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Athletic Trainers' Perceptions of the Importance, Preparation and Time Spent in the Athletic Training Content Areas

Martin Donahue, PhD, ATC
Slippery Rock University, Slippery Rock, PA

Context: Graduates of professional programs accredited by the Commission on Accreditation of Athletic Training Education are expected to be competent and proficient in the athletic training content areas.
Objective: The unique skills and knowledge that an athletic trainer (AT) must possess may have more importance in one clinical setting than in another. The purpose of this study was to determine how ATs in the six largest employment categories perceive the athletic training content areas.
Design: Descriptive, exploratory.
Setting: Survey instrument mailed to ATs practicing in the clinical settings identified by the National Athletic Trainers' Association (NATA) as employing the most ATs.
Patients or other Participants: Participants were ATs assigned to groups based on their current clinical setting.
Intervention(s): Participants were asked to rate the athletic training content areas regarding: importance for successful practice, time on task, importance for patient care, educational preparation, and educational emphasis.
Main Outcome Measures: ANOVA was repeated for the seven groups, each of the 12 content areas and for each of the five research questions, producing 60 analyses. Post hoc analysis was used to determine group differences ($p < 0.01$).
Results: ATs largely agree on the ratings of the content areas in relation to preparation, patient care, and educational emphasis. Significant differences were related to time, and importance for success.
Conclusions: Findings indicate ATs do not feel well prepared in six (Pharmacology, General Medical Conditions and Disabilities, Nutritional Aspects of Injury and Illness, Psychological Intervention and Referral, Health Care Administration, and Professional Development and Responsibilities) of the twelve content areas.
Key Words: accreditation, professional preparation, competencies, undergraduate education, clinical skills.

Athletic training education is shaped by accreditation standards and guidelines, NATA educational competencies and clinical proficiencies, and the[1] Board of Certification (BOC) for the Athletic Trainer *Role Delineation Study*. Professional undergraduate and graduate athletic training education programs (ATEPs) are expected to prepare students to meet the competencies and proficiencies described in this manual.[2]

Each clinical setting has its own characteristics, skills and knowledge that an AT must use. The athletic training content areas may have more importance in one setting as compared to another. If differences exist, this could have implications for athletic training education. The purpose of this investigation was to explore whether ATs in seven distinct clinical settings (university/college, ATEP faculty, clinic, high school, hospital, high school/clinic, and professional sport) had different perceptions about the 12 athletic training content areas. If the educational competencies are valid instrument constructs for developing ATEPs, there should be little difference among these groups as to their perceptions of required knowledge. This investigation also demonstrated the need to address areas of importance for different clinical settings as part of the athletic training curriculum.

Dr. Donahue is an Assistant Professor in the Physical Education Department at Slippery Rock University.
martin.donahue@sru.edu

Methods

Given the dearth of published research from which to construct hypotheses, this design was exploratory in nature and intended to provide data to form hypotheses for future research. This type of design allowed generalizations about group perceptions based upon individual responses and to compare responses among groups.[3] The design did not allow for the manipulation of independent variables or to apply treatments. However, it did allow for the analysis of the current perceptions of individuals within the research groups as defined by the various clinical settings.[4] An exploratory design was appropriate for this study because the focus was on similarities and differences in the perceptions and uses of various content areas as a function of the various athletic training clinical settings.

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The research questions for this investigation were:

1. Do ATs in different work settings have different perceptions about the importance of the athletic training content areas for successful practice as an AT?
2. Do ATs in different work settings spend different amounts of time performing skills from the athletic training content areas?
3. Do ATs in different work settings have different perceptions about the criticality of athletic training content areas?
4. What are perceptions of ATs in various work settings regarding their preparation based upon athletic training content areas?
5. Do ATs in different work settings have different perceptions about the emphasis that ATEPs should place on the athletic training content areas?

Patients or Other Participants

The New Mexico State University Institutional Review Board granted approval for use of human subjects. The participants were assigned to groups based upon current clinical settings: (*a*) university/college, (*b*) ATEP faculty, (*c*) clinic, (*d*) high school, (*e*) hospital, (*f*) high school/clinic, and (*g*) professional sport. These settings represent athletic training educators and the six largest employment settings as identified by the membership demographics for the NATA (comprising 78% of the NATA membership).[5] Names and addresses of 100 randomly selected ATs from each of the seven subgroups were requested from the NATA in the form of mailing labels.

I collected data through a mailed survey to the sample population. The packet mailed to participants contained a cover letter explaining the investigation, an informed consent statement indicating that return of the survey acknowledged consent, the survey, descriptions of the athletic training content areas and a return-addressed stamped envelope. I requested participants to return the survey in the envelope within one week of the original mailing. I received all surveys included in data analysis within four weeks. I did not incorporate a follow up mailing because the NATA policy for providing mailing labels does not allow for follow up mailings.

Survey

A survey was developed by the investigator for use within this investigation (Figure 1).[6] Wording of survey questions was taken directly from the *Athletic Training Educational Competencies 3rd edition*.[7] The surveys were reviewed by a group of six ATs to ensure clarity of the questions and usability. Included with the survey were the titles and definitions/ descriptions of the content areas as stated in the *Athletic Training Educational Competencies*.[7]

CONTENT AREAS RATING SCALE

PLEASE TAKE THE TIME TO COMPLETE THE RATINGS BELOW REGARDING YOUR CLINICAL SETTING AND THE CONTENT AREAS DEVELOPED BY THE *NATA EDUCATION COUNCIL*. THE SURVEY SHOULD TAKE ONLY ABOUT 15 MINUTES. IF YOU ARE NOT COMPLETELY FAMILIAR WITH THE CONTENT AREAS, AN EXPLANATION OF THE DOMAINS, AS DEVELOPED BY THE COUNCIL, IS ATTACHED.

Gender: M F

Age 21-30 31-40 41-50 51-60 61+

Highest degree (circle one): Bachelor's Master's Doctorate

Years as a certified athletic trainer (circle one): 0-5 6-10 11-15 16-20 21+

Years in current setting (circle one): 0-5 6-10 11-15 16-20 21+

Indicate your current practice setting as identified on your NATA membership information:

_____

Route to certification (circle one): Accredited curriculum Internship

NATA District (Circle one): 1 2 3 4 5 6 7 8 9 10

1. Write a number from 1 to 5 in the space to the left of each content areas based on your opinion as to their importance to ensuring success as a certified athletic trainer (1 = little or no importance…. 5 = extreme importance):

_____ Risk Management and Injury Prevention
_____ Pathology of Injuries and Illness
_____ Assessment and Evaluation
_____ Acute Care of Injury and Illness
_____ Pharmacology
_____ Therapeutic Modalities
_____ Therapeutic Exercise
_____ General Medical Conditions and Disabilities
_____ Nutritional Aspects of Injury and Illness
_____ Psychological Intervention and Referral
_____ Health Care Administration
_____ Professional Development / Responsibilities

2. Write a number from 1 to 5 in the space to the left of each content areas based on the amount of time you spend in performing tasks within that domain (1 = little or no time….5 = a great deal of time).

_____ Risk Management and Injury Prevention
_____ Pathology of Injuries and Illness
_____ Assessment and Evaluation
_____ Acute Care of Injury and Illness
_____ Pharmacology
_____ Therapeutic Modalities
_____ Therapeutic Exercise
_____ General Medical Conditions and Disabilities
_____ Nutritional Aspects of Injury and Illness
_____ Psychological Intervention and Referral
_____ Health Care Administration
_____ Professional Development / Responsibilities

3. Write a number from 1 to 5 in the space to the left of each content areas based on what is the most important for patient care (ensuring patient safety) (1 = little or no importance….5 = extreme importance)

_____ Risk Management and Injury Prevention
_____ Pathology of Injuries and Illness
_____ Assessment and Evaluation
_____ Acute Care of Injury and Illness
_____ Pharmacology
_____ Therapeutic Modalities
_____ Therapeutic Exercise
_____ General Medical Conditions and Disabilities
_____ Nutritional Aspects of Injury and Illness
_____ Psychological Intervention and Referral
_____ Health Care Administration
_____ Professional Development / Responsibilities

4. Write a number from 1 to 5 in the space to the left of each content areas to indicate how prepared you were when first starting as a certified athletic trainer (1 = prepared little or not at all….5 = very well prepared).

_____ Risk Management and Injury Prevention
_____ Pathology of Injuries and Illness
_____ Assessment and Evaluation
_____ Acute Care of Injury and Illness
_____ Pharmacology
_____ Therapeutic Modalities
_____ Therapeutic Exercise
_____ General Medical Conditions and Disabilities
_____ Nutritional Aspects of Injury and Illness
_____ Psychological Intervention and Referral
_____ Health Care Administration
_____ Professional Development / Responsibilities

5. Write a number from 1 to 5 in the space to the left of each content areas based on the emphasis Athletic Training Education Programs should place on these domains in preparing future certified athletic trainers (1 = little emphasis….5 = a great deal of emphasis).

_____ Risk Management and Injury Prevention
_____ Pathology of Injuries and Illness
_____ Assessment and Evaluation
_____ Acute Care of Injury and Illness
_____ Pharmacology
_____ Therapeutic Modalities
_____ Therapeutic Exercise
_____ General Medical Conditions and Disabilities
_____ Nutritional Aspects of Injury and Illness
_____ Psychological Intervention and Referral
_____ Health Care Administration
_____ Professional Development / Responsibilities

Figure 1. Content Areas Rating Scale

Statistical Treatment

Using SPSS 14.0 (Chicago, Ill), a one-way analysis of variance (ANOVA) was used to compare the mean ratings of the seven research groups as defined by their clinical settings. This analysis was repeated for each of the 12 content areas for each of the five research questions, producing 60 analyses. Fisher's LSD post hoc analysis was used to determine group differences in those ANOVA tests that showed statistical significance (.01).[8]

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Table 1. Subject Demographic Data

Demographic		*n*	*(%)*
Sex	Male	130	(57.5)
	Female	86	(38.1)
	No Data	10	(4.4)
Age	21-30	65	(28.7)
	31-40	98	(43.4)
	41-50	49	(21.7)
	51-60	11	(4.9)
	61+	3	(1.3)
Education Level	Bachelor's	61	(27.0)
	Master's	141	(62.4)
	Doctorate	22	(9.7)
	No Data	2	(0.9)
Years Certified	<6	51	(22.5)
	6-10	65	(28.8)
	11-15	43	(19.0)
	16-20	32	(14.2)
	21+	32	(14.2)
	No Data	3	(1.3)
Years in Setting	<6	115	(50.9)
	6-10	57	(25.2)
	11-15	31	(13.7)
	16-20	11	(4.9)
	21+	10	(4.4)
	No Data	2	(0.8)
Current Setting	Univ/Coll	29	(12.8)
	ATEP	43	(19.0)
	Clinic	30	(13.3)
	High School	41	(18.1)
	Hospital	27	(12.0)
	High School/Clinic	31	(13.7)
	Professional Sports	25	(11.1)
Route to Certification	Accredited	117	(51.8)
	Intern	97	(42.9)
	No Data	12	(5.3)
NATA District	District 1	18	(8.0)
	District 2	38	(16.8)
	District 3	24	(10.6)
	District 4	45	(19.9)
	District 5	23	(10.2)
	District 6	14	(6.2)
	District 7	9	(4.0)
	District 8	5	(2.2)
	District 9	29	(12.8)
	District 10	11	(4.9)
	No Data	10	(4.4)

Results

Of the surveys mailed (n=700), 32.2% were returned yielding a sample of 226 participants. Demographic data for participants are included in Table 1. Response rates from the 100 sent to each group were: university/college = 29, ATEP faculty = 43, clinic = 30, high school = 41, hospital = 27, high school/ clinic = 31, and professional sport = 25.

ATs largely agreed on the ratings of the content areas regarding the research questions asked in this study. The athletic trainers within each group also agreed on the ratings of the content areas as they related to the research questions, as indicated by the small values for the standard deviations (in five instances, $SD = 0$).

Results indicate ATs in different work settings have different perceptions about the importance of the content areas for successful practice. Table 2 lists the mean ratings for this research question. Groups perceptions differ significantly regarding five content areas: Acute Care of Injury and Illness ($p = 0.001$), Pharmacology ($p = 0.0003$), Therapeutic Modalities ($p = 0.0001$), Therapeutic Exercise ($p = 0.0091$), Health Care Administration ($p = 0.003$). Significance may be a result of the small standard deviations. A group's ratings may be one or two standard deviations different, but when the standard deviation is small there is little practical difference. The analysis indicated that ATs within the professional sports setting (4.6) rated Acute Care of Injury and Illness less important for ensuring success as an AT than did each of the other groups (4.9). ATEP faculty (3.7) identified Pharmacology as being more important compared to high school/clinic (3.3), university/college (3.2), clinic (3.1), and high school ATs (2.9). ATs within professional sport rated Pharmacology (3.6) significantly more important than did ATs practicing in clinics and high schools. ATs practicing in the hospital setting rated pharmacology (3.4) significantly more important than did ATs practicing in high schools. ATEP faculty rated Therapeutic Modalities (4.7) more important than did ATs practicing in clinics (3.9), high schools (3.9), hospitals (4.0), high school/clinics (4.1) or professional sports (4.0). ATs practicing in the university/college setting rated Therapeutic Modalities (4.4) significantly more important than did ATs practicing in clinics and high schools. ATEP faculty rated Therapeutic Exercise (4.9) more important than those ATs in high schools (4.4), high school/clinics (4.6), and professional sports (4.6). ATs practicing in a clinic (4.8) rated Therapeutic Exercise significantly more important than did those in high schools. ATEP faculty rated Health Care Administration (3.8) more important than ATs in clinics (2.8), high schools (3.3), and high school/clinics (3.3). ATs practicing in the university/ college (3.5), professional sport (3.4), hospital (3.4), high school (3.3), and high school/clinic (3.3) settings rated Health Care Administration significantly more important than did ATs practicing in clinics (2.8).

The amount of time ATs spend performing tasks in each content area is largely similar. Table 3 reports mean ratings for

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Table 2. Means and Standard Deviations for Importance for Successful Practice as an Athletic Trainer

Content Area	Univ/Coll (*n* = 29)	ATEP (*n* = 43)	Clinic (*n* = 30)	HS (*n* = 41)	Hospital (*n* = 27)	HS/Clinic (*n* = 31)	Pro Sport (*n* = 25)	Combined (*n* = 226)	*p*
Risk Management and Injury Prevention	4.7 ± 0.6	4.8 ± 0.4	4.6 ± 0.7	4.8 ± 0.6	4.6 ± 0.7	4.7 ± 0.6	4.3 ± 0.8	4.6 ± 0.6	.07
Pathology of Injury and Illness	4.3 ± 0.8	4.4 ± 0.6	4.3 ± 0.7	4.3 ± 0.8	4.4 ± 0.6	4.6 ± 0.6	4.4 ± 0.8	4.4 ± 0.7	.71
Assessment and Evaluation	5.0 ± 0.2	4.9 ± 0.3	4.9 ± 0.3	4.8 ± 0.5	5.0 ± 0.0	4.9 ± 0.3	4.7 ± 0.6	4.9 ± 0.4	.75
Acute Care of Injuries and Illness	5.0 ± 0.0	5.0 ± 0.3	4.9 ± 0.3	4.9 ± 0.5	5.0 ± 0.0	4.9 ± 0.3	4.6 ± 0.7	4.9 ± 0.4	.001*
Pharmacology	3.2 ± 0.8	3.7 ± 0.8	3.1 ± 0.6	2.9 ± 1.0	3.4 ± 0.9	3.3 ± 0.7	3.6 ± 0.9	3.3 ± 0.9	.0003*
Therapeutic Modalities	4.4 ± 0.8	4.7 ± 0.5	3.9 ± 0.9	3.9 ± 1.0	4.0 ± 0.8	4.1 ± 0.8	4.0 ± 0.8	4.2 ± 0.9	.0001*
Therapeutic Exercise	4.7 ± 0.5	4.9 ± 0.3	4.8 ± 0.4	4.4 ± 0.8	4.6 ± 0.6	4.6 ± 0.5	4.6 ± 0.6	4.7 ± 0.6	.009*
General Medical Conditions and Disabilities	3.7 ± 0.7	3.8 ± 0.8	3.4 ± 0.7	3.8 ± 0.9	3.7 ± 0.9	3.6 ± 0.8	3.7 ± 0.8	3.7 ± 0.8	.32
Nutritional Aspects of Injury and Illness	3.6 ± 0.7	3.7 ± 0.7	3.5 ± 0.6	3.6 ± 0.9	3.8 ± 0.8	3.5 ± 0.8	3.3 ± 1.0	3.6 ± 0.8	.30
Psychosocial Intervention and Referral	3.6 ± 1.0	3.5 ± 0.9	2.9 ± 0.8	3.4 ± 1.0	3.3 ± 1.0	3.3 ± 1.1	3.2 ± 1.0	3.3 ± 1.0	.92
Health Care Administration	3.5 ± 0.8	3.8 ± 0.8	2.8 ± 0.8	3.3 ± 1.3	3.4 ± 1.0	3.3 ± 1.0	3.4 ± 1.1	3.4 ± 1.0	.003*
Professional Development and Responsibility	3.9 ± 1.0	4.1 ± 0.9	3.8 ± 0.9	3.8 ± 1.0	4.0 ± 0.9	4.0 ± 0.7	3.8 ± 1.0	3.9 ± 0.9	.76

* p<.01

Table 3. Means and Standard Deviations for Time Spent in Performing Skills from the Education Content Areas

Content Area	Univ/Coll (*n* = 29)	ATEP (*n* = 43)	Clinic (*n* = 30)	HS (*n* = 41)	Hospital (*n* = 27)	HS/Clinic (*n* = 31)	Pro Sport (*n* = 25)	Combined (*n* = 226)	*p*
Risk Management and Injury Prevention	4.1 ± 0.9	3.8 ± 1.2	3.3 ± 1.4	3.8 ± 1.2	3.5 ± 1.4	4.0 ± 1.2	3.9 ± 1.0	3.8 ± 1.2	.16
Pathology of Injury and Illness	3.8 ± 1.1	3.3 ± 1.2	3.2 ± 1.1	3.7 ± 1.0	3.8 ± 1.1	3.4 ± 1.1	3.7 ± 1.1	3.6 ± 1.1	.08
Assessment and Evaluation	4.9 ± 0.3	4.2 ± 1.4	4.3 ± 1.0	4.9 ± 0.4	4.6 ± 1.0	4.7 ± 0.6	4.2 ± 1.1	4.6 ± 1.0	.002*
Acute Care of Injuries and Illness	4.8 ± 0.4	4.0 ± 1.5	3.6 ± 1.4	4.8 ± 0.5	4.0 ± 1.5	4.5 ± 0.8	4.1 ± 1.1	4.3 ± 1.2	<.0001*
Pharmacology	2.5 ± 0.8	2.5 ± 0.9	2.0 ± 0.9	2.0 ± 0.9	2.6 ± 1.2	2.0 ± 1.0	3.1 ± 1.1	2.4 ± 1.0	<.0001*
Therapeutic Modalities	4.0 ± 1.1	2.4 ± 1.0	3.3 ± 1.2	3.3 ± 1.2	3.5 ± 1.4	3.5 ± 1.2	3.7 ± 1.2	3.6 ± 1.2	.410*
Therapeutic Exercise	4.4 ± 0.7	3.3 ± 1.3	4.1 ± 0.9	4.4 ± 0.9	4.4 ± 1.0	4.4 ± 0.8	4.2 ± 1.2	4.3 ± 1.0	.18*
General Medical Conditions and Disabilities	3.0 ± 1.1	3.6 ± 1.2	2.9 ± 1.1	2.9 ± 1.1	3.7 ± 1.0	3.0 ± 1.2	3.2 ± 1.1	3.0 ± 1.1	.02
Nutritional Aspects of Injury and Illness	2.9 ± 1.1	2.5 ± 0.9	2.1 ± 0.9	2.6 ± 0.9	2.6 ± 0.9	2.4 ± 1.1	2.7 ± 1.2	2.5 ± 1.0	.16
Psychosocial Intervention and Referral	2.4 ± 1.2	2.4 ± 1.0	2.1 ± 0.9	2.3 ± 1.1	2.5 ± 1.2	2.7 ± 1.3	2.8 ± 1.3	2.4 ± 1.1	.30
Health Care Administration	3.4 ± 1.3	3.3 ± 1.3	2.8 ± 1.3	3.0 ± 1.2	3.4 ± 1.3	2.9 ± 1.2	3.5 ± 1.2	3.2 ± 1.3	.17
Professional Development and Responsibility	3.2 ± 1.0	3.6 ± 1.2	3.5 ± 0.8	3.1 ± 1.1	3.5 ± 1.3	3.7 ± 0.9	3.2 ± 1.3	3.4 ± 1.1	.12

* p<.01

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this research question. One-way ANOVA revealed three areas of statistical significance among the seven participant groups' perceptions of Assessment and Evaluation, Acute Care of Injury and Illness and Pharmacology. Post hoc analysis indicated that ATs in the university/college setting (4.9) reported spending more time performing tasks in the Assessment and Evaluation content area than did ATEP faculty (4.2), or ATs in clinics (4.3) and professional sports (4.2). Those practicing in high schools, (4.9) reported spending more time performing Assessment and Evaluation tasks than did ATEP faculty, clinic, hospital and professional sport ATs. The high school/clinic (4.7) group reported spending more time performing Assessment and evaluation tasks than did ATEP faculty and clinic ATs. University/college (4.8) and high school (4.8) ATs reported spending more time performing Acute Care of Injury and Illness tasks than ATEP faculty (4.0), clinic (3.6), hospital (4.0), and professional sport ATs (4.1). High school/clinic ATs (4.5) spent more time in performing tasks in this content area than did ATEP faculty and clinic groups. ATs practicing in professional sports reported spending more time performing tasks in the Pharmacology content area (3.1) than did university/college (2.5), ATEP faculty (2.5), clinic (2.0), high school (2.0), and high school/clinic groups (2.0). Whereas ATs in the hospital setting (2.6) spent more time in performing Pharmacology tasks than indicated by high school and high school/clinic groups. ATs in the university/college setting and ATEP faculty spent more time in performing tasks in the Pharmacology content area than did high school ATs.

ATs in different work settings have different perceptions about the criticality (importance for patient care and safety) of the athletic training content areas. Table 4 reports mean ratings for this research question. One-way ANOVA revealed statistical significance among the seven groups' perceptions about the criticality of Acute Care of Injury and Illness and Therapeutic Exercise. Post hoc analysis showed that ATs in the university/college setting (5.0) rated Acute Care of Injury and Illness more important than did the clinic (4.8), high school (4.8), and professional sport groups (4.6). Those ATs practicing in hospitals (5.0) rated this content area significantly more important than those practicing in professional sports. The ATEP faculty (5.0), high school/clinic (4.9), and high school ATs (4.8) rated acute care significantly more important than clinic and professional sport groups. ATs practicing in clinics rated this content area more important than those ATs in high schools, high school/clinic, and professional sports settings. ATEP faculty rated this content area significantly more important than ATs practicing in high school/clinics and high schools. The university/college (4.6) and hospital (4.6) groups rated the Therapeutic Exercise content area significantly more important than did ATs practicing in high schools (4.1).

Perceptions of ATs in various work settings regarding their preparation on the content areas are not statistically different. Table 5 presents means scores related to this finding. Further analysis compared the internship and accredited program route to certification. One-way ANOVA comparing the two groups did indicate two areas of statistically significant differences. ATs who completed accredited programs perceived they are better prepared in the content areas of Assessment and Evaluation and Therapeutic Modalities.

ATs do not have significantly different perceptions about the emphasis that ATEPs should place on the content areas. Table 6 presents means of the groups as related to this finding. An important distinction must be drawn here about the difference in preparation and educational emphasis. It is understandable that ATs would like to be better prepared in certain content areas without the ATEPs placing more emphasis on those content areas. Emphasis seems to be related more to time performing tasks and patient care. ATs indicated emphasizing the content areas most important for patient care or those ATs dedicate the most time to.

I conducted a further analysis to determine if the route to certification (internship vs. accredited entry-level ATEP) influenced these perceptions (Table 7). Analysis of means revealed only two areas of significant difference: Assessment and Evaluation, and Therapeutic Modalities. Graduates of accredited programs rated the Assessment and Evaluation content area 4.4 (±0.9) and those completing internship routes rated the content area 4.1 (±0.9). Accredited program graduates rated the Therapeutic Modalities content area 3.8 (±0.9) while internship candidates rated modalities 3.4 (±1.1). This would indicate the requirement that all BOC exam candidates be graduates of accredited programs should accomplish its goal of similarly preparing professional ATs. This study is limited, however, in that participants may have completed accredited programs prior to implementation of the 3rd or 4th edition of the *Educational Competencies*.

Discussion

This study is exploratory and demonstrates no cause-and-effect relationship among the work settings and the ratings of the content areas. It simply indicates perceptions or opinions held by the participants. Discordance among groups does not indicate any need to change the content areas. It simply points out perceptual differences among groups. I made no attempt to determine competent performance of skills within those content areas. Every respondent was BOC certified, so I assumed they possess the necessary skills to practice as a professional athletic trainer. Identified differences may be helpful for program directors and ATEP faculty in determining clinical education settings and perceptions of practicing ATs.

Clinical setting does influence the time performing tasks within the content areas. Time on task may influence perceptions of importance for successful practice. Respondents felt well prepared in the areas in which they spend the most time. This could be a result of the focus of ATEPs or the clinical education

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Table 4. Means and Standard Deviations for Importance of Athletic Training Education Content Areas For Patient Care

Content Area	Univ/Coll (*n* = 29)	ATEP (*n* = 43)	Clinic (*n* = 30)	HS (*n* = 41)	Hospital (*n* = 27)	HS/Clinic (*n* = 31)	Pro Sport (*n* = 25)	Combined (*n* = 226)	*p*
Risk Management and Injury Prevention	4.7 ± 0.5	4.7 ± 0.6	4.5 ± 0.7	4.6 ± 0.7	4.7 ± 0.5	4.7 ± 0.6	4.1 ± 1.1	4.6 ± 0.7	.02
Pathology of Injury and Illness	4.2 ± 0.8	3.9 ± 1.1	3.9 ± 0.8	4.1 ± 0.8	4.4 ± 0.8	4.0 ± 1.0	4.2 ± 0.9	4.1 ± 0.9	.41
Assessment and Evaluation	5.0 ± 0.2	4.9 ± 0.3	4.8 ± 0.4	4.8 ± 0.4	4.9 ± 0.4	4.7 ± 0.5	4.7 ± 0.5	4.7 ± 0.4	.14
Acute Care of Injuries and Illness	5.0 ± 0.0	5.0 ± 0.2	4.8 ± 0.4	4.8 ± 0.5	5.0 ± 0.2	4.9 ± 0.3	4.6 ± 0.8	4.6 ± 0.4	.0005*
Pharmacology	3.3 ± 1.2	3.6 ± 1.1	3.4 ± 0.8	2.8 ± 1.2	3.2 ± 1.2	3.1 ± 0.9	3.3 ± 1.1	3.3 ± 1.1	.05
Therapeutic Modalities	4.1 ± 0.8	4.3 ± 0.8	3.8 ± 1.2	3.7 ± 1.2	3.9 ± 0.9	3.7 ± 1.0	3.5 ± 1.3	3.5 ± 1.1	.02
Therapeutic Exercise	4.6 ± 0.5	4.6 ± 0.6	4.7 ± 0.5	4.1 ± 0.9	4.6 ± 0.6	4.3 ± 0.9	4.4 ± 0.6	4.4 ± 07	.002*
General Medical Conditions and Disabilities	3.6 ± 1.1	3.7 ± 1.0	3.2 ± 1.1	3.4 ± 1.0	3.7 ± 1.0	3.6 ± 0.9	3.2 ± 1.2	3.2 ± 1.0	.37
Nutritional Aspects of Injury and Illness	3.3 ± 1.0	3.0 ± 1.0	2.8 ± 0.7	3.3 ± 1.0	3.3 ± 1.2	3.2 ± 1.0	3.0 ± 0.8	3.0 ± 1.0	.29
Psychosocial Intervention and Referral	3.3 ± 1.1	3.4 ± 1.1	2.9 ± 0.9	3.2 ± 1.0	3.0 ± 1.2	3.2 ± 1.2	2.9 ± 1.1	2.9 ± 1.1	.46
Health Care Administration	2.5 ± 1.0	2.8 ± 1.2	2.1 ± 1.0	2.7 ± 1.3	2.4 ± 1.1	2.2 ± 1.2	2.3 ± 1.4	2.3 ± 1.2	.11
Professional Development and Responsibility	2.9 ± 1.2	3.0 ± 1.5	3.0 ± 1.3	3.0 ± 1.3	3.0 ± 1.3	2.8 ± 1.3	3.4 ± 1.5	3.4 ± 1.3	.85

* p<.01

Table 5. Means and Standard Deviations for Preparation in the Education Content Areas

Content Area	Univ/Coll (*n* = 29)	ATEP (*n* = 43)	Clinic (*n* = 30)	HS (*n* = 41)	Hospital (*n* = 27)	HS/Clinic (*n* = 31)	Pro Sport (*n* = 25)	Combined (*n* = 226)	*p*
Risk Management and Injury Prevention	3.9 ± 1.1	4.0 ± 0.9	3.7 ± 0.7	3.8 ± 1.0	3.9 ± 0.9	4.3 ± 0.8	3.6 ± 0.9	3.9 ± 0.7	.08
Pathology of Injury and Illness	3.6 ± 1.1	3.2 ± 0.7	3.5 ± 0.9	3.5 ± 1.0	3.7 ± 1.0	3.9 ± 0.9	3.5 ± 0.9	3.5 ± 0.9	.10
Assessment and Evaluation	4.4 ± 0.7	4.2 ± 0.7	4.0 ± 0.9	4.0 ± 0.9	4.5 ± 0.9	4.4 ± 0.1	4.3 ± 1.0	4.3 ± 0.4	.14
Acute Care of Injuries and Illness	4.5 ± 0.5	4.5 ± 0.6	4.3 ± 0.8	4.2 ± 0.1	4.4 ± 0.8	4.5 ± 0.7	4.2 ± 1.0	4.4 ± 0.4	.28
Pharmacology	2.0 ± 0.9	1.8 ± 1.0	2.2 ± 0.9	2.1 ± 1.0	2.0 ± 0.9	2.1 ± 0.9	1.9 ± 0.7	2.0 ± 1.1	.59
Therapeutic Modalities	3.6 ± 0.9	3.5 ± 1.0	3.8 ± 0.9	3.4 ± 1.0	3.7 ± 0.9	3.8 ± 1.0	3.4 ± 1.2	3.6 ± 1.1	.41
Therapeutic Exercise	3.4 ± 0.9	3.5 ± 1.0	3.6 ± 0.7	3.7 ± 1.2	3.9 ± 1.0	4.0 ± 1.1	3.4 ± 1.2	3.6 ± 07	.10
General Medical Conditions and Disabilities	2.8 ± 1.1	2.3 ± 1.0	2.6 ± 0.9	3.0 ± 1.0	2.9 ± 1.0	2.9 ± 0.9	2.9 ± 0.9	2.7 ± 1.0	.03
Nutritional Aspects of Injury and Illness	2.3 ± 0.8	2.5 ± 0.8	2.7 ± 0.9	2.9 ± 1.0	2.7 ± 0.8	2.7 ± 0.9	2.2 ± 0.9	2.6 ± 1.0	.03
Psychosocial Intervention and Referral	2.1 ± 1.1	2.1 ± 0.9	2.4 ± 1.2	2.2 ± 1.0	2.3 ± 1.0	2.5 ± 0.9	1.9 ± 1.0	2.2 ± 1.1	.45
Health Care Administration	2.5 ± 1.2	2.6 ± 0.9	2.0 ± 1.0	2.6 ± 1.4	1.8 ± 0.8	2.4 ± 1.2	2.4 ± 1.1	2.3 ± 1.2	.04
Professional Development and Responsibility	2.6 ± 1.1	3.1 ± 1.1	2.8 ± 1.0	2.8 ± 1.1	2.7 ± 1.2	3.0 ± 1.2	3.0 ± 1.3	2.9 ± 1.3	.68

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experiences. This also has implications for clinical education planning. The results of this study demonstrate the importance of placing students in a number of clinical sites for adequate practice in the athletic training content areas. Program directors and clinical coordinators can use this data to place students at sites where they will have the opportunity for practicing competencies and proficiencies. For example, university/college ATs often utilize assessment and evaluation skills. Conversely, according to the data, clinical education that takes place in a clinic would not present opportunities for the acute care of injuries and illnesses. If a student does not have the experiences as planned at a clinical education site, placement in a site with similar demands would provide a student opportunities to learn skills without repeating a clinical placement. For example, a student who is not deemed competent or proficient for the Assessment and Evaluation content area in the university/college clinical setting could be placed at a high school setting for continued practice. Students may also have interest in a specific clinical setting for their own career goals. These data may assist them in gaining the skills they need to be successful. It may also expose them to the demands of the different sites and fully prepare them for these demands.

Time on task does not appear to influence perceptions of skills important for patient care. Participants rated acute care high for patient care but low for time performing tasks in some instances. Acute care may not involve time consuming tasks or occur at a great enough frequency to constitute a large block of time, but performing these skills correctly has major implications for catastrophic injuries and patient outcomes. The lowest rating for time devoted to acute care was the clinic setting; however, these ATs rate acute care the second highest for patient care. Conversely, the Health Care Administration content area may have considerable time demands but has little effect on patient care.

Knowing ATs are similarly prepared is a positive finding regarding the care patients can expect to receive. As indicated by the high rating of the Assessment and Evaluation and Acute Care of Injury and Illness content areas, it is evident that participants perceived ATEPs as effectively preparing graduates in these content areas. Six of the content areas had ratings below 3.0: Pharmacology, General Medical Conditions and Disabilities, Nutritional Aspects of Injury and Illness, Psychological Intervention and Referral, Health Care Administration, and Professional Development and Responsibilities. These findings are similar to those of Weidner and Vincent's[9] assessment of BOC domains. The ratings of the content areas concerning preparation lead to questions to address as part of improving athletic training education. The data in this study reveal there are areas that need improvement in athletic training education.

The main goal of the competency-based curriculum is to produce graduates who are prepared to function in their chosen profession.[10] Graduates of ATEPs must have the skills necessary to pass the BOC examination: the purpose of which is to ascertain whether or not the applicant meets the requirements for a professional AT.[11] The results of this study indicate that ATs perceive their preparation in Pharmacology, General Medical Conditions and Disabilities, Nutritional Aspects of Injury and Illness, Psychological Intervention and Referral, Health Care Administration, and Professional Development and Responsibilities could have been better but is similar to ATs in other settings.

The benefit of developing competencies is that stakeholders can determine whether the program is achieving its desired goals.[12, 13, 14] The competencies and proficiencies ensure all BOC candidates have completed programs with similar content and skills.[15] The key component in preparing entry-level ATs, however, is the assessment of competencies and proficiencies. Assessing skills within clinical education sites in which they are commonly used may provide a more authentic assessment of the competencies and proficiencies.[16] The data in this study indicate which setting may provide for the most authentic assessment opportunities for specific content areas when considering time spent performing skills from that content area.

Regarding the emphasis to place on the content areas as part of athletic training education, the ratings for these content areas are very similar to those of patient care. This is an interesting finding because they are slightly different than the rating for importance for successful practice and time spent performing tasks. It is a promising finding that ATs place more emphasis on the care provided to patients than on the duties that have high demands on time.

This study investigated only current settings. Further investigation in which participants respond based on all previous clinical settings should be undertaken. Determining which setting ATs felt best prepared would provide more insight about the utilization of clinical education sites in athletic training education programs.

Previous investigations have indicated that ATEP graduates were not satisfied with their clinical education.[9] Denegar[17] pointed out that university/college athletic training rooms or local high schools may be convenient but do not reflect athletic training employment data. Denegar[17] emphasized incorporating a variety of clinical settings into athletic training students' clinical education. This point is supported by other studies,[18] and the data from this study. The differences in time demands would indicate greater opportunity for students to observe and perform skills within specific content areas in specific settings.

Another important consideration is the AT/patient interaction. Each setting has a different patient population. Student experience with the needs and characteristics of these patients is an important function of clinical education.[15,19,20,21]

Accreditation of ATEPs by the Commission on Accreditation of Allied Health Education Programs , and now the Commission on Accreditation of Athletic Training Education , is intended to continue professional growth, increase recognition by other health care professionals, and improve the professional

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Table 6. Mean Scores and Standard Deviations for Emphases That ATEPs Should Place on the Education Content areas

Content Area	Univ/Coll (*n* = 29)	ATEP (*n* = 43)	Clinic (*n* = 30)	HS (*n* = 41)	Hospital (*n* = 27)	HS/Clinic (*n* = 31)	Pro Sport (*n* = 25)	Combined (*n* = 226)	*p*
Risk Management and Injury Prevention	4.8 ± 0.5	4.7 ± 0.6	4.8 ± 0.7	4.7 ± 0.7	4.7 ± 0.6	4.7 ± 0.6	4.4 ± 0.8	4.7 ± 0.7	.25
Pathology of Injury and Illness	4.4 ± 0.8	4.5 ± 0.6	4.3 ± 0.9	4.6 ± 0.7	4.6 ± 0.6	4.7 ± 0.6	4.5 ± 0.8	4.5 ± 0.9	.47
Assessment and Evaluation	5.0 ± 0.0	5.0 ± 0.3	4.9 ± 0.9	5.0 ± 0.3	5.0 ± 0.2	5.0 ± 0.0	4.8 ± 0.5	4.9 ± 0.4	.04
Acute Care of Injuries and Illness	5.0 ± 0.0	5.0 ± 0.2	5.0 ± 0.8	4.9 ± 0.4	4.9 ± 0.3	4.9 ± 0.4	4.8 ± 0.5	4.9 ± 0.4	.07
Pharmacology	3.6 ± 1.0	3.6 ± 0.8	3.3 ± 0.9	3.4 ± 1.0	3.5 ± 0.8	3.5 ± 0.9	3.6 ± 0.8	3.5 ± 1.1	.64
Therapeutic Modalities	4.5 ± 0.8	4.7 ± 0.5	4.1 ± 0.9	4.3 ± 0.9	4.4 ± 0.8	4.4 ± 0.6	4.0 ± 1.1	4.3 ± 1.1	.01
Therapeutic Exercise	4.8 ± 0.4	4.9 ± 0.3	4.8 ± 0.7	4.6 ± 0.6	4.7 ± 0.4	4.7 ± 0.5	4.7 ± 0.5	4.8 ± 0.7	.23
General Medical Conditions and Disabilities	3.6 ± 1.0	3.9 ± 0.9	3.4 ± 0.9	3.8 ± 0.9	3.9 ± 0.8	3.9 ± 0.8	3.6 ± 1.1	3.7 ± 1.0	.27
Nutritional Aspects of Injury and Illness	3.5 ± 1.0	3.7 ± 0.8	3.4 ± 0.9	3.7 ± 1.0	3.7 ± 0.8	3.7 ± 0.9	3.4 ± 1.0	3.6 ± 1.0	.36
Psychosocial Intervention and Referral	3.5 ± 1.2	3.5 ± 0.9	3.1 ± 1.2	3.4 ± 1.1	3.6 ± 1.0	3.6 ± 1.0	3.3 ± 1.1	3.1 ± 1.1	.41
Health Care Administration	3.4 ± 0.9	3.6 ± 0.9	2.9 ± 1.0	3.6 ± 1.1	3.4 ± 1.0	3.4 ± 1.2	3.2 ± 1.2	3.4 ± 1.2	.14
Professional Development and Responsibility	3.7 ± 1.1	3.9 ± 1.0	3.7 ± 1.0	3.4 ± 1.1	4.0 ± 1.0	4.0 ± 1.0	3.4 ± 1.2	3.7 ± 1.3	.35

Table 7. Perceptions of Preparation Among Internship and Accredited Curriculum Completers

Content Area	Accredited (*n* = 117)	Internship (*n* = 97)	Total (*n* = 214)	*p*
Risk Management and Injury Prevention	3.9 ± 0.8	4.9 ± 1.0	3.9 ± 0.9	.82
Pathology of Injury and Illness	3.6 ± 0.1	3.5 ± 1.0	3.5 ± 1.0	.25
Assessment and Evaluation	4.4 ± 0.1	4.1 ± 0.9	4.3 ± 0.8	.006*
Acute Care of Injuries and Illness	4.4 ± 0.7	4.3 ± 0.8	4.4 ± 0.8	.19
Pharmacology	2.0 ± 1.0	1.9 ± 0.9	2.0 ± 0.9	.42
Therapeutic Modalities	3.8 ± 0.9	3.4 ± 1.1	3.6 ± 1.0	.006*
Therapeutic Exercise	3.7 ± 0.9	3.5 ± 1.2	3.6 ± 1.0	.15
General Medical Conditions and Disabilities	2.7 ± 0.9	2.7 ± 1.1	2.7 ± 1.0	.88
Nutritional Aspects of Injury and Illness	2.6 ± 0.9	2.6 ± 1.0	2.6 ± 0.9	.45
Psychosocial Intervention and Referral	2.2 ± 1.0	2.2 ± 1.1	2.2 ± 1.0	.97
Health Care Administration	2.4 ± 1.1	2.2 ± 1.0	2.7 ± 1.1	.20
Professional Development and Responsibility	2.9 ± 1.1	2.9 ± 1.2	2.9 ± 1.1	.92

* $p<.01$

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preparation of ATs.[22] Quality education is important in ensuring high standard of care for patients who may receive services from an AT. Assurance is important for athletic training education as well. The reason for developing and identifying competencies is to ensure ATs are properly prepared to practice this body of knowledge as an allied health professional. Employers like competency-based education because, in theory, they know what skills and knowledge a graduate from a program will have.[12,23] It is the responsibility of ATEPs to provide a quality education to students. This quality should be reflected in the quality of entry-level ATs they produce.

Evidenced by the number of participants in their current work setting fewer than five years (50%) as compared to years certified, ATs may practice in more than one setting upon completion of their undergraduate studies and BOC examination. Many of the ATs certified for more than six years indicated they had fewer years in their current setting. It is the goal of ATEPs to prepare students to enter each of these settings. Examining the data about successful practice and preparation, it appears as though ATs are similarly prepared regardless of the low scores for some content areas. This would indicate the ATEPs are similarly preparing students.

ATEP program directors and faculty can use this evidence as a curriculum evaluation tool. There are some definite areas of strength and others that may require more attention. It will be up to the ATEP faculty to determine what steps to take in order to improve their individual curricula.

Suggested Further Research

In order to make clear conclusions about all possible clinical settings, a research study should investigate all of the employment settings identified by the NATA for other differences in perceptions about the athletic training education content areas. An investigation such as this would provide evidence of clear clinical education progressions. Having such clear information on each competency or clinical proficiency would be very helpful in providing for learning over time and assessment of clinical skills.

The current study focused solely on the athletic training education content areas. A similar investigation that includes analyses of specific competencies would provide more specific information about the differences among the clinical settings. Knowing where students will have the greatest exposure may also aid program directors and curriculum developers in aligning competencies with the clinical education sites.

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