

# Acute Care Interprofessional Event Improved Knowledge, Attitudes, and Practices of Athletic Training and Nurse Practitioner Students

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**Objective:** In this study, we sought to assess the changes in the knowledge, attitudes, and practices (KAP) of athletic training program (ATP) and nurse practitioner (NP) graduate students before and after an acute care interprofessional education (IPE) workshop.

**Design and Setting:** This was a descriptive KAP survey to be taken by participants before and after the IPE event. This survey was administered using a QR code that participants scanned. The study occurred at the University of Central Florida College of Nursing before and after acute care skills were taught and practiced by each program's students.

**Patients or Other Participants:** A total of 35 students from a professional master's ATP and an adult gerontology acute care NP program were present at the workshop. Thirty-two students took the preworkshop survey, while 30 students completed the postworkshop survey.

**Main Outcome Measure(s):** In this study, we aimed to measure the change in perceptions about the knowledge, skills, teaching, and IPE understanding of each respective program after the educational workshop. Surveys were distributed before the IPE workshop and then again after the workshop concluded. The survey responses were scored on a 5-point Likert scale. Scores for each section were averaged, and statistical analysis was done using repeated measures analyses of variance for total and subsection scores for both programs.

**Results:** A significant increase was found for each group in IPE understanding, knowledge, skills, and teaching scoring ( $P < .05$ ) with moderate to large effect sizes.

**Conclusions:** Participating in this acute care IPE workshop showed significant increases in perceptions of the KAP among ATP and NP students.

**Key Words:** Collaborative education, emergency skills, student teaching

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# Acute Care Interprofessional Event Improved Knowledge, Attitudes, and Practices of Athletic Training and Nurse Practitioner Students

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## KEY POINTS

- A 3-hour, single-day acute care interprofessional education workshop improved the knowledge, skills, and practices of athletic training and nurse practitioner students.
- Perceptions of each profession's skillset and roles were enhanced by the collaborative educational workshop.
- Reciprocal student demonstrations and teaching led to a better understanding and appreciation for future team-based work environments in acute care.

## INTRODUCTION

Interprofessional education (IPE) is defined as the “educational process whereby professions learn about, from, and with each other to improve collaboration and the quality of care.”<sup>1,2</sup> Interprofessional education workshops support a useful understanding between the collaboration of different professions and the skills of other professions which results in a higher quality of patient outcomes.<sup>1,3</sup> Interprofessional Collaborative Practice has integrated IPE by addressing the core competencies of values and ethics for interprofessional practice, understanding the roles and responsibilities between professions, communication, and teamwork.<sup>1</sup> Interprofessional education bridges the gap between providers and patients, which can lead to improved outcomes.<sup>4</sup> It is common for athletic trainers (ATs) to have interactions and collaboration with other health care professionals, for example, team physicians, nurses, emergency medical technicians, and pharmacists. Knowledge of the skills and practices of other health care professions allows ATs and other health care professionals to provide better patient-centered care while collaborating as a complete health care team.<sup>5</sup> When integrating an IPE program into the curriculum, the design, implementation, and outcomes should align with one another and the desired learning objectives to ultimately improve patient-centered care.<sup>6</sup>

Commission on Accreditation of Athletic Training Education (CAATE) Accreditation Standard 8 for athletic training indicates that IPE should be part of the professional program,<sup>7</sup> as IPE has become a fundamental component in athletic training curriculums.<sup>8</sup> Commission on Collegiate Nursing Education (CCNE) Accreditation Standard III-H—Program Quality: Curriculum and Teaching—Learning Practices for Nursing states that planned clinical practice experiences that encourage interprofessional collaboration should be included.<sup>9</sup> Regardless of the importance of the CAATE and CCNE standards in each respective program, research and information on the benefits of IPE in athletic training programs (ATPs) is limited<sup>10</sup> compared with nursing programs that adopted IPE competencies much earlier.<sup>9,10</sup>

The objective of the ATP curriculum includes developing a positive attitude toward other health care professionals and interprofessional and team-based collaborative care for advancing the

quality of care to their patients and patient outcomes. Sharing the knowledge of the curriculum and skills used in the athletic training profession while improving the understanding and respect for other health care professions and acquiring team-based skills are also aims of ATPs.<sup>8</sup> Athletic trainers and nurses both provide direct patient care, and therefore, the development for IPE programs is productive for improvements and benefits both groups to support patient care and outcomes.<sup>11</sup>

Interprofessional-focused studies have been conducted regarding different domains of athletic training and other health care professions, but very few authors have assessed the acute care domain of athletic training.<sup>4</sup> Acute care is one of the domains that ATs must manage when providing medical services at athletic events. They are expected to fill the roles of primary caregiver and first responder, but other health care providers may misunderstand their roles.<sup>12</sup> This has led to questions about why this misunderstanding and role conflict exist and whether implementing more IPE acute care workshops could increase the understanding and respect for ATs by other health care professionals.<sup>10</sup> The Institute of Medicine (IOM) has acknowledged that, while many health care providers are asked to work together across professions with other providers, they are not taught how to do this properly.<sup>13,14</sup> Working together with the World Health Organization, the IOM also promotes more collaboration between health care providers.<sup>6,13</sup> Only a small number of athletic training participants was the focus of IPE studies in the literature compared with the other health professions.<sup>2-4</sup> Therefore, the purpose of this study was to assess the preperceptions and postperceptions of the knowledge, skills, teaching, and IPE understanding of athletic training program (ATP) and adult gerontology acute care nurse practitioner (AGACNP) students who participated in an IPE workshop. We hypothesized that participating in an IPE workshop would influence the perceptions of the students' knowledge, attitudes, and practices (KAP).

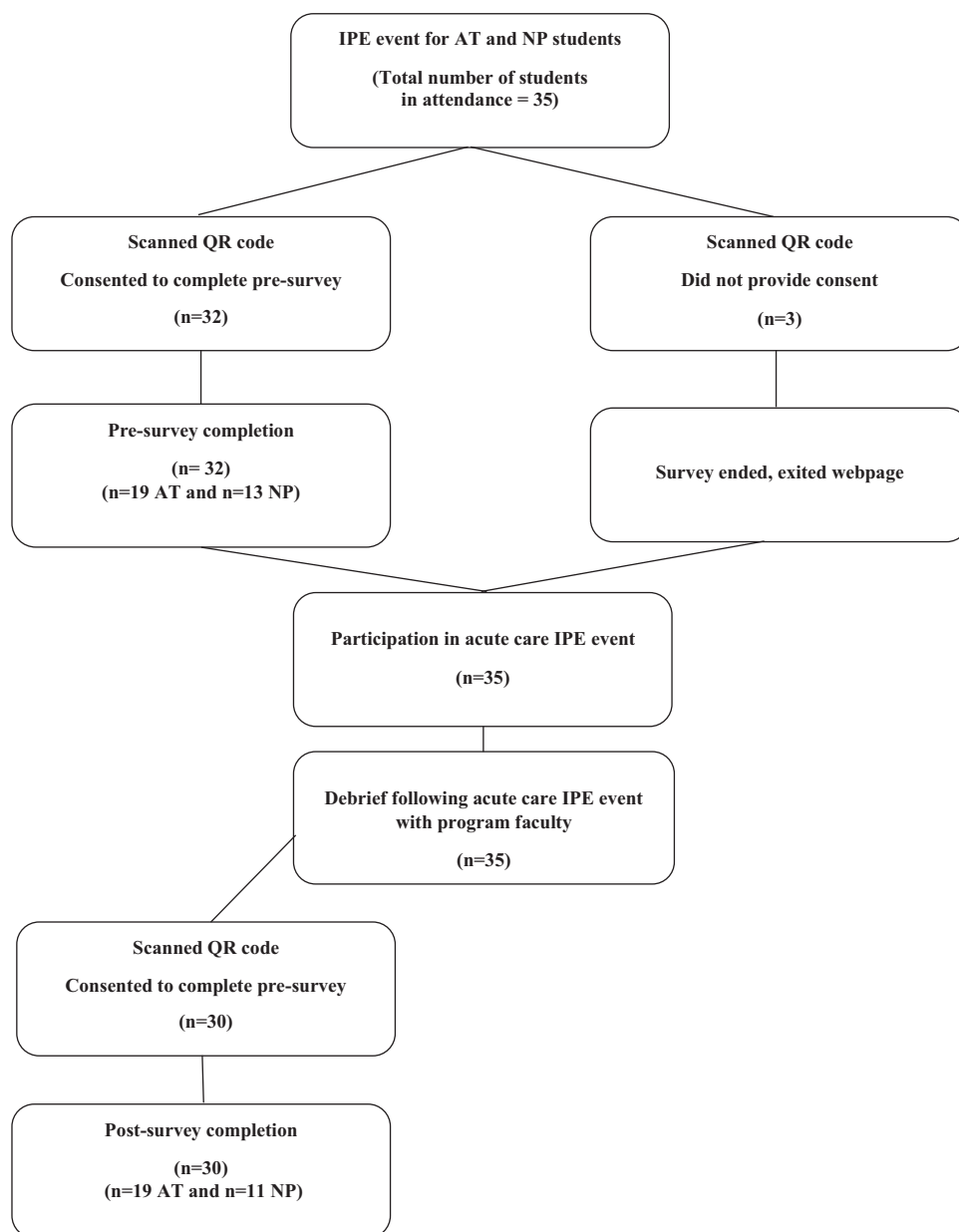
## METHODS

This was a descriptive KAP survey<sup>15</sup> study that was administered before and after an acute care IPE event. This study was approved by the university Institutional Review Board. The Checklist for Reporting of Survey Studies (CROSS)<sup>16</sup> was used as a guideline to prepare the present manuscript.

## Participants

Thirty-five students from a CAATE-accredited professional master's ATP (n = 19) and CCNE-accredited AGACNP program (n = 16) attended an IPE workshop where they were asked to participate in this study. Thirty-two students provided informed consent and completed the preworkshop survey (19 ATs, 13 AGACNPs), and 30 students took the postworkshop survey (19 ATs, 11 AGACNPs). All students were required

Figure. Methods flow diagram.



to participate in the IPE workshop as a part of their respective curriculum; however, participation in completion of the surveys was fully voluntary. The opportunity to consent and take the surveys was presented to all ATP and AGACNP students upon entry to the IPE workshop, and they made a choice to scan the QR code provided and complete the survey (Figure).

### Instrumentation

Knowledge, attitudes, and practices were determined to be best measured using a preworkshop-postworkshop survey format. Using a survey for this study was the preferred method of data collection so that cohort differences over time could be examined thoroughly. The instrument used was developed by the researchers of this study using published Likert-scale KAP surveys as survey guideline documents.<sup>13</sup> Statements such as, “I know how to manage a household budget,” were modified to coincide with the knowledge, skills, and practice statements used in the preworkshop and postworkshop surveys used in this study.<sup>13</sup>

After thorough review by all authors, the survey went through an expert review. A total of 6 experts were used to review the survey. Two experts were athletic training faculty with prior experience in critical incident management and certified cardiopulmonary resuscitation instructors. Two experts were AGACNP faculty members who served as instructors in their program and had experience managing emergency care situations in a clinical setting. The 4 faculty experts had over 5 years of experience developing and conducting IPE events together. As a result, they have an in-depth background of the knowledge, attitudes, and perceptions that should be assessed during the event. The final experts included 2 athletic training researchers with experience reviewing survey materials during their doctorate program. The experts were asked to review both professional student groups’ presurvey and postsurvey prompts. They were instructed to provide comments, edits, and revision suggestions using track changes for any concerns with each construct: knowledge, skills, teaching, and IPE experience. The experts were asked to prioritize commenting on clarity, content, and relevance (face validity) to the aim of the survey and the timing of its delivery before and after the IPE

workshop. An overall recommendation of moving forward with the survey after edits were applied was then requested from the experts. The athletic training researchers selected were familiar with the IPE workshop as it had been implemented in the past, but they were not involved with the planning for the present workshop.

The survey administered before and after the IPE workshop was completed using REDCap electronic data capture tools at the University of Central Florida<sup>17,18</sup> and consisted of 4 constructs designed to assess the perceptions of the participants before and after the acute care IPE workshop. The pre-IPE and post-IPE workshop surveys were comprised of 4 constructs: knowledge, skills, teaching, and IPE understanding. These constructs were adapted from KAP survey, IPE literature,<sup>5</sup> and individual statements in the presurvey-postsurvey prompts were created to be task specific to the workshop.<sup>15</sup> The knowledge section aimed to ask about specific topics covered in the workshop, and the skills section assessed the individual's ability to properly complete the tasks within the IPE workshop. The skills section was a surrogate for the practices portion of a traditional KAP survey. Individuals were asked to rate their confidence in instructing the skills within the IPE workshop in the teaching section. The final section was comprehensive for the IPE experience and inquired how well the students understood the roles of the other profession and how the IPE workshop may have changed their present and future engagement with the other profession. The combination of the teaching and comprehensive IPE sections of the survey represented the attitudes aspect of a traditional KAP survey. Different survey statements for both ATs and AGACNPs reflected their specific skills learned and taught throughout the IPE workshop. Each section used Likert-scale inquiries to assess the perceptions of each participant that partook in this acute care IPE workshop. The presurvey and postsurvey prompts for the ATP students can be found in Tables 1 and 2. All the presurvey and postsurvey prompts for the AGACNP students can be found in Tables 3 and 4. Survey responses were evaluated and scored on a 5-point Likert scale: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, 5 = *strongly agree*.

### Interprofessional Education Workshop

Investigators attended an IPE workshop between an athletic training professional master's degree program and an AGACNP Doctor of Nursing degree program to recruit participants for the study. The investigators who administered the surveys were not involved in the planning of the IPE workshop. The IPE workshop is an annual event between the 2 degree programs and is embedded into their coursework. The collaboration between the 2 programs began in 2017 with the inaugural acute care IPE workshop. The workshop's objective was for students in each program to understand and appreciate the care a patient receives on the field and in the emergency room by their counterparts while enhancing their acute care assessment and management skills. Through these objectives, all 4 of the constructs from the survey prompts were addressed in the workshop.

Upon arrival at the workshop, investigators asked ATP and AGACNP students if they would like to participate. Interested individuals were given a QR code to access the preworkshop survey. Students scanned the QR code with their personal mobile devices or tablet to access the survey. They were directed to

the informed consent upon opening the preworkshop survey and elected whether they wanted to continue participation or to discontinue. If participants decided to continue, they clicked *yes* and proceeded to the survey. If individuals declined to continue, then the survey ended. The survey continued by asking participants to provide nonidentifiable information. Participants selected their program affiliation and answered the Likert-scale questions (Tables 1–4). The survey took about 5 minutes to complete.

All ATP and AGACNP students participated in the IPE workshop, which began with AT-specific acute care skills (tourniquet application, spine boarding, cervical collar application, vacuum splinting, multiperson lift techniques, and equipment removal) and was followed by AGACNP-specific simulations (eg, assessing vitals, ordering labs, and medication) upon arrival to an emergency department setting. The students were primarily guiding one another and teaching their ATP or AGACNP counterparts throughout the workshop. Faculty from both the ATP and AGACNP programs were present during the workshop. They served to support the students in their instruction of the skills while also facilitating the workshop. During the workshop, before the participants were broken into 6 groups comprised of ATP and AGACNP students, an introductory lecture was given which explained the materials that would be used and the skills that would be taught during the workshop. Within this first hour, ATP students instructed and allowed the AGACNP students to practice the emergency care skills they would see at sporting events.

After a short break, the participants were retained in their 6 small groups for the simulations portion of the workshop. The athletic training faculty designed the simulations and ATP students were used as simulated patients. During this next hour, the AGACNP students participated in and rotated around 3 simulations to apply the skills they learned in the previous skills session. Additionally, they instructed and demonstrated to the ATP students how the skills will be applied in an emergency room. Students used role playing, simulation, and “see one, do one, teach one” techniques throughout the workshop. Athletic training and AGACNP faculty were available for prompting through simulations, troubleshooting, and feedback.

After the simulations concluded, faculty led a debrief. Students and faculty discussed each case in detail, providing feedback using the plus-delta debrief.<sup>14</sup> Students and faculty were equally able to express their perceptions of their performance during the simulations.

The workshop lasted approximately 3 hours. Afterward, investigators provided the participants with a QR code or link to access the postworkshop survey. Participants were instructed to complete the postsurvey at their leisure. Data analysis was conducted after the workshop concluded.

### Statistical Analysis

The scores of each construct on a 5-point Likert scale were summed and averaged to obtain composite scores for each construct. Maximum scores for each construct were 55 for knowledge (11 questions), 45 for skills (9 questions), 55 for teaching (11 questions), and 35 for IPE understanding (7 questions). Higher scores indicated improved perceptions, and lower scores indicated poor perceptions of the constructs resulting from the IPE workshop. SPSS, version 27.0 (SPSS Inc) was used for all

**Table 1. Athletic Training Student Presurvey Prompts**

Construct or Subsection	Prompt
Knowledge	"I know how to properly apply a tourniquet."
	"I know how to properly splint a fracture or dislocation using a SAM splint."
	"I know how to properly splint a fracture or dislocation using a vacuum splint."
	"I know how to properly remove protective equipment on a patient with a spinal injury."
	"I know how to properly perform an on-the-field spinal evaluation."
	"I know how to properly spine board a patient with a spinal injury."
	"I know how to properly apply a cervical collar."
	"I know how to do the tilt equipment removal technique."
	"I know how to properly do the multiperson lift equipment removal technique."
	"I know how to properly do the flat torso equipment removal technique on a patient with a spinal injury."
Skills	"I know how to properly remove a facemask."
	"I can properly remove protective equipment on a patient with a spinal injury."
	"I can properly perform the tilt technique to remove equipment on a patient with a spinal injury."
	"I can properly remove a facemask."
	"I can properly apply a tourniquet using a combat application tourniquet (CAT)."
	"I can properly splint a fracture or dislocation utilizing a SAM splint."
	"I can properly splint a fracture or dislocation utilizing a vacuum splint."
	"I can properly evaluate a patient with a spinal injury."
	"I can properly immobilize a patient on a spine board."
	"I can properly apply a cervical collar."
Teaching	"I am confident in instructing other students how to apply a tourniquet using the combat application tourniquet (CAT)."
	"I am confident in instructing other students how to perform on the field splinting application using a SAM splint."
	"I am confident in instructing other students how to perform on the field splinting application using the vacuum splint."
	"I am confident in instructing other students how to perform a proper spinal evaluation."
	"I am confident in instructing other students how to perform proper spine boarding."
	"I am confident in instructing other students how to perform proper cervical collar application."
	"I am confident in instructing other students how to perform the multiperson lift equipment removal technique on a patient with a spinal injury."
	"I am confident in instructing other students how to perform the tilt technique equipment removal on a patient with a spinal injury."
	"I am confident in instructing other students how to perform the flat torso equipment removal technique on a patient with a spinal injury."
	"I am confident in instructing other students how to perform proper facemask removal."
Interprofessional education	"I am confident in teaching the proper equipment removal on a patient with a spinal injury."
	"I understand the role of adult/gerontology nurse practitioners in acute care scenarios."
	"Participating in this interprofessional experience will influence my ability to work with adult/gerontology nurse practitioners."
	"Participating in this interprofessional experience will affect how I deliver patient-centered care."
	"Participating in this interprofessional experience with adult/gerontology nurse practitioners will enhance my education."
	"Participating in this interprofessional event will influence how I communicate with adult/gerontology nurse practitioners."
	"Participating in this interprofessional event will affect how I work effectively with interprofessional team members to enhance patient-centered care."
"Participating in this interprofessional event will affect how I engage with other health care professions."	

statistical analyses. Descriptive statistics were used to describe the participant characteristics and subsection scores using frequency, means, and standard deviations for students in each program. A repeated measures analysis of variance was used to assess main effects between time and group for each construct. Paired *t* tests were used to evaluate the preconstruct and postconstruct scores of students in each program for significant main effects. Cohen *d* effect sizes with 95% confidence intervals or partial-eta squared ( $\eta^2$ ) were calculated for all significant ( $P \leq .05$ ) findings to determine magnitude of difference.

## RESULTS

Thirty-two students (ATP:  $n = 19$ ; age =  $22.79 \pm 1.44$  years; NP:  $n = 13$ ; age =  $33.69 \pm 5.98$  years) participated in this study. Here, 26.3% ( $n = 5$ ) were male ATP students, and 73.7% ( $n = 14$ ) were female; and 15.4% ( $n = 2$ ) were male AGACNP students, and 84.6% ( $n = 11$ ) were female. When comparing presurvey and postsurvey construct score means, a significant increase was found for both groups in all constructs (Table 5). Presurvey construct score medians and ranges (median, minimum-maximum) were

**Table 2. Athletic Training Student Postsurvey Prompts**

Construct or Subsection	Prompt
Knowledge	"I know how to properly apply a tourniquet."
	"I know how to properly splint a fracture or dislocation using a SAM splint."
	"I know how to properly splint a fracture or dislocation using a vacuum splint."
	"I know how to properly remove protective equipment on a patient with a spinal injury."
	"I know how to properly perform an on-the-field spinal evaluation."
	"I know how to properly spine board a patient with a spinal injury."
	"I know how to properly apply a cervical collar."
	"I know how to do the tilt equipment removal technique."
	"I know how to properly do the multiperson lift equipment removal technique."
	"I know how to properly do the flat torso equipment removal technique on a patient with a spinal injury."
Skills	"I know how to properly remove a facemask."
	"I can properly remove protective equipment on a patient with a spinal injury."
	"I can properly perform the tilt technique to remove equipment on a patient with a spinal injury."
	"I can properly remove a facemask."
	"I can properly apply a tourniquet using a combat application tourniquet (CAT)."
	"I can properly splint a fracture or dislocation utilizing a SAM splint."
	"I can properly splint a fracture or dislocation utilizing a vacuum splint."
	"I can properly evaluate a patient with a spinal injury."
Teaching	"I can properly immobilize a patient on a spine board."
	"I can properly apply a cervical collar."
	"I am confident in instructing other students how to apply a tourniquet using the combat application tourniquet (CAT)."
	"I am confident in instructing other students how to perform on the field splinting application using a SAM splint."
	"I am confident in instructing other students how to perform on the field splinting application using the vacuum splint."
	"I am confident in instructing other students how to perform a proper spinal evaluation."
	"I am confident in instructing other students how to perform proper spine boarding."
	"I am confident in instructing other students how to perform proper cervical collar application."
	"I am confident in instructing other students how to perform the multiperson lift equipment removal technique on a patient with a spinal injury."
	"I am confident in instructing other students how to perform the tilt technique equipment removal on a patient with a spinal injury."
	"I am confident in instructing other students how to perform the flat torso equipment removal technique on a patient with a spinal injury."
	"I am confident in instructing other students how to perform proper facemask removal."
Interprofessional education	"I am confident in teaching the proper equipment removal on a patient with a spinal injury."
	"I better understand the role of adult/gerontology nurse practitioners in acute care scenarios."
	"Participating in this interprofessional experience has influenced my ability to work with adult/gerontology nurse practitioners in the future."
	"Participating in this interprofessional experience will affect how I deliver patient-centered care in the future."
	"Participating in this interprofessional experience with adult/gerontology nurse practitioners has enhanced my education."
	"Participating in this interprofessional event has influenced how I communicate with adult/gerontology nurse practitioners."
	"Participating in this interprofessional event has affected how I will work with interprofessional team members to enhance patient-centered care."
"Participating in this interprofessional event will affect how I engage with other health care professions in the future."	

wider for AGACNP students (knowledge: 49, 43–55 [ATP]; 24, 17–55 [AGACNP]; skills: 38, 35–45 [ATP]; 19, 12–45 [AGACNP]; teaching: 44, 33–55 [ATP]; 22, 11–55 [AGACNP]), although the IPE understanding presurvey score medians were similar and ranges were the same for both cohorts (26, 21–35 [ATP]; 28, 21–35 [AGACNP]). Postsurvey construct score medians and ranges were similar between cohorts (knowledge: 55, 44–55 [ATP]; 51,

42–55 [AGACNP]; skills: 45, 36–45 [ATP]; 45, 32–45 [AGACNP]; teaching: 53, 42–55 [ATP]; 55, 43–55 [AGACNP]; IPE understanding: 35, 23–35 [ATP]; 35, 30–35 [AGACNP]). Effect sizes were large for IPE understanding changes after the IPE workshop for the ATP and AGACNP program (Table 5), and AGACNP program scores displayed larger effect sizes ( $\eta^2$ ) in knowledge, skills, and teaching subsection scores (Table 5).

**Table 3. Nurse Practitioner Presurvey Prompts**

Construct or Subsection	Prompt
Knowledge	"I know how to properly apply a tourniquet."
	"I know how to properly splint a fracture or dislocation using a SAM splint."
	"I know how to properly splint a fracture or dislocation using a vacuum splint."
	"I know how to properly remove protective equipment on a patient with a spinal injury."
	"I know how to properly perform an on-the-field spinal evaluation."
	"I know how to properly spine board a patient with a spinal injury."
	"I know how to properly apply a cervical collar."
	"I know how to do the tilt equipment removal technique."
	"I know how to properly do the multiperson lift equipment removal technique."
	"I know how to properly do the flat torso equipment removal technique on a patient with a spinal injury."
Skills	"I know how to properly remove a facemask."
	"I can properly remove protective equipment on a patient with a spinal injury."
	"I can properly perform the tilt technique to remove equipment on a patient with a spinal injury."
	"I can properly remove a facemask."
	"I can properly apply a tourniquet using a combat application tourniquet (CAT)."
	"I can properly splint a fracture or dislocation utilizing a SAM splint."
	"I can properly splint a fracture or dislocation utilizing a vacuum splint."
	"I can properly evaluate a patient with a spinal injury."
Teaching	"I can properly immobilize a patient on a spine board."
	"I can properly apply a cervical collar."
	"I am confident in instructing other students how to apply a tourniquet using the combat application tourniquet (CAT)."
	"I am confident in instructing other students how to perform on the field splinting application using a SAM splint."
	"I am confident in instructing other students how to perform on the field splinting application using the vacuum splint."
	"I am confident in instructing other students how to perform a proper spinal evaluation."
	"I am confident in instructing other students how to perform proper spine boarding."
	"I am confident in instructing other students how to perform proper cervical collar application."
	"I am confident in instructing other students how to perform the multiperson lift equipment removal technique on a patient with a spinal injury."
	"I am confident in instructing other students how to perform the tilt technique equipment removal on a patient with a spinal injury."
	"I am confident in instructing other students how to perform the flat torso equipment removal technique on a patient with a spinal injury."
	"I am confident in instructing other students how to perform proper facemask removal."
Interprofessional education	"I am confident in teaching the proper equipment removal on a patient with a spinal injury."
	"I understand the role of athletic trainers in acute care scenarios."
	"Participating in this interprofessional experience will influence my ability to work with athletic trainers."
	"Participating in this interprofessional experience will affect how I deliver patient-centered care."
	"Participating in this interprofessional experience with athletic trainers will enhance my education."
	"Participating in this interprofessional event will influence how I communicate with athletic trainers."
	"Participating in this interprofessional event will affect how I work effectively with interprofessional team members to enhance patient-centered care."
"Participating in this interprofessional event will affect how I engage with other healthcare professions."	

## DISCUSSION

The purpose of our study was to assess the preperceptions and postperceptions of the KAP of ATP and AGACNP graduate students who participated in an acute care IPE workshop. We hypothesized that taking part in an IPE workshop would influence the perceptions of the students' KAPs. Our hypothesis was supported by researchers looking at IPE between athletic training students and advanced nursing programs<sup>11</sup> and teamwork before and after an interprofessional cocurricular experience<sup>19</sup> research that looked at the attitudes toward IPE.<sup>20</sup>

We found a significant difference between preperceptions and postperceptions of the ATP students and AGACNP students, supporting that the perceptions of each group of students positively changed because of the IPE workshop activities. Very strong effect sizes were found for both groups' IPE understanding scores (Table 5). Both groups of students improved upon their knowledge, skills, and teaching after participating in the IPE workshop. The AGACNP students showed a larger magnitude of difference in their scores from the presurvey assessing each construct to the postsurvey (Table 5). Scores from the preworkshop survey showed that both ATP and AGACNP students had little understanding about the others' respective professions

**Table 4. Nurse Practitioner Postsurvey Prompts**

Construct or Subsection	Prompt
Knowledge	"I know how to properly apply a tourniquet."
	"I know how to properly splint a fracture or dislocation using a SAM splint."
	"I know how to properly splint a fracture or dislocation using a vacuum splint."
	"I know how to properly remove protective equipment on a patient with a spinal injury."
	"I know how to properly perform an on-the-field spinal evaluation."
	"I know how to properly spine board a patient with a spinal injury."
	"I know how to properly apply a cervical collar."
	"I know how to do the tilt equipment removal technique."
	"I know how to properly do the multiperson lift equipment removal technique."
	"I know how to properly do the flat torso equipment removal technique on a patient with a spinal injury."
Skills	"I know how to properly remove a facemask."
	"I can properly remove protective equipment on a patient with a spinal injury."
	"I can properly perform the tilt technique to remove equipment on a patient with a spinal injury."
	"I can properly remove a facemask."
	"I can properly apply a tourniquet using a combat application tourniquet (CAT)."
	"I can properly splint a fracture or dislocation utilizing a SAM splint."
	"I can properly splint a fracture or dislocation utilizing a vacuum splint."
	"I can properly evaluate a patient with a spinal injury."
	"I can properly immobilize a patient on a spine board."
	"I can properly apply a cervical collar."
Teaching	"I am confident in instructing other students how to apply a tourniquet using the combat application tourniquet (CAT)."
	"I am confident in instructing other students how to perform on the field splinting application using a SAM splint."
	"I am confident in instructing other students how to perform on the field splinting application using the vacuum splint."
	"I am confident in instructing other students how to perform a proper spinal evaluation."
	"I am confident in instructing other students how to perform proper spine boarding."
	"I am confident in instructing other students how to perform proper cervical collar application."
	"I am confident in instructing other students how to perform the multiperson lift equipment removal technique on a patient with a spinal injury."
	"I am confident in instructing other students how to perform the tilt technique equipment removal on a patient with a spinal injury."
	"I am confident in instructing other students how to perform the flat torso equipment removal technique on a patient with a spinal injury."
	"I am confident in instructing other students how to perform proper facemask removal."
Interprofessional education	"I am confident in teaching the proper equipment removal on a patient with a spinal injury."
	"I understand the role of adult/gerontology nurse practitioners in acute care scenarios."
	"Participating in this interprofessional experience has influenced my ability to work with athletic trainers in the future."
	"Participating in this interprofessional experience will affect how I deliver patient-centered care in the future."
	"Participating in this interprofessional experience with athletic trainers has enhanced my education."
	"Participating in this interprofessional event has influenced how I will communicate with athletic trainers in the future."
	"Participating in this interprofessional event has affected how I will work with interprofessional team members to enhance patient care in the future."
"Participating in this interprofessional event will affect how I engage with other healthcare professions in the future."	

and skillsets, although after the workshop, scores vastly improved for both groups. The medians and ranges for the presurvey scores support this notion that less understanding existed about each other's professions. The wider range of scores for the AGACNP cohort before the workshop also indicates that the participants who indicated lower levels of knowledge gained a great deal throughout the IPE experience. Therefore, it is evident that taking part in an acute care IPE workshop with specific skills taught by each respective program's students can improve upon the KAP of the participating students.

Due to the innate nature of the athletic training and AGACNP professions, these results show the importance of collaboration between these 2 professions, as they are faced with responding and treating in acute care simulation. Conducting studies that allow for the KAP of athletic training to be better understood could help solidify the athletic training profession in widespread recognition as health care providers and stress the need for ATs in different work settings.<sup>5</sup> Here, AGACNPs can specialize in acute care within the emergency room,<sup>3</sup> and ATs are often the first to handle acute care simulation on the field at



**Table 5. Survey Scores Before and After Interprofessional Education Workshop**

		Knowledge	P Value $\eta^2$	Skills	P Value $\eta^2$	Teaching	P Value $\eta^2$	IPE Understanding	P Value Cohen d
ATP	Pre (n = 19)	48.26 ± 3.68	.009 <sup>a</sup>	38.74 ± 2.94	.002 <sup>a</sup>	43.74 ± 6.573	.005 <sup>a</sup>	27.47 ± 3.99	.001 <sup>a</sup>
	Post (n = 19)	52.21 ± 3.78	.32	42.79 ± 3.05	.41	50.58 ± 5.81	.37	33.26 ± 4.31	-1.02 (-1.62, -0.39)
NPP	Pre (n = 13)	27.73 ± 12.15	<.001 <sup>a</sup>	21.82 ± 10.4	<.001 <sup>a</sup>	22.00 ± 13.02	<.001 <sup>a</sup>	28.69 ± 4.37	.003 <sup>a</sup>
	Post (n = 11)	49.91 ± 5.72	.75	40.27 ± 5.53	.75	50.82 ± 5.811	.82	36.09 ± 3.08	-1.12 (-1.96, -0.39)

Abbreviations: ATP, athletic training program; IPE, interprofessional education; NPP, nurse practitioner program.

<sup>a</sup>  $P \leq .05$ .

sporting events.<sup>15</sup> For these 2 professions, understanding what each respective profession does and their protocols for acute care simulation is essential, as time sensitivity in acute care is paramount. By both professions gaining knowledge and understanding of skills during their educational programs, their teamwork should be instinctive and improve patient outcomes once they are in the field. The selection of the skills and knowledge shared by the ATP and AGACNP students with one another during this particular IPE workshop was strategic by both faculties and students, as the skills that were taught during the workshop were skills that these students had prior exposure to during their regular class lectures before this workshop. Faculty from both the ATP and AGACNP program were present during the first hour of ATP students instructing and allowing the AGACNP students to practice the emergency care skills, and they served to support the students in their instruction of the skills during the simulations. For example, the application of a tourniquet was one of the main skills that ATP students instructed AGACNP students on during the first half of the workshop. Here, AGACNP students were given time to see demonstrations, practice multiple times, and then show they could apply appropriately as well as ask questions of their ATP student counterparts. The use of the “see one, do one, teach one” active learning technique was successful in this IPE workshop. Although the “see one, do one, teach one” method has been criticized in some environments, such as surgical training, the benefits of the technique still outweigh any disadvantages.<sup>21</sup> The nature of acute care skills and the simulations built into this workshop lent themselves well to this type of teaching and learning technique. Role playing and simulations were also employed and were ideal for the acute care tasks taught and learned during the workshop by both ATP and AGACNP students.

Implementing IPE opportunities can be difficult and time consuming, but the results of this study show the benefits of taking on such a task. This workshop served as a learning experience for the AGACNP students to better understand athletic training, and as other IPE literature indicate, the overarching goal was to improve patient care in a collaborative environment.<sup>12,15</sup> Implementing IPE and studying them more frequently allows a better understanding of how to benefit and prepare health care professionals to work collaboratively and provide patient-centered care during their time as students in their respective programs and ultimately throughout their careers.<sup>5,12</sup> Interprofessional education is crucial to developing students in health care and clinical programs,<sup>1,12</sup> like the students in the ATP and AGACNP program. Interprofessional education provides important learning experiences that mimic clinical simulations for students to practice skills to become better health care providers. Practicing in a simulated environment allows students to hone their skills before working with actual patients. Confidence in decision making and communication between ATs and nurse practitioners (NPs) in acute care settings can both be built upon in IPE simulations. Allowing different health care programs to come together to practice and teach skills to one another allows them the experience of how to work collaboratively in a supportive learning environment, which is important for providing high-quality patient care.<sup>19,20,22</sup> Research specifically involving athletic training students and professionals with other health care students and professionals is crucial to the evolution of athletic training as a profession. Interprofessional education which includes athletic training programs serves to inform institutions, academic units, and other professions about the athletic training profession. Interprofessional education

events work to break the collaborative boundaries between a multitude of different professions.

This study was not without limitations. Only the mean scores for each program were analyzed, as the survey was anonymous; therefore, we were unable to track individual survey responses. Athletic training and nurse practice are not the only health care professions that are involved in acute care situations, which would necessitate future studies engaging multiple professions in a similar event. Not all the postsurveys were completed; thus, the total number of responses did not match the total number of participants. Also, while all students were required to attend the IPE workshop as part of their curriculum, participation in the surveys was voluntary for ATP and AGACNP students. The novelty of this survey should also be considered, although it was adapted from previously established survey items. Due to the smaller sample sizes of each cohort, the magnitude of the effect sizes calculated should be interpreted carefully to not overestimate the time effects observed.

## CONCLUSIONS

The change of perceptions for the participating ATP and AGACNP program showed promising growth in the KAP for the acute care IPE workshop. Reporting the change in perceptions between these health care programs shows that IPE workshops can set a higher standard of patient-centered care, help each profession better understand the other's scope of practice, and recognize the athletic training profession specifically. In this study, we promote how ATs progress in their role using IPE among other health care teams. With communication and support from other professions, ATs can promote better teamwork, relationships, and patient-centered care.

## REFERENCES

- Breitbach AP, Richardson R. Interprofessional education and practice in athletic training. *Athl Train Educ J*. 2015;10(2):170–182. doi:10.4085/1002170
- Gilbert JHV, Yan J, Hoffman SJ. A WHO report: framework for action on interprofessional education and collaborative practice. *J Allied Health*. 2010;39(3 Pt 2):196–197.
- Dow A, Blue A, Konrad SC, Earnest M, Reeves S. The moving target: outcomes of interprofessional education. *J Interprof Care*. 2013;27(5):353–355. doi:10.3109/13561820.2013.806449
- Rizzo CS, Breitbach AP, Richardson R. Athletic trainers have a place in interprofessional education and practice. *J Interprof Care*. 2015;29(3):256–257. doi:10.3109/13561820.2014.942778
- Varpio L, Bader KS, Meyer HS, Durning SJ, Artino AR, Hamwey MK. Interprofessional healthcare teams in the military: a scoping literature review. *Mil Med*. 2018;183(11–12):e448–e454. doi:10.1093/milmed/usy087
- van Diggle C, Roberts C, Burgess A, Mellis C. Interprofessional education: tips for design and implementation. *BMC Med Educ*. 2020;20(Suppl 2):455. doi:10.1186/s12909-020-02286-z
- Standards and Procedures for Accreditation of Professional Programs in Athletic Training. Commission on Accreditation of Athletic Training Education. Accessed November 18, 2022. [https://caate.net/Portals/0/Standards\\_and\\_Procedures\\_Professional\\_Programs.pdf](https://caate.net/Portals/0/Standards_and_Procedures_Professional_Programs.pdf)
- Kraemer E, Kahanov L. Development of Interprofessional Education for Entry-Level Athletic Training Programs. *Int J Athl Ther Train*. 2014;19(6):4–7. doi:10.1123/ijatt.2014-0046
- Standards for Accreditation of Baccalaureate and Graduate Nursing Programs. Commission on Collegiate Nursing Education. Accessed November 18, 2022. <https://www.aacnnursing.org/Portals/42/CCNE/PDF/Standards-Final-2018.pdf>
- Breitbach AP, Eliot K, Cuppett M, Wilson M, Chushak M. The progress and promise of interprofessional education in athletic training programs. *Athl Train Educ J*. 2018;13(1):57–66. doi:10.4085/130157
- Diakogeorgiou E, Cotter JJ, Clines SH, Jusino DL. Emergency medical services personnel's perceptions of the roles and responsibilities of athletic trainers during on-field injury management. *Athl Train Sports Health Care*. 2014;9(4):154–162. doi:10.3928/19425864-20170310-01
- Vereen LG, Yates C, Hudock D, et al. The phenomena of collaborative practice: the impact of interprofessional education. *Int J Adv Couns*. 2018;40(4):427–442. doi:10.1007/s10447-018-9335-1
- Knowledge, Attitude and Practice Surveys. Pacific Women Shaping Pacific Development. Accessed May 24, 2022. [https://pacificwomen.org/wp-content/uploads/2019/12/KAP-Surveys-Guidance-Note\\_Pacific-Women-Shaping-Pacific-Development.pdf](https://pacificwomen.org/wp-content/uploads/2019/12/KAP-Surveys-Guidance-Note_Pacific-Women-Shaping-Pacific-Development.pdf)
- Cheng A, Eppich W, Epps C, Kolbe M, Meguerdichian M, Grant V. Embracing informed learner self-assessment during debriefing: the art of plus-delta. *Adv Simul*. 2021;6:22. doi:10.1186/s41077-021-00173-1
- Morrell BLM, Nichols AM, Voll CA, et al. Care across campus: athletic training, nursing, and occupational therapy student experiences in an interprofessional simulation. *Athl Train Educ J*. 2018;13(4):332–339. doi:10.4085/1304332
- Sharma A, Minh Duc NT, Luu Lam Thang T, et al. A consensus-based Checklist for Reporting of Survey Studies (CROSS). *J Gen Intern Med*. 2021;36(10):3179–3187. doi:10.1007/s11606-021-06737-1
- PA Harris, R Taylor, R Thielke, et al. Research electronic data capture (REDCap) – A metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009 Apr;42(2):377–81.
- PA Harris, R Taylor, BL Minor, et al. REDCap Consortium, The REDCap consortium: Building an international community of software partners. *J Biomed Inform*. 2019 May 9. doi:10.1016/j.jbi.2019.103208
- Mishoe SC, Adams Tufts K, Diggs LA, et al. Health professions students' teamwork before and after an interprofessional education co-curricular experience. *J Res Interprofessional Pract Educ*. 2018;8(1). doi:10.22230/jripe.2018v8n1a264
- Page C, Christopher K, Simpkins L, Humphrey C, Jones L, Sciascia A. “Where I am weak, they are strong”: students' perceptions and attitudes toward interprofessional education. *Internet J Allied Health Sci Pract*. 2021;9(2):17. doi:10.46743/1540-580X/2021.1981
- Kotsis SV, Chung KC. Application of the “see one, do one, teach one” concept in surgical training. *Plast Reconstr Surg*. 2013;131(5):1194–1201. doi:10.1097/PRS.0b013e318287a0b3
- Addy CL, Browne T, Blake EW, Bailey J. Enhancing interprofessional education: integrating public health and social work perspectives. *Am J Public Health*. 2015;105(Suppl 1):S106–S108. doi:10.2105/AJPH.2014.302502