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Perceptions of voice health, voice health care, and voice health education in the performance
community

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ABSTRACT

There is a medical consensus that proper voice health precautions can protect the voice and decrease the occurrence and severity of voice disorders in vocal performers. Similarly, seeking medical treatment for voice disorders can speed recovery time and preserve the voice. Voice disorders are common in performance students and professionals because of demanding curricula and frequent voice use, but little is known about their voice care needs, preferred voice care resources, and clinical care. The purpose of this study was to add to the research on voice health by interviewing faculty members in the College of Communication, Fine Arts, and Media at UNO. Faculty members were asked about voice health among the performance community and their students. Additionally, participants were asked about the type and amount of voice health education provided to students at the college. Participants were interviewed utilizing Zoom or telephone; interviews lasted approximately one hour. Participants answered questions about voice health education and protocols at UNO and potential barriers to voice health care. Interviews were recorded and transcribed. Analysis of the data included coding transcribed interviews and summarizing information about key themes. We found that participants had similar definitions of voice health and all previously had voice health training, most through a college education or private voice lessons. Overall, participants felt that financial burdens or lack of insurance was the greatest barrier to voice health care. Participants voiced resources such as a vocal care network, performance lab, or medical professional guest lecturers would be useful to improve voice health information and education at UNO.

INTRODUCTION

Pertaining to the importance of prevention, treatment, and rehabilitation of injury, one might not immediately think of vocal performers. However, many parallels exist between traditional sports athletes and vocal performers, specifically at the collegiate and professional levels. Like athletes, vocal performers are at a higher risk for certain injuries and illnesses due to their occupation and lifestyle (Ravall & Simberg, 2020). In sport, repetitive loading of the musculoskeletal system may result in a classification of injury referred to as an “overuse injury.” These injuries commonly occur because of frequent training while not giving the biological tissues enough time to rest and repair (Edwards, 2018). Similar injuries in vocal performers have been well documented (Carding & Wade, 2000).

Injury to the voices of vocal performers can occur for various reasons (Johns Hopkins University, 2020). Within the larynx, delicate multi-layered tissue known as the vocal folds vibrate to produce sound. There are several illnesses and injuries that can afflict the vocal folds, these are known collectively as voice disorders. Voice disorders may be the result of a virus, unusual cell growth, nerve or hormone problems, or voice misuse. Like the traditional athlete’s musculoskeletal system, vocal performers may overuse their voice, and this can result in injury. Voice disorders negatively affect the quality of a vocal performer’s voice and may cause irreversible physical damage if not treated properly (Johns Hopkins University, 2020).

Aside from the more obvious physical discomfort resulting from voice disorders, vocal performers may also experience negative psychological effects from being sidelined. A phenomenon well-studied in the arena of sports medicine known as “athletic identity” is described as; “the degree to which an individual identifies with the athlete role and looks to others for acknowledgement of that role (Brewer, Van Raalte, & Linder, 1993).” When obstacles

occur that prevent athletes from engaging in their sport, such as injury, these athletes can feel lost or directionless. This perceived loss of identity is not something to be deemphasized. One study administered the Impact of Event scale to 280 intercollegiate athletes at a National Collegiate Athletic Association (NCAA) Division 1 school (Shuer & Dietrich, 1997). The Impact of Event scale is a questionnaire that serves to gauge a person's feeling of psychological distress after trauma. Of the athletes surveyed, 48% were considered injured by the study parameter.

Amazingly, Impact of Event scale scores amongst these participants in a subscale category mirrored the reported trauma of individuals who had lived through a national disaster such as a hurricane.

Studies have found similar results concerning performance students. One study surveyed 79 female voice students at the Northwestern University School of Music to learn more about vocal attrition symptoms and their causes (Sapir, 1993). One of the questions included in the questionnaire dealt with mental health factors as they related to vocal attrition symptoms. Survey participants that reported multiple symptoms were significantly more likely to be bothered, frustrated, worried, depressed, or anxious about their voice; quit performance, quit singing altogether; speak in a voice that is too low in pitch; and in general worry, be depressed or anxious, or have mood swings.

Access to Voice Health Care

Given the serious physical and mental health implications of vocal injury, ensuring access to vocal health care is essential. The existing literature on access to health care among the performance community is limited. One recent study surveyed 30 professional singers on Broadway (Bradshaw & Cooper, 2018). Overall, the researchers found negative attitudes toward

sharing health information by performers. A staggering 73% of surveyed subjects reported negative professional consequences following the use of injury/illness leave. Subjects also reported social consequences such as feeling ostracized and undervalued after using injury/illness leave. Researchers also found 37% of subjects felt hesitant to report injury, with 86% reporting greater hesitation communicating a vocal health issue rather than a musculoskeletal one. The researchers make an important conjecture in the study's discussion, with performers' hesitation to disclose vocal injury to employers, the employers may not see the need to provide voice health services to performers. This study is important because performing on Broadway is often seen as the highest level for theatrical performers, and the barriers to performers seeking health services at this level may be a good indicator of industry norms.

Another study focused on the health information-seeking behaviors of classically trained singers (Petty, 2012). These behaviors can either be verbal or non-verbal and include all the ways that individuals gain information about their health, illnesses, health promotion activities, and health risks. Understanding these health information-seekers behaviors can help guide the creation and implementation of clinical interventions. The study found that singers were twice as likely to first consult with a singing teacher before seeking professional medical attention for a voice health concern. While this may not be a surprising result, this is significant because it highlights the importance of collaboration with singing teachers when implementing clinical approaches to care for performance populations.

To our knowledge, not many studies on vocal health among college students have been conducted. Vocal students are a unique population to study in terms of their access to voice health care because there may be variance in resources and procedures in each undergraduate school setting. Additionally, these students may face the same barriers to care that may be

experienced by non-performance students on the same campus. Being an undergraduate student poses its own barriers to health care access. Barriers such as lack of time, cost concerns, and questioning the severity of a health issue may prevent college students from seeking medical care for a health issue (Garcia, Lechner, Frerich, Lust, & Eisenberg, 2014). More research is needed to examine the vocal health of students on college campuses.

Voice Health Education

In addition to health care, vocal health education is critical to injury prevention. One recent nation-wide study looked exclusively at the voice health education provided to graduate-level voice students in 81 National Association of Schools of Music (NASM) accredited schools (Latham, Messing, Bidlack, Merritt, Zhou & Akst, 2017). Faculty and staff from these identified schools answered various survey questions pertaining to voice health education in their graduate program curricula. Using a five-point Likert scale, 98% of respondents strongly agreed or agreed that vocal physiology and vocal health belonged in a graduate-level voice curriculum. However, there was more variance among answers when the question of who should provide this vocal health information to graduate voice students was posed. Using the same Likert scale, answers from two antithetic questions resulted in 28% of respondents strongly agreed or agreed that a medical professional (such as a speech-language pathologist) is best equipped to instruct graduate voice students in the area of vocal health, while the other question yielded 50% of respondents favoring this instruction best delivered by a singing teacher. The major barriers to teaching vocal health information in the graduate-level curriculum were reported as limited time in the curriculum, lack of financial support, and lack of availability of medical professionals.

This study was significant in that it provided some insight into the vocal health instruction given to graduate-level voice students.

Aims:

The purpose of this project was to better understand the specific voice health needs of the performance community in Omaha, as well as performance students at the University of Nebraska Omaha. By interviewing full-time and part-time faculty members in the College of Communication, Fine Arts, and Media at the University of Nebraska Omaha, information that was gathered can provide research-backed recommendations for clinical and educational interventions that may improve and protect performance professionals' and performance students' voice health.

This project aimed to answer the following research questions related to voice performers:

1. How do they define vocal health?
2. Where do they go to get voice health information and services related to preventive care and care when they are having issues with voice health?
3. What are the barriers to getting voice health care?

This project aimed to answer the following research questions related to performance students:

1. Is there a differential impact of in-person vs. distance teaching on voice health?
2. What voice health information is currently provided to students/performers?

3. What information would better help faculty better serve students in terms of their voice health?
4. Where do students go to get voice health information and services?

Methods

Research design

This research utilized a qualitative research design by using one-on-one interviews.

Participants

Twelve part-time and full-time faculty members in the College of Communication, Fine Arts, and Media from the University of Nebraska Omaha were requested to participate in this study via email. These faculty members were selected to participate because they all consider themselves to currently be performers, or teachers. Furthermore, possible participants' biographies were reviewed to verify they taught classes where the voice was used in a performative way. These faculty members, their contact information, and biographies were located on the UNO website. Seven faculty members participated in the study.

Procedures

Each participant engaged in a semi-structured interview conducted by the primary investigator (Appendix B). The interviews took approximately 15 minutes to one hour to complete and were conducted over the video conferencing tool Zoom or over the telephone. Interviews were recorded and transcribed verbatim. Each participant was also asked to complete a short demographic questionnaire. It took participants less than five minutes on average to complete the demographic questionnaire (Appendix C).

Analysis and interpretation

Transcriptions of the interviews were reviewed by the primary and secondary investigators. A deductive coding method was utilized to identify themes within the interview data. Coding categories were set by the primary and secondary investigators and each interview was coded line by line using the software program, MAXQDA. Attention was also paid to how these themes related to the questions in the interview guide. In this report, a summary of key information about each theme will be presented, including quotes relevant to the themes.

RESULTS

Participant Characteristics

All seven participants are currently active instructors (four from the School of Music and three from the Theater department). The mean age of participants was 54 years. The majority of participants identified as female (57%) and White (86%).

Participants represented a wide range of performance and teaching backgrounds. 57% of participants considered themselves to be performers (i.e., a person who entertains others through artistic pursuits such as music, dance, stage entertainment, and theater). Of those who considered themselves to be performers, participants had a range of 42 years of performance experience. Six of the seven participants considered themselves to be teachers and had a combined total of 175 years of reported teaching experience.

Interview Findings

Qualitative information gained from the participant interviews is organized into two main sections based on whether participants were speaking on behalf of performers' voice health or UNO students' voice health. This information is sorted further by our chosen research topics.

Voice Health in Performers

Defining Voice Health

Because the focal point of this study was voice health, it is obligatory to first assess what the term "voice health" was defined as by the participants. The majority of participants defined voice health as the use of techniques that allow the voice to be used consistently over time without causing harm. One participant explained: "Vocal health to me is employing practices or techniques that positively impact your voice to make sure that you're able to use it in the ways that you need to use it for your career as a performer." Some participants shared that they considered voice health to be very closely related to overall health and cited the importance of hydration, limiting alcohol consumption, and refraining from smoking.

Participants shared a wide range of education and training that they received pertaining to voice health. Most participants obtained much of their training while in college, as part of their curriculum or in applied voice classes. It was during this time, most participants shared, that they learned vocal anatomy, strategies to warm-up the voice, and proper singing technique which helps them to avoid most injury.

The most common voice health issues affecting performers included misuse and abuse of the voice, causing vocal fatigue. Participants referenced things like using improper singing technique or shouting or talking too much causing the voice to strain and become fatigued.

Participants also listed many general health issues which could affect the voice negatively, including medications, dehydration, colds and allergies, and malaise. All four participants from the UNO School of Music also cited vocal nodules as a common voice health issue.

Voice Health Information and Services

To understand how performers contend with personal voice health issues, participants were asked who they would speak with about the issue, where they would go to get information, and where they would go to receive medical treatment. Most participants expressed that they would seek both medical and non-medical avenues of assistance and advice if they were to have an issue with their voice. For example, six participants said they would discuss a vocal health issue with a health care provider and three said that they would consult a voice teacher. Two participants shared that they would seek the advice of colleagues. To gather information about a voice health issue, some participants stated they would use the internet, albeit cautiously: “I would use the internet, but I would ... try and find some reputable sites. Look for some things specifically geared towards vocal health with actor performance, singer performance.” Other participants stated that they would seek both information and services from a health care provider.

Voice Health Care Barriers

As with many populations, performers experience a specific set of barriers to health care because of their occupation and lifestyle. Specific to voice health, participants identified a range of barriers. Most notably, six out of seven participants cited financial burdens or lack of insurance as a potential reason why performers may forgo necessary medical consultation and

treatment. Many participants felt as though this was the most prominent reason. One participant said, “Number one [barrier] is insurance, especially if we’re talking about performers in career performance. If they do not belong to an organization that carries insurance, that is definitely the number one barrier.”

Three participants also felt as though some performers would not seek voice health care because they did not think the voice health issue was serious enough for medical intervention, or that they could treat it themselves. Another barrier discussed by two participants was social stigma and that injuries among performers are not always well accepted, because the inclination is that they do not know how to take proper care of their voice. If a performer is perceived as commonly injured, they may not be viewed as reliable or professional.

Voice Health in Students

Voice Health at UNO

The voice health information taught to students at UNO is largely determined by the collaborative efforts of faculty members and further depends on what course they are teaching. Participants described that some classes are more focused on voice health than others. In the School of Music courses that were mentioned by participants to be heavy in voice health information included music education methods classes, applied voice classes, and vocal pedagogy. In the theater department, some classes heavy in voice health information that were mentioned included acting classes, movement, musical theater courses, and a whole course dedicated to the voice of the actor. Class content is largely determined by the teacher of the course. However, most participants stated that they do include some voice health in most classes, and proper technique is a foundation of keeping the voice healthy. Participants also stated that if there is a course in the curriculum that is heavily focused on voice health, they may not spend as

much time on it in their class. One participant explained: “For something like theater appreciation, it's pretty brief. It's usually part of a day. When I'm teaching an acting class, I teach at an advanced level. So, the hope is that when they take the lower level, they have had some training and that they actually remember what that training is.” One participant shared that part of their curriculum is based off recommendations from the accrediting body, National Association of Schools of Music.

Improving Student Voice Health

One of the greatest resources UNO has in improving students' voice health are faculty members. While levels of comfort of teaching voice health information to students differed among participants, none reported feeling uncomfortable. Ideas for resources to make teaching voice health more comfortable for participants ranged from a language lab on campus, to having more medical connections with a focus on vocal health in the area. Ideas for a relationship with a medical theme included having a medical professional come in and teach during the semester or having a vocal health “lab” where performance students could go for vocal health information and services. One participant stated, “some of the information that I desire as a singer is something that's more in depth and collaborative between the medical community and the artistic community or the singing world.”

Voice Health Information and Services

All the participants felt that students consulted with UNO faculty about voice health issues. Some of the participants who belong to the School Music specified that students are most likely seeking out the help of their choral director or voice teacher than other faculty. Aside from contacting faculty, four out of the seven participants felt as though performance students get the

bulk of their information from other students. Some participants also voiced that students may get their voice health information from the internet.

In-person vs. Distance Teaching

Only one of the seven participants reported noticing an increase in voice fatigue due to distance teaching. This participant is a voice teacher and said that they experience more vocal fatigue due to having to speak loudly over a student who is singing. All other participants felt no change in vocal fatigue or experienced it less. Some participants who stated that they experience less vocal fatigue, attributed this to not having to project their voice like they normally would while in the classroom.

DISCUSSION

This study adds to the literature about the voice health needs of the performance community. Although the study participants had varying backgrounds, education, and current occupations, for the most part, all participants viewed vocal health in a similar light. Not surprisingly, all participants had had some form of education and training related to voice health. This training most often occurred in a college performance curriculum or in applied voice lessons.

All study participants considered lack of insurance or cost issues as a barrier to care for performers except one. As some participants noted, career performers are often not insured through a company and, therefore, are responsible for the full balance of their medical costs. Lack of insurance as a barrier was not a theme discussed much in the literature review. The study by Bradshaw and Cooper (2018) had a population of Broadway performers who had health care resources through their employer. The findings from that study did mirror some of our study

themes, however. Bradshaw and Cooper found a large percentage of surveyed subjects had negative feelings about reporting illness/injury due to perceived negative professional and social consequences. This was also reflected in the data from our participant interviews.

Participants described numerous ways that voice health is included in the curricula at UNO. From the participants' interviews we can surmise that some faculty include voice health in their curriculum more than others. However, it is important to note that in their roles as teachers, the participants teach a wide range of classes. For example, some participants teach voice lessons, while some teach music education. As one participant pointed out, the school accrediting agency, National Association of Schools of Music, has released some resource information pertaining to both musculoskeletal and voice health information that is suggested to be taught to students at accredited schools. Aside from this information, the schools balance what voice health information gets covered in which class, and furthermore, teachers can decide what information they would like to teach in their class. The results suggest there is not a coordinated voice health curriculum within the college.

The fact that no participants stated that they felt uncomfortable teaching voice health to students is important, as studies, including this one, show students seek out advice from teachers regarding voice health (Latham, 2017). It was also stated by four participants that students most likely also obtain voice health information from other students, which could be problematic as the potential for incorrect information to be shared is most likely high.

As far as requested voice health resources are concerned, multiple participants mentioned resources with a medical basis, as one participant stated: "The information that I desire as a singer is something that's more in depth and collaborative between the medical community and the artistic community or the singing world." One participant noted the potential collaboration

with the UNMC campus: “We’re super lucky to have UNMC and some specialists around, having them come in and teach. Even yearly, they just come in for a day or we go over to them for a day and have them talk about it and have that open a relationship so that we create a united front and a relationship that is trusting.” Another idea from a participant was a voice lab that was accessible to the performance community in the area: “It would be wonderful to be able to have a voice network here, vocal health, vocal production, accessing your voice especially for people who don't have access to it.”

Future data collection could be useful in determining how UNMC could benefit the UNO performance students or the performance community. Additionally, an area for future research may be the perceptions of voice health care, and voice health education among UNO students. We can infer that students may have differences in opinion on voice health when compared to their UNO faculty members.

While this study offers insight into voice health among performers and students at UNO, it is important to also consider the limitations of this study. Most importantly, this study included a small sample size of participants from a single university and may not be fully representative of voice health perceptions, education, and services at all universities with music and theater programs in the U.S. While the sample size was small, the semi-structured interview design allowed us to gather in-depth information relative to our research questions and allowed us to explore the complicated relationship of voice health and the performance community and students at UNO. Despite the limitations of the study, our results suggest more work is needed to ensure performers and students receive the necessary voice health care and voice health education.

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Appendix A

Dear Name,

I am writing on behalf of the Voice Health Project team at the University of Nebraska Medical Center. We are interested in learning more about the voice health of faculty and students in the College of Communication, Fine Arts, and Media. We would like to interview you via Zoom about your perceptions of voice health, voice health care, and voice health education. We anticipate the interview will take approximately 1 hour. We will use this information to inform voice health clinical care services at the University of Nebraska Medical Center and to formulate voice health education recommendations.

Please let me know if you are willing to participate.

Katelyn Nelson

Master of Public Health Student

Voice Health Project Team:

Dr. Jayme Dowdall – UNMC College of Medicine

Dr. Kristy Carlson – UNMC College of Medicine

Dr. Melissa Tibbits – UNMC College of Public Health

Dr. Shelby VanNordstrand – UNO School of Music

Dr. Jack Ziebe – UNO School of the Arts

Appendix B

Voice Health Interview Guide

Introduction: Thank you for agreeing to participate in this interview. The purpose of the interview is to better understand voice health among performance faculty and students at UNO. The first section of the interview will ask about your personal experiences with voice health issues as a member of the performance community. The second section of the interview will ask about students' experiences with voice health issues. We will use this information to provide recommendations for clinical and educational interventions that can improve performers' voice health.

Role: Member of the Performance Community		
In this section, we will ask you to think about your role as a member of the performance community.		
Research Question	Interview Question	Probe
<i>How do performers define vocal health?</i>	<ol style="list-style-type: none"> 1. What does the term "voice health" mean to you? 2. Please describe any education or training you have received about voice health. 3. In your experience, what voice health issues are most common among performers in your field? 	
<i>Where do performers go to get voice health information and services?</i>	<p>If you had a problem with your voice...</p> <ol style="list-style-type: none"> 1. Who would you discuss the problem with? 2. Where would you go to get information about the problem? 3. Where would you go to get services to help with the problem? 	
<i>What are the barriers to performers getting voice health care?</i>	<ol style="list-style-type: none"> 1. What are barriers that might prevent performers from seeking voice care from a health care provider? 	

Role: Teacher		
In this section, we will ask you to think about your role as a teacher.		
Research Question	Interview Question	Probe
<i>Is there a differential impact of in-person vs. distance teaching on voice health?</i>	1. Thinking about voice fatigue, do you notice a difference between in-person and distance teaching (e.g. online or Zoom)?	
<i>What voice health information currently is provided to students?</i>	1. In what ways is voice health included in the curriculum for students in your department? 2. How do you decide what to teach about voice health?	
<i>What information would help you better serve students in terms of their voice health.</i>	1. How comfortable are you teaching voice health information to students? 2. What resources would make teaching voice health information more comfortable?	
<i>Where do students go to get voice health information and services?</i>	1. To what extent do students consult with faculty about voice health issues? 2. Aside from faculty, where do students go for voice health information and services?	

Appendix C

Voice Health Survey

1. What is your age? _____
2. What is your gender?
 - a. Male
 - b. Female
 - c. Non-binary
 - d. Not Listed _____
3. What is your race/ethnicity (select all that apply)
 - a. African American/Black
 - b. American Indian/Alaskan Native
 - c. Asian
 - d. Latinx/Hispanic
 - e. Native Hawaiian/Pacific Islander
 - f. White
 - g. Not Listed _____
4. Do you consider yourself a performer? (we define a performer as a person who entertains others through artistic pursuits such as such as music, dance, stage entertainment, and theater)
 - a. Yes
 - b. No

If 4=yes, continue to 5. If 4=no, skip to 8

5. How many years have you been performing? _____
6. On average, how many days per month do you perform? _____
7. On average, how many hours per month do you perform? _____
8. Do you consider yourself a teacher?
 - a. Yes
 - b. No

If 8=yes, continue to 9. If 8=no, skip to 12

9. How many years have you been teaching? _____
10. On average, how many days per month do you teach? _____
11. On average, how many hours per month do you teach? _____
12. If your primary occupation is teaching, how aware are you of your vocal presence during instruction?
 - a. Not aware

- b. Somewhat aware
 - c. Very aware
13. Do you consider the use of voice in your teaching role performative in any way?
- a. Yes
 - b. No

14. If so, how?"

15. In a typical day, how many hours do you spend using your voice...
- a. At home/in your personal life
 - b. Practicing for performance
 - c. Performing
 - d. Teaching

Curriculum Vitae

Katelyn Nelson, LAT, ATC

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Education:

Graduate

Master of Public Health: Health Promotion, degree expected 2020
University of Nebraska Medical Center- Omaha, NE

Undergraduate

Bachelor of Science: Athletic Training, 2016
University of Lynchburg- Lynchburg, VA
magna cum laude

Board Certifications and Licensing:

Board Certified, Athletic Trainer	Certificate No. 2000023697	Exp. 12/2021
State of Virginia	License No. 0126002592	Exp. 03/2021

Publications:

Nelson, Katelyn M., Daidone, Elizabeth H.K., Breedlove, Katherine M., Bradney, Debbie A., & Bowman, Thomas G., (2020). "Head Impact Characteristics Based on Player Position in Collegiate Soccer Athletes". *International Journal of Athletic Therapy and Training*. Advance online publication. 10.1123/ijatt.2019-0095.

Presentations:

National Athletic Trainers' Association Clinical Symposia, June 2016: Baltimore, MD.
Head Impact Characteristics Based on Player Position in Collegiate Soccer Athletes

University of Lynchburg Guest Lecture Research Team, Master of Public Health and Doctor of Education classes, April 2016: Lynchburg VA.
Examining head impact characteristics in collegiate soccer and lacrosse athletes.

University of Lynchburg Student Scholar Showcase, April 2016: Lynchburg, VA.
Head Impact Characteristics Based on Player Position in Collegiate Soccer Athletes

Awards & Honors:

Undergraduate award finalist for original research: National Athletic Trainers' Association Clinical Symposia, June 2016.

Third place finalist for original campus-wide research: Student Scholar Showcase, University of Lynchburg, April 2016.

Professional Memberships:

MedBridge Education member: 2016-Present

National Athletic Trainers' Association professional member: 2015-Present

Vice president-Iota Tau Alpha, Athletic Training National Honor Society: 2014-2016

Phi Epsilon Kappa, National Professional Physical Education Fraternity: 2015-2016

Biography

Katelyn Nelson, LAT, ATC, received her Bachelor of Science from the University of Lynchburg in 2016 in Athletic Training. At UL, she completed over 900 clinical hours of applied athletic training skills in various settings across Central Virginia, including: public and private high schools, public and private colleges, and walk-in urgent care centers as part of the Bachelor of Science in athletic training curriculum. After graduating, she began working for a physical therapy company in Virginia as an outreach athletic trainer for a local public high school. At the conclusion of the 2018 school year, she took on an administrative role within the company and began training to become a CMS compliance specialist. In the Spring of 2018, she was accepted into the University of Nebraska Medical Center's College of Public Health to pursue her MPH in Health Promotion, where she is currently completing her final semester.