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# Athletic Trainers' Perceptions and Experiences with Interprofessional Practice

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## Abstract

**INTRODUCTION** Understanding athletic trainers' (ATs) perceptions of and experiences with interprofessional collaborative practice (IPCP) can help improve their interactions with other healthcare professionals. The purpose of this study was to explore ATs' perceptions (beliefs, benefits, barriers), experiences and recommended strategies related to IPCP.

**METHODS** 314 ATs (139 male, 175 female) completed an online survey that collected participant demographics in addition to sections about participants' perceptions experiences related to IPCP and recommended strategies implementation of IPCP.

**RESULTS** Participants reported the primary sports medicine team should include ATs, orthopedic physicians and physical therapists (PTs) with the AT serving as the point person. Athletic trainers reported interacting most frequently with other ATs, orthopedic physicians and primary care physicians using a combination of direct and indirect communication methods. The primary benefits of IPCP included providing comprehensive patient care, building understanding of each other's professions and professional growth. Barriers to collaboration centered on limited knowledge of providers' scopes of training, inadequate communication, work setting, work schedules and providers' attitudes toward each other and collaboration. Strategies to facilitate IPCP focused on building relationships with providers, establishing regular communication and understanding each other's scope of training.

**CONCLUSION** Currently, ATs interact with other healthcare providers and have positive perceptions of IPCP. It is recommended that ATs build on the current relationships and aim to enhance them through purposeful communication.

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## Implications for Interprofessional Practice

- Athletic trainers believe collaboration between providers positively affects both provider relationships and comprehensiveness of patient care.
- Misunderstanding providers' scopes of training, along with limited access to providers and inadequate communication, may hinder collaboration.
- By initiating communication and building relationships with providers, ATs may develop successful collaborative teams.
- Collaboration between ATs and other providers may be improved through direct communication and building understanding of each provider's scope of training and role in patient care.

## Introduction

Interprofessional collaboration has been promoted as a means to improve patient care, healthcare services and provider relationships (Reeves et al., 2011). Interprofessional collaboration has decreased medical errors, which are estimated to be the third most common cause of death in the U.S. (Makary & Daniel, 2016). Interprofessional collaborative practice (IPCP) can be understood as “a type of interprofessional work which involves different health and social care professions who regularly come together to solve problems or provide services” (Reeves, Lewin, Espin, & Zwarenstein, 2011, p. 8). Authors have identified keys to successful collaboration in healthcare professions such as nursing, occupational therapy, physical therapy and social work to include administrative support, patient primacy, understanding and respecting each provider's scope of training and role on the team, willingness to work together, being open to new ideas and ongoing formal and informal communication (Hopkins, 2010; Pellatt, 2005; Reeves et al., 2011). These keys align with the Interprofessional Education Collaborative (IPEC) competency domains: (1) values/ethics for interprofessional practice; (2) roles/responsibilities; (3) interprofessional communication; and (4) teams and teamwork (IPEC, 2016).

Athletic trainers (ATs) collaborate with a variety of healthcare professionals (i.e. physicians, physical therapists, dietitians and mental health care providers) to provide patient care (Arvinen-Barrow & Clement, 2015). By the year 2026, the U.S. Bureau of Labor Statistics (2016)

has projected the number of ATs employed in outpatient clinic and hospital settings will increase by 39.8%. Additionally, the number of ATs is expected to increase 33.9% in college settings and 23.2% in the elementary and secondary school settings. Therefore, the necessity for ATs to collaborate with other medical providers will continue to increase over the next several years and beyond.

## Literature Review

Providing care in collaboration with other providers increases the level of patient satisfaction and patient outcomes (Hopkins, 2010; Reeves et al., 2011; Tomasik & Fleming, 2014). By using a team approach, providers can better identify and prevent adverse patient events, while improving patient safety (Hopkins, 2010; Institute of Medicine, 2011; Reeves et al., 2011). The implementation of IPCP has positively impacted healthcare services in a variety of settings, such as hospitals and clinics, by providing more comprehensive services. Since each profession has a specific scope of training, collaboration allows providers to offer a wider range of services, while reducing duplication of services, improving efficiency and reducing patient costs (Kraft, Blomberg, & Hedman, 2014; Meyer & Miers, 2005; Molyneux, 2001; Suddick & De Souza, 2006). As an example, Meyer and Miers (2005) found collaboration between cardiovascular surgeons and acute care nurse practitioners resulted in a total decrease in cost of \$5,000 per patient in postoperative cardiovascular care, along with a shorter length of hospital stay and fewer medical complications in comparison to care directed by cardiovascular surgeons alone.

Studies have shown collaboration among professionals, such as social workers, physiotherapists, occupational therapists (OTs) and/or physicians may provide opportunities for mentoring and professional growth (Abramson & Mizrahi, 1996; Malcolm & Scott, 2011; Molyneux, 2001; Morris & Matthews, 2014; Suddick & De Souza, 2006). Other benefits include increasing staff satisfaction (Molyneux, 2001), decreasing staff turnover (Morris & Matthews, 2014) and building respect between professions (Kraft et al., 2014; Sumsion & Lencucha, 2009).

Caring for athletes and athletic teams/organizations provides a unique set of challenges for health professionals. These organizations often possess their own structure/hierarchy, especially in the university/college and professional sport settings. In a scoping review of IPCP and sports medicine, Fletcher and colleagues identified several areas of increased focus among health professionals in athletics: (1) professionalization among team members; (2) professional dominance/hierarchy; (3) status imbalances which affect collaboration; (4) inter-professional negotiation; (5) ethical behaviors linked to the patient confidentiality; and (6) compromise/competition among sports medicine practitioners to balance the desire for performance over care (Fletcher, Breitbach & Reeves, 2017). There has been a recent movement by the NATA to promote a “Medical Model” that addresses some of these issues in college and professional settings, however traditional challenges still exist for ATs working in these settings (Hankemeier & Manspeaker, 2018; Laursen & Parsons, 2010).

Although ATs are recognized as allied health professionals by the American Medical Association, Health Resources Services Administration and the Department of Health and Human Services (NATA, 2015), many medical professionals, such as nurses, physicians and physical therapists are not aware of ATs’ educational practice standards and scope of training (Breitbach & Richardson, 2015). Athletic trainers are healthcare professionals who collaborate with other providers to “provide preventative services, emergency care, clinical diagnosis, therapeutic intervention and rehabilitation of injuries and medical conditions” (NATA, 2015). This is further supported by the National Athletic Trainers’ Association (NATA, 2015) White Paper on interprofessional education and practice, specifically stating the following areas of needed collaboration improvement: (1) access to oth-

er healthcare professionals; (2) increased communication between professionals; and (3) a better understanding of each team member’s roles and duties (Breitbach & Richardson, 2015).

Although ATs collaborate with a variety of providers, a paucity of research exists regarding the effectiveness of IPCP in AT. One study showed that although ATs believed IPCP helped them provide better patient care, only 44.73% of ATs indicated they used an interprofessional approach to patient care (Hankemeier & Manspeaker, 2017). Athletic trainers’ opportunities to collaborate with other providers depended on the availability of providers at their job setting. Athletic trainers who had on-site access to other healthcare professionals had more opportunities to collaborate. Athletic trainers also perceived that collaboration with other providers improved understanding of each other’s profession and improved communication between providers. However, collaboration was sometimes limited by lack of respect between professions or providers not being willing to collaborate, among a variety of other factors.

Due to the limited available research regarding IPCP in AT, the purpose of this study was three-fold: (1) explore perceptions (beliefs, benefits, barriers) to ATs’ collaboration with healthcare providers; (2) describe ATs’ experiences with IPCP; and (3) discover strategies for implementing IPCP in AT.

## Methods

### *Participants*

A stratified random sample email list of 4500 athletic trainers was purchased from the NATA Member Services Department. The requested membership categories included: clinic, hospital, industrial/occupational/corporate, military/law enforcement/government, amateur/recreational/youth sports, secondary school, college/university and professional sports.

Students, academic faculty or administrators (>75% appointment), international ATs and retired ATs were excluded from the study. Additional exclusion criteria included ATs not currently employed in the selected settings, ATs not credentialed by the Board of Certification (BOC) and ATs who provided patient care <20 hours per week on average.

### Instrumentation

Although instruments have been developed to measure IPCP, no instrument was found to evaluate perceptions and experiences with IPCP in AT. Therefore, the researcher reviewed surveys from other healthcare professions on IPCP and adapted questions from two surveys: (1) Athletic Trainers' Views and Experiences of Multidisciplinary Teams in Sport Injury Rehabilitation (Arvinen-Barrow & Clement, 2015); and (2) Attitudes toward Health Care Teams Scale (Heinemann, Schmitt, Farrell, & Brallier, 1999) to create the Athletic Training Interprofessional Practice Scale (ATIPS).

Questions on the original surveys were geared toward multidisciplinary sport injury rehabilitation (Arvinen-Barrow & Clement, 2015) of physicians, nurses and social workers (Heinemann, Schmitt, Farrell, & Brallier, 1999). Survey questions regarding benefits and barriers were adapted from Heinemann, Schmitt, Farrell, and

Brallier's (1999) attitude survey. Adaptations primarily focused on rephrasing the statements to focus on inter-professional collaboration in sports medicine. Survey questions regarding sports medicine team members, along with type and frequency of communication between providers were adapted from Arvinen-Barrow and Clement's (2015) survey on multidisciplinary teams. Updates focused on changing healthcare provider titles, such as physiotherapist to physical therapist, to better represent commonly accepted titles in the United States. Also, since the focus of the current survey was on the sports medicine team, options such as "teammate," "spouse/partner" and "friend" were excluded from the survey. After revisions of the instrument, the final survey included four sections: participant demographics, perceptions of IPCP in AT, experiences with IPCP in AT and strategies for improving IPCP in AT. The survey also included open-ended questions to probe deeper into the purpose of the study (Table 1).

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What are some other benefits to IPCP?

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What are some other barriers to IPCP?

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What strategies can ATs use to facilitate interprofessional collaboration in providing patient care?

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**Table 1.** *Open-ended survey questions*

As recommended by Turocy (2002), criterion-related validity was evaluated by creating a table of specifications prior to creating the ATIPS to make sure each survey item correlated with the research questions. The survey was then reviewed for content validity based on the recommendations (Polit & Beck, 2006; Turocy, 2002). A panel of four athletic trainers with experience in developing and/or conducting survey research in AT evaluated the survey items for clarity, content validity and relevance to the AT profession. The scale-level content validity index average score was 0.82 after eliminating the low scoring professions (biomechanists and exercise physiologists). Cronbach's  $\alpha$  scores for the Likert scale questions were 0.84 (benefits of collaboration), 0.67 (barriers to collaboration) and 0.79 (frequency of collaboration with other providers). After determining validity and revising the ATIPS, the Qualtrics survey link was sent to a convenience sample of six ATs. Participants completed the survey a second time, 8-11 days after their initial completion of the survey to measure test-retest reliability. Pearson's correlation analysis was utilized to

establish test-retest reliability for each Likert scale item. There was a strong correlation between results of the first and second surveys for benefits of IPCP (0.934;  $p=0.006$ ) and frequency of working with other providers (0.859;  $p=0.028$ ). However, the correlation between surveys for barriers to IPCP was very small (0.172;  $p>.05$ ).

### Procedures

Prior to conducting the study, the researchers obtained permission from the Rocky Mountain University of Health Professions Institutional Review Board. A recruitment email was sent in the spring of 2016 to 4500 potential participants explaining the purpose of the study, informed consent information, the primary researcher's contact information and website link to the survey hosted on Qualtrics Online Survey Software (Qualtrics, Provo, UT). Follow-up email reminders were sent 1 and 2 weeks after the initial email. The follow up emails contained identical information as the initial invitation, as well as a thank you for those who had completed the survey.

Participants were required to check the informed consent box at the beginning of the survey to confirm their consent to participate in the study. Potential survey participants were asked two screening questions at the beginning of the survey to ensure all participants met the inclusion criteria. Participants who did not meet the screening criteria were directed to a thank you page and were excluded from the study. For those who qualified for the survey they were directed to a link to complete the survey. Once completed they were thanked for their contribution to the study.

### *Data Analysis*

Survey data were downloaded from Qualtrics and analyzed using SPSS (version 24.0; SPSS Inc., Chicago, IL). Descriptive statistics were used to calculate the means, standard deviations and frequencies. Dependent variables assessed were benefits of IPCP, barriers to implementing IPCP along with the frequency and type of interactions with healthcare providers as indicated by participants' experiences. A 5-point Likert scale was used to evaluate benefits and barriers to IPCP in AT. To streamline the output from data analysis, the 5-point Likert scale was condensed to a positive, neutral or negative response to clarify the interpretation of the results. The 5-point Likert scale (1 = *strongly disagree*, 3 = *neutral*, 5 = *strongly agree*) for benefits and barriers to IPCP was combined into a 3-point Likert scale (1 = *disagree/strongly disagree*, 2 = *neither agree nor disagree*, 3 = *agree/strongly agree*) to condense the data.

Kruskal Wallis was used to evaluate initial differences between patient care settings and dependent variables, with the  $\alpha$  level set at  $p \leq 0.05$ . Post-hoc testing for each pair was conducted using separate Mann-Whitney *U* tests with a calculated  $p \leq 0.01$  Bonferroni correction. Data for the open-ended survey questions (Table 1) were coded, organized and grouped into themes using NVivo 11 software (QSR International). After coding was complete, a peer reviewer with qualitative research experience reviewed the coded open-ended questions and themes for accuracy.

### **Results**

Of the 4500 email invitations, 37 emails were returned as undeliverable, leaving 4463 invitations. Of the 4463 invitations, 561 (12.6%) ATs initiated the survey, 377

participants met the inclusion criteria and 314 (7%) completed the survey for a completion rate of 83.3% for those who initiated the survey and met the inclusion criteria. Demographic data can be found in Table 2. Responses to the three open-ended survey questions (benefits, barriers, strategies) are organized into each section below. Open-ended responses supported the findings from the Likert scale statements and added depth to the barriers and benefits sections, along with insight into strategies for implementing IPCP in AT. The sample size was large and represented a variety of patient-care employment settings.

### *Athletic Trainers' Perceptions Regarding IPCP*

A variety of healthcare providers may be included in a patient's care plan. Participants believed the three primary sports medicine team members should include ATs ( $n = 314$ ), orthopedic physicians ( $n = 274$ ) and PTs ( $n = 184$ ). A full list of the top ten providers chosen for the primary sports medicine team can be found in Table 3. The majority of ATs believed they were typically the point person for the sports medicine team ( $n = 246$ ). Orthopedic physicians were the second most frequently identified point person ( $n = 246$ ) for the sports medicine team. There were no significant differences ( $p > .05$ ) between who ATs believed should be the point person on the sports medicine team and the person who typically was the point person.

### *Benefits of IPCP*

When reviewing the average overall scores for the benefits section of the survey, the majority of ATs (87.5%,  $n = 275$ ) agreed or strongly agreed on the eight statements (Table 4). The only statement with significant differences between settings was related to working collaboratively to provide comprehensive services.

Open-ended responses further revealed a variety of benefits to working with other providers. By working with other providers, ATs reported they could provide more comprehensive patient care. One participant conveyed, "Communication leads to greater insight and understanding of the patient's condition and therefore a more effective treatment plan." Two other participants agreed, stating "Different approaches to injury and treatment benefit the patient" and "the patients can be treated for more than just their injury/illness di-

Variable	N%
<b>Age</b>	
20-29	120 (38.2)
30-39	94 (29.9)
40-49	64 (20.4)
50-59	28 (8.9)
>60	8 (2.5)
<b>Sex</b>	
Male	139 (44.3)
Female	175 (55.7)
<b>Total hours of direct patient care each week</b>	
20-30	75 (23.9)
30-39	106 (33.8)
40-49	86 (27.4)
>50	47 (15.0)
<b>Highest level of education completed</b>	
Baccalaureate	80 (25.5)
Master's degree in an accredited graduate professional AT program	49 (15.6)
Master's degree in an accredited post-professional AT program	43 (13.7)
Master's degree in a non-AT program	132 (42.0)
Doctorate (i.e. PhD, EdD, DAT, DPT, DHSc)	10 (3.2)
<b>Number of years BOC certified</b>	
0-5	102 (32.5)
6-10	71 (22.6)
11-15	42 (13.4)
16-20	38 (12.1)
21-30	48 (15.3)
>31	13 (4.1)
<b>Primary patient care setting</b>	
College/University	125 (39.8)
Clinic/Hospital	96 (30.6)
Secondary School	70 (22.3)
Nontraditional (i.e. amateur sports, military, law enforcement, professional sports, performing arts)	23 (7.3)
<b>Number of full-time ATs in facility</b>	
0	176 (56.1)
1-2	8 (2.5)
3-4	72 (22.9)
5-6	27 (8.6)
7-8	14 (4.5)
9-10	5 (1.6)
>10	12 (3.8)
<b>Number of non-AT healthcare providers in facility</b>	
0	165 (52.5)
1-2	69 (22.0)
3-4	26 (8.3)
5-6	12 (3.8)
7-8	8 (2.5)
9-10	9 (2.9)
>10	25 (8.0)

**Table 2.** Participant demographics (N=314)

Health Care Provider	Frequency	Percent (%)
Athletic trainers	314	100.0
Orthopedic physicians	274	87.3
Physical therapists	184	58.6
Primary care physicians	177	56.4
Strength & conditioning coaches	109	34.7
Psychologists, counselors & psychiatrists	50	15.9
Doctors of Osteopathic Medicine	33	10.5
Emergency medical technicians	31	9.9
Physician assistants	30	9.6
Chiropractors	18	5.7

Note: Percentages do not add to 100 as multiple responses were allowed. Other possible responses included dietitians, massage therapists, nurse practitioners, registered nurses, general surgeons, dentists and occupational therapists.

**Table 3.** *Providers who should be included in the primary sports medicine team*

Statement	<u>Disagree/ Strongly Disagree</u> N (%)	<u>Neither Agree nor Disagree</u> N (%)	<u>Agree/ Strongly Agree</u> N (%)
Overall Average Scores	8 (2.5)	32 (10)	275 (87.5)
Health care providers working collaboratively are able to provide more comprehensive services than those working independently. <sup>ab</sup>			
Overall Average Score	8 (2.5)	30 (9.6)	276 (87.9)
College	2 (1.6)	16 (12.8)	107 (85.6)
Secondary School	5 (7.1)	8 (11.4)	57 (81.4)
Clinic	1 (1.0)	3 (3.1)	92 (95.8)
Nontraditional	0 (0.0)	3 (13.0)	20 (87.0)
Working interprofessionally keeps health care professionals enthusiastic about their jobs.	6 (1.9)	40 (12.7)	268 (85.4)
Working interprofessionally helps providers better understand the work of other health care professionals.	3 (1.0)	3 (1.0)	308 (98.1)
Interprofessional meetings foster communication among members from multiple professions or disciplines.	4 (1.3)	8 (2.5)	302 (96.2)
Working interprofessionally makes the delivery of patient care more efficient.	3 (1.0)	28 (8.9)	283 (90.1)
Developing a patient care plan in collaboration with other providers decreases errors when providing patient care.	9 (2.9)	36 (11.5)	269 (85.7)
Patients receiving care interprofessionally are more likely than others to be treated as a whole person.	19 (6.1)	75 (23.9)	220 (70.1)
Working interprofessionally improves the quality of care for patients.	2 (0.6)	13 (4.1)	299 (95.2)
a Significant difference ( $p = .03$ ) between college and clinic settings			
b Significant difference ( $p = .003$ ) between secondary school and clinic settings			

**Table 4.** *Benefits of IPCP in athletic training*

rectly; psychological and other aspects that are affected by injury or illness can be addressed.” Participants also discussed how they were able to learn new skills when working with other providers. One AT reported, “Medical professionals can continue to learn and grow from each other by working together” and another participant noted, “A lot of professional growth can happen by being willing to share ideas and learn from one another.”

*Barriers to IPCP*

Participants' global responses to survey items on bar-

riers to IPCP in AT varied and differences between patient care settings were found in three of the statements (Table 5). The majority of ATs (n = 222; 70.7%) did not believe that working interprofessionally complicated things most of the time; however, there were significant differences (p<.05) between three of the four patient care settings. Athletic trainers agreed/strongly agreed collaboration was hindered when non-AT medical providers did not understand ATs' scope of training (n = 225; 71.7%); however there were significant differences (p<.05) between all four settings. Exploration of open-ended responses provided more information on the lack of understanding of ATs' scope of training and practice. Limited understanding was believed to

	Disagree/ Strongly Disagree N (%)	Neither Agree nor Disagree N (%)	Agree/ Strongly Agree N (%)
Overall Average Scores	81 (25.8)	76 (24.2)	157 (50)
Working interprofessionally unnecessarily complicates things most of the time. <sup>ab</sup>			
Overall Average Score	222 (70.7)	63 (20.1)	29 (9.2)
College	84 (67.2)	26 (20.8)	15 (12.0)
Secondary School	44 (62.9)	18 (25.7)	8 (11.4)
Clinic	73 (76.0)	17 (17.7)	6 (6.3)
Nontraditional	21 (91.3)	2 (8.7)	0 (0.0)
Non-AT medical providers do not understand the ATs' scope of training. <sup>cde</sup>			
Overall Average Score	34 (10.8)	55 (17.5)	225 (71.7)
College	20 (16.0)	33 (26.4)	72 (57.6)
Secondary School	2 (6.4)	10 (14.3)	58 (82.9)
Clinic	8 (8.3)	9 (9.4)	79 (82.3)
Nontraditional	4 (17.4)	3 (13.0)	16 (69.6)
Inadequate communication with other health care providers hinders collaborative practice. <sup>fg</sup>			
Overall Average Score	7 (2.2)	13 (4.1)	294 (93.6)
College	4 (3.2)	7 (5.6)	114 (91.2)
Secondary School	0 (0.0)	0 (0.0)	70 (100)
Clinic	3 (3.1)	6 (6.3)	87 (90.6)
Nontraditional	0 (0.0)	0 (0.0)	23 (100)
Developing an interprofessional patient care plan is time-consuming.	57 (18.2)	113 (36.0)	144 (45.9)
The time required for interprofessional consultations could be better spent in other ways.	179 (57.0)	106 (33.8)	29 (9.2)
The traditional medical model of hierarchy (MD has final authority on patient decision) impedes collaboration between team members.	143 (45.5)	100 (31.8)	71 (22.6)
Inadequate access to non-AT health care providers hinders collaborative care.	38 (12.1)	77 (24.5)	199 (63.4)
Medical providers' different approaches to patient care may impede patient care.	78 (24.8)	78 (24.8)	158 (50.3)
Health care providers' inability to work together impedes collaboration.	28 (8.9)	47 (15.0)	239 (76.1)
The current medical reimbursement model hinders collaboration between medical providers.	24 (7.6)	105 (33.4)	185 (58.9)

**Table 5.** Barriers to IPCP in athletic training

prevent collaboration as documented by one AT who noted, “Some medical providers do not see what the practice of athletic training can offer” and another who reported “Many PTs do not understand that ATs can carry out detailed rehabilitation programs.”

Finally, ATs agreed/strongly agreed was that inadequate communication with other providers hinders collaboration ( $n = 294$ ; 93.6%); however, there were statistically significant differences ( $p < .05$ ) between three of the four settings (Table 5). In a related open-ended question on barriers to collaboration, one participant stated, “Since I am based at a school, communication can be difficult logistically.” Another AT reported, “Lack of communication...between different healthcare providers is the biggest barrier to patient care.”

No significant differences were found between settings on the other seven statements regarding barriers to collaboration (Table 5). Open-ended responses provided greater insight into perceived barriers. Living in rural areas or a long distance from healthcare providers increased the difficulty of collaboration and seemed to limit the access to other healthcare providers, as identified by one participant, “living in a rural area limited access to other ATs and specialty providers.” Furthermore, working in locations that were a long distance from other healthcare providers limited collaboration “distance(s) between facilities if not in the same building,” according to another AT.

In addition to physical/geographical work location, varying work schedules may limit collaboration. The majority of healthcare providers in clinics work during the week; however many ATs work evenings and weekends, which hindered collaboration. Two ATs noted this limitation by reporting “inability to find a common time to get everyone together” and having a “lack of time for off-site clinical staff to consult with ATs regarding patient care during the ATs typical work hours.”

One of the issues preventing providers from working together may be their attitude toward other providers and toward collaboration. Several participants specifically used the word “ego” when describing barriers to collaboration. One AT reported “I also see ‘ego’ as a barrier. Some medical professionals feel their care is superior to others and I feel this hinders the care of our patients.” Two ATs noted, “Provider ego can lead to

unwillingness to work with others” and “Another barrier is EGO. There are a lot of healthcare providers that look down on other professions. They are not willing to admit they do not know something and will not take the steps to collaborate.”

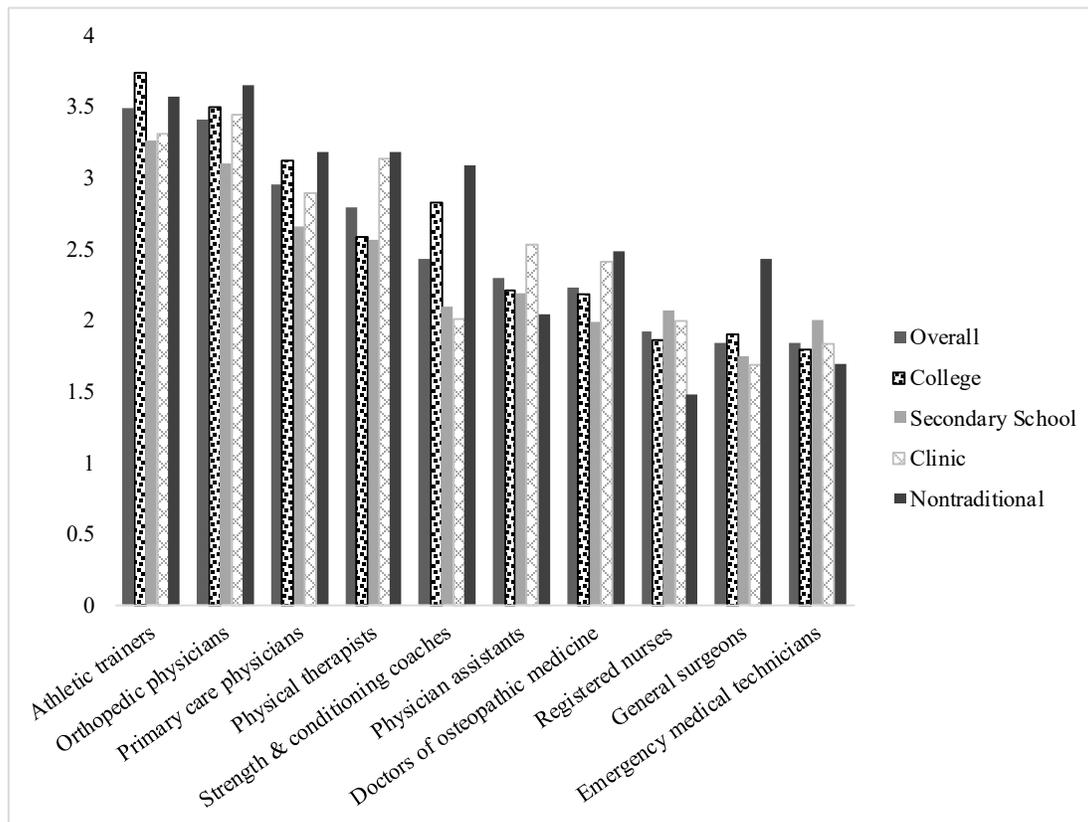
### **Athletic Trainers’ Experiences with Other Healthcare Providers Frequency of Interaction**

Frequency of collaboration between providers was scored using a 4-point Likert scale (1 = *never*, 2 = *occasionally*, 3 = *frequently*, 4 = *all the time*). Athletic trainers most frequently interacted with other ATs ( $3.48 \pm .85$ ), orthopedic physicians ( $3.40 \pm .70$ ) and primary care physicians ( $2.95 \pm .84$ ) either frequently or all the time, with a few differences in frequency based on patient care setting (Figure 1). College ATs were more likely to interact with orthopedic physicians ( $p < .01$ ) and primary care physicians ( $p < .01$ ) than secondary school ATs. Athletic trainers in the clinic setting were more likely to interact with orthopedic physicians and osteopathic physicians than ATs in the secondary school setting ( $p \leq .01$ ).

Differences were also discovered in frequency of collaboration between ATs and PTs (Figure 1). Athletic trainers in the clinic and nontraditional settings were more likely to interact with PTs than ATs in the college ( $p < .01$ ) and secondary school settings ( $p < .01$ ). Athletic trainers’ interactions with non-healthcare providers differed based on work setting. Athletic trainers working in the college and nontraditional settings were more likely to interact with strength and conditioning coaches than ATs in the secondary school and clinic settings ( $p < .01$ ).

### *Type of Interaction*

Athletic trainers who indicated interaction with other providers were asked to specify the type of interaction (Table 6). Not all participants interacted with every provider; therefore, the total number of responses for this question are less than the total number of participants. For all of the providers participants indicated interaction with, they were asked to choose between faceto-face, electronic (i.e. phone or video conferencing) or indirect (i.e. fax, mail, etc.) Participants primarily interacted face-to-face (F2F) with strength and



**Figure 1.** Frequency of collaboration between athletic trainers and other healthcare providers.

Frequency of interaction was assessed using a 4-point Likert scale (1 = never, 2 = occasionally, 3 = frequently, 4 = all the time). Other possible responses included nurse practitioners, chiropractors, occupational therapists, psychologists/counselors/psychiatrists, registered dietitians, general surgeons, dentists, ophthalmologists/optometrists and podiatrists.

<sup>a</sup>Significant difference ( $p < .01$ ) between college and secondary school settings

<sup>b</sup>Significant difference ( $p < .01$ ) between college and clinic settings

<sup>c</sup>Significant difference ( $p < .01$ ) between secondary school and clinic settings

<sup>d</sup>Significant difference ( $p < .01$ ) between secondary school and nontraditional settings

<sup>e</sup>Significant difference ( $p < .01$ ) between college and nontraditional settings

<sup>f</sup>Significant difference ( $p < .01$ ) between clinic and nontraditional settings

conditioning coaches (78.4%), other ATs (76.2%) and EMTs/paramedics (70.8%). Participants interacted through electronic means primarily with orthopedic physicians (38.4%), physician assistants (36%) and doctors of osteopathic medicine (32.9%). Indirect communication was most often utilized between ATs and massage therapists (49.6%), registered nurses (40.8%) and physician assistants (40.2%).

### Strategies for Implementing IPCP in AT

Athletic trainers provided several strategies to facili-

tate IPCP, such as finding providers who are willing to collaborate and work together. Often, ATs are the ones reaching out to initiate and develop relationships with providers as noted by one AT, "reaching out and building relationships with local providers, doing the leg work to build connections." Another participant agreed, "Go into the community and ask other professionals to be part of the healthcare team." By building relationships, ATs will have resources when they need to refer their patients to other healthcare providers. "Gain and maintain relationships with many healthcare providers so that you can effectively collaborate

on a patient's care in the future," as recommended by another AT. Additionally, one participant noted, "patient care is multifaceted...it is important to have strong interprofessional relationships so that patients receive the appropriate care." Once ATs have initiated relationships with providers, it is important to maintain these relationships through regular interactions. One participant believed ATs should meet "face-to-face with a variety of other healthcare professionals." Regularly scheduled meetings may improve collaboration, as explained by two ATs, who suggested "meeting with the individuals once a year" and or more frequent meetings, "once per month meetings to talk face-to-face." Regular meetings may be used to "discuss each person's role and reservations," as reported by two participants, who recommended they meet to "discuss new trends and share suggestions for treatment/diagnosis."

Another purpose of meeting with non-AT providers is to build understanding of the scope of practice and roles of ATs in patient care. "ATs could benefit by accurately defining the capabilities and limitations of our profession to other providers," as suggested by one AT. Another participant agreed with the idea of collaboration by stating, "Let individuals know the role ATs play in collaboration of patient care." Improving understanding of scopes of practice and being open-minded may improve willingness to collaborate. By being "open-minded," and "open to alternative approaches, ATs can foster relationships for interprofessional collaboration," as noted by varying participants.

Not only is it important for other providers to know ATs' roles in patient care, it is vital for all providers to know their own roles, as reported by one AT, "a clear definition and understanding on all sides of their roles within the team." Another participant recommended ATs "communicate each other's role in the patient's continuum of care." The scope of practice of ATs is often misunderstood, so it is important to discuss the scope and roles of ATs in patient care.

### **Discussion Athletic Trainers' Perceptions Regarding IPCP**

Sports medicine and health care for athletes and athletic teams provides a unique set of challenges (Fletcher et al., 2017; Laursen & Parsons, 2010). This team concept is not only important on the field or court, but is

also important among the health professionals working together in IPCP (Breitbach, Reeves & Fletcher, 2018). Athletic trainers play a key role on the primary sports medicine team; when asked which healthcare providers should be part of this team, the top three responses included the AT, orthopedic physician and PT. This list of providers is slightly different than other recommendations in a study by Arvinen-Barrow and Clement (2015), which showed ATs believed members of the sport injury rehabilitation team should include the AT, physician and athletic coach and strength and conditioning coach. The current study focused on healthcare providers; therefore, athletic coach was not a possible selection for participants to choose. A similar study found sport psychology consultants (SPC) believed the primary members of the sport injury rehabilitation team should include the SPC, strength and conditioning coach and AT (Arvinen-Barrow & Clement, 2017).

When working in a collaborative sports medicine team, having a primary point person is essential to the success of the team (Arvinen-Barrow & Clement, 2015). Traditionally, and in the current study, the AT is the point person for medical care as the AT provides initial care, organizes referrals and is the final person to clear the patient for return to activity. Arvinen-Barrow and Clement (2015) found similar results when examining ATs perspectives on the primary point person of the multidisciplinary injury rehabilitation team; however, SPCs' believed the point person for the sport injury rehabilitation team was either the AT or PT (Arvinen-Barrow & Clement, 2017).

### *Benefits of IPCP*

Athletic trainers believed IPCP positively affected healthcare providers and patients. Similar to the current study results, ATs in other studies believed their patients receive more comprehensive care when working collaboratively with other healthcare providers in multidisciplinary clinical rehabilitation settings (Pitney & Mazerolle, 2012) and various practice settings (Hankemeier & Manspecker, 2017). Other benefits of IPCP include the ability for ATs and non-AT providers to learn from each other and build positive working relationships (Hankemeier & Manspecker, 2017; Molyneux, 2001; Pitney & Mazerolle, 2012; Reeves et al., 2011; Theberge, 2009).

### *Barriers to IPCP*

A lack of understanding of each other's scope of practice can be a barrier to forming and working within interprofessional teams. Arvinen-Barrow & Clement (2015) found SPCs did not have a complete understanding of ATs' roles and educational background. A variety of studies found ATs believed other medical providers did not fully understand ATs' scope of training and practice (Arvinen-Barrow & Clement, 2017; Hankemeier & Manspecker, 2017; Pitney & Mazerolle, 2012).

This lack of understanding may lead to health professionals believing they are superior to others, resulting in a negative perception and unwillingness to work together. Additional consequences of not understanding each other's scope may include providers not valuing, respecting or trusting each other (Ambrose-Miller & Ashcroft, 2016; Hankemeier & Manspecker, 2017; Hankemeier & Manspecker, 2018; Suddick & De Souza, 2006; Pitney & Mazerolle, 2012). As seen in studies on providers working in orthopedic postoperative rehabilitation (Longstaffe, Slade Shantz, Leiter, & Peeler, 2015), intensive care units (Lingard, Espin, Evans, & Hawryluck, 2004) and surgical units (Williams et al., 2007), a lack of desire to collaborate may limit communication between providers and negatively affect patient care. A lack of time, isolation due to geographic location and non-traditional working hours often held by an AT, also have the potential to hinder collaborative practice (Hankemeier & Manspecker, 2017; Welch Bacon, Erickson, Kay, Weber, & Valovich McLeod, 2017).

Access to providers may be influenced by setting. ATs in the college setting are frequently able to collaborate with other providers, such as physicians and ATs, since they are in the same physical location (Hankemeier & Manspecker 2018); however, secondary school ATs are less likely to have on-site access to other providers with the exception of the school nurse (Welch Bacon et al., 2017; Welch Bacon, Cohen, Kay, Tierney & Valovich McLeod, 2018). Athletic trainers often provide patient care on the evenings and weekends, rather than the traditional "9 to 5" workday shared by other clinicians; therefore, impeding ATs from interacting directly with providers (Arvinen-Barrow & Clement, 2015; Hankemeier & Manspecker, 2017).

### *Athletic Trainers' Experiences with Other Healthcare Providers*

The current study and Arvinen-Barrow and Clement (2015) found ATs most frequently interacted with other ATs, orthopedic physicians and primary care physicians. Providers who work in the same physical location have more opportunities for F2F communication between professionals. For example, strength and conditioning coaches are typically on-site at colleges and secondary schools, which allows them to communicate in person. Paramedics and EMTs are often on-site for college and secondary school events such as football games, which allows providers to interact F2F (Mazerolle, Pagnotta, Applegate, Casa, & Maresh, 2012). Physical therapists in the acute care setting collaborated most often with nurses and physicians working in the same physical location; whereas, PTs collaborated least often with ATs, chiropractors and exercise physiologists due to limited access to these providers (Cleary, 2004).

### *Strategies for Implementing IPCP*

When developing strategies for implementing IPCP, ATs may refer to the IPEC (2016) competencies as a foundation. Focusing on teamwork, identifying responsibilities of each team member, maintaining clear and frequent communication and abiding by a shared code of ethics is recommended for successful collaboration. Participants emphasized their positive perceptions of working collaboratively and shared recommended strategies for implementing IPCP.

To build a successful collaborative team, ATs should initiate conversations and build relationships with other healthcare providers. Athletic trainers should begin with those who most often provide care to their patients. When building an interprofessional team in any profession, results of this study and others indicate that it is essential to find providers who are willing to collaborate, maintain respect and understanding of each other's role on the healthcare team and keep the patient as the top priority (Board of Certification, 2006; Hopkins, 2010; Reeves et al., 2011; Sumsion & Lencucha, 2009).

Regular meetings between healthcare providers have been recommended by other authors to coordinate patient care and maximize collaboration (Hopkins,

2010; Institute of Medicine, 2001; Reeves et al., 2011). Although electronic and written patient reports aid in communication between clinicians, it is vital that members of the healthcare team include F2F communication to enhance both patient care and facilitate interprofessional collaboration (Ambrose-Miller & Ashcroft, 2016). An opportunity for ATs to increase their communication with a healthcare provider can be achieved through attending patient appointments. Since the AT is likely to interact with the patient on a daily basis, when they are injured or ill, they can often share valuable insight into the patient's values and progress. However, when it is not feasible for the AT to attend a medical appointment along with a patient, detailed progress notes are recommended.

The unique scope and abilities of each IPCP participant is enhanced and better understood when team members communicate their knowledge and opinions while being open to other's ideas (Arvinen-Barrow & Clement, 2017; Breitbach & Richardson, 2015; Hopkins, 2010; Kraft et al., 2014; Reeves et al., 2011; Tomasik & Fleming, 2014). Healthcare providers' scopes of training oftentimes overlap; therefore it is vital for providers to know their role on the team and respect the role of others (Hankemeier & Manspeaker, 2017; Hankemeier & Manspeaker, 2018; Kraft et al., 2014; Reeves et al., 2011; Theberge, 2009). Arvinen-Barrow & Clement (2015) found ATs believed they could better determine the role each person would play in patient care when they understood each other's education and scope of practice. Through shared patient care and interactions with other healthcare providers, ATs can demonstrate their scope of training through their actions. To learn more about the providers they are working with, ATs can refer to the provider's website or the professional healthcare organization's website.

### *Limitations and Future Research*

Although these results add to the knowledge base of IPCP in athletic training, the study was not without limitations. Participants came from a random sample of ATs from the NATA membership directory; however ATs are not required to be NATA members. Therefore, ATs who were not NATA members were excluded from the study. The lower-than-preferred response rate of individuals initiating the survey (12.6%) and potential for self-selection bias may have skewed the data. The

low response rate may have been due to the timing of the survey distribution corresponding with the end of the school year, a lack of motivation to participate in research or limited interest in IPCP. Although the response rate was low, the sample size was large and represented a variety of patient-care settings.

The results of this study enhance understanding of the current state of IPCP in AT. As the IPCP initiative moves forward in AT, future research should investigate the nature and purpose of providers' interactions. Additionally, surveying other healthcare providers using the current survey with the addition of questions regarding the ATs' role, may provide greater insight into the status of IPCP, other healthcare provider's knowledge of the AT's role and strategies for moving forward together.

### **Conclusion**

The purpose of this study was to assess ATs' perceptions, experiences and strategies for implementing IPCP. Overall, participants believed IPCP has a positive effect on both patients and providers and their interactions with other healthcare providers varied by work setting. This study highlights the importance of ATs building and maintaining relationships with other healthcare providers through regular communication. More comprehensive care and a deeper understanding of other healthcare professional's scope of practice result when working with other healthcare professionals. This study highlights several strategies for facilitating IPCP in AT, which include: (1) initiating and building relationships; (2) establishing regular route of communication; and (3) understanding scopes of training. Through strategic and purposeful interactions with other healthcare professionals, ATs will gain more opportunities to be a consistent part of the interprofessional collaborative healthcare team.

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