health services among American Indians in two age groups. *Community Mental Health Journal*. 2015; 51:970-977.
6. Rihawi A, Tah S, Rangan P, Knobbe K, Lee-Iannotti J. Evaluation of healthcare delivery disparities among the Native American population: Knowledge and attitudes of obstructive sleep apnea among the Indian Health Services primary care physicians. *Sleep*. 2022; 45(S1):A168-A169.
7. Green AR, Carney DR, Pallin DJ, Ngo NH, Raymond KL, Iezzoni LI, *et al*. Implicit bias among physicians and prediction of thrombolysis decisions for black and white patients. *Journal of General Internal Medicine*. 2007; 22(9):1231-1238.
8. Cooper LA, Roter DL, Carson KA, Beach MC, Sabin JA, Greenwald AG, *et al*. The association of clinicians' implicit attitudes about race with medical visit communication and patient ratings of interpersonal care. *American Journal of Public Health*. 2012; 102(5):979-987.
9. Blair IV, Steiner JF, Fairclough DL, Hanratty R, Price DW, Hirsh HK, *et al*. Clinicians' implicit ethnic/racial bias and perceptions of care among Black and Latino patients. *Annals of Family Medicine*. 2013; 11(1):43-52.
10. Oliver MN, Wells KM, Joy-Gaba JA, Hawkins CB, Nosek BA. Do physicians' implicit views of African Americans affect clinical decision making? *Journal of the American Board of Family Medicine*. 2014; 27(2):177-188.
11. Lambe KA, O'Reilly G, Kelly BD, Curristan S. Dual-process cognitive interventions to enhance diagnostic

- reasoning: A systematic review. *BMJ Quality & Safety*. 2016; 25:808-820.
12. Blair IV, Steiner JF, Hanratty R, Price DW, Fairclough DL, Daugherty SL, *et al.* An investigation of associations between clinicians' ethnic or racial bias and hypertension treatment, medication adherence, and blood pressure control. *Journal of General Internal Medicine*. 2014; 29(7):987-995.
 13. Hagiwara N, Penner LA, Gonzalez R, Eggly S, Dovidio JF, Gaertner SL, *et al.* Racial attitudes, physician-patient talk time ratio, and adherence in racially discordant medical interventions. *Social Science & Medicine*. 2013; 87:123-131.
 14. Merali HS, Lipsitz SR, Hevelone N, Gawande AA, Lashofer A, Agrawal P, *et al.* Audit-identified avoidable factors in maternal and perinatal deaths in low resource settings: A systematic review. *BMC Pregnancy Childbirth*. 2014; 14:280.
 15. Abbett SK, Yokoe DS, Lipsitz SR, Bader AM, Berry WR, Tamplin EM, *et al.* Proposed checklist of hospital interventions to decrease incidence of hospital associated *Clostridium difficile* infection. *Infection Control & Hospital Epidemiology*. 2009; 30:1062-1069.
 16. Rutman S, Park A, Castor M, Taulii M, Forquera R. Urban American Indian and Alaska Native youth: Youth risk behavior survey 1997-200. *Maternity and Child Health Journal*. 2008; 12:S76-S81.
 17. Thomas MA, Pennock J, Sturm A. Development of the Attitudes Toward Native Americans Scale. Conference: Society for Personality and Social Psychology, 2016.
 18. Cage SA, Warner BJ, Gallegos DM, Goza JP, Winkelmann ZK. Perceived and Actual knowledge of cupping therapy concepts among athletic trainers in the state of Texas. *Research & Investigations in Sports Medicine*. 2020; 6(4):538-542.
 19. Yang CW, Yen ZS, McGowan JE, *et al.* A systematic review of retention of adult advanced life support knowledge and skills in healthcare providers. *Resuscitation*. 2012; 83(9):1055-1060.
 20. Schellhase K, Plant J, Rothschild C. Collegiate athletic trainers perceived and actual knowledge of therapeutic ultrasound concepts. *International Journal of Athletic Therapy and Training*. 2015; 20(5):43-53.