Internet Journal of Allied Health Sciences and Practice

Volume 21 | Number 2 Article 20

March 2023

Athletic Trainers Value the Intrinsic Rewards of Specialty Certifications More than Barriers and Extrinsic Rewards

Michael B. Hudson
Missouri State University - Springfield, michaelhudson@missouristate.edu

Eva M. Frank
Lebanon Valley College, frank@lvc.edu

Taylor Harper
University of Arkansas for Medical Sciences, tayshae302@gmail.com

Lyndsey Comer
CoxHealth, lyndseycomeratc@outlook.com

Kelsey LaMont
Seattle University Athletics, klamont@seattleu.edu

Recommended Citation

Hudson MB, Frank EM, Harper T, Comer L, LaMont K. Athletic Trainers Value the Intrinsic Rewards of Specialty Certifications More than Barriers and Extrinsic Rewards. The Internet Journal of Allied Health Sciences and Practice. 2023 Mar 27;21(2), Article 20.

Athletic Trainers Value the Intrinsic Rewards of Specialty Certifications More than Barriers and Extrinsic Rewards

Abstract

Purpose: Health care professionals may earn specialty certifications to recognize their advanced knowledge and skills. Athletic training has implemented specialties; however, it is unclear what athletic trainers (ATs) know and perceive about specialty certifications. We developed a survey to examine the following issues: (1) analyze what ATs know about specialty certifications; (2) rank the rewards and barriers ATs perceive to be associated with earning/pursuing specialty certifications; and (3) examine differences in these findings based on ATs state practice acts being more restrictive or less restrictive. **Method:** We utilized a nonequivalent group, cross-sectional survey design and collected data for one month using an online survey and e-mail recruitment process. We validated our instrument using the content validity index. We utilized qualitative data analysis techniques to group states as having more restrictive practice acts and less restrictive practice acts. Using a single stage cluster sampling process, we selected 3 more-restrictive states and 3 less-restrictive states and sent recruitment emails to 4,503 potential participants in these 6 states. We received 342 responses for a 7.6% response rate and an 87% completion rate. **Results:** Our analysis demonstrated practicing ATs have limited knowledge about specialty certifications. The differences in state practice act restrictions did not affect the perceived rewards or barriers for specialty certifications; however, the participants reported statistically significant differences in their agreement about the intrinsic rewards, barriers, and extrinsic rewards, respectively. **Conclusions:** ATs have limited knowledge about specialty certifications, and the level of state practice act restriction did not influence perceptions about their potential rewards and barriers. Participants ranked the proposed intrinsic rewards for earning a specialty certification highest, and the potential barriers for earning these credentials second highest. Participants perceived the potential extrinsic rewards of these credentials lowest.

Author Bio(s)

Michael B. Hudson, PhD, LAT, ATC, is an Associate Professor in the Department of Public Health and Sports Medicine at Missouri State University. He is a licensed athletic trainer in the state of Missouri.

Eva M. Frank, PhD, LAT, ATC, is an Assistant Professor in Athletic Training at Lebanon Valley College. She is a licensed athletic trainer in the state of Pennsylvania.

Taylor Harper, MSAT, ATC is a student at The University of Arkansas for Medical Science in Fayetteville, Arkansas. She is studying to receive her clinical doctorate in physical therapy.

Lyndsey M. Comer, MSAT, LAT, ATC, is the Head Athletic Trainer at Ash Grove High School through Cox Health. She is a licensed athletic trainer in the state of Missouri.

Kelsey LaMont, MSAT, LAT, ATC is an athletic trainer at Seattle University who oversees the women's volleyball and softball teams. She is a licensed athletic trainer in the State of Washington.

Acknowledgements

We would like to acknowledge and thank the Board of Certification, Inc. for assisting us with recruitment emails and consulting with us about athletic trainer/athletic training state practice acts.

The Internet Journal of Allied Health Sciences and Practice
Dedicated to allied health professional practice and education
Vol. 21 No. 2 ISSN 1540-580X

Athletic Trainers Value the Intrinsic Rewards of Specialty Certifications More than Barriers and Extrinsic Rewards

Michael B. Hudson[1]
Eva M. Frank[2]
Taylor Harper[3]
Lyndsey Comer[4]
Kelsey LaMont[5]

1. Missouri State University - Springfield
2. Lebanon Valley College
3. University of Arkansas for Medical Sciences
4. CoxHealth
5. Seattle University Athletics

United States

ABSTRACT

Purpose: Health care professionals may earn specialty certifications to recognize their advanced knowledge and skills. Athletic training has implemented specialties; however, it is unclear what athletic trainers (ATs) know and perceive about specialty certifications. We developed a survey to examine the following issues: (1) analyze what ATs know about specialty certifications; (2) rank the rewards and barriers ATs perceive to be associated with earning/pursuing specialty certifications; and (3) examine differences in these findings based on ATs state practice acts being more restrictive or less restrictive. **Method:** We utilized a nonequivalent group, cross-sectional survey design and collected data for one month using an online survey and e-mail recruitment process. We validated our instrument using the content validity index. We utilized qualitative data analysis techniques to group states as having more restrictive practice acts and less restrictive practice acts. Using a single stage cluster sampling process, we selected 3 more-restrictive states and 3 less-restrictive states and sent recruitment emails to 4,503 potential participants in these 6 states. We received 342 responses for a 7.6% response rate and an 87% completion rate. **Results:** Our analysis demonstrated practicing ATs have limited knowledge about specialty certifications. The differences in state practice act restrictions did not affect the perceived rewards or barriers for specialty certifications; however, the participants reported statistically significant differences in their agreement about the intrinsic rewards, barriers, and extrinsic rewards, respectively. **Conclusions:** ATs have limited knowledge about specialty certifications, and the level of state practice act restriction did not influence perceptions about their potential rewards and barriers. Participants ranked the proposed intrinsic rewards for earning a specialty certification highest, and the potential barriers for earning these credentials second highest. Participants perceived the potential extrinsic rewards of these credentials lowest.

Keywords: perceptions, practice act, credentials

INTRODUCTION

Health care is constantly progressing, so health care providers must stay up to date via continuing education and professional development. Any additional education should also be recognized, and one way health care professionals are recognized for their advanced care abilities is through specialty certifications. These certifications identify the clinician for obtaining more knowledge and skills, which communicates the ability for improved clinical practice and optimal care.[1] For example, nursing specialties have been defined as, "a pursuit, area of study, or skill to which someone has devoted much time and effort and in which they are an expert."[2] Additionally, it has been reported there is a positive relationship between nurses who are specialty certified and their patient's satisfaction.[3] Athletic training is a younger health care profession than nursing; however, it has wanted to recognize athletic trainers (ATs) with specialized skills for some time. In 1997, the National Athletic Trainers' Association (NATA) Education Task Force recommended the association develop certificates of advanced qualification programs to recognize ATs who use skills to work in specialized work settings.[4] This initial concept evolved, and in 2020, athletic training finalized the *AT Specialties Petitioner's Guide*, which initiates the process to formally recognize an athletic training specialty and create its specialty certification examination.[5]

Specialty certifications for health care disciplines identify individuals with advanced knowledge and skills. To acquire these advanced abilities, an individual must first complete the discipline's general professional education process and pass its assessment standards. After transitioning from student to professional, a practitioner will gain more knowledge, skills, and experiences, which in turn advances their abilities. An individual with these advanced abilities should be different than a practitioner entering the discipline. In the area of credentialing, the primary method used to describe the knowledge, skills, and abilities expected of individuals at these different levels is the practice analysis (aka, job analysis but hereinafter referred to as practice analysis). Basically, a practice analysis "identifies and defines in detail particular duties and requirements as well as relative importance of these duties."[6] Not only does the practice analysis describe the roles and function of a discipline—which in turn validates the practice, whether it be general or specialized—it also establishes the framework for writing a certification examination.[6] In athletic training, the practice analysis defining professional athletic training practice is published by the Board of Certification, Inc. (BOC), which is currently on its 7th edition.[7] This practice analysis is the blueprint for assessing individuals earning the certified athletic trainer (ATC®) credential. In fall 2020, the BOC published the *Content Outline for BOC Orthopedic Practice Analysis*, which became the first validated specialty for ATs.[8] The ability to practice as an athletic trainer with the BOC orthopedic specialization begins after completing additional education and training, such as the post-professional residency, and passing the BOC specialty certification exam. Completing these steps will officially recognize the individual AT as a board-certified and credentialed AT in a validated specialty practice.[9]

Athletic training is just entering the world of specialties and specialty certifications; however, medicine has incorporated and studied specialties for multiple years. Hospitals and patients both value the board-certified physician, and although results are correlational versus causal, board-certified physicians tend to provide better patient care.[10] Some physicians perceived specializations as a way to "offer defined responsibility, [and] more control over their practice, prestige, and potential remuneration."[11] Other physicians, however, have mixed perceptions towards specialty certifications, and they are not convinced specialty certifications benefits are worth the effort to maintain the certification.[10] One of these concerns is that specialty certifications can create professional monopolies or restrict other physicians to provide similar services, which can lead to fragmentation of care or gaps in health care services due to specialized tunnel vision.[11]

The nursing specialty literature has presented some more optimistic views of specialty certifications. The American Board of Nursing Specialties surveyed a wide range of nurses (certified and noncertified) and nurse managers, all of whom highly valued these certifications.[12] Krapohl et al reported a moderate association between workplace empowerment and nurses holding a specialty certification.[2] The nursing specialty certification literature also reported positive evidence regarding patient outcomes; Boltz et al found hospital units with higher percentages of specialty certified nurses were less likely to have patient falls.[13]

While specialty certifications in athletic training are just beginning, residency-trained AT specialists have been practicing for many years. Published research investigating these practitioners have noted patients perceived these ATs to have the same knowledge as orthopedic medical residents.[14] In addition, physicians were highly satisfied with their residency-trained ATs.[15] While this research is positive and has suggested the value of athletic training specialties, there is a difference between residency-trained specialists and board-certified specialists. As defined by the BOC, a specialty certification is:

> A voluntary process by which an Athletic Trainer's [*sic*] (AT) mastery of advanced knowledge, skills, and experience in a specialized area of clinical practice, exceeding what is required for entry-level AT certification, is demonstrated, and measured against defined predetermined standards, such as completing post-

> professional education, training, and/or experience (e.g., accredited residency) and achieving a passing score on a specialty certification exam.[9]

Our purpose for this study was to better understand the knowledge and perceptions state-credentialed ATs have about athletic training specialty certifications. For this purpose, we developed three overarching research questions:

(1) What do ATs know about specialty certifications?
(2) Does a more restrictive or less restrictive state practice act affect how ATs perceive the potential rewards and barriers with earning a specialty certification?
(3) How do ATs rank the values and barriers associated with pursuing specialty certifications?

The results of this research can guide future educational initiatives to help ATs better understand specialty certifications, establish a foundation to examine factors that may influence the growth of specialty certifications, and develop a basis to rank perceived values and barriers towards earning the credential.

METHODS

We utilized a nonequivalent group, cross-sectional survey design for this study. We recruited participants for the online (Qualtrics XM, 2020) survey from a single-stage cluster sample with the criterion being athletic trainer state practice act restrictions (ie, more restrictive, or less restrictive). We validated our instrument utilizing a content validity index (CVI) from a panel of ATs with expertise in specialty health care, certification, and athletic training education. The three parts of the final survey consisted of (1) knowledge-based questions; (2) perceptions on rewards and barriers; and (3) demographic questions. Prior to any data collected, we received approval to conduct the study from the Missouri State University Institutional Review Board.

Survey Development

We developed a survey aimed at describing the participants' knowledge and perceptions about specialty certifications. The survey included three sections. The first section of the survey examined the knowledge ATs have about specialty certifications. Part two of the survey questioned participants about their perceptions of the intrinsic and extrinsic rewards with specialty certifications, as well as perceived barriers to obtaining specialty certifications. The intrinsic rewards survey questions examined how ATs perceived specialty certifications affecting them personally (eg, validation of specialized practice, increased marketability). The survey items measuring extrinsic rewards asked ATs about the benefit specialty certifications may provide the profession overall (eg, recognition from other health professions, increased patient confidence in the athletic trainer). The barriers survey items questioned the ATs' perceptions about obstacles with earning a specialty certification (eg, financial cost, employer support). The final section of the instrument recorded participant demographics.

We developed our initial survey items for the Athletic Training Specialty Certification: Knowledge and Perception Instrument from a review of specialty certification literature in nursing and medicine. To validate these items, we contacted 6 ATs with expertise in the areas of specialty practice, certifications/credentialing, and athletic training education. Of these 6 ATs, 4 completed reviews of the initial instrument, which contained 40 survey items. From their review, we calculated an initial average scale-level CVI (S-CVI/Ave) of .825; however, the item CVI (I-CVI) ranged from .25-1.00. Based on the recommendations of Polit and Beck, the S-CVI/Ave of .825 was acceptable but the I-CVI range was not.[16] After reviewing our experts' assessment of the instrument, we removed 10 survey items and rephrased 9 items. From this process, we calculated the revised instrument's S-CVI/Ave at .925 with an I-CVI range from .75-1.00. Although this S-CVI/Ave did not achieve the recommendation for an excellent S-CVI/Ave when using 3-5 reviewers, it did achieve the recommendation for 6-10 reviewers; therefore, we appraised the instrument's S-CVI/Ave score as more than acceptable because the article did not provide a defined level for a S-CVI/Ave at .925. Last, we pilot tested the survey with practicing ATs for final revisions and corrections.

For part 1 of the survey, we asked 9 true/false knowledge-based questions to test how accurately certified ATs could answer questions about athletic training specialty certifications (see Table 1 for these questions and correct responses). We have clarified falsely written survey items in the Discussion section.

Part 2 of the survey questioned ATs about their perceptions of intrinsic and extrinsic rewards with specialty certification. Furthermore, we inquired about the perceived barriers with pursing specialty certifications. The list of intrinsic/extrinsic rewards, along with perceived barriers, are listed in Table 2. For each of these subscales, participants responded to each survey item using a 3-point scale (ie, disagree, neutral, agree), so the minimum achievable score was 7 and the maximum score was 21. We interpreted subscale total scores above 14 as tending to agree with the perceived rewards or barrier and total scores below 14 as tending to disagree.

Part 3 included participants' demographics, which included factors such as participant sex, age, experience, and practice setting.

From our final data, we conducted a reliability analysis for the 3 sub-sections of the survey examining participants' perceptions about athletic training specialty certifications: intrinsic rewards, extrinsic rewards, and barriers. We calculated the following Cronbach's alpha scores: (1) .821 for intrinsic rewards, (2) .847 for extrinsic rewards, and (3) .693 for barriers. We assessed Cronbach's alpha for the intrinsic and extrinsic rewards as good. Although the Cronbach's alpha for the barriers sub-section was just below the generally accepted minimum score for good (i.e., .70), we appraised the score as adequate for three reasons: (1) the score .693 was well within the range of other accepted Cronbach's alpha scores in published research; (2) the instrument's overall high S-CVI/Ave score of .925; and (3) our external reviewers agreed the barrier survey items were highly relevant.[17] We did not conduct a reliability analysis of the knowledge questions because we expected variability with these responses; therefore, we planned to conduct only a descriptive analysis of these questions.

Table 1. Survey Items: Knowledge of Specialty Certifications

True/False Survey Item (ANSWER)	Response	%
A specialty certification is awarded by the same organization that also provides the education and training. (FALSE)	Correct	19.2
	Incorrect or Do Not Know	80.8
Completing an athletic training residency will earn the individual a specialty certification. (FALSE)	Correct	36.4
	Incorrect or Do Not Know	63.6
* The athletic trainer who successfully passes a specialty certification examination will earn a new credential in addition to the ATC credential. (TRUE)	Correct	66.7
	Incorrect or Do Not Know	33.3
* The specialty certification recognizes independently validated, focused, and advanced knowledge and skills the certified athletic trainer acquires after completing professional education. (TRUE)	Correct	85.9
	Incorrect or Do Not Know	14.1
The Commission on Accreditation of Athletic Training Education is responsible for defining the knowledge and skills evaluated by an athletic training specialty certification examination. (FALSE)	Correct	23.4
	Incorrect or Do Not Know	76.6
There is published research in nursing suggesting health care providers with specialty certifications can improve patient outcomes. (TRUE)	Correct	46.4
	Incorrect or Do Not Know	53.6
According to published research in medicine, doctors perceive the cost to get and maintain a specialty certification as a challenge. (TRUE)	Correct	33.3
	Incorrect or Do Not Know	66.7
An athletic trainer who successfully passes a specialty certification exam will expand the scope of practice of the ATC credential. (FALSE)	Correct	33.7
	Incorrect or Do Not Know	66.3
All athletic trainers who hold the ATC credential and are in good standing with the Board of Certification will be eligible to sit for a specialty certification examination. (FALSE)	Correct	15.1
	Incorrect or Do Not Know	84.9

* More than 50% of participants demonstrated correct knowledge.

Table 2. Survey Items: Perceived Intrinsic Rewards, Extrinsic Rewards, and Barriers

Survey Section	Survey Items
Perceived Intrinsic Rewards	Specialty certification will provide me with an enhanced feeling of personal accomplishment (having earned something).
	Specialty certification will validate specialized knowledge & skills
	Specialty certification will indicate professional growth
	Specialty certification will enhance my professional credibility
	Specialty certification will increase my marketability if I seek a new job
	Specialty certification will show I am advanced in my knowledge and skills beyond the general practice of athletic training
	Specialty certification will indicate a greater level of clinical competence
Perceived Extrinsic Rewards	Specialty certification will promote recognition from peers within athletic training
	Specialty certification will promote recognition from other non-physician health care providers
	Specialty certification will promote recognition from physicians
	Specialty certification will promote recognition from patients
	Specialty certification will promote employability for athletic trainers
	Specialty certification will increase consumer confidence
	Specialty certification will increase salaries
Perceived Barriers	Financial costs associated with advanced education and training
	Personal time utilized to complete advanced education and training
	Available institutional/employer support to complete advanced education and training
	Lack of known reward from obtaining an athletic training specialty certification
	Lack of recognition for an athletic training specialty certification
	Maintaining the specialty certification credential
	The unknown influence of a specialty certification on patient-reported outcomes

Nonequivalent Grouping Procedures

After finalizing the survey instrument, two researchers reviewed athletic trainer practice acts using a BOC-maintained database of language for each state's legislation. Our purpose with this review was to categorize state practice acts by their level of restricting ATs' practice. We excluded California because it did not have a state practice act when we completed this process, and we excluded the District of Columbia because it is not a state. We began our grouping process by identifying if the state specifically described the scope of practice for athletic training. We specifically reviewed this language in reference to how it could narrow/limit patient types and/or settings the athletic trainer may work with in the state. If this process suggested the state practice act limited the kinds of patients/settings where the athletic trainer may practice, we identified the practice act as more restrictive.

Next, if a state practice act did not define the scope of practice for athletic training, the two researchers independently reviewed each act for how it defined the key terms athlete, athletic trainer, athletic injury, and athletic training. Again, if the language suggested limitations on the kinds of patients and/or settings where the athletic trainer could practice, we identified the state as more restrictive. For all states we could not identify as restricting the ATs' practice, we tentatively grouped them as less restrictive or to be determined. The two researchers reviewed and discussed these terms for each state until reaching consensus with the initial grouping of more restrictive, less restrictive, or to be determined.

Next, we initially reaffirmed our grouping of state practice acts with the assistance of the leadership for state athletic trainer associations. We e-mailed the leadership, or chairs of governmental committees, for the state associations to acquire their

perceptions. Following a brief introduction of our project, we asked the following question, "Does your state practice act restrict ATs from who they can practice with (patients) and/or where they can practice (settings)?" From those who replied, we reaffirmed our previous groupings of more restrictive or less restrictive. Any state that conflicted with our initial grouping was identified as to be determined.

To finalize and confirm our grouping of states, we discussed state practice act language and reviewed our preliminary groupings with a BOC staff member overseeing the organization's database on regulatory affairs. Following a review of our procedures, we discussed all 50 states until we reached consensus with the final 3 groupings: more restrictive (n = 18), less restrictive (n = 23), and unable to be categorized (n = 9). After we confirmed our grouping of states, we approximated the population of ATs in each state using published demographics of NATA membership per state.[18] We identified approximately equal state populations of ATs and then randomly selected states to sample. Prior to recruiting participants from these states, we confirmed with the BOC population sizes of actual certified ATs in these states along with those ATs who consented to be recruited for survey research. The actual recruitment of participants was governed by the BOC following their rules for survey research. We then collected data for the month of March 2020.

RESULTS

Over 7000 practicing ATs across the 6 states were identified for sampling. From these practicing ATs, we recruited 4,503 individuals who agreed to participate in survey research when contacted by the BOC. A total of 2,244 participants were practicing in a state with a more restrictive practice act (Louisiana, New York, and Washington) and 2,259 participants were practicing in a state with a less restrictive practice act (Minnesota, Nebraska, and North Carolina). Of the 4,503 ATs we recruited, 342 participants responded to our Qualtrics survey resulting in a 7.6% response rate. Of those participants who responded, 87.7% (n = 300) completed the instrument's knowledge and perceptions survey items. We summarized the following demographic data based on the 300 participants who completed the knowledge and perception survey items:

(1) Biological sex: males = 146; females = 148; did not identify = 6
(2) State practice act: more restrictive = 118; less restrictive = 166; did not identify = 16
(3) Age in years (n = 294): M (SD) = 37.8 (11.6)
(4) Years holding the ATC® credential (n = 294): M (SD) = 14.2 (10.8)
(5) Highest degree earned: bachelor's degree = 74; master's degree = 185; doctoral degree = 35; did not identify = 6

To answer research question 1, we derived 9 content questions from a BOC presentation with the purpose of educating ATs and other attendees about specialty certifications.[19] The responses for these questions were true, false, and do not know. In Table 1, we provided the nine knowledge questions along with the correct true/false response for each survey item. We analyzed only the percentage of right answers and combined wrong/do not know responses. Of the 9 knowledge questions, only 2 were answered correctly by more than half of the participants.

For research question 2, we analyzed the data using the Kruskal-Wallis H test to examine the differences in scores based on practice acts. Our nonparametric statistical analysis found no statistically significant difference in perceived intrinsic rewards (H = .064, P = .968), perceived extrinsic rewards (H =.005, P = .998), or perceived barriers (H = .921, P = .631) based on the level of restriction per state practice acts (Table 3).

To answer research question 3, we analyzed responses to the survey items measuring the participants' perceptions about intrinsic rewards, extrinsic rewards, and barriers to specialty certifications. Total mean scores identified all participants agreed with the intrinsic rewards, extrinsic rewards, and barriers with earning a specialty certification because scores greater than 14 trended towards agreement with the survey sub-scale. Using the Friedman test, we compared the subjects' perceptions of these 3 outcome measures. We calculated a statistically significant difference and a small effect size (χ^2_2 = 160.197, P < .001, W = .272) between intrinsic rewards (M [SD] = 18.9 [2.7]), extrinsic rewards (M [SD] = 16.2 [3.5]), and barriers (M [SD] = 17.9 [2.7]) for all survey respondents. Using the Wilcoxon test and the Bonferroni correction (α < .017), we calculated a statistically significant difference between intrinsic rewards and extrinsic rewards (Z = 11.815, P < .001), between intrinsic rewards and barriers (Z = 6.062, P < .001), and between barriers and extrinsic rewards (Z = -5.753, P < .001) (Figure).

In addition, participants in states with more restrictive practice acts reported a statistically significant difference and small effect size (χ^2_2 = 67.770, P < .001, W = .287) between intrinsic rewards (M [SD] = 18.8 [2.9]), extrinsic rewards (M [SD] = 16.2 [3.6]), and barriers (M [SD] = 17.9 [2.7]). Our post-hoc analysis using the Wilcoxon test with the Bonferroni correction (α < .017) also calculated a statistically significant difference between intrinsic rewards and extrinsic rewards (Z = 7.649, P < .001), between intrinsic rewards and barriers (Z = 3.580, P < .001), and between barriers and extrinsic rewards (Z = -4.068, P < .001). Our analysis of participants

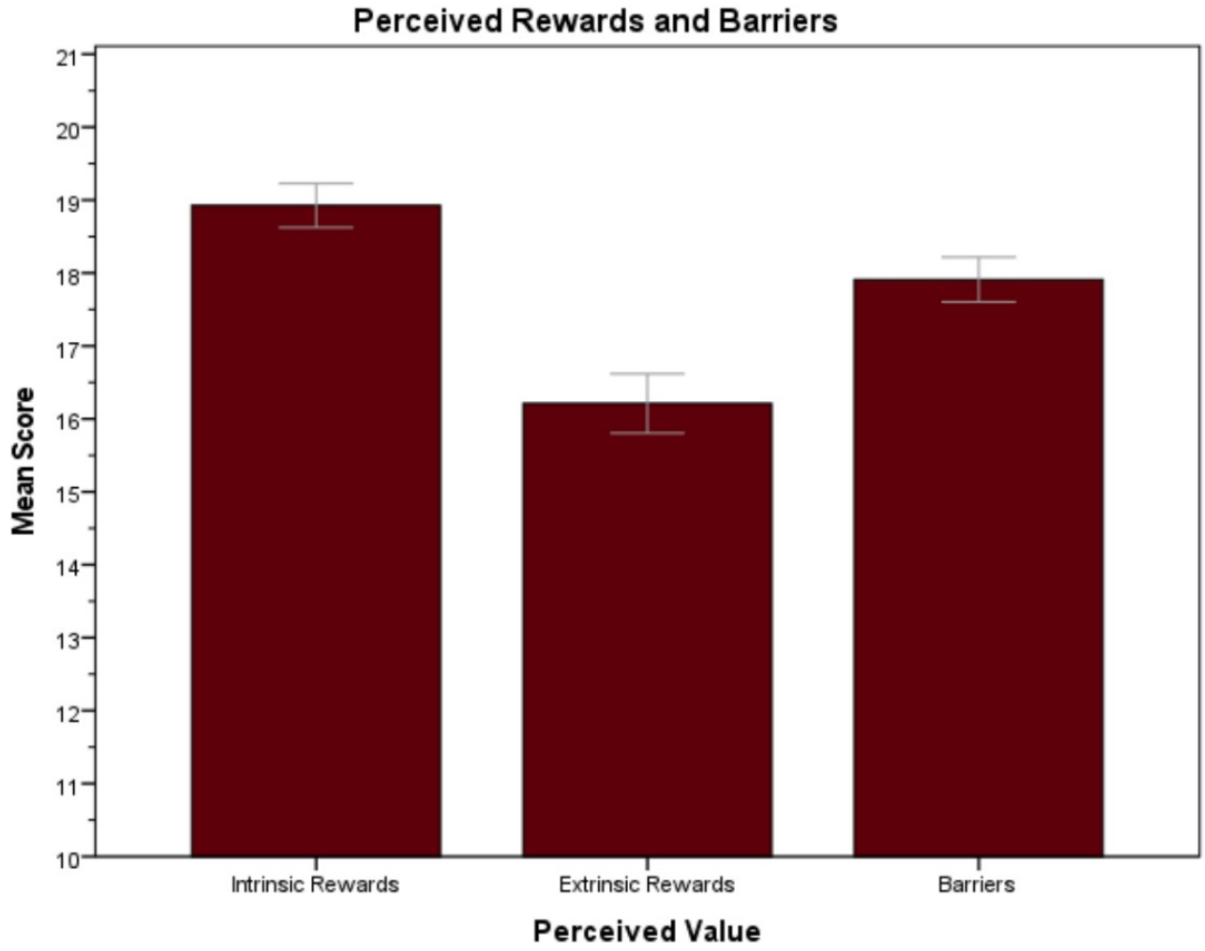
in states with less restrictive practice acts demonstrated similar findings with a statistically significant difference and small effect size (χ^2_2 = 91.360, *P* < .001, *W* = .275) between intrinsic rewards (M [SD] = 19.0 [2.5]), extrinsic rewards (M [SD] = 16.2 [3.5]), and barriers (M [SD] = 17.9 [2.6]). Once again, our post-hoc analysis using the Wilcoxon test and the Bonferroni correction (α < .017), calculated a statistically significant difference between intrinsic rewards and extrinsic rewards (*Z* = 8.946, *P* < .001), between intrinsic rewards and barriers (*Z* = 4.967, *P* < .001), and between barriers and extrinsic rewards (*Z* = -3.979, *P* < .001).

Table 3. Rewards and Barriers per Practice Act Restrictions

State Practice Act	Perceived Score	Mean (SD)*
More Restrictive	Intrinsic	18.8 (2.9)
	Extrinsic	16.2 (3.6)
	Barriers	17.9 (2.7)
Less Restrictive	Intrinsic	19.0 (2.5)
	Extrinsic	16.2 (3.5)
	Barriers	17.9 (2.6)

* Range for each total score was 7 (lowest) to 21 (highest)

Figure. Ranking of Perceived Rewards and Barriers



Along with the analyses already listed, we examined the data for associations (Spearman's rho correlation) between the participants' years holding the ATC® credential and the perceived rewards and barriers for an athletic training specialty certification. Our analysis identified no statistically significant correlation between years holding the credential with perceived intrinsic rewards (ρ = -.093, *P* = .111) and barriers (ρ = .037, *P* = .523). Our analysis, however, calculated a statistically significant, negative, and weak correlation between perceived extrinsic rewards and the participants' years holding the ATC® credential (ρ = -.141, *P* = .016).

DISCUSSION

According to the NATA, "athletic trainers are highly qualified, multi-skilled health care professionals who render service or treatment, under the direction of or in collaboration with a physician, in accordance with their education, training and the state's statutes, rules and regulations."[20] The educational path to become an athletic trainer is governed by the Commission on Accreditation of Athletic Training Education (CAATE), which provides standards educational programs abide by to stay accredited. Excluding foundational knowledge, the aim of Section IV: Curricular Content in the 2020 professional standards for athletic training programs is to provide broad education within six core competencies areas and three areas of clinical practice (see Table 4).[21] After graduating from a professional program and successfully passing the BOC certification exam, the athletic trainer earns the ATC® credential, which recognizes the AT as being minimally competent with the general practice of athletic training across 5 domains: (1) Injury and Illness Prevention and Wellness Promotion; (2) Examination, Assessment and Diagnosis; (3) Immediate and Emergency Care; (4) Therapeutic Intervention; and (5) Healthcare Administration and Professional Responsibility.[7] This achievement formally opens the door in most every US state for the athletic trainer to practice legally and independently as a credentialed health care professional. This individual can be described as someone at the professional level of practice, or a general practitioner of the discipline. After entering professional practice, practitioners will advance their knowledge and skills, potentially even specializing in a certain area of the discipline. Because specialty certifications are new for ATs, the purpose of our research project was to investigate the knowledge ATs have about specialty certifications; compare these perceptions based on state practice act restrictions for ATs; and measure ATs' perceptions about the intrinsic rewards, extrinsic rewards, and barriers towards earning the certification.

Table 4. CAATE 2020 Standards for Accreditation of Professional Athletic Training Programs

Area of Practice	Practice Subsection Listing Accreditation Standards
Core Competencies	Patient-centered care
	Interprofessional practice and interprofessional education
	Evidence-based practice
	Quality improvement
	Health care informatics
	Professionalism
Patient/Client Care	Care plan
	Examination, diagnosis, and intervention
Prevention, Health Promotion, and Wellness	[no subsections listed]
Health Care Administration	[no subsections listed]

Specialty Certification Knowledge

Although an athletic trainer may be able to legally practice in a state, the person must still transition from being a student to a health care practitioner. The transition to practice for a newly credentialed AT should be a supportive process where mentors help new ATs develop further knowledge and skills. With time and experience, ATs should expand their knowledge and skills beyond entry-level competence. One path an AT can pursue to build on their knowledge and clinical practice is to enroll in a CAATE-accredited residency program, which is purposefully structured post-professional education. The AT resident is a paid employee and credentialed health care provider for the organization, who is also learning a specialized area of practice by way of formal didactic education and clinical experiences.[22] Besides residency programs, the AT may use other advanced training to learn a specialization. This other training can include self-directed learning, professional development within the workplace, or graduate education with clinical practice.

While either structured or self-guided education can help develop a specialized practice, one misconception most of our participants had about specialty certifications was who was awarded the certification. Our participants believed the organization that provided the specialized education and training also awards the specialty certification. This is not true for athletic training because the BOC—which is not in the business of education and training—is responsible for awarding athletic trainer specialty certifications. Completing a residency program can lead to being eligible to take a specialty certification exam.[23] This individual, however, must still pass the specialty certification exam offered by the BOC to state they are board-certified in a specialty.

Within the credentialing world there are important and distinct differences between certifications and assessment-based certificates. For the purposes of our study, the key difference was the organization overseeing the credentialing process. While both credentialing processes incorporate focused education and training, the primary difference between a certification and a certificate is an organization separate from the education process formally grants a certification (including specialty certifications), which allows for an unbiased evaluation of the individual's knowledge and skills.[24] This unbiased assessment of the credential holder achieves a higher level of public safety and accountability because the testing is independent of the education and training.

Specialty certifications formally recognize expanded and focused (ie, specialized) post-professional education and training someone acquires after entering a profession. This specialized knowledge is still founded on the professional knowledge and skills ATs learn during their professional education process. The participants for our study recognized earning a specialty certification occurs after completing the professional education process; however, they incorrectly perceived the specialty certification as expanding the AT's scope of practice. While the AT who is board certified in a specialty possesses an additional credential that identifies the specialized knowledge and skills, it does not expand the scope of practice for the ATC® credential because that is governed by state practice acts.[25] Instead, the specialty certification formally recognizes the AT as receiving additional and specialized education and training in a certain aspect of athletic training beyond what is required to earn the ATC® credential.

Creating a specialty practice is a grass-roots process undertaken by ATs with expertise in the specialty practice area.[19] Once a critical mass of individuals in the practice area have organized themselves and their practice, the group may petition the BOC to validate the new specialty.[5] The petition must demonstrate the need for ATs within this specialty and outline the advanced knowledge and skills it encompasses. Successfully submitting a petition does not create the specialty area, but it is the first step to conducting a practice analysis of the proposed specialty. A successful practice analysis validates the existence of the specialized practice, and it establishes the framework for evaluating practitioners who believe they practice the specialty. It was again on this point where our participants misunderstood the process. Specialized practice, like professional (ie, entry-level, or general) practice, is created by its practitioners and taught to new members by educators with the respective knowledge and skills. The highest level of credentialing, however, comes from an organization independent of the practice and education processes. This is done to provide the highest level of credibility behind the earned credential.

Although we did not survey the participants on all aspects of specialty certifications, our research findings demonstrated ATs have limited knowledge about them. We hypothesized the subjects would possess limited knowledge because specialty practice and specialty certification are new aspects of athletic training. Furthermore, the concept of specialized practice is contingent upon recognition of a general practice, and the differences between specialized and general athletic training practice are just beginning to be studied. Foundational research surveying ATs employed in college/university, secondary school, and clinic settings perceived the definition of advanced practice as encompassing formal training and education; informal training and education; specific knowledge and skills for the advanced practice; and additional years of experience.[26] We agree with the themes of this research because they provide a broad framework for differentiating professional and post-professional practice abilities; however, a broad framework can only initiate the process of identifying a specialized practice from general practice. For the profession to empirically validate a specialty, and then generate a certification examination for that specialty, ATs must advance their knowledge and comprehension of what differentiates professional knowledge/skills and general practice from advanced knowledge/skills and specialty practice areas.

Factors Influencing ATs' Perceptions About Specialty Certifications

Specialty certifications for ATs did not formally exist at the time of this study. Furthermore, state practice acts for ATs vary across the US, and specialty certifications are related to practice acts. Consequently, we believed it was important to investigate if practice acts may influence ATs' perspectives of specialty certifications. In short, our analysis identified no differences in how ATs perceived the intrinsic rewards, extrinsic rewards, or barriers towards earning a specialty certification based on practice acts being more restrictive or less restrictive.

Overall, the participants agreed with the positive intrinsic and extrinsic rewards specialty certifications could provide ATs, and they agreed with the barriers towards earning the certification. As previously noted, participants misunderstood the relationship between

specialty certifications and scope of practice; however, we believe the perceived level of agreement participants reported with rewards and barriers is important to growing athletic training specialty certifications. The Federation of State Medical Boards noted medical practice acts regulate the general practice of the profession and specialty certification is not required to obtain a state license to practice.[25] We believe the same relationship is true for athletic training because a specialty practice is not a new professional practice. Instead, specialization is new knowledge and skills in a focused area of an already established discipline.[20] In other words, there is a difference between general and specialized practices, but this difference is not a state regulation issue. Our findings noted 66.3% of the subjects did not know or misunderstood this relationship. If statutes in a state are limiting athletic training practice in that state, the statutes are limiting the general practice of athletic training, so specialty certification will not alter these limitations. Considering our findings demonstrated ATs practicing in more and less restrictive states agreed with the intrinsic and extrinsic rewards from earning specialty certifications, we believe there is potential to develop athletic training specialties in all states because state practice acts did not influence perceptions.

Another factor our findings identified as influencing ATs' perceptions about specialty certifications was the years practicing athletic training. Specifically, ATs who held the ATC® credential longer had a more negative view of the potential extrinsic rewards from specialty certification (this relationship was not present when considering intrinsic rewards or barriers). Considering athletic training is only beginning to develop specialty certifications, we do not have any empirical evidence in the profession to compare to this perception; however, we can make some inferences from the research in other health professions. In medicine, some physicians believe the escalating costs of specializations with only mixed outcome evidence requires carefully producing more objective data before expanding specialization in the discipline.[11] Nursing also recognizes the challenges of specialty practice (eg, cost of certification and recertification, lack of recognition for specialty certifications, lack of improved patient care and clinical outcomes); however, the benefits seem to outweigh the costs so they have committed to expanding research on the benefits of specializations.[27] In short, there appear to be advantages and disadvantages with developing specialized practices in other health care professions, but overall, there does not appear to be a prevailing interest with eliminating specializations. ATs are practicing in settings and with patients previously not conceived as being athletic training settings/patients. Consequently, we believe we need to expand our research of athletic training specialties and specialty certifications to support the growth of our knowledge and skills in these expanded areas.

ATs' Perceptions About Specialty Certification Rewards and Barriers

We examined what perceptions ATs have about the rewards—intrinsic and extrinsic—and barriers associated with specialty certifications in athletic training. Because empirical evidence focused on athletic training specialty certifications did not exist at the time of this study, we were limited to comparing our findings with published research studying athletic training residencies and specialty certifications in other disciplines.

Orthopedic surgeons and primary care physicians reported being highly satisfied with their residency-trained ATs and favorably perceived their musculoskeletal clinical skills when compared to physician assistants and nurse practitioners.[15] While this study did not control for non-residency educated ATs practicing in these settings, these findings provide a start for identifying the value of board-certified athletic trainer specialists to the health care team.

In addition to physicians, published research has also presented the patients' perceptions of residency-trained athletic trainer specialists. There were no statistically significant differences in the patients' perceptions about the knowledge and quality of care provided by orthopedic physician residents and athletic trainer residents; furthermore, both clinicians received high patient satisfaction scores.[14]

Besides patients and clinician perceptions, board-certified specialists may also enhance clinic efficiency. A 2-year retrospective study of physician practices with AT residents demonstrated the practice setting was able to increase total patient volume, the number of patients the physician evaluated per hour, and the total relative unit (measurable number of resources used to provide care) values generated.[28]

The results of our study showed ATs tended to agree with the perceived intrinsic rewards, perceived extrinsic rewards, and perceived barriers (see Table 2) with earning a specialty certification. Interestingly, the published findings described in the previous three paragraphs note clinicians and patients who worked with residency-trained athletic trainer specialists recognized the value of these clinicians. The ATs we surveyed tended to agree with the perceived extrinsic rewards of specialty certifications; however, the participants' level of agreement was significantly lower than their perceptions of a specialty certification's intrinsic rewards and the barriers towards earning the credential. Our survey described extrinsic rewards as encompassing issues such as professional recognition, employability, and salaries. Future research needs to examine these issues and investigate the type of relationship (eg, cause-and-effect, correlation) between specialty certifications and the extrinsic rewards they may produce.

In disciplines such as nursing, there is more published research highlighting the value of specialty certifications. A study of nursing specialists reported improved patient outcomes; specifically, there was a lower incidence of patients falling while in the care of a specialty nurse.[13] Other published literature reported specialty certifications are valued by nurses, and they provide nurses with greater empowerment and enhanced skills.[3] Similar to our findings, nurses were cognizant of the barriers (eg, the cost of the exam, the lack of reward or support by employers, inadequate compensation and lack of recognition upon earning specialty certification) towards earning specialty certifications, and they were aware of its intrinsic value with 98% of all respondents agreeing/strongly agreeing with a statement describing enhanced feelings of personal accomplishment and 97.3% agreeing or strongly agreeing with specialty certifications validating specialized knowledge value.[29] The intrinsic reward subscale of our survey examined the participants' perceptions about issues such as a specialty certifications providing enhanced feelings of personal accomplishment and validating specialized knowledge and skills. Our findings showed participants valued the intrinsic rewards of specialty certifications significantly more than their potential barriers and extrinsic rewards.

Of the research in medicine we reviewed, we did not identify findings suggesting physicians were concerned about specialty certifications increasing their recognition with other health care providers or improving their salaries. This was not surprising considering physicians are viewed as the top health care providers. This body of research did report patients and hospitals value specialty certifications, and physicians believed specialty certifications encourage collaboration, lead to fewer malpractice issues, and may correlate better with patient-health outcomes.[10] Other published literature noted physicians view the high cost of maintaining specialty certifications as a challenge.[1] In addition, there were concerns of specialty certifications causing a fragmentation of care for patients even with single conditions.[11] We investigated the perceived rewards accompanying specialty certifications, as well as the potential barriers towards earning the credentials. We did not, however, examine any of the potential negative aspects of specialty certifications. The American Board of Medical Specialties lists 24 medical specialty boards, which oversee certifications for 125 specialties and subspecialties. By the fall of 2021, the CAATE web site listed 19 residency programs as either active-in-good-standing or seeking accreditation, and athletic training had only 1 validated specialty certification (ie, orthopedics).[30] Clearly, athletic training is at the start of building specialties and specialty certifications; therefore, we need to consider what other health professions have learned about the possible undesirable outcomes of specialty certifications.

Limitations/Future Research

Our study was not without limitations. One main limitation was the 7.6% response rate. We hoped to achieve at least a 20% response rate; however, data collection started just before the initiation of nationwide stay-at-home orders due to the COVID-19 pandemic. Considering the impact of this global event, we believe the 342 returned surveys from the one-month recruitment process provided an acceptable sample for our study.

Another limitation to our study was designating practice acts as more restrictive or less restrictive. There is no standard definition for more-or-less-restricted practice acts; consequently, we had to develop a process to identify this grouping factor. In short, we triangulated the perspectives of state association leadership and BOC staff along with our own perceptions to establish our independent variable. While this was a subjective method for establishing the grouping factor, we did utilize accepted multiple analyst triangulation methods to reach consensus.

Finally, one of our findings identified knowledge limitations. It is possible these limitations could have influenced perceptions in ways we did not examine. It is clear athletic training has a lot of work to do with educating ATs, peer professionals, patients, and other stakeholders about specialty certifications and specialty practice. Future research should investigate changes in AT knowledge and perceptions about specialization. More importantly, future research should examine the clinical outcomes from ATs who are board-certified in recognized and validated specialties.

CONCLUSION

From our research findings, we concluded ATs have limited knowledge about specialty certifications. Furthermore, ATs who practice in states with more-or-less-restrictive practice acts do not report statistically different perceptions regarding the potential intrinsic rewards, extrinsic rewards, and barriers towards earning a specialty certification. However, these ATs agreed specialty certifications have the most potential to personally reward the practitioner. Ranked second, ATs agreed with the barriers towards earning a specialty certification. Although participants agreed with the list of extrinsic rewards, ATs perceived specialty certifications have the least potential to reward the profession.

ACKNOWLEDGMENTS

We would like to acknowledge and thank the Board of Certification, Inc. for assisting us with recruitment emails and consulting with us about athletic trainer/athletic training state practice acts.

REFERENCES

1. Boulet J, van Zanten M. Ensuring high-quality patient care: the role of accreditation, licensure, specialty certification and revalidation in medicine. *Med Educ*. 2014;48(1):75-86. [PMID 24330120]
2. Krapohl G, Manojlovich M, Redman R, Zhang L. Nursing specialty certification and nursing-sensitive patient outcomes in the intensive care unit. *Am J Crit Care*. 2010;19(6):490-498. [PMID 21041193]
3. Wade CH. Perceived effects of specialty nurse certification: a review of the literature. *Assoc Perioper Regist Nurses*. 2009;89(1):183-192. [PMID 19121422]
4. NATA Education Task Force. Recommendations to reform athletic training education. *NATA News*. 1997:16-24.
5. Board of Certification Inc. AT Specialties Petitioner's Guide [Internet]. Nebraska: Board of Certification Inc; 2020 [cited 2020 Apr 16]. Available from: https://online.flowpaper.com/7f6907b2/SpecialtyPetitionersGuide/docs/SpecialtyPetitionersGuide.pdf?reload=1585776203868
6. Knapp J, Anderson L, Wild C, eds. Certification: The ICE Handbook. 2nd ed. District of Colombia: Institute for Credentialing Excellence; 2009.
7. Henderson L. The 2015 Athletic Trainer Practice Analysis Study. 7th ed. Nebraska: Board of Certification Inc; 2015.
8. Board of Certification, Inc. Content Outline for BOC Orthopedic Practice Analysis [Internet]. Omaha: Board of Certification Inc; 2020 [cited 2020 Dec 1]. Available from: https://7f6907b2.flowpaper.com/ContentOutlineforOPA/.
9. Board of Certification, Inc. BOC-AT Specialties [Internet].Omaha: Board of Certification Inc; 2020 [cited 2020 Apr 28]. Available from: http://www.bocatc.org/at-specialties.
10. Lipner RS, Hess BJ, Phillips RL. Specialty board certification in the United States: issues and evidence. *J Contin Edu Heal Prof*. 2013;33(S1):S20-S35. [PMID 24347150]
11. Detsky AS, Gauthier SR, Fuchs VR. Specialization in medicine: how much is appropriate? *J Am Med Assoc*. 2012;307(5):463-464. [PMID 22298676]
12. American Board of Nursing Specialties. Value of Certification Survey: Executive Summary [Internet]. Alabama: American Board of Nursing Specialties; 2006: [cited 2018 Mar 10] Available from: http://www.nursingcertification.org/resources/documents/research/executive_summary.pdf.
13. Boltz M, Capezuti E, Wagner L, Rosenberg M-C, Secic M. Patient safety in medical-surgical units: can nurse certification make a difference? *MEDSURG Nurs*. 2013;22(1):26-37. [PMID 23469496]
14. Pecha FQ, Nicolello TS, Xerogeanes JW, Karas S, Labib SA. Patient perceptions of athletic trainers and orthopaedic medical residents as primary clinical support staff in sports medicine practice: a randomized, double-blinded prospective survey. *J Allied Health*. 2015;44(4):225-228A. [PMID 2661702]
15. Pecha FQ, Bahnmaier LA, Hasty ML, Greene JJ. Physician satisfaction with residency-trained athletic trainers as physician extenders. *Int J Athl Ther Train*. 2014;19(2):1-3.
16. Polit D, Beck C. The content validity index: are you sure you know what's being reported? Critique and recommendations. *Res Nurs Health*. 2006;29(5):489-497. [PMID 16977646]
17. Taber K. The use of Cronbach's alpha when developing and reporting research instruments in science education. *Res Sci Educ*. 2018;48(6):1273-1296.
18. National Athletic Trainers' Association. Total members by district and state. *NATA News*. 2019;(December):24-25.
19. Hudson M. Athletic training specialties and specialty certification.; 2018 Jun 27-29; Nea Orleans, Louisianna. Texas: National Athletic Trainers' Association 69th NATA Clinical Symposia & AT Expo.
20. Nottingham S, Starkey C, Fandel D, et al. Athletic training glossary [Internet]. Texas: National Athletic Trainers' Association; 2017 [cited 2017 Jan 12]. Available from: https://www.nata.org/about/athletic-training/athletic-training-glossary.
21. Commission on Accreditation of Athletic Training Education. Standards for accreditation of professional athletic training programs [Internet].District of Colombia: Commission on Accreditation of Athletic Training Education; 2020 [cited 2020 Sep 1]. Available from: https://caate.net/wp-content/uploads/2018/09/2020-Standards-for-Professional-Programs-copyedited-clean.pdf.
22. Commission on Accreditation of Athletic Training Education. Standards for the accreditation of post-professional athletic training residency programs [Internet]. Commission on Accreditation of Athletic Training Education; 2019 [cited 2019 Jan 28]. Available from: https://caate.net/wp-content/uploads/2014/05/2014-Residency-Standards-.pdf.
23. Board of Certification [Internet]. Nebraska: Board of Certification Inc; 2021 [cited 2021 Jan 15]. Specialty Certification FAQ; [about 2 screens]. Available from: https://bocatc.org/at-specialties/specialty-certification/faqs/specialty-certification-faqs.
24. Institute for Credentialing Excellence. Defining features of qualitfy certification and assessment-based certificate programs [Internet]. Institute for Credentialing Excellence; 2010 [cited 2017 Oct 20]. Institute for Credentialing

Excellence. Available from: https://www.credentialingexcellence.org/Portals/0/Docs/Accreditation/Features%20Document.pdf
25. Federation of State Medical Boards. Understanding medical regulation in the United States module 1: An introduction to medical regulation [Internet]. Federation of State Medical Boards; 2020 [cited 2020 Nov 13]. Available from: https://www.fsmb.org/siteassets/education/pdf/best-module-text-intro-to-medical-regulation.pdf.
26. Anderson BE, Bacon CEW, Sauers EL. Athletic trainers' perceptions of advanced clinical practice: defining advanced clinical practice in athletic training. *ATEJ*. 2020;15(1):26-34.
27. American Board of Nursing Specialties. A National Convening: The Value of Certification Summary Report [Internet]. American Board of Nursing Specialties; 2016 [cited 2018 Mar 10]. Available from: http://www.nursingcertification.org/resources/documents/research/Value-of-Certification-Convening-Report-Final.pdf.
28. Nicolello TS, Pecha FQ, Omdal RL, Nilsson KJ, Homaechevarria AA. Patient throughput in a sports medicine clinic with the implementation of an athletic trainer: a retrospective analysis. *Sports Health*. 2017;9(1):70-74. [PMID 27799568]
29. Niebuhr B, Biel M. The value of specialty nursing certification. *Nurs Outlook*. 2007;55(4):176-181. [PMID 17678682]
30. Commission on Accreditation of Athletic Training Education [Internet]. Washington: Commission on Accreditation of Athletic Training; 2021 [cited Sep 9]. Search for accredited programs; [about 1 screen]. Available from: https://caate.net/search-for-accredited-program/.