

# The Relationship Between Student Evaluation of Instruction Scores and Faculty Formal Educational Coursework

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**Context:** Emphasis is placed on athletic training educators' content area expertise and not on their formal training in educational concepts.

**Objective:** The purposes of this study were to identify the amount of educational coursework completed by ATEP faculty and investigate the relationship between ATEP instructors' student evaluation of instruction scores and their formal educational coursework completed.

**Design:** Survey design that included demographic and questionnaire components.

**Setting:** Self-administered questionnaires

**Participants:** The population for the study was athletic trainers working as full-time faculty in Florida ATEPs ( $n = 19$ ; mean age  $39.2 \pm 8.03$ ; mean teaching experience  $8.84 \pm 5.79$  years).

**Data Collection:** Faculty participants completed a demographic questionnaire. Students in a non-laboratory based and non-clinical education course taught by the faculty member completed the Students' Evaluation of Educational Quality questionnaire.

**Analysis:** Correlations and independent samples t-tests were analyzed.

**Results:** Faculty completed  $9.25 \pm 7.39$  education courses. The study found positive correlations of moderate/large effect sizes between 7 of the 9 Student Evaluation of Educational Quality (SEEQ) subscales as well as the total SEEQ score, and the number of education courses taken by faculty. The positive correlation between the "Assignments/Readings" subscale and the number of education courses taken by faculty was significant. Independent samples t-tests demonstrated that when faculty had taken more than 10 courses related to education, their students rated them significantly higher on the "Learning/Academic Value" and "Assignments/Readings" subscales than faculty who have taken 10 or fewer courses.

**Conclusion(s):** There is a lack of uniformity among ATEP faculty regarding the quantity of formal educational coursework. The results of this study provide some evidence that a positive relationship exists between educational coursework and some student evaluation of instruction subscale scores.

**Key Words:** Students' Evaluation of Educational Quality (SEEQ), student perception of instruction, qualifications of athletic training faculty

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# The Relationship Between Student Evaluation of Instruction Scores and Faculty Formal Educational Coursework

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The profession of “athletic training educator” began in the late 1960s following the first National Athletic Trainers’ Association (NATA) proposed curriculum model in 1959.<sup>1</sup> Until that time, athletic trainers were educated using the coursework and faculty of other disciplines.<sup>1,2</sup> In 1969, there were four athletic training educational programs (ATEPs). These programs still relied, in part, on faculty within other disciplines like physical education and physical therapy. However, they were the first to offer the specific and planned curricular route approved by the NATA.<sup>1</sup> That first approved curriculum evolved in tandem with the profession as a whole, and now clearly stands as a distinct curriculum with faculty who are more discipline-specific than in the past. As of 2010, the number of ATEPs in the United States had grown to 348 professional undergraduate programs and 23 professional master’s programs.<sup>3</sup>

Athletic training education has recently emerged from a period of significant reform.<sup>4</sup> In 2004, the elimination of the internship route for BOC exam eligibility established important structure and uniformity among ATEPs. Changes in accreditation standards have also brought oversight that was largely absent in many internship-based ATEPs a decade ago. Currently, ATEPs accredited by the Commission on Accreditation of Athletic Training Education (CAATE) follow standards related to sponsorship, personnel, financial resources, physical resources, operational policies and fair standards, health and safety, student records, outcomes, curriculum and instruction, and clinical education. However, of the 38 standards, none address a mandate for faculty to be formally trained or experienced with educational concepts. One standard, B1.34, addresses the qualifications of the program director, stating that the program director must “demonstrate teaching, scholarship and service consistent with institutional standards,” but falls short of a specific requirement.<sup>5</sup>

The lack of emphasis placed on collegiate faculty having formal training in the field of education is not unusual. In many fields, college faculty are expected to have content area expertise, not necessarily pedagogical expertise. In medical education, it was traditionally thought that a qualified practitioner ensured a qualified instructor or that a good teacher is “born” and not “made.”<sup>6,7</sup> In public high schools, the qualification to be a teacher is usually a teaching degree or the completion of a teacher certification program in addition to subject matter competence. In higher education, subject matter competence is primary. Applicants are hired according to their academic preparation in their field of study and not generally according to their formal preparation for the pedagogical responsibilities of the position. It is assumed that if the candidate knows the content, they will be able to teach, or that through experience in the classroom, the requisite teaching skills will develop. However, while introducing a new “Teaching and Learning” column in the Athletic Training Education Journal, Berry notes that content knowledge does not necessarily translate to the ability to deliver content to students in a meaningful way.<sup>8</sup>

While several researchers report that athletic training faculty lack formal coursework in the field of education, little research has been done to assess the specific quantity of coursework in education, teaching practices, or educational knowledge of athletic training faculty.<sup>9-11</sup> Athletic training research that specifically addresses classroom instructional methods is narrow and there is no known research on whether formal preparation in the area of education influences student outcomes. While there is some demographic data related to the degrees earned by athletic training educators, little is known about the amount of formal educational coursework taken by the cadre of athletic training educators because of differing participant groups and methodologies.<sup>9,10,12-14</sup>

Research in other disciplines suggests that formal education is linked to student outcomes such as student evaluation of instruction scores.<sup>15</sup> A very commonly used student feedback questionnaire in the United States is the Students’ Evaluation of Educational Quality Questionnaire (SEEQ). The average student response score is found to have excellent reliability, reasonable validity and a robust factor structure.<sup>16,17</sup> Some research has been conducted examining the relationship between a faculty member’s participation in a teacher education program and the SEEQ scores of their students. Gibbs and Coffey<sup>15</sup> investigated teachers in 20 universities in 10 countries and found that after a year of participation in a teacher education program, five SEEQ subscale scores increased while the SEEQ scores in the control group remained the same or decreased. The five subscales that correlated significantly were: “Enthusiasm,” “Organization,” “Group Interaction,” “Rapport,” and “Breadth.” In addition, the study reported that students scored the trained teachers statistically significantly higher in the area of “Student Learning.”<sup>15</sup>

Teaching effectiveness is a complex construct. There are multiple ways that teaching effectiveness is measured. Student-centered outcomes such as pass rates on board examinations, skill examinations, and student evaluation of instruction scores can be used. In addition, teacher-centered outcomes, such as self-reported behaviors, observed classroom behaviors, peer/supervisor evaluations, and student evaluations are also used. This study examined only one of these measures, student evaluation of instruction scores, because they are widely used in higher education. Though some faculty believe there is a substantial deal of bias in these scores, Aleamoni reviewed student perception of instruction research and determined that students’ judgments are consistent, students are not fooled by their attraction to the teacher, and that there is little influence from factors such as class size, student gender, instructor gender, time of day, major of the student, semester, or expected grade.<sup>18</sup> Marsh found that SEEQ scores had excellent reliability and reasonable validity.<sup>19</sup> Currently, there are no known studies related to athletic training education and student perception of instruction scores. Given that student perception of instruction scores are widely used in higher education for evaluation, promotion and tenure, it is important to investigate the factors that influence these scores.

There were two main purposes for this study. First, the study attempted to gain a greater understanding of the amount of formal educational coursework taken by athletic training educators. Second, the study attempted to examine whether the amount of formal faculty coursework in educational concepts was related to student evaluation of instruction scores as measured by the SEEQ. While it is recognized that some athletic training educators have backgrounds in other disciplines, the study excluded participants who were not athletic trainers to gain a better understanding of the backgrounds of those who have come from, and remained in, the discipline.

## METHODS

### Questionnaire Population and Responses

Faculty participants were identified using the CAATE online database of Florida's accredited athletic training education programs.<sup>20</sup> Faculty participants from 10 of the 13 CAATE accredited ATEPs in Florida were recruited. IRB constraints prevented recruitment from two ATEPs, and the researcher's home ATEP was also excluded. Participation was sought from every full-time (defined as teaching two or more courses each semester) faculty member at each of the participating Florida ATEPs who also held the certified athletic trainer (ATC) credential. Therefore, 21 faculty in ten ATEPs were solicited.

The demographic questionnaire was distributed by mail to the 21 faculty and reminders were sent by mail and email using Dillman's five-contact method.<sup>21</sup> One questionnaire was completed by a person who was not an athletic trainer and that data were not calculated in the results. One questionnaire was not returned. Therefore, the study obtained a response rate of 95% (19 of 20) for the initial questionnaire. Including the faculty at schools that were unable to participate, the study was able to gain demographic data from 66% (19 of 29) of all faculty teaching full-time in a Florida ATEP. The faculty were also asked to identify a course that did not have a separate laboratory component and was not a clinical education course and its enrollment for use in the second part of the study. This delimitation was used to ensure greater uniformity of courses among the responding faculty participants.

At the end of the semester, faculty were asked to have the students in their selected course complete the Students' Evaluation of Educational Quality (SEEQ) (Marsh, © 2002). SEEQs were completed by the students of 84% (16 of 19) of the faculty who participated in the demographic portion of the study. Therefore, the study was able to obtain SEEQ data from the students of 55% (16 of 29) of all full-time faculty athletic trainers teaching at ATEPs in Florida. All but two respondents reported full participation from every student in attendance. Class sizes ranged from 5 to 27 students per class, with a total of 202 students completing the SEEQ questionnaire. The mean number of SEEQs completed by students per faculty member was 12.56.

### Instruments and Procedures

The study received Institutional Review Board (IRB) approval. Faculty completed a demographic questionnaire related to

clinical and teaching experience, employment characteristics, and educational history. Clinical and teaching experience was measured with the following variables: years of experience teaching at least two courses per semester in an ATEP, and years of experience working directly with patient/athlete care. Employment characteristics were measured with the following variables: college in which the ATEP is housed; description of current position (tenured, tenure-track, non-tenure track); annual evaluation/promotion and tenure emphasis on teaching, research/scholarship, and service; and number of hours spent on certain tasks related to the faculty member's position. Educational history was measured with the following variables: type of undergraduate, master's, and doctoral degrees (classification, major, specialization, number of education courses); and completion of a K-12 certification program. Faculty were also asked to report their age, gender, and ethnicity, as well as the enrollment in the context course.

Permission to use the Students' Evaluation of Educational Quality (SEEQ) (Marsh, © 2002) was obtained from its creator, Herbert Marsh. The instrument contains nine factors, assessed by 32 questions. Responses are based on a Likert scale with values ranging from 1-9 (1 = "strongly disagree" to 9 = "strongly agree"). Table 1 provides a list of factors and an example question from each. The average student response score is found to have excellent reliability and reasonable validity.<sup>16,17</sup> The estimated reliability of the class average response from the SEEQ factors is high. Marsh states that the estimated reliability is .95 for 50 students, .90 for 25 students, and .74 for ten students.<sup>19</sup>

**Table 1.** Example Questions from SEEQ

Subscale	Example Question
Learning/Academic Value	You found the course to be intellectually challenging and stimulating.
Enthusiasm	Staff member's style of presentation held your interest in class.
Organization/Clarity	Class materials were well prepared and carefully explained.
Group Interaction	Students were encouraged to participate in class discussions.
Individual Rapport	Staff member made students feel welcome in seeking help/advice in or outside of class.
Breadth of Coverage	Staff member presented points of view other than his/her own when appropriate.
Examination/Grading	Feedback on assessments/graded material was valuable.
Assignments/Readings	Readings, assignments, etc. contributed to appreciation and understanding of the unit.
Overall Rating	Overall, how does this staff member compare with other staff members at this institution? (1 = very poor, 9 = very good)

## Data Analysis

Data gained from faculty demographic questionnaires and completed SEEQs were obtained and analyzed using SPSS for Windows (SPSS Inc. Chicago, Illinois), a statistical software package. Data regarding means, standard deviations, ranges, and normality variables (skewness, kurtosis) were reported for interval data while frequencies and percentages were reported for nominal data. Correlations between the number of formal educational courses taken by ATEP faculty and the class mean of the total score and subscale scores on the SEEQ were analyzed. Finally, independent t-tests were conducted to identify mean differences in SEEQ total scores and subscale scores based on faculty who had taken 10 or fewer education courses as compared to more than 10 courses.

## RESULTS

### Relevant Demographic Data

#### *Personal and Employment Characteristics*

The respondents for this study were  $39.2 \pm 8.03$  years old ( $n = 19$ ), had  $8.84 \pm 5.79$  years of teaching experience and had  $11.5 \pm 7.06$  years of experience with patient care. The group was represented by 57.9% ( $n = 11$ ) females and 42.1% ( $n = 8$ ) males. A majority (89.5%;  $n = 17$ ) of respondents reported their race/ethnicity as "White." The remaining respondents (10.6%;  $n = 2$ ) selected a minority classification. While most (78.9%;  $n = 15$ ) respondents were non-tenure track at their institutions, three (15.8%) were currently classified as tenure-track, and 1 respondent was tenured (5.3%). With regard to annual evaluation, promotion and tenure, 94.1% of faculty ( $n = 17$ ) reported that teaching was emphasized to a "great extent." Research/Scholarship and Service were emphasized to a "great extent" in 41.2% and 29.4% of faculty decisions on annual evaluation, promotion and tenure, respectively ( $n = 17$ ).

#### *Educational Characteristics*

The majority of full-time athletic trainers teaching in a Florida ATEP described having a Bachelor of Science (BS) degree (89.5%;  $n = 17$ ). One (5.3%) reported earning a Bachelor of Arts (BA) degree and one degree is unknown (5.3%). Regarding major classification, three respondents reported holding dual majors in "Physical Education" and "Sports Medicine/Athletic Training." In those cases, both majors selected were counted. Six of the respondents (31.6%) reported an undergraduate degree in "Physical Education" and none reported a degree in "Education." 47.4% ( $n = 9$ ) reported that their undergraduate degree contained a minor or specialization in education. The undergraduate major classifications related to education are summarized in Table 2.

Respondents were also asked to classify their master's degree as "MA," "MEd," "MS" or "other." The majority of respondents (78.9%;  $n = 15$ ) reported earning MS degrees, with the remaining four respondents evenly divided between MA (10.5%;  $n = 2$ ) and MEd degrees (10.5%;  $n = 2$ ). Master's degree majors varied among

**Table 2.** Comparison of Faculty Respondents' Degree Majors

	Current Study		Rich	
	<i>n</i>	(%)*	<i>n</i>	(%)**
<b>Undergraduate</b>				
Physical Education	6	(31.6)	63	(33)
Education	-	-	3	(1.5)
Secondary Education	-	-	2	(1)
Elementary Education	-	-	1	(0.5)
<b>Graduate</b>				
Physical Education	3	(15.8)	27	(15)
Education	1	(5.3)	22	(12)
Health Education	1	(5.3)		
<b>Doctoral (completed or in progress)</b>				
Curriculum & Instruction	4	(26.7)	15	(9)
Higher Educ. Admin.	3	(20.0)	10	(6)
Higher Education	1	(6.7)	13	(8)
Higher Educ. Leadership	-	-	10	(6)
Other Education Area	-	-	14	(8)

\*  $n = 19$  for respondents who earned undergraduate and graduate degrees,  $n = 15$  for respondents who earned or are in progress with doctoral degrees. Percentages were calculated as respondents chosen degree divided by  $n$ .

\*\* Rich calculated the ratio of each degree classification in relation to the total number of majors chosen even if respondents chose more than one degree classification.

eight types. Three respondents selected two classifications of majors. In those cases, both majors selected were counted. However, only 26.3% ( $n = 5$ ) of respondents claimed to have earned degrees related to education. Table 2 shows the quantity and percentages of master's degrees related to education.

Furthermore, respondents were asked to classify their doctoral degree as "DPT," "EdD," "PhD," "other," "I am currently in process of earning a doctoral degree," or "I have not completed a doctoral degree." Those in progress for a doctoral degree were asked to specify the type of degree they expected to earn. All but four (78.9%;  $n = 15$ ) of the respondents had either completed or were in the process of earning a terminal degree. Six respondents classified their earned degree as a PhD (31.6%), two classified their earned degree as an EdD (10.5%), and the remaining seven (36.8%) of respondents were currently in progress with a doctoral degree. Including the earned and in progress doctoral degrees ( $n = 15$ ), 60% ( $n = 9$ ) of respondents reported a PhD, 26.7% ( $n = 4$ ) of respondents reported an EdD, and 6.7% ( $n = 1$ ) of respondents reported a DHSc. One respondent supplied their major designation instead of their degree designation, and therefore, their degree designation is unknown (6.7%).

Doctoral degrees were varied. The four respondents who stated that they have not earned and are not in progress with a doctoral degree were excluded from this question. One respondent supplied two answers to the question. Both degrees were related to



education as the respondent reported a dual degree in "Curriculum and Instruction" and "Higher Education Administration." Including only those respondents who have earned or are in progress with earning a doctoral degree, seven (46.7%) doctoral degrees were related to education. If all respondents are included ( $n=19$ ), 36.8% of ATEP faculty included in the study have earned, or are in progress of earning a doctoral degree related to education. Table 2 illustrates the doctoral degrees related to education.

The summed total of education courses from each degree level was determined and treated as ratio data. Due to some inconsistencies in the open-ended responses given by the participants, the most conservative value given to determine the number of courses in each of the degree levels (eg "10+ courses was treated as 10 and "2 or 3 courses" was treated as 2). In addition, due to missing data or inappropriate responses, two respondents' data were eliminated. The mean from all other respondents was  $11.06 \pm 10.33$  courses ( $n = 17$ ). The range was 40 courses with a minimum number of 0 courses reported and a maximum of 40 courses reported. The data was slightly positively skewed and slightly leptokurtic (skewness = 1.466,  $SE = .550$ ; kurtosis = 2.687,  $SE = 1.063$ ). A Shapiro-Wilk calculation indicated non-normality ( $p = .025$ ). One respondent reported taking 40 educational courses. When this outlier was removed, the data became normal with a mean of  $9.25 \pm 7.39$  courses ( $n=16$ ); skewness = .595,  $SE = .564$ ; kurtosis = -.379,  $SE = 1.091$ ; Shapiro Wilk = .938,  $p = .328$ ) and a range of 25 courses (0 to 25 courses).

### Students' Evaluation of Educational Quality Reliability and Validity

Cronbach's alpha was calculated for each of the SEEQ subscales. Two hundred and two students completed the SEEQ questionnaire. One student's questionnaire was omitted from the analysis because it appeared to be completed incorrectly, with all values given as "strongly disagree" or "disagree" despite very positive and exclusively complimentary comments on the free response section. Therefore, the analysis reflected 201 students' SEEQ questionnaire data. The total SEEQ scores and all subscale scores were judged to be very reliable for the students to whom the SEEQ was given. Item numbers and Cronbach's alpha values are presented in Table 3.

Evidence of construct validity was sought using exploratory factor analysis of the SEEQs returned in the study. A Promax rotation was selected because there were large correlations among the questions. Interpreting the underlying constructs behind the five factors was not possible because many items were loaded under multiple factors and each factor had many differing items loading under it. These results raise questions about the internal structure validity of the current version of the SEEQ (nine factors) as used with the population in the current study. However, Coffey and Gibbs performed confirmatory factor analysis on an earlier version (6 factors) of the SEEQ using Principal Components with Varimax rotation.<sup>16</sup> That analysis found the appropriate 6 factors and confirmed several earlier analyses by Marsh.<sup>19,22</sup> The SEEQ is widely accepted as a reliable and valid instrument. However, given the SEEQ subscale construct validity concern in this study,

**Table 3.** Reliability Estimates for the SEEQ

	Item Numbers	Cronbach's Alpha
Learning/Academic Value	1, 2, 3, 4	.867
Staff Member Enthusiasm	5, 6, 7, 8	.914
Organization/Clarity	9, 10, 11, 12	.867
Group Interaction	13, 14, 15, 16	.875
Individual Rapport	17, 18, 19, 20	.908
Breadth of Coverage	21, 22, 23, 24	.854
Examination/Grading	25, 26, 27	.928
Assignments/Readings	28, 29	.894
Overall Rating	30, 31	.905
<b>Total SEEQ Score</b>	<b>All Items</b>	<b>.971</b>

the results of the subscale analysis should be interpreted with caution.

### Significant Findings

The study found one statistically significant two-tailed correlation ( $r = .654$ ,  $P < .05$ ) between the amount of formal educational coursework and the SEEQ subscale value of "Assignments/Readings." This positive correlation is considered to be a large correlation with a large effect size.<sup>23</sup> This means that instructors who have completed more educational courses tend to have higher scores on the "Assignments/Readings" subscale. Other correlations between the amount of formal educational coursework and SEEQ subscales were not statistically significant, nor was the correlation between the amount of formal educational coursework and the SEEQ total score. However, due to a small sample size, the power of the statistical analysis is low. Despite the low statistical power, The Learning/Academic Value" and "Breadth of Coverage" subscales had correlation coefficients of .484 and .494 respectively. These positive correlations are considered to be large correlations with large effect sizes according to Cohen.<sup>23</sup> This means that instructors who have more educational courses tend to have higher scores on the "Learning/Academic Value" subscale and the "Breadth of Coverage" subscale. In addition, the SEEQ total score and four subscales demonstrated medium correlations and medium effect sizes according to Cohen.<sup>23</sup> This means that instructors who have more educational courses tend to have higher scores on the "Staff Member Enthusiasm," "Organization/Clarity," "Group Interaction," and "Examination/Grading" subscales. Also, instructors who have more educational courses also have higher scores on the entire SEEQ. Given that all statistically significant and non-significant correlation values were in the positive direction, it is possible that a study with more statistical power would find greater significance. Table 4 shows the correlation values, and effect sizes.

To examine mean differences in SEEQ total scores and subscale scores based on faculty who had taken 10 or fewer education courses as compared to more than 10 courses, independent  $t$  tests were conducted. The dependent variable, number of

**Table 4.** SEEQ Correlations with Educational Coursework Completed

	<i>r</i>	Effect Size Interpretation
Learning/Academic Value	.484	Large
Staff Member Enthusiasm	.365	Medium
Organization/Clarity	.297	Medium
Group Interaction	.362	Medium
Individual Rapport	.084	N/A
Breadth of Coverage	.494	Large
Examination/Grading	.265	Medium
Assignments/Readings	.654 **	Large
Overall Rating	.239	Small
Total SEEQ Score	.382	Medium

\*\* Indicates significance at the .05 level (2-tailed)

educational courses, was split into two groups. The first group contained participants with “10 or less courses” and the second group contained participants with “more than 10 courses.” The independent variable was the class mean on all items of the SEEQ. Fourteen participants submitted both acceptable education course demographic data and SEEQ data. Assumptions of normality and equality of variances were tested and met. The respondents who took 10 or fewer courses had a mean SEEQ total score of  $220 \pm 25.09$  ( $n = 7$ ) while the respondents who took more than 10 courses had a mean SEEQ total score of  $244.59 \pm 20.25$  ( $n = 7$ ). Results show that there is not a statistically significant difference between the means of the two groups ( $P = .067$ ,  $t = -2.017$ ,  $df = 12$ ; Cohen’s  $d = -1.165$ ).

Independent samples  $t$ -tests were also conducted to evaluate the relationship between the two educational course groups, and the scores on the SEEQ subscales. Assumptions of normality and equality of variances were tested and met. Results show that there is a statistically significant difference for the class mean scores of “Learning/Academic Value” ( $P = .012$ ,  $t = -2.945$ ,  $df = 12$ ; Cohen’s  $d = -1.700$ ) and “Assignments/Readings” ( $P = .006$ ,  $t = -3.290$ ,  $df = 12$ ; Cohen’s  $d = -1.9$ ) subscales. In both cases, the mean scores for faculty who had taken more than 10 education courses were higher than faculty who had taken 10 or fewer education courses. Both had at least a medium effect size as interpreted by Cohen.<sup>23</sup> A summary of the results is found in Table 5.

## DISCUSSION

### Formal Educational Coursework

The first part of the study attempted to identify the amount of formal educational coursework taken by athletic training educators. While the study was limited to ATEP faculty in Florida, the data from this study can be compared to other recent studies to determine whether the research population in the current study differed significantly from the larger population. The ages

and experience levels of respondents were similar to other researchers and can therefore allow some comparisons between study populations in the area of educational history.<sup>10,12,14</sup>

The literature includes three studies that were relevant to this topic. Mench & Ennis performed a qualitative study using instructors teaching in a limited number of ATEPs.<sup>12</sup> Hertel et al performed a study that included only doctoral-trained faculty and attempted to ascertain the characteristics of that limited population.<sup>10</sup> Rich performed a study that examined the educational backgrounds of athletic training educators. That study was quantitative in nature, recruited subjects teaching in ATEPs, and was not exclusive to doctoral-trained faculty. For these reasons, Rich’s study is the most relevant and similar to the current study.<sup>14</sup>

Rich calculated the degree demographics in a slightly different manner than the current study, and reported the percentages as a ratio of each type of degree to the total number of degrees. Rich did not calculate the total number of respondents who reported any certain degree designation. At the undergraduate level, Rich evaluated 174 respondents who earned 189 bachelor’s degrees and found that the degrees related to education were 35% of the total degrees earned.<sup>14</sup> The current study found that 31.6% of respondents earned a degree related to education. Using the same methodology, Rich study reported 27% of the total master’s degrees were related to education. The current study found that 26.4% of respondents earned a master’s degree related to education. While 63% of the respondents in Rich’s study had earned or were in progress with a doctoral degree, 78.9% of respondents in the present study met those criteria. The percentage of doctoral degrees related to education in Rich’s study was 37%, whereas the present study reflected 46.7% of doctoral degrees related to education.<sup>14</sup> The results for the two studies were very similar for undergraduate and graduate degrees, but demonstrate a possible increase in the number of faculty with doctoral degrees (completed or in progress) as well as a possible increase in the number of doctoral degrees that are related to education. Specifically, an increase in the number of ATEP faculty who have earned doctoral degrees would likely translate to a greater ATEP faculty presence, legitimacy and participation in the academy. Greater percentages of doctoral degrees related to education may be seen as a benefit to the profession by some due to the increased training in pedagogy and curriculum provided by those programs. However, if fewer ATEP faculty are earning doctoral degrees in more scientific content areas (eg, exercise physiology, rehabilitation sciences, biomechanics), this may translate to decreased research productivity in evidence based practice areas desired by the profession.

The two studies found similar results for the mean number of education courses taken by respondents. The current study found the mean to be 8.13 courses and the Rich study found the mean was 9.25 courses. Both studies reported large standard deviations. The standard deviation for the current study was 7.39 (0 to 25 courses) and the standard deviation for the Rich study was 11.06 (0 to 70 courses).

Given the data reported by the participants of both studies, there is considerable lack of uniformity among faculty in the

**Table 5.** SEEQ and Subscales t-tests

	<b>t</b>	<b>df</b>	<b>sig</b>	<b>Cohen's d</b>	<b>Effect Size Interpretation</b>
Learning/Academic Value	-2.945	12	.012 **	-1.700	Medium
Staff Member Enthusiasm	-2.046	12	.063	-1.181	Medium
Organization/Clarity	-1.649	12	.125	-.952	Small to Medium
Group Interaction	-1.937	12	.077	-1.118	Medium
Individual Rapport	-.501	9.347 *	.628	-.328	Small
Breadth of Coverage	-2.079	12	.060	-1.200	Medium
Examination/Grading	-1.651	12	.125	-.953	Small to Medium
Assignments/Readings	-3.290	12	.006 **	-1.9	Medium to Large
Overall Rating	-1.132	12	.280	-.654	Small
Total SEEQ Score	-2.017	12	.067	-1.165	Medium

\*\* Indicates statistically significant values

\* Indicates unequal variances assumed

area of formal training in educational concepts. Both studies demonstrate that students in ATEPs can be taught by someone who has taken no formal coursework in education, or they could be taught by someone who has one or more education degrees that include a plethora of courses in pedagogy and curriculum.<sup>14</sup> The Commission on Accreditation of Athletic Training Education currently does not mandate that faculty have any formal training in education, nor does it mandate any particular degree qualification.<sup>5</sup> Given the lack of mandates, standards, or expectations in the area of formal training in education, it is not surprising that there is a wide range of formal preparation represented. However, the large differences in formal preparation may influence educational outcomes so it is important that research investigate whether these differences matter.

### Student Evaluation of Instruction Scores

The second part of the study examined the relationship between the amount of formal coursework in the area of education and student evaluation of instruction scores as measured by the SEEQ. The current study found that faculty with more formal educational coursework were rated statistically significantly higher on the SEEQ subscale value of "Assignments/Readings." This subscale is a new addition to the SEEQ and was not evaluated in the Gibbs and Coffey study.<sup>15</sup> In addition, the current study found that, although statistically insignificant, positive relationships existed between all subscales. Each subscale correlation, other than "Individual Rapport" and "Overall Rating," had a medium or large effect size. Finally, the current study found that those faculty who had more than 10 education courses had statistically significantly higher scores on the "Assignments/Readings" and "Learning/Academic Value" subscales. While the "Assignments/Readings" subscale is a new addition, the results from this study agree with Gibbs and Coffey that participation in a teacher education program does correlate positively with student learning.<sup>15</sup> The large differences in the formal preparation of ATEP faculty, along with the research showing that this formal preparation influences

student perception of instruction total scores and subscale scores, suggests that formal training in educational concepts should be added to the list of criterion used when hiring ATEP faculty.

### Implications for Annual Evaluations, Promotion and Tenure

There is very little prior research on ATEP faculty student evaluation of instruction scores. The limited research relating to student evaluations finds that ratings of "good to excellent" are expected and that evaluation of classroom instruction is important.<sup>13</sup> For example, 80% of Staurowsky and Scriber's respondents said that student evaluation of instruction scores are important or very important to promotion and retention.<sup>14</sup> Similarly, the current study found that 91.4% of respondents said that their teaching was emphasized to a "great extent" when it came to annual evaluation, promotion, and tenure.

If student evaluation of instruction scores are used heavily for annual evaluation, promotion, and tenure decisions, this study demonstrates that the reliability of these scores is concerning. Marsh found that SEEQ factor reliability estimates decline significantly as enrollment decreases. Marsh estimates that the reliability coefficient for 50 students is 0.95; 25 students is 0.9; ten students is 0.74; five students is 0.6; and one student is 0.23.<sup>17</sup> Six respondents in this study reported class enrollments that were fewer than 10 students.

According to the above estimates by Marsh, about a third of the faculty respondents in this study will have student evaluation instrument reliability that is questionable.<sup>17</sup> For this reason, the statistical analysis of this study should be interpreted with caution. Furthermore, this information is very important since 94.1% of these same respondents reported that the emphasis on teaching for annual evaluation, promotion, and tenure was to a "great extent." In addition, Marsh points out that there is significant variety in the instruments to evaluate educational quality.<sup>17</sup> Not all methods used are multi-dimensional, reliable, and/or valid. If

the enrollment in courses is low, and the instrument used is not confirmed to be statistically valid, faculty are being evaluated using data that is not indicative of their actual teaching ability. Without quality feedback, it is difficult for department chairs and deans to fairly evaluate the teaching ability of the ATEP faculty. This represents an important issue for the success of athletic training students as well as the success of ATEP faculty in academia. Faculty need to be aware of the statistical limitations of the scores they receive and advocate for a multifaceted approach to performance evaluation.

Marsh argues that teaching effectiveness, as measured by student evaluations, is highly stable over time.<sup>25</sup> For teachers to improve their teaching, feedback as well as intervention is necessary. For the faculty in this study with low enrollment, the reliability of the feedback they receive from students is questionable. Therefore, improvements in teaching ability will be hampered by the inability to receive quality information about their performance.

### Limitations

The limitations of this study are largely based on the low statistical power created by a small population sample. The study had an excellent response rate (95%; 19 of 20) for the demographics questionnaire, and gained participation from 10 of the 13 ATEPs in Florida. The study had a good response rate (84%; 16 of 19) for the SEEQ. However, due to the fact that three ATEPs were unable to be invited to participate, and three incidences of attrition, the study was only able to gain total participation from 55% (16 of 29) of all the faculty teaching in Florida. Due to the inability to obtain enough statistical power, the results and discussion concentrate on effect sizes rather than statistical significance.

In addition, the study found that many faculty respondents had course enrollments that raise concerns about the reliability of the SEEQ data. While an important limitation for the statistical analysis of this study, this finding has much wider implications for faculty who seek to use the information gained by student evaluation of instruction scores to improve their teaching. It also raises serious concerns about the use of this kind of data for annual evaluation, promotion and tenure.

### Recommendations for Further Research

There are several areas that should be explored as a result of this study. First, given the trend in the data, the study should be replicated using a larger sample size. An additional study with more statistical power could provide important information regarding the educational background of ATEP faculty outside of the Florida. Second, it is worthwhile to investigate the student evaluation of instruction instruments that are used for feedback on teaching effectiveness as well as the influence these instruments have on decisions related to annual evaluations, promotion, and tenure. Third, given the complex construct of effective teaching, research investigating other markers of good teaching is needed as well as an investigation of the other, less formal, ways faculty may choose to improve teaching. Fourth, this study found that nearly 79% of full-time ATEP educators in Florida are in non-

tenure track positions, despite 50% having an earned doctorate. If this is true across the country, research is needed regarding the availability of tenure-earning positions for appropriately credentialed athletic training educators.

### CONCLUSIONS

The results of this study provide some evidence that there is a positive relationship between educational coursework and student evaluation of instruction scores. Students reported that the learning and academic value provided by the instructor was higher when the instructor had more educational coursework in their background. Students also reported that instructors with more educational coursework were better in the area of assignments and readings. While the results of this study should be interpreted with caution, trends in the data suggest that further investigations could result in findings that would be very useful to ATEP faculty and the administration at the institutions that house ATEPs. If further investigations also show that more educational coursework increases the students' evaluations of educational quality, recommendations could be made regarding the professional preparation of ATEP faculty in the future.

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