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Review

Factors Affecting PhD Student Success

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ABSTRACT

International Journal of Exercise Science 12(1): 34-45, 2019. Attrition rates for Doctor of Philosophy (PhD) programs in the United States across the fields of engineering, life sciences, social sciences, mathematics and physical sciences, and humanities range from 36 – 51%. A qualitative literature review indicates certain factors may impact the PhD student's success in completing the program and degree. The factors focused on in this review include the student-advisor relationship, mentorship, and the dissertation process. Although kinesiology doctoral programs are evaluated and ranked by the National Academy of Kinesiology, little information is available exploring kinesiology PhD student success. General information on PhD student success may, therefore, be valuable to kinesiology PhD students and programs.

KEY WORDS: Student-advisor, mentorship, dissertation process, kinesiology education

INTRODUCTION

Results from 2006 (31), 2007 (30), 2011 (28), and 2015 (33) provide evidence that the National Academy of Kinesiology (formerly the American Academy of Kinesiology and Physical Education) evaluates and ranks kinesiology doctoral programs in the United States (U.S.) every five years. However, ranking information and data regarding the attrition rate of kinesiology PhD students and factors that may impact student attainment of the degree is not included. Although not specific to kinesiology, Doctor of Philosophy (PhD) attrition data is available through The Council of Graduate Schools who performed a quantitative analysis of 30 institutions and nearly 50,000 students across five fields (i.e., engineering, life sciences, social sciences, mathematics and physical sciences, and humanities; 6). The 10-year PhD completion rate was 64%, 63%, 56%, 55%, and 49% for engineering, life sciences, social sciences, mathematics

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and physical sciences, and humanities, respectively (6). This relates to the field of kinesiology as it is classified as a life science by the Council of Graduate Schools (7).

Across the country, kinesiology programs typically do not have a standardized core curriculum and the outcomes of each program are established by the teaching and research expertise of the faculty. However, common courses such as research design and statistics are included in kinesiology PhD curriculums (26). Each program varies in the courses offered and amount and type of mentoring and advising of PhD students dependent on program faculty. Confusion also exists in the definition of the terms advising and mentoring in regard to PhD students. In a study by Titus and Ballou in 2013, 3,534 researchers, who had received a National Institute of Health (NIH) grant and had at least one PhD student, completed a survey to determine views of the role of advising and mentoring in PhD students (32). The participants were asked to rate and classify 19 activities as advisor only, mentor only, both, or neither (32). The activities of chairing a student's dissertation committee and providing financial support were identified as the highest "advisor only" activities while teaching life or social skills and preparing contracts or grant proposals rated highest in "mentor only" activities (32). However, results indicated that most faculty members view their roles as mentor and advisor almost synonymously (32). As these terms can be used interchangeably, the authors will use the term mentoring or mentorship to encompass all advising and mentoring activities with PhD students. Titus and Ballou (32) also found that, while the majority of faculty supervising PhD students had training in human or animal subjects' protection (89.6%) and responsible conduct of research (72.3%), relatively few had formal training on how to mentor (27.7%) or advise (25.4%) PhD students. Much of the mentorship therefore is dictated by the faculty's personal doctoral experience and not typically from any formal training. Based on the amount of experience and training a mentor possesses, as well as the level of involvement in the PhD student experience, students may have vastly different experiences and outcomes such as completion of the program (8) and opportunities for professional development (20).

While little data is available on PhD student attrition in the area of kinesiology, research has indicated that multiple reasons contribute to PhD students in general not completing their programs (9,14,16). One of those reasons is navigating the dissertation process and following through to completion. In regard to the dissertation, it is typically up to the student to be intrinsically motivated and resourceful to manage the process and ensure the dissertation process persists until completion (9). Involvement of the faculty mentor in the dissertation process varies and may be dependent on the motivation and capabilities of the student. Faculty mentoring can play a monumental role in ensuring that doctorial students are successful throughout the coursework, dissertation process, and professional development. Russell advocates for kinesiology PhD programs to focus on developing professional stewardship in students (25). Stewardship includes teaching students how to: interact as a professional, become involved in and promote the profession, maintain ethical standards, and become autonomous

researchers (13,24,25). Understanding reasons for attrition in PhD students can lead to a plan to mitigate barriers.

Overall, there has been limited research examining kinesiology PhD student success (20,25). Therefore, examining the existing evidence regarding PhD student success would be of benefit for kinesiology students and faculty alike by examining how to ensure successful completion of the program and determine any potential barriers. A qualitative literature review was performed by four of the authors with one additional author providing first-hand insight into the field of PhD level kinesiology programs. One author performed a search on PubMed using terms such as "kinesiology doctoral student success" and "kinesiology doctoral student" which garnered only one pertinent article. Three authors also performed an expanded electronic search on general PhD or doctoral student success, persistence, advising/mentoring, and attrition. The articles were selected if they related to kinesiology or general PhD success. The articles were then read and analyzed resulting in three recurring themes. For this review, PhD success was interpreted to mean successful completion of the degree and dissertation process. Attrition, in this review, is interpreted to mean students who did not complete the degree and or dissertation process and included those who dropped out during the program/coursework or those who finished the program/coursework but not the dissertation. In this review, the authors will discuss the following commonly cited issues affecting PhD student success: the student-advisor relationship, mentorship, and the dissertation process (Table 1). In addition, the authors will provide practical recommendations to address these issues to aid in success. By addressing the potential factors that may impact student success of completing the dissertation and program, administration, faculty, and students can have conversations that may lead to a better understanding of the process and address potential issues.

POTENTIAL CONTRIBUTING FACTORS TO PHD STUDENT SUCCESS

Student-Advisor Relationship

A critical factor in PhD student success (i.e., attaining the degree) is the student-advisor relationship (11). In a qualitative study by Knox et al., 19 psychology faculty members were interviewed about their student-advisor relationship with PhD students (18). Results indicated that it is not uncommon for doctoral advisors to adopt a mentoring style based on their own experience as a PhD student (18). Furthermore, they found a lack of training or preparation by the instructional institution leaves the task of acquiring mentoring skills to the practicing faculty member (18). This is in agreement with Golde and Dore who found that there appears to be a lack of emphasis programmatically on doctoral advising and mentoring (10).

An investigation by Mansson and Myers the authors found that advisors and advisees have similar ideas of what make a successful relationship (19). In this study, 636 doctoral and 141 faculty advisors from around the United States were surveyed about the mentoring relationship by using the Mentoring and Communication Support Scale, the Academic Mentoring Behavior Scale, and the Advisee Relational Maintenance Scale (19). This study found that advisees can positively influence the advisor-advisee relationship with 6 behaviors: showing appreciation, completing assignments in a timely manner, being courteous, protecting the reputation of the

advisor, using humor in interactions with the advisor, and consulting the advisor about their individual goals (19). This was also supported by a qualitative study by Mazerolle et al. in 2015 in which 28 students completing a PhD in varied programs, including kinesiology and exercise science, were interviewed to determine their perception of mentoring from their advisors (20). The study found that most PhD students had positive relationships with their advisors with students founded on trust and communication (20). The students in this study further identified themes that must exist in a healthy mentoring relationship: encouraging independence and collaboration in a supportive environment, reciprocal relationship, and providing chances for professional development (20).

Table 1. Summary of potential factors influencing PhD student success.

	Positive Influences	Negative Influences
Student-Advisor Relationship	• Student can influence the relationship with positive proactive behaviors • Mutual trust and clear communication between student and advisor • Student has clear communication of goals • Advisor encouraging independence but offering support and opportunities for development • University provides structured training of advisors • Advisor provides clear expectations	• Programmatic lack of emphasis on advising and mentoring • Incompatible personalities
Mentorship	• Providing students exposure to and guiding teaching, research, service and office politics • Advise on mental health resources • Modeling of professional behaviors	• Added responsibilities without support
Dissertation Process	• Alternate models such as lock-step program, joint dissertations, mentors from multiple disciplines • Choose a topic at start of program • Assignments as early work for dissertation • Student schedules time for research and writing with set deadlines • Opportunities to develop independence and critical thinking skills	• Isolation can impact completion • Students not understanding the dissertation process or what questions to ask • Ineffective communication between student and advisor leading to ambiguity and delays

In the interest of improving PhD student success, some studies suggested that university and program-specific officials should evaluate how they can best provide structured and consistent mentorship, including training/mentoring for advisors (14,18). These mentorship strategies must be structured to consider that each student begins a program with different skill sets, levels of intrinsic motivation, and resilience. Harding-DeKam et al. postulated that initial steps for advisors, when the student initiates the program, included asking students what they intend to accomplish during the doctoral program and what area(s) they foresee needing the most support (15). The authors further suggest that advisors should schedule purposeful meetings to foster a relationship of open communication and trust, as well as using this time to provide

explicit expectations (15). In a study of graduate students from library and information science, public affairs, higher education, and a variety of doctoral programs in the humanities and social sciences by Grady et al., the authors devised additional goals of regular meetings including: 1) timeline planning for degree completion and 2) possible funding available during and throughout their coursework (14). Some evidence offered advice on how to foster an improved relationship between the advisor and the PhD student but did not offer data that indicated whether or not the positive relationship impacted success.

While the evidence demonstrates that a healthy mentoring relationship is beneficial for the PhD student, there is conflicting evidence that this relationship has a direct impact on attrition. Golde et al. performed a qualitative analysis of 58 individuals from the humanities (English and history) and the science (biology and geology) who did not complete a doctoral program at a major American research institution to determine reasons for attrition (11). Major themes indicated that students feeling they were a mismatch and in isolation emerged (11). One of the areas of mismatch was in the student-advisor relationship and was cited as a reason for attrition (11). This is contrast to a qualitative study by Devos et al. who interviewed 21 former PhD students in Belgium (8 completing and 13 who did not) from science and technology, social sciences, and health sciences disciplines) to explore the students' experiences that led to completion or attrition of the degree (8). The results indicated that while the supervisor support had a large impact, the quality of the relationship did not necessarily predict the success of the student in completing (8).

In summary, the student-advisor relationship can have both positive and negative influences (Table 1). Recommendations to foster a positive student-advisor relationship include establishing mutual trust and clear communication early in the program including setting expectations, goals, and deadlines. The advisor should be supportive but also provide opportunities for development and encourage independence. The student should be proactive in the process of developing and maintaining a collaborative relationship rather than relying solely on the advisor to perform these tasks. Finally, administrators can also assist by providing an emphasis on advising tasks.

Mentorship

Mentorship plays a significant role in developing PhD students into professionals (9). Therefore, the advisor can also serve as a mentor to help the transition from student to professional (14). A study by Golde and Dore contends mentors are pivotal, not only for the PhD student's education, but also for the development of the student's desired career path (12). This includes exposing students to teaching, research, and service, but also includes helping students navigate professional subtleties, such as office politics (25).

An investigation of graduate student stress and strain found great value when mentors advised students transitioning into their new position being that there are many new added responsibilities beyond the pedagogical aspects of degree attainment (14). This is essential for PhD students, who often have many added responsibilities and subsequent stressors beyond the pedagogical aspects of the degree. For example, graduate students are often required to take

on novel tasks beyond their studies (e.g., research, teach and/or oversee undergraduates), without the status, resources, or experience of a professional (14). Added responsibilities without support can lead to role conflict and overload, possibly affecting mental health and student success (14). A study that looked at the mental health of 146 graduate students in Brazil, who had been seen at a university mental health clinic, found that depression and anxiety were the main diagnoses reported (44%) and caused 4.5% of the students to be suspended from their programs (22). As mental health disorders are present in the graduate student population, advisors should be aware of this and may advise students on mental health resources.

It is also important to consider the advisor's professional background and experience. A study by Carpenter et al. surveyed 21 doctoral faculty members of varying academic ranks in the field of communication, from a representative 14 universities, and revealed four main areas of support mentors provide: career, psychosocial, research, and intellectual (4). Of particular interest were the factors contributing to how this advisement was delivered (4). For example, lower ranking faculty provided mentorship that was more psychosocially-based (4). The authors speculated that as newer faculty tend to relate easier to students as they are not as far removed from their own graduate studies experience (4). On the other hand, the authors found that higher-ranking professors tend to provide more career and intellectual mentorship than their lower-ranking colleagues (4). However, tenured professors were less likely to collaborate on research compared to assistant professors (4). The authors of the study speculate that assistant professors are more inclined to collaborate with graduate students on research projects being that they are working towards tenure and promotion (4). Effective mentorship of the PhD student provides an avenue of development of professional behaviors and understanding of professional roles. This supportive environment may contribute to successful completion of a degree (4). Quality advising indicators of "number of doctoral advisees, faculty with at least one doctoral advisee, doctoral advisees who graduate, faculty with at least one doctoral advisee graduated, graduates who found employment within the field" were once used by the National Academy of Kinesiology in the five-year reports to rank and evaluate doctoral programs in kinesiology (33). Specific data related to these indicators for each school was not published, however. Additionally, in the latest report in 2015, the faculty indicators of total number and number of advisees that graduated were removed and employment was moved to a student indicator (33). The removal of these indicators, as well as the lack of specific data other than rank of the program, makes it difficult to gauge quality of mentorship as it relates to successful completion of a degree in kinesiology PhD programs.

Mentorship can also have a potential positive and negative influence on PhD student success (Table 1). Recommendations for effective mentorship include providing students with exposure to and guidance in research, teaching, service and office politics. Additionally, the mentor should model professional behaviors and provide advice on mental health resources if needed.

Dissertation Process

The dissertation process may impact a PhD student's success in completing the degree. Ali and Kohun divide the PhD program into four stages: Stage 1 – Preadmission to Enrollment, Stage II – First Year through Candidacy, Stage III- Second Year to Candidacy, and Stage IV – Dissertation

Stage (1). Throughout theses stages, the student must build a committee and find a chair, formulate a research proposal, manage scheduling and time deadlines, and complete the dissertation. This process is often performed in relative isolation which can impact completion (1). A researcher interviewed 58 individuals from 4 departments in one university in the fields of history, biology, geology, and English who did not complete a PhD program and found isolation to be a major theme of the reason for attrition (11). Alternative dissertation models such as use of the cohort model and a lock-step process (11), the companion dissertation (21,23), and the supervision across disciplines model (5) have been proposed to mitigate the feelings of isolation.

Building a committee and finding a chair can complicate the dissertation process (15,27). Difficulties can arise from not knowing the pertinent questions to ask, nor understanding one's options when selecting a chair and committee members. Spaulding and Rockinson-Szapkiw advise to carefully select a chair and committee that work well together and with you (27). Beatty found that lack of effective communication with the committee and chair can also be a concern (3). This ineffective communication can lead to the supervisor being unaware of the amount and type of feedback that the student needs or lead to ambiguity about authorship and writing responsibilities (3). Another challenge noted by Beatty and Harding-DeKam et al. is selecting a topic that is unique, interesting, and relevant (3,15). Beatty further reports that PhD students should consider the focus of the topic area, whether the research is feasible and congruent with the committee chair's expertise, and whether the methodology is appropriate (3). It has also been suggested that students start considering dissertation topics early at the start of the program to narrow the focus of their research (3). This may benefit students if assignments throughout the program can serve as preliminary work for the final dissertation (3,15). Lastly, time management skills may impact dissertation completion. The PhD student must be responsible and willing to take on tasks and to complete them in a timely manner (17). It has been proposed that PhD students should set deadlines and work continuously, avoiding taking extended breaks (2,13). As time is a critical factor, scheduling time for research and writing may keep the student focused (2,12,13). Harding-DeKam suggests that PhD advisors utilize structured meetings where what the student knows is analyzed against what the student needs to learn (15). The student is then given individualized and explicit expectations and deadlines to complete assignments depending on the stage of the process that he or she is in (15).

The dissertation process offers the PhD student an opportunity to develop critical thinking skills as well as positive attributes and behaviors needed as a professional. This challenging period of growth from student to professional may have barriers that will need to be overcome to be successful. Unfortunately, however, some students are unable to overcome these barriers. Completing the dissertation can be a major hurdle in PhD student success and influence attrition (23). These barriers were also noted in studies related to doctoral degrees in the field of education where when the student is no longer in the classroom, there is a loss of support from peers and instructors giving an opportunity to develop independence (15,27). This loss of structure can lead to apprehension and feelings of isolation, with the dissertation often cited as the most isolating portion of doctoral training (2,12,13,21). In addition, lack of structure as an all but dissertation (ABD) PhD student may lead to feelings of isolation and a loss of focus resulting

in the student never completing his/her dissertation. This is congruent with a study by Gardner who interviewed 60 PhD students and 34 faculty members to determine perceived attributes for attrition from these stakeholders (10). The results of this study indicated that faculty found "student lacking" (including a lack of focus and motivation) to be the most identified reason for attrition at 53% (10). Both groups identified "personal problems" as reasons for PhD student attrition (15% faculty and 34% student) (10). Ali and Kohun found social isolation to be a major factor in attrition of the doctoral program and developed a four-stage framework to combat this (1,2). Some of the highlights from the proposed framework included a structured orientation, formal social events, a structured advisor selection, collaboration, and face-to-face communication (2). Kinesiology students also need structure and support. A study examining the socialization experiences of kinesiology PhD students by utilizing a qualitative approach found that they needed both social and resource support to be successful with difficulty noted most during times of transition – such as from the coursework phase to the dissertation phase (24).

Multiple alternative models for the dissertation process have been suggested. One alternative model is the cohort approach with a lock-step program. A study by Ali and Kohum described a PhD program of Information Systems and communications at Robert Morris University (RMU) that has a higher graduation rate (90%) and time of completion (3 years) than the national average (1). The RMU program utilizes a three-year lock-step program in which a strict schedule of community dinners, debriefings, presentation of proposals to students and faculty, and individual meetings with each member of the students' committee is required to keep the PhD student on track (1). Additionally, the PhD students presented their progress to others in their cohort and elicited feedback throughout the process from development to completion allowing them to find issues and make modifications quicker (1). This method was also noted to decrease these PhD students' feelings of isolation (1). The use of a companion dissertation is another alternative model for the dissertation process that has been described in the education (21) and nursing (23) fields which may decrease feelings of isolation. In a companion dissertation, two PhD students work together on the same project (23). Essential components are sharing a dissertation chair, a common research agenda, and a collaborative completion of the research and writing (21,23). While Robinson and Tagher found that this approach improved interactions between PhD students and, subsequently, degree completion (23), limited evidence on the number of schools utilizing this method was found. Limitations were also noted with the companion dissertation including co-writing taking longer, the dissertation seen as less rigorous, and tension between students to meet all deadlines (23). Thus, this dissertation approach may not be feasible in the field of kinesiology without further evidence of success. Additionally, Carter-Veale et al proposed another alternative dissertation model that utilized faculty mentors from multiple departments to give additional support and collaboration (5). However, limited information is available on the effectiveness of this proposed model or the number of schools utilizing this multi-department collaboration. Overall, the goal of these alternative methods is to decrease feelings of isolation by improving connectivity, collaboration, and communication between students, their peers, and their advisors and mentors (5,23). While the dissertation process can impact a PhD student's completion of a degree, effective communication with the dissertation committee, early and relevant topic selection, effective

time management skills, and adoption of alternative models may positively impact this process, but more evidence is needed.

As with the other areas identified, the dissertation process has positive and negative consequences on completion (Table 1). Recommendations to improve the dissertation process include choosing a topic at the start of the program and scheduling times for research and writing with set deadlines. As isolation and ambiguity in the process can impact completion, mentors should ensure the students understand the dissertation process early in the program, be available to consult, and encourage the student to ask questions. Likewise, the student should take a proactive approach to understanding the process and seek help when needed.

DISCUSSION

A review of the literature suggests repeated themes of potential factors that impact PhD student success in completing the program and degree: the student-advisor relationship, mentorship, and the dissertation process. As limited evidence is available regarding factors of success in PhD students specific to kinesiology, this general information gives insight to potential factors that may impact kinesiology PhD student success as well.

The student-advisor relationship can positively influence PhD student success by incorporating structured meetings, communication, and training for the advisors may improve the student-advisor relationship and therefore impact student success. This information may be useful to advisors so that they can help students better understand and navigate the program, as well as assist students in setting goals for meeting dissertation timeline deadlines.

Mentorship may also have a potential impact on PhD student success. Having a mentor to provide critical and timely information offers support to PhD students as they face the challenges listed in this review. Additionally, a mentor provides an opportunity for modeling and instruction on professional behaviors needed by the PhD student. A student could also find a mentor that is outside the department as in the Dissertation House Model where PhD students utilize multiple mentors across many disciplines to help supervise and assist in a cohort model (5).

The dissertation process should not be overlooked as an impactful experience on PhD student success. Evidence suggests selecting a chair and committee, building a topic, and managing the process and deadlines can impact success. Choosing a dissertation chair and committee was found to be a critical aspect to student success. To navigate this process, students are encouraged to proactively ask questions to understand the dissertation process, seek help from a mentor inside or outside of their department, research the chair and committee members area of research to see if it congruent with their interests, foster positive relationship by being proactive, and schedule time for writing and research. It has been suggested that the selection of a dissertation topic should begin early in the doctoral process. However, students should spend time reflecting prior to selecting a topic to ensure that it is interesting to them and that it will be relevant to their profession. As PhD students may feel isolated in the dissertation process,

alternate models such as collaboration or the companion dissertation were reviewed; however little evidence is available on the widespread use or success of these models.

PhD student success of completing a degree and program is multifactorial. More evidence is needed regarding PhD student success for those enrolled in kinesiology programs. This could include a comprehensive survey to PhD students enrolled in kinesiology programs and those who completed the degree to determine the factors that these stakeholders attribute to successful completion. Additionally, a rise in undergraduate majors in kinesiology programs also necessitates the need for qualified PhD trained faculty as these majors are often selected by students entering physical therapy and other professional graduate programs (29). Therefore, future studies may also look at the type and quality of mentorship of PhD students for careers in higher education. Because there is limited information regarding kinesiology PhD student success degree completion, more research is needed with the aim of improving retention and completion.

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