

## Effectiveness of Research Mentoring at a Large, Urban Research University

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**Objective:** The purpose of this study was to evaluate the effectiveness of a research mentoring program and research mentors. **Design and Setting:** The Research Mentoring Program is a component of a required course within the Advanced Masters in Athletic Training/Sports Medicine Program used in this investigation. Two scholarly writing projects are required; students prepare these projects for submission at local, regional, and national symposia. **Participants:** Participants were purposefully sampled as all participants were enrolled in the Research Mentoring Program. Eleven participants (91.7%; six female, five male) completed the Research Mentor Evaluation (mean age=24±2.13yr; range=22-29yr). Four mentors (three female, one male) were identified (mean age=28.4±4.72yr; range=24-35yr). **Measurements:** An electronic survey containing 34 Likert-type questions was used. Seven open-ended questions solicited further responses. Data were analyzed using open-coding and closed-coding techniques by the primary investigator and a co-investigator. **Results:** The Likert-type questions revealed that participants “somewhat agreed” with responses in each of the thematic areas: Intellectual Growth and Development (mean=3.89±.16), Research Skill Development (mean=4.06±.35), Professional Career Development (mean=3.81±.59), Academic Guidance (mean=3.85±0.83), and Personal Communication (mean=4.34±.66). Participants reported their mentors had the ability to provide constructive criticism, a willingness to help others, showed genuine interest in mentees, made themselves available to all students, provided excellent feedback, and explained concepts without making people feel inferior. **Conclusions:** Because the profession of athletic training is very new and we struggle for respect and ownership over our skills, the mentorship of future researchers and professionals is vital. Continued investigations of this unique mentorship process with semi-structured interviews are planned. **Key Words:** mentorship, post-certification graduate athletic training education program, higher education

Mentorship is said to be at the center of graduate education.<sup>1,2</sup> Mentorship relationships develop when older, more experienced professionals provide guidance, support, and socialization opportunities to a less experienced protégé.<sup>1-4</sup> This role includes teaching the technical aspects of the profession, collaboration with research, assistance with job placement, networking, and professional development,<sup>1</sup> as well as providing support, understanding, positive role modeling, and protection.<sup>4</sup> Several educational researchers and educators have conveyed their experiences in scholarly journals to demonstrate positive characteristics of their mentorship relationships.<sup>3-5</sup> One researcher stated that his relationship with his mentor motivated him to take action, but allowed him the space to be his own person and create his own professional identity.<sup>3</sup> Another researcher reported that he was mentored by a leader in his profession and that his mentor had exposed him to a series of professional and personal principles: value of collaboration, value of the research process, valuing educational research, productivity, and humility.<sup>5</sup> These researchers had journeyed from a mentorship relationship to a partnership.

Research suggests that all graduate students should be exposed to mentorship, especially women,<sup>1,4</sup> minorities,<sup>1,6</sup> and international students.<sup>1</sup> Some research has investigated the role of mentorship mostly in relation to different fields within higher education;<sup>1,3,4,5-8</sup> however, no present research exists investigating the role of research mentoring in post-certification athletic training education programs. As such, we developed and implemented a research mentoring program in a post-certification athletic training education program at a large, urban research university. We sought to evaluate the effectiveness of a research mentoring program and research mentors to better understand the characteristics of an effective mentor.

## **Methods**

### *Research Mentoring Program*

The Research Mentoring Program is a component of the required Graduate Research Seminar course within the Advanced Athletic Training/Sports Medicine Masters of Science Program used in this investigation. Two scholarly writing projects are required for the course, a clinical research project and empirical research project. Students prepare these projects for submission at local, regional, and national symposia. During the development of these research projects, the Research Mentoring Program involves three layers of mentorship. Each participant is a member of a Research Group which includes peers, senior students, and a doctoral resident. The first layer of mentorship occurs among peers within the Research Group. The second layer of mentorship involves the guidance of the Research Group Leader who is a doctoral resident. A faculty member provides the third level of mentorship and this relationship is often developed in the second semester or second year of coursework.

### *Participants*

Participants were purposefully sampled as all participants were enrolled in the Research Mentoring Program and asked to evaluate whomever they considered their research mentor (doctoral resident and/or faculty). Institutional Review Board approval and informed consent were obtained prior to the investigation. Twelve participants were enrolled in the Research Mentoring Program at this urban institution. Eleven participants (91.7%; six female, five male) completed the Research Mentor Evaluation and their ages ranged from 22 to 29 years (mean age= 24±2.13 yr). Four mentors (three female, one male) were identified with an age range of 24 to 35 years (mean age= 28.2±4.32 yr). Seven of eleven, or 63.6% of the mentees reported that a doctoral student served the mentorship role. The remaining participants (46.4%, n= 4) reported that a faculty member acted as their mentor, but all four participants were in their second year of coursework.

### *Instrumentation*

In this pilot investigation we sought to evaluate our electronic survey to determine its effectiveness. Five common themes of mentorship were identified and used to evaluate the effectiveness of the mentor. The survey contained 34 5-point Likert-type questions, ranging from “Strongly Disagree” to “Strongly Agree” with an option of N/A (Not applicable). Seven open-ended questions solicited further responses. Five faculty members and two doctoral residents reviewed the survey for construct and content validity and readability. Revisions were made accordingly.

### *Data Analysis*

Data were analyzed using open-coding and closed-coding techniques by the primary investigator and a co-investigator. A colleague with expertise in qualitative methods conducted a peer review by examining the coding sheets and summary of the findings. The peer review established the effectiveness of the research instrument and the trustworthiness of the findings.

## Results

The Likert-type questions revealed that participants “somewhat agreed” with responses in each of the thematic areas: Intellectual Growth and Development (mean= 3.89±.16), Research Skill Development (mean= 4.06±.35), Professional Career Development (mean=3.81±.59), Academic Guidance (mean=3.85±0.83), and Personal Communication (mean= 4.34±.66). The themes that were used for the Likert-type questions were also helpful in describing the aspects of research mentoring that were influential, both effectively and ineffectively in the open-ended questions. In addition, respondents provided characteristics of the research mentor that were effective and ineffective; therefore, we developed a theme describing personality characteristics.

### *Intellectual Growth and Development*

Mentors furthered the intellectual growth and development of their mentees. Mentees reported that their mentors “stimulated thought” and promoted a “desire to learn” that positively influenced them. By providing “constant encouragement”, participants were “inspired to look at research from a new perspective and find enjoyment.” Mentors promoted creative, critical, and innovative thinking that are important tools within allied health professions. The most obvious trend reported by respondents was that mentors encouraged students to challenge themselves.

### *Research Skills Development*

A fundamental aspect of the relationship between mentor and mentee in a research mentoring program is obviously the development of strong research skills. According to mentees, research mentors demonstrated a strong understanding of research skills and knowledge in the commonly researched areas within the program. Mentees reported that they developed or strengthened writing, editing, and presentation skills under the guidance of their mentors. Mentors often aided in the brainstorming and development of the empirical research project. Mentors and Research Groups helped to provide avenues for finding research resources and created a pool of research resources. One mentor used examples of her own work to help students understand the research process. Second year students reported having mentors who taught them how to use equipment in the research lab and instructed them on the use of the equipment in order to conduct their research projects. Mentors were also vital in instructing mentees on the use of software for data analysis, analyzing data, understanding findings, and the development and completion of the research project.

### *Professional Career Development*

Mentors should provide students with avenues to progress within the profession. Several respondents reported that their mentor discussed publishing their work. One student reported that the mentor encouraged the publication of both her empirical research project and clinical case report upon graduation. Mentees stated that mentors should set a good example of how to present one’s self professionally. One participant stated that their mentor was “a good example of how to try to present oneself as a professional at all times.” Another student commented that the mentor “has encouraged me to rethink the importance of having a Masters in Athletic Training,” which is a current issue in the profession. Mentees also suggested that the mentors were strong advocates of the profession.

### *Academic Guidance*

Students within the Academic Program at this institution enroll in courses taught within the department, but are also encouraged to take courses in other colleges and departments to fulfill an area of specialization. Mentors often provided academic guidance for classes taught both in other departments and within the Exercise and Sport Science program area. Participants reported that one mentor offered “personal time to tutor for an anatomy class.” Also,

respondents reported that the mentor provided useful information for success in classes. Mentors provided confidential, individual meetings to help students develop their program of study and discuss academic issues. While helping students shape their program of study, one mentor encouraged students to take “interdisciplinary courses for professional development.”

#### *Personal Communication*

Participants as well as investigators believed that personal communication is an important aspect of the mentorship relationship. Not only was the communication between the mentor and the mentee important, but also the encouragement of other professional relationships through communication was a central theme. Mentees suggested that their mentors had taught them the value of effective and continuous communication by themselves providing continued email and phone communication. When mentors provided immediate and quality feedback, they demonstrated good examples for students to follow which transferred into the dynamic of the research groups. Respondents stated that the research group provided them with almost “instantaneous feedback” on their writing, which strengthened their writing and editing skills. Mentees often respected their mentors because they were able to provide constructive criticism. One mentee reported that the mentor was willing to “tell you when you are messing up, but will as easily tell you when you have done a good job.”

#### *Characteristics of a Mentor*

Participants were asked about the effective and ineffective characteristics of their mentors, and they were also asked about the characteristics of their mentors that have influenced them to become mentors. Participants reported that their mentors were approachable, honest, knowledgeable and experienced, exemplified strong research skills, were versatile, good listeners, and have a passion for discovering new ideas. One participant stated that the mentor was “very intelligent, not only within our profession, but in academics as well.” One mentor had influenced her students “not by what she has spoken, but by her actions and her willingness to help others.” Participants reported several actions that influenced them positively; ability to provide constructive criticism, willingness to help others, showing genuine interest in her mentees, making herself available to all students, providing excellent feedback, and explaining concepts without making people feel inferior.

### **Discussion**

Constructive relationships between graduate students and their mentors are essential for the promotion of excellence in graduate education. As previously stated, no current research was found investigating the effectiveness of mentorship in post-certification athletic training education; however, one investigation explored the role of mentorship in entry-level (or undergraduate) athletic training education. The researchers demonstrated that athletic training students believed effective mentors were approachable and accessible.<sup>9</sup> Athletic training students sought mentors who demonstrated similar values to their own, trust, and a willingness to engage in personal relationships.<sup>9</sup> Athletic training students believed that their mentors should facilitate knowledge and skill development, individualize learning, and encourage different professional perspectives.<sup>9</sup> This information is important in understanding the expectations of students as they progress from undergraduate into graduate education. Accessibility and approachability are vital in igniting the mentorship relationship, but often the relationship is continued through similar interests and professional aspirations.<sup>1-4</sup>

The development of research skills was essential for both the mentor and mentee in this investigation. Waxman<sup>5</sup> reported that one of the most important lessons he learned from his mentor was the value of understanding the research process. Understanding the research process

propelled he and his mentor into a collegial relationship beyond the faculty-student mentorship he once described.<sup>5</sup> Understanding the need for research in athletic training is in itself unique and therefore very important to the mission of this Research Mentoring Program.

### Conclusions

This pilot investigation revealed the need for further research of mentorship among graduate students in post-certification athletic training education programs. The survey tool was ineffective in obtaining the deep, rich experiences of our participants. The Likert-type questions allowed for a thorough evaluation of certain characteristics within graduate education; however, we believe interviewing participants will allow us to gain a deeper understanding about aspects of the program that are effective or ineffective. The interpretation of data revealed positive experiences reported by respondents. We intend to continue the investigation of mentorship in graduate athletic training education beyond this initial investigation with a semi-structured interview to gain more insight into this unique, layered mentorship process.

**Table 1.** Open-Ended Response Questions from Survey Instrument

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- Please provide at least FIVE perceptions about the effectiveness of the research groups:
  - Please provide at least FIVE perceptions about the ineffectiveness of the research groups:
  - Please provide FIVE or more ways your mentor has influenced you in the following areas: Intellectual Growth and Development, Research Skill Development, Professional Career Development, Academic Guidance, Personal Communication:
  - What mentoring activities have you found useful? Should they be continued?
  - What mentoring activities have not been useful? How could they be improved?
  - What are some characteristics of your mentor that influence you positively?
  - What are some characteristics of your mentor that influence you negatively?
  - How has your mentoring experience encouraged you to be a mentor?
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