

**PUBLICATION PRODUCTIVITY OF ATHLETIC
TRAINING PROGRAM DIRECTORS' WHILE
PURSUING ACCREDITATION**

By

CHRIS TINA HARMAN

**Bachelor of Science
University of Vermont
Burlington, Vermont
1980**

**Master of Science
Indiana University
Bloomington, Indiana
1984**

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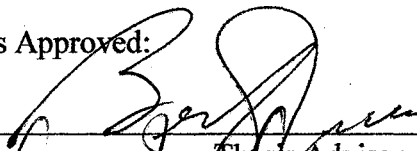
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Thesis Approved:



Thesis Advisor



Steven W. Edwards





Dean of the Graduate College

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CHAPTER I

INTRODUCTION

Background and Significance of the Problem

Scholarship has evolved from the colonial college whose objective was to supply society with a learned clergy (11). With the founding of Harvard college in 1636 and Dartmouth in 1769, the seven of the nine colonial colleges prepared young men for civic and ministry stations in life (36). At the time, the colleges were run by tutors with clerical aspirations. The main purpose of tutors into the 1800's was to mold the spiritual, moral, and intellectual development of the students. There were few professors in higher education at the time. Charles W. Eliot, president of Harvard in 1869 emphasized the purpose of the American professor was persistent and consistent teaching (11).

The Morrill Land Grant Act of 1862 followed by the Hatch Act of 1887 created opportunity for the development of experimental stations in the college settings (78). The ruralization of higher education created an environment to apply agricultural and mechanical experimentation and shifted the attitude of gaining an education to a right instead of a privilege (11).

Scholarly activity first appeared in the early 18th century with the influence of the German approach to scholarship; *Lehrfreiheit* (89). Scholars traveled to Europe to experience this innovative approach to higher education. Professors returned to America wanting to incorporate this new-found freedom of inquiry to investigate and report their

findings. The shift away from the traditional classical curriculum in American academic philosophy moved slowly and with much resistance into the mid 19th century. Professors were expected at the time to teach what was, not to pass on a new knowledge base. Although the emphasis on teaching was the established norm throughout the country, significant research transformations were taking place. Research institutes with strong German influences were created in the early 19th century at Harvard and the Massachusetts Institute of Technology. This was closely followed by the founding of John Hopkins and the University of Chicago (11).

As the century progressed, there was a shift toward a competitive demonstration of research findings between institutions. Professors presented reviews of their research to learned groups and wrote textbooks. William Rainey Harper, president of the University of Chicago stated in 1895 that promotion of professors depended on their research productivity. This resulted in the present day institution missions demonstrating the influences of colonial teaching and European research ideals. (11)

The development of academic tenure was well established in the early 20th century. This process safeguarded the professors position in his institution, his quest for new knowledge, and right of academic freedom (89). The classical curriculum was slowly evolving with the rise of science and the knowledge gained from investigations (27). Further evidence of this is shown from the development of academic disciplines and departments. The academician became a profession with career paths as they moved through the established institutional ranks of assistant, associate, and full professor. This professional development of the academic professor was further supported by the growth

of scholarly associations, annual symposium, and journal publications (36). Henry Rosovsky, former dean of Harvard stated that the university teacher is assumed to be a producer of new knowledge. The best teachers are on the cutting edge of inquiry and creatively applying published peer reviewed research in the classroom environment. As Benjamin Barber noted:

“...No one ever was tenured on the basis of great teaching alone; and no one with a great record of research and publication was ever denied tenure because of a poor teaching record. Teaching is the gravy, but research is the meat and potatoes.” (62)

With this emphasis on the research and publication component of the tenure and promotion process, factors that may influence publication productivity were the focus of recent literature. While many disciplines have been investigated, of particular interest are factors that affect the publication productivity of allied health educators. Gould Schurman noted in 1906 that teachers in the scientific departments chose their profession because of their love of teaching. This, however, was overpowered by their desire to continue the study of their speciality (41).

The medical and allied health professions existed outside of higher education until the German influence of research moved them into academic departments. The Flexner Report of 1910 revolutionized medical education by moving the once separate schools of medicine into research universities. The schools of medicine incorporated a scientific component into the curriculum, separating theory from practice. This academic change was reflected in sciences teaching with didactic and clinical components. A pattern was

established and replicated in subsequent allied health programs (86).

Nursing education primarily trained students at the graduate level for faculty positions. These programs shifted in the 1960's to include basic research and clinical application (79). Dentistry followed the example medical education set with its version of the Flexner Report. Gies's report in 1926 facilitated the move of dental schools into the university setting. Dental faculty were drawn from the private sector up until the 1960's and struggled with the rigors of academic scholarship. Their clinical experience put them at a disadvantage to fulfill the academic demands of research and scholarship. The ethical dilemma they experienced found many having to choose between maintaining their academic career or continuing to teach dental education effectively (33).

The profession of athletic training has evolved much like medical, nursing, and dental allied health sciences. The past images of our founding fathers wielding a ladle and bucket from the early 1950's has been replaced with present day doctorally prepared men and women donning white lab coats and conducting technology-based physiological research. Athletic training was recognized as an allied health profession by the American Medical Association in 1990 and has subsequently modified the national certification and educational requirements for its membership (21). The National Athletic Trainers' Association (NATA) has developed a liaison with the National Athletic Trainers Association Board of Certification (NATABOC), the Joint Review Committee on Educational Programs in Athletic Training (JRC-AT), and the Commission on Accreditation of Allied Health Education Programs (CAAHEP). These partnerships were created to reinforce the NATA's mission of advancing the profession of athletic training

through education and publication (77). In support of this mission, changes were made affecting the accreditation status of athletic training educational programs in higher education. For any individual seeking a license to practice as an athletic trainer in the United States, they must first graduate from a CAAHEP accredited athletic training program. This requirement will be effective January 1, 2004 and has led to the influx of athletic training programs in higher education seeking CAAHEP accreditation (21).

Standards and Guidelines for an Accredited Educational Program in Athletic Training (Standards and Guidelines) have been developed by CAAHEP to help assure consistency in the completion of the accreditation process. Section 1.B.1.a of the Standards and Guidelines outlines the responsibilities and qualifications of the program director (17). The responsibilities of a program director include supervision of athletic training students in the athletic setting, evaluation of students in a clinical laboratory, and administration of the program. Completing the CAAHEP self-study requires additional time to coordinate personnel, create administrative procedures, and monitor the program's adherence to the accreditation standards (66). The Standards and Guidelines also state that the program director shall be a voting member of their university or college faculty and demonstrate involvement in the profession through research and publication (17). The institutional tenure and promotion requirements of teaching, service and research are a concern as program directors develop and maintain accredited athletic training programs.

The literature will show that tenure seeking higher education faculty concentrate on

their pursuit of tenure by developing scholarship, most specifically publication productivity.

“...[To] be a scholar is to be a researcher — and publication is the primary yardstick by which scholarly productivity is measured.” (11)

Allied health professionals were originally technical and skill oriented and not required to demonstrate the scholarly application of theories. The curricula in allied health higher education now require systematic investigation and validation of methods and principles (80). With the unchanging pressures for athletic training program directors to develop programs that adhere to the Standards and Guidelines, the impact of fulfilling the requirements for tenure and promotion is a concern. An optimal environment for completing significant research commands both tangible and intangible factors. A skilled researcher is often supported by adequate research funding, space, equipment, and personnel. The literature will show that the publication productivity of faculty in medical, allied health, nursing, physical therapy, occupational therapy, clinical laboratory science, physician assistant, and internal medicine education is adversely affected by an array of additional factors. These factors include but are not limited to: 1) professional factors: type of degree earned and academic rank and 2) employment factors: number of hours per week spent administrating, teaching in the clinical setting, and conducting research (1, 3, 6, 28, 30, 39, 40, 44, 45, 48, 59, 64, 65, 69, 70, 81, 82, 90, 94-97). While these factors have been investigated in the literature for many of the allied health professions, very little is known of the influences they have on the publication productivity of athletic training program directors of CAAHEP accredited athletic training programs. Because of this gap

in the investigative literature, it is necessary to identify the correlates of publication productivity of athletic training program directors as they strive to satisfy tenure criteria and increase the educational and publication professionalism of athletic training. It is important that athletic training create its own knowledge base instead of continuing to borrow from other professions. The pursuit of scholarship will be what elevates athletic training from a trade to a profession (57).

Purpose of Study and Hypotheses

Purpose of Study

The purpose of this study is to investigate the publication productivity of athletic training program directors. The corresponding publication questions are:

1. To determine if specific academic factors and publication productivity are related.
 - A. What is the relationship between the program director's academic degree and publication productivity?
 - B. What is the relationship between the program director's academic rank and publication productivity?
 - C. What is the relationship between the program director's institutional Carnegie classification and publication productivity?
2. To determine if specific institutional obligations and publication productivity are related.
 - A. What is the relationship between institutional tenure and promotion

criteria and publication productivity?

- B. What is the relationship between athletic training education program administrative load and publication productivity?
- C. What is the relationship between having a team coverage assignment in the Athletic Department and publication productivity?
- D. What is the relationship between having clinical teaching responsibilities and publication productivity?
- E. What is the relationship between time spent writing research reports and publication productivity?
- F. What is the relationship between completing the JRC-AT self-study and subsequent publication productivity as a program director of an accredited program?

Hypotheses

HO₁: There will be no significant difference in the publication productivity of athletic training program directors holding a doctoral degree when compared to those holding masters degrees.

HO₂: There will be no significant difference in the publication productivity of athletic training program directors who are tenured when compared to those who are not tenured.

HO₃: There will be no significant difference in the publication productivity of athletic training program directors and institutional Carnegie classification.

HO₄: There will be no significant difference in the publication productivity of

athletic training program directors and institutional tenure and promotion criteria.

HO₅: There will be no significant difference in the publication productivity of athletic training program directors who have greater administrative responsibilities when compared to those with reduced responsibilities.

HO₆: There will be no significant difference in the publication productivity of athletic training program directors who have greater athletic team coverage responsibilities when compared to those with reduced responsibilities.

HO₇: There will be no significant difference in the publication productivity of athletic training program directors who have greater clinical teaching responsibilities when compared to those with reduced responsibilities.

HO₈: There will be no significant difference in the publication productivity of athletic training program directors who spend more time writing for publication when compared to those who spend less time writing.

HO₉: There will be no significant difference in the publication productivity of athletic training program directors while completing the JRC-AT self-study when compared to subsequent productivity directing a CAAHEP accredited program.

Delimitations, Limitations, and Assumptions

Delimitations

The study will be based on the following delimitations:

1. The sample will be delimited to program directors of CAAHEP accredited college or university under-graduate athletic training programs published by the

National Athletic Trainers Association (76).

2. The participants may not complete the publication productivity portion of the research instrument because they have limited rates of publications or are not publishing at all.
3. The participants who are employed at non-research institutions may not be expected to publish as a term of their employment contract.

Limitations

The study will be based on the following limitations:

1. The voluntary participation of the sample may affect the results.
2. Based on self-reporting, participants may leave out or embellish items in their publication history.
3. A statistical analysis of the reported data is dependant on the return of completed questionnaires.

Assumptions

The study will be based on the following assumptions:

1. The publication productivity of program directors will be measured through the evaluation of the quantity and quality of their publications.
2. The research problem of publication productivity will be of sufficient interest to generate participation by the athletic training program directors.
3. The Athletic Training Program Director Publication Productivity Questionnaire will be answered truthfully by all participants.
4. Faculty self-reporting is a valid method of assessing publication productivity.

Definition of Terms

The following terms will have restricted meaning and are defined for this study:

1. **Athletic Training Publication.** The investigation of factors that involve the care and prevention of injuries to physically active individuals.
2. **CAAHEP.** The Commission on Accreditation of Allied Health Education Programs accredits programs representing 18 allied health professions recognizing over 1800 allied health programs in more than 1000 institutions.
3. **Certified Athletic Trainer.** The athletic training professional who has successfully completed the national certification examination requirements of the National Athletic Trainers' Association Board of Certification.
4. **Clinical Instructor.** The athletic training professional in a laboratory setting instructs students and assesses completion of psychomotor competencies.
5. **JRC-AT.** The Joint Review Committee on Educational Programs in Athletic Training reviews accreditation self-studies and conducts site visits to evaluate athletic training programs and their adherence to the Standards and Guidelines established by CAAHEP.
6. **NATA.** The National Athletic Trainers' Association is recognized as the professional organization for athletic trainers in the United States.
7. **NATABOC.** The National Athletic Trainers' Association Board of Certification regulates the administration of the certification examination and monitors continuing education units of certified members.
8. **Program Directors.** Certified athletic trainer, appointed by their institution

as a faculty member, and recognized by National Athletic Trainers' Association as the athletic training program administrator (17).

9. **Publication productivity.** The quantity of published studies that were conducted as a single or part of multiple investigators. These studies include descriptive and investigative research published in referred journals, textbooks, and textbook chapters.

Summary

Historically, colleges and universities existed to educate young men to enter the clergy or public service. Through the influence of research in German higher education, academic professions were created and the quest for knowledge became the norm in universities. Publication of research findings then became a criteria for tenure and promotion. The publication productivity has been investigated extensively in allied health academics with the exception of athletic training. The additional administrative responsibilities created from the CAAHEP athletic training program accreditation process has initiated this investigation of publication productivity factors. Chapter I presented the background and significance of the problem, the purpose of the study, hypotheses, delimitations, limitations, assumptions, and definition of terms. Chapter II will review the literature on measurements of publication productivity in allied health academic professions. The methodology, description of the subjects, instrumentation, collection of data, and statistical procedures will be described in Chapter III. A statistical analysis of

the data will be presented in Chapter IV followed by a discussion on the findings in Chapter V.

CHAPTER II

LITERATURE REVIEW

The review of literature identifies correlates of publication productivity in allied health and medical education. The representative sample of the related literature will be presented in three parts. The first section of the review will discuss the definition of scholarship in higher education. This will be followed by techniques used in higher education to measure individual faculty publication productivity. The final section of this review will present correlates of publication productivity in the allied health professions.

Scholarship in Higher Education

The process of scholarship and the purposes behind it are often used to define scholarship. These may include the advancement, creation, integration, and application of new knowledge (11). The tenure and promotion evaluation of academic professionals judges scholarship in terms of the quantity and quality of product output from these processes. The products may include 1) performances in the visual and theatrical arts, 2) proceedings and conference presentations, and 3) books, chapters, and refereed journal publications (29).

A metaphorical view of scholarship defines the published article as an icon; the revered physical presentation of scholarly knowledge. The published article is given honor by a closed society, is representative of something that is sacred, and is not viewed with such esteem by those outside higher education. They are displayed in journals, admired for the use of graphics and clever statistics to accent the topic of investigation,

and then stored away awaiting selective access (72).

For the purposes of this investigation, scholarship of the academic athletic training professional will be defined by their production of publications: textbooks, textbook chapters, and journal articles (26).

Measurements of Publication Productivity

There are several methods of publication measurement. The most prevalent method of assessing research performance is the quantitative measurement of publications (5, 6, 19, 20, 44, 59, 81, 84, 91, 95). Quantity indices are used in the academic fields of nursing, accounting, biochemistry, communications, economy, journalism, library sciences, physical education, social sciences, and social work. Data is also available for analysis from national surveys of higher education academics. Information is collected on attitudes, behaviors, and career measures of publishing productivity. These surveys are conducted by the American Association of Higher Education, American Council on Education, American Educational Research Association, Carnegie Foundation for the Advancement of Teaching, Higher Education Research Institute, National Center for Research to Improve Post-secondary Teaching and Learning, and United States Department of Education (2, 5, 14, 18, 20, 51, 99).

Qualitative weighing systems also measure the value of the publication to its discipline, its cumulative contribution to scientific knowledge, differences in the manuscript length, type of publication, number of authors, and the quality of journals (20, 81). The quality of each publication when categorized by number of authors was shown

to be statistically significant when compared to individual and institutional variables. The publications were ranked in descending order of quality by single-authorship, co-authorship, or multiple authorship (81). It is of concern that this method of measuring by authorship may affect the qualitative assessment of publication productivity. Because of this, authorship ranking will be used in this investigation primarily to facilitate the completion of the survey instrument (82). The career totals of publications while pursuing accreditation and directing an accredited program will be used for the statistical analysis in Chapter IV.

Correlates of Publication Productivity

Correlates of publication productivity indicators will be reviewed for medical and allied health educational programs in higher education.

Medical Education. The relationships between intrinsic and extrinsic career-motivational factors and academic productivity were evaluated in 1,764 medical faculty. The areas of medical specialization were divided into four categories: basic science (anatomy, biochemistry, pharmacology, and physiology), surgical specialties (obstetrics-gynecology, orthopedic surgery, otolaryngology), medical specialist (dermatology, neurology, physical medicine and rehabilitation, and psychiatry), and generalist (family medicine, general internal medicine, and pediatric medicine). Individuals with intrinsic career motivation wanted to develop their skills, express their creativity, and make a contribution. Those with extrinsic career motivation were more concerned with their medical careers and status in the academic community. Extrinsically motivated academic

professionals demonstrated a decrease in publication productivity in their pursuit of financial rewards. A modified Rosenberg Occupational Values Scale was used to test their career motivations using the following items:

1. Intrinsic Motivation:

Providing opportunities for me to use my special abilities or aptitudes

Permitting me to be creative

Leaving me relatively free of supervision by others

Providing me with a challenge

Attaining academic achievement

Advancing knowledge in some area and/or innovation

2. Extrinsic motivation:

Providing me with a chance to earn a good deal of money

Attaining social status and prestige

Giving me an opportunity to work with people rather than things

Enabling me to look forward to a stable, secure future

Giving me a chance to exercise leadership

Giving me an opportunity to be helpful to others

Helping particular individuals, groups, organizations, or society advance and improve

The findings of the investigation showed that men had greater publication productivity than women, that publication productivity was positively associated with intrinsic career motivational factors and negatively associated with extrinsic career motivational factors,

and that these associations were not affected by gender. Suggestion were made for additional research on harassment, institutional support, and family obligations to perhaps explain the gender difference (3).

Family Medicine. Publication productivity of family medicine departments in the United States was quantified by retrieving data from journals. The top family medicine journals were utilized: *Journal of Family Practice*, *Family Medicine*, *Journal of the American Board of Family Practice*, *Family Practice Research Journal*, *Journal of the American Medical Association* and *Academic Medicine*. A five-year journal search identified the top publication producers of original research in family medicine. The data showed that the publication productivity of the top department was 25 articles in a five year period and the strongest predictors of publication productivity was the mean dollar value of established research grants (95).

Physician Assistant. The faculty of 59 accredited programs of the Association of Physician Assistant Programs were surveyed regarding their publication productivity (N = 184). Survey items elicited responses regarding their potential for future publications, perceived preparation to conduct research, and publication productivity for the previous three years. The reported mean level of preparedness to submit a manuscript for publication was 3.54 (scale of 1 - unprepared to 5 - prepared). Seventy percent had not published and less than one percent published 15 articles in the past three years. The highest correlation was between an earned doctoral degree and high number of publications. The overall low number of publication for the population sample was attributed to the lack of Physician Assistant programs at the doctoral level (48).

Internal Medicine. The department of Internal medicine is usually the largest in any medical school. They are responsible for the majority of graduate and under graduate clinical and didactic curricula. This study investigated the publication productivity correlates of 56 full-time faculty of the Department of Medicine of the State University of New York. The subjects were split into older (born in or after 1940) and younger groups (born before 1940). They were also divided into sub-specialities: oncology, hematology, endocrinology, gastroenterology, cardiology, pulmonary, nephrology, rheumatology, infectious disease, and general medicine. Their publications, which were kept on file in the Department of Medicine Library, were reviewed for a five year period. The faculty who were older, had tenure, and the highest rank were more productive than their younger colleagues. There was a significant difference between the sub-specialities age groups. Younger faculty were more productive than the older faculty in the most productive sub-speciality groups. This was attributed to the support and interest of their section chief (64).

Radiology. The quantitative analysis of publication productivity of 581 academic radiologist was compared to their education, training, and personal attitudes. Subjects educated at institutions with the most federal research funding published almost twice as much as those attending other institutions. There was also a significant difference between subjects that had a radiology research fellowship, access to grant funding, a research mentor, and attended research seminars. Those that had these opportunities produced 50% to 90% more publications than all other respondents. After entering their faculty position, subjects with research support and adequate facilities published 40% to

140% more than those that did not have this support. When personal attitudes across all rates of publication were evaluated, subjects expressed their concern about insufficient research time, inaccessibility to funding, and increased pressure to conduct clinical work. The publication rates were significantly different when comparing gender. The lower publication rates for women were attributed to decreased exposure to research mentors, fewer case reports, and less research training in medical school. Women also received significantly less research training as faculty members than their male counterparts. There was a significant difference between the research impediments between genders. These impediments included the concerns of women with family obligations, time constraints to conduct research, access to research support services, clinical teaching pressure, and getting their research published (44).

Clinical Laboratory Sciences. The publication productivity of clinical laboratory sciences faculty was researched using a survey instrument. The subjects were faculty of accredited programs approved by the *National Accredited Agency for Clinical Laboratory Sciences* and listed in the 24th Edition of the *Allied Health and Rehabilitation Professions Directory*. Responses were received from 57% of the faculty that represented 90% of the programs. Three-quarters of the population sample were employed at major research institutions. Half of the respondents spent significantly more time conducting research, were employed for at least 16 years, had doctoral degrees and were tenured. There was no significant difference in publication productivity when compared with rank (97).

Dietetics. There was a concern that the administrative duties of directors of

coordinated dietetics programs prevented them from achieving tenure. A 59% return rate of a survey mailed to 116 directors showed that two-thirds had research responsibilities. They conducted their research throughout the year during their spring, summer and fall sessions and had a mean of one published article per year. They were most motivated to remain as program directors because of the opportunities to help the program mature, satisfaction with program growth and student performance (30).

Chiropractic. The study of the research productivity of chiropractic faculty was conducted to identify effective characteristics. A survey seeking research attitudes was returned by 673 full-time chiropractic faculty. Article publications and presentations to professional organizations were reported as the most common form of scholarly activity. Faculty with both Ph.D. and D.C. degrees publish more than those who had either a Ph.D. or D.C. degree. While age and gender did not significantly influence publication productivity, those at full professor rank published more than all other ranks. More than 70% of the respondents had not published at all and less than 2% had published 10 or more articles in the last three years (65).

Psychology. There are numerous avenues through which research is produced in the field of psychology. The following is one example of this research: A sample of 1,084 academic psychologists were chosen from the *International Directory of Psychologists*, age and gender was determined from the *Directory of American Psychologist*, and those in private practice were eliminated using the *Directory of the American Psychological Association*. The publications by each subject were tabulated for five years using the *Cumulative Author Index to Psychological Abstracts*. All publications were counted with

equal weight including books, book reviews, literature reviews, and research papers. Productivity was determined to be lowest at age 20, peaked around age 40, and decreased as the researcher aged. Despite this finding, subjects who began their academic careers as high publication producers remain significantly more productive than all other groups (46).

Allied Health. There were several studies that surveyed faculty from allied health education departments. The professions included in allied health departments were identified by the American Society of Allied Health Professions' *Institutional Profile of Allied Health*. These included: communication disorders, cytotechnology, medical technology, radiologic technology, nutrition and dietetics, medical record administration, respiratory therapy, occupational therapy, physical therapy, and physician assistant (59). Other fields that were identified within allied health departments included: nurse anesthesia, perfusion technology, respiratory therapy, and speech language pathology/audiology. The responses of 2,187 allied health faculty indicated that the most productive respondents were female, tenured, held administrative appointments, and were full professors at research institutions (28).

Physical Therapy. The publication productivity of physical therapist in Canada was conducted using a survey method of inquiry. Surveys were sent to 118 faculty and the 66% return rate indicated that two-thirds of the sample population were female. Journal articles comprised 86% of the publications and full professors were most productive when compared to all other ranks (6).

Occupational Therapy. There were two studies found in the literature that had

researched the publication productivity of occupational therapy faculty. The population of 66 full-time occupational therapy faculty respondents in the first study were primarily female (85%), one third were tenured, 26% had doctorates, and those with the rank of full professors were the most productive. Over half of the professors had extramural funding for their research and 67% had directed a mean of three federal grants. The factor that encouraged scholarly activity was their own academic preparation while discouraging factors included lack of funding and heavy teaching loads. Full professors found that their administrative duties and responsibilities were the most discouraging factors that influenced their publication productivity (45). In the second study, 275 full-time occupational therapy faculty from accredited baccalaureate and post-baccalaureate programs rated intrinsically rewarding aspects of their position. The top responses for research-related rewards were 1) having the opportunity to research problems of interest, 2) the autonomy to set their own schedule and 3) the choice of research topics (82).

Nursing. Faculty of National League for Nursing accredited nursing education programs were surveyed regarding their publication productivity in three studies. The first study of 60 baccalaureate nurse educators used the Carnegie institutional classification system. The analysis of the data concluded that faculty employed at research institutions published significantly more than those from comprehensive or liberal arts institutions (71). A second group of 148 doctorally prepared, tenured nursing research faculty were categorized as high producers of research (eight or more articles). They were motivated by peer pressure, preferred to conduct research and write more than low producers (less than eight articles). The productive faculty also had past experiences of co-authoring

articles in graduate school, administrating more hours per week than teaching, and publishing before earning a terminal degree (69). A third study of 261 full-time, tenure track faculty at Research I institutions showed a significant relationship between increased publication productivity and: 1) intrinsic motivation to conduct research, 2) the belief that publishing was important in the tenure and promotion process, 3) an increase of teaching and practical work experience in higher education (81).

Athletic Training Publication Productivity

The limited research literature by athletic training professionals is of great concern (21, 22, 53, 57, 80). The *Journal of Athletic Training*, the primary outlet for athletic training research and communication from the National Athletic Trainers' Association to its membership, was created in 1956. This refereed journal published a mean number of 5.6 experimental reports per year from 1957 through 1987 with a circulation rate of 1200. The *Journal* during the 1990's averaged 30 experimental reports per year with a circulation of over 22,000 (58). With the saturation point of the *Journal* looming on the horizon, athletic training researchers can be reassured of the potential to publish in over 130 refereed journals in sports medicine and physical medicine and rehabilitation (61).

Summary

A review of the literature on the publication productivity of allied health education faculty substantiates that variables affect their ability to fulfill the publication requirement of tenure and promotion. Variables of particular interest were: 1) male medical and radiology educators produced more publications than their female counterparts, 2) clinical laboratory science and nursing educators employed at Research I Carnegie institutions

produced more publications than those at Comprehensive and Liberal Arts institutions, 3) physician assistant, clinical laboratory sciences, and nursing educators with earned doctorates produced more publications than those with lesser degrees, 4) individuals with the rank of tenure in internal medicine, clinical laboratory sciences, chiropractic, allied health, physical therapy, and nursing education considered publishing important for tenure and promotion and produced more publications than those not tenured, 5) clinical instruction in radiology, administrative duties in dietetics and occupational therapy, and time spent researching in clinical laboratory sciences education were identified as work related responsibilities that affected publication productivity, 6) quantitative over qualitative totals of career publications were assessed in each educational profession. Further investigation shows that the impact these variables may have on athletic training faculty publication productivity is not represented in the literature.

The next chapter will discuss the methods and procedures of this study. The questions for the survey instrument were adapted from the validated variables stated above and include the relationships between publication productivity of athletic training program directors and: 1) institutional Carnegie classification, 2) time spent on job related tasks, 3) academic appointment, 4) highest earned degree, 5) quantity of publications, and 6) institutional tenure and promotion criteria.

CHAPTER III

METHODS AND PROCEDURES

This study was designed to identify factors that may affect the publication productivity of program directors of accredited athletic training programs. Selected academic and institutional factors were correlated with program directors' publication productivity. The data were gathered by mailing an anonymous and confidential questionnaire to under-graduate athletic training program directors in an attempt to show association of factors that may affect publication productivity while 1) pursuing program accreditation and 2) directing an accredited program.

Subjects of the Study

The participants of this study were identified through an accredited program list provide by the NATA (76). The list included the name, institutional affiliation, address, phone number, and e-mail address of all program directors (N = 122). The research population was identified for mailing purposes only and an anonymous professional title was used for the salutation.

Instrumentation Development

The self-report questionnaire was developed by the principal investigator, drawing from pre-existing instruments to obtain answers to the research questions and test the hypotheses. This format was shown to be highly reliable in the calculation of the publication productivity of faculty (20). The following faculty publication productivity variables have been cited in other studies and were the basis for the questionnaire items:

- A. The use of Carnegie classifications to categorize institutions while investigating faculty productivity variables (4, 7, 9, 11, 12, 35, 71, 73, 75, 83, 90).
- B. Time spent on job related tasks (1, 31, 40, 59, 70, 81).
- C. Publication productivity differences between tenured and non-tenured faculty (2, 5, 28, 48, 59, 64, 88).
- D. Publication productivity differences between faculty with earned doctorates and those with lesser degrees (28, 48, 59, 96).
- E. Quantity of articles published (3, 5-8, 13, 19, 44, 64, 71, 81, 84, 91, 95).
- F. Tenure and promotion criteria (26, 60, 63, 75, 87, 93, 96, 99).

In the determination of technical merit, all items specific to the athletic training hypotheses were adapted from previously tested instruments of publication productivity. The instrument (Appendix D) is comprised of two sections containing a total of nine items. Section one requested demographic and institutional information: age, gender, last degree earned, present academic appointment, and the institution's Carnegie classification. The Carnegie classification was shown to be a significant publication productivity variable of baccalaureate nursing education faculty (4). The subjects were requested to indicate how their institution was classified using a listing of the revised Carnegie classifications (15). Section two requested professional activities information: work-related hours-per-week, experience completing a self-study for program accreditation, and number and type of publications. The number of hours spent in job related activities was demonstrated to affect publication productivity (31). The same format was used to identify the number of

hours the athletic training program directors instructed in the clinical setting, wrote for publication, administrated the athletic training program, and participated in the professional practice of a certified athletic trainer for their athletic department.

The quantity and quality of publications were shown to be reliable in predicting publication productivity. To measure the quantity of publications, categories were adapted for this study to differentiate between textbooks, textbook chapters, experimental research in referred journals, and non-refereed journal publications. The quality of each publication category was shown to be statistically significant when compared to individual and institutional variables. The publications were ranked in descending order of quality by single-authorship, co-authorship, or multiple authorship (81).

The final question used a five-point Likert scale seeking information identifying the importance of the program director's institutional tenure and promotion criteria. An assessment of faculty academic work used the same scale to evaluate the importance of academic advancement within their institution (75, 94). A modification was made to assess the importance of specific publication activities in satisfying institutional tenure and promotion criteria. The following scale was used:

1 - extremely unimportant	2 - fairly unimportant	3 - neutral	4 - fairly important	5 - very important
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The instrument was sent to five doctorally prepared athletic training program directors. After they submitted an evaluation of its appropriateness in eliciting responses to the research questions, the recommended revisions were made.

Collection of Data

Data for this study was collected Fall 2000. The list of athletic training program directors was obtained from the NATA web-site (76). Each program director was e-mailed an initial letter of introduction (Appendix A) followed by the self-report questionnaire one week later (Appendix D). The questionnaire was accompanied by a cover letter (Appendix B) describing the purpose of the study, explaining how their name was chosen, soliciting their participation, identifying the researcher, supplying instructions on the method of returning the questionnaire, and stating that the anonymity and confidentiality of their participation was assured. A follow-up reminder was sent one week after mailing the questionnaire (Appendix C).

Statistical Analysis

The data were analyzed using SPSS 10.0 for Windows. Descriptive statistics are presented in frequency distributions for individual and institutional demographics, professional preparation, academic workload, publication productivity, and tenure and promotion criteria. Independent t-tests and analysis of variance tests were performed to answer the research questions. The Tukey post hoc test for multiple comparisons determined differences between groups.

Summary

This chapter describes the methodology used to investigate the publication productivity of program directors of accredited athletic training programs. Data was collected from the returned e-mail questionnaires of 68 program directors. Information

was provided on the relationship between their publication productivity and type of institution, professional preparation, academic workload, and institutional criteria for tenure and promotion. Descriptive statistics were used to determine the frequency distribution. The research questions were answered using independent t-test, analysis of variance, and Tukey post hoc.

CHAPTER IV

ANALYSIS OF DATA

This chapter reports the analysis of data concerning the publication productivity of athletic training education program directors in the United States. The data was obtained from program directors of CAAHEP accredited athletic training programs who responded to the research questionnaire. This chapter begins with details of the descriptive statistics collected in the study. All data will then be presented and analyzed in relation to the research questions proposed in Chapter One.

The questionnaire and cover letter detailing the nature of the research was e-mailed to 122 program directors listed on the National Athletic Trainers' Association website. Four weeks after the initial e-mail, completed questionnaires were returned either by e-mail or through the United States Postal Service. The final questionnaire return rate was 55.78 percent (68/122).

Descriptive Statistics

Individual Demographics

Table 1 summarizes the age and gender demographics for the total sample. The respondents reported a mean age of 41.50 years with the majority falling in the 30 - 49 range (82.4 percent). The response by gender was predominately male (64.7 percent).

Institutional Demographics

Table 2 summarizes the institutional Carnegie classification for the total sample.

Table 1

Age and Gender of Respondents

Age (N = 68)	Years
Mean	41.50
Median	41.00
Standard Deviation	8.54
Range	35 (29 - 64)

Age Range (years)	Frequency	Percent
<30	2	2.9
30 - 39	25	36.8
40 - 49	31	45.6
50 - 59	7	10.3
>60	3	4.4
Total	68	100.0

Gender	Frequency	Percent
Male	44	64.7
Female	24	35.3
Total	68	100.0

Doctoral/research universities - extensive and Master's I each represented one-third of the institutional classifications. The next closest category was Baccalaureate - general (16.2 percent). The total response rate was also represented. Of the 48 surveys sent to Doctoral/research universities, there was a response rate of 65 percent. The Master's institutions had a response rate of 42 percent (25/59) followed by respondents from Baccalaureate institutions with 75 percent (12/16).

Table 2

Carnegie Classification for Respondents' Institution

Carnegie Classification	Frequency	Percent
Doctoral/Research - Extensive	23	33.8
Doctoral/Research - Intensive	8	11.8
Master's Colleges and Universities I	22	32.4
Master's Colleges and Universities II	3	4.4
Baccalaureate Colleges - Liberal Arts	1	1.5
Baccalaureate Colleges - General	11	16.2
Total	68	100.0

Carnegie Classification	N Sent	N Response	Percent
Doctoral/Research - Extensive	31	23	74
Doctoral/Research - Intensive	17	8	41
Master's Colleges and Universities I	51	22	44
Master's Colleges and Universities II	8	3	37
Baccalaureate Colleges - Liberal Arts	3	1	33
Baccalaureate Colleges - General	13	11	85
Total	122	68	

Professional Preparation

Table 3 summarizes the professional preparation for the total sample. The last degree earned was evenly split between an earned masters and doctorate, 47 and 53 percentages, respectively. There was also a balanced response when comparing respondents with an EdD (25.0 percent) versus those with a PhD (23.5 percent). The majority of program directors were tenured or tenure-track with-out tenure (77 percent).

Academic Workload

Table 4 presents the respondents' academic workload teaching in the clinic, writing for publication, administrating the athletic training program, and covering athletic

Table 3

Last Degree Earned by Respondents

Degree Type	Frequency	Percent
Master	32	47.1
Doctorate EdD	17	25.0
Doctorate PhD	16	23.5
Doctorate other	3	4.4
Total	68	100.0

Present Academic Appointment of Respondents

Academic Appointment	Frequency	Percent
Tenured	31	45.6
Tenure-track w/out tenure	21	30.9
Other	16	23.5
Total	68	100.0

teams. Respondents spent 12 hours per week administrating an athletic training program compared to a mean of three hours per week writing for publication. When reviewing the responses for time spent in clinical instruction and athletic team coverage, a large number of data were missing. This may be attributed to program directors at Research I and II institutions not being required to teach in the clinic or cover athletic teams. Potentially, this may leave more time to write for publication and administrate their programs.

Table 5 presents the number of program directors that have completed a JRC-AT self-study. Seventy-five percent of the respondents reported to have completed a self-study and 47 of these respondents completed the self-study in 1.5 years.

Table 4

Academic Workload of Respondents*

		Clinical Instruction	Writing for Publication	Athletic Training Program Administration	Athletic Team coverage
N	Valid	55	60	64	58
	Missing	13	8	4	10
Mean		8.25	2.78	11.88	9.59
Median		5.00	2.00	10.00	3.00
SD		8.69	3.59	9.05	12.42
Range		45 (0 - 45)	15 (0 - 15)	43 (2 - 45)	45 (0 - 45)

*Average hours per week

Table 5

Self-study Completion by Respondents

Completed Self-study	Frequency	Percent
Yes	50	73.5
No	18	26.5
Total	68	100.0

Years to Complete Self-Study		
N	Valid	47
	Missing	21
Mean		1.3723
Median		1.0000
Standard Deviation		.9367
Range		5.50 (0.50 - 6.00)

Publication Productivity

Table 6 presents the publication productivity of respondents while conducting a

JRC-AT self-study and as a program director of an accredited athletic training program. Respondents reported greater mean number of publications while directing an accredited program than during the accreditation process. This may be attributed to more program directors completing the self-study with no research responsibilities, less research experience, or less research release time when compared to those directing accredited programs.

Table 6
Productivity Descriptive Statistics

	While Completing Self-study	As Program Director of Accredited Program
N Valid	26	34
N Missing	42	34
Mean	4.69	6.62
Median	2.00	3.00
SD	6.45	12.92
Range	26.00 (1 - 26)	73.00 (1 - 74)

Tables 7, 8 and 9 present the publication productivity of respondents while pursuing accreditation, directing an accredited program, and career total publications, respectively. In all the tables, the majority of respondents published an average of less than four publications. The number of missing data was a marked frequency statistic. On average, 32 percent of the respondents had no publications. This may be because of the infancy of the profession, no institutional research requirement, or lack of research experience.

Table 7

Productivity of Respondents While Pursuing Accreditation

# Publications	Frequency	Percent
1	10	14.7
2	7	10.3
3	2	2.9
5	1	1.5
6	1	1.5
7	1	1.5
15	1	1.5
16	1	1.5
17	1	1.5
26	1	1.5
Missing	42	61.8
Total	68	100.0

Table 8

Productivity of Respondents While Directing Accredited Programs

# Publications	Frequency	Percent
1	9	13.2
2	6	8.8
3	5	7.4
4	4	5.9
5	2	2.9
6	1	1.5
7	1	1.5
8	1	1.5
14	1	1.5
15	1	1.5
19	1	1.5
20	1	1.5
74	1	1.5
Missing	34	50.0
Total	68	100.0

Table 9

Total Publication Productivity of Respondents

# Publications	Frequency	Percent
1	9	13.2
2	5	7.4
3	7	10.3
4	4	5.9
5	2	2.9
6	2	2.9
7	2	2.9
8	1	1.5
9	2	2.9
15	1	1.5
16	1	1.5
22	1	1.5
26	1	1.5
31	1	1.5
45	1	1.5
74	1	1.5
Missing	27	39.7
Total	68	100.0

Tenure and Promotion Opinion Responses

The following describes the importance of specific types of publications in satisfying institutional tenure and promotion criteria. Provided are specific response rates for each tenure and promotion opinion question. Table 10 shows that publishing in refereed journals was rated by 38 program directors (55.9 percent) as being “very important” or “fairly important” in satisfying the tenure and promotion criteria at their institution. Publishing in non-refereed journals was rated by 28 program directors (41.2 percent) as being “fairly important” or “extremely unimportant” in satisfying the tenure and promotion criteria at their institution is shown in Table 11.

Table 10

Institutional Importance of Publishing Refereed Journals for Tenure and Promotion

Criteria	Frequency	Percent
Extremely Unimportant	4	5.9
Fairly Unimportant	8	11.8
Neutral	14	20.6
Fairly Important	11	16.2
Very Important	27	39.7
Missing	4	5.9
Total	68	100.0

Table 11

Institutional Importance of Publishing Non-Refereed Journals for Tenure and Promotion

Criteria	Frequency	Percent
Extremely Unimportant	14	20.6
Fairly Unimportant	14	20.6
Neutral	20	29.4
Fairly Important	11	16.2
Very Important	5	7.4
Missing	4	5.9
Total	68	100.0

Table 12 shows that publishing textbooks was rated by 33 program directors (48.5 percent) as being “fairly important” or “neutral” in satisfying the tenure and promotion criteria at their institution.

Publishing textbook chapters was rated by 33 program directors (48.5 percent) as being “fairly important” or “neutral” in satisfying the tenure and promotion criteria at their institution is shown in Table 13.

Table 12

Institutional Importance of Publishing Textbooks
for Tenure and Promotion

Criteria	Frequency	Percent
Extremely Unimportant	10	14.7
Fairly Unimportant	13	19.1
Neutral	17	25.0
Fairly Important	16	23.5
Very Important	8	11.8
Missing	4	5.9
Total	68	100.0

Table 13

Institutional Importance of Publishing Textbook
Chapters for Tenure and Promotion

Criteria	Frequency	Percent
Extremely Unimportant	11	16.2
Fairly Unimportant	12	17.6
Neutral	17	25.0
Fairly Important	16	23.5
Very Important	8	11.8
Missing	4	5.9
Total	68	100.0

Statistical Analysis of Factors Associated with Publication Productivity

Type of Degree

HO₁: There will be no significant difference in the publication productivity of athletic training program directors holding doctoral degrees when compared to those holding masters degrees. This hypothesis was not rejected by the analysis of the data.

Publication productivity during accreditation process

Table 14 demonstrates no significant difference between the publication productivity while pursuing accreditation and type of degrees ($F = 1.21, p = .329$). The data show program directors with EdD doctoral degrees to be more productive than respondents with other degrees.

Publication Productivity as a Program Director of an Accredited Program

Table 15 demonstrates no significant difference between the publication productivity while directing an accredited program and type of degrees ($F = 1.14, p = .349$). The data shows program directors with PhD doctoral degrees reported a greater number of publications than all other degree categories.

Academic Appointment

HO₂: There will be no significant difference in the publication productivity of athletic training program directors who are tenured when compared to those who are not tenured. This hypothesis was not rejected by the analysis of the data.

Publication productivity during accreditation process

Table 16 demonstrates no significant difference between publication productivity while pursuing accreditation and present appointment ($F = 1.26, p = .304$). Program

Table 14

Difference Between Type of Degrees and Productivity
While Pursuing Accreditation

Degree	Number Responses (percentage)	N Publications Mean (SD)
Master	8 (31.0)	1.4 (0.74)
Doctorate - EdD	7 (27.0)	7.4 (9.57)
Doctorate - PhD	9 (35.0)	5.6 (6.39)
Doctorate- Other	2 (7.0)	4.5 (3.54)
Total	26 (100.0)	4.7 (6.45)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	147.227	3	49.076	1.21	0.329
Error	892.312	22	40.560		
Total	1039.538	25			

$p \leq .05$

Table 15

Difference Between Type of Degrees and Productivity
While Directing Accredited Programs

Degree	Number Responses (percentage)	N Publications Mean (SD)
Master	11 (32.4)	2.5 (2.11)
Doctorate - EdD	10 (29.4)	5.8 (5.80)
Doctorate - PhD	11 (32.4)	12.2 (21.42)
Doctorate- Other	2 (5.8)	3.0 (2.82)
Total	34 (100.0)	6.6 (12.92)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	564.066	3	188.022	1.14	.349
Error	4945.964	30	164.865		
Total	5510.029	33			

$p \leq .05$

Table 16

Difference Between Academic Appointment and Productivity While Pursuing Accreditation

Academic Appointment	Number Responses (percentage)	N Publications Mean (SD)
Tenured	13 (50.0)	3.1 (4.03)
Tenure-track without tenure	9 (35.0)	5.2 (6.33)
Other	4 (15.0)	8.8 (11.84)
Total	26 (100.0)	4.7 (6.45)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	102.310	2	51.155	1.26	.304
Error	937.229	23	40.749		
Total	1039.538	25			

$p \leq .05$

directors categorized as “other” reported more publications than all other appointments.

Publication Productivity as a Program Director of an Accredited Program

Table 17 demonstrates no significant difference between publication productivity while directing an accredited program and academic appointment ($F = .493, p = .615$). Program directors who were tenured reported a greater number of publications than the other academic appointments.

Carnegie Classification

H_{O3} : There will be no significant difference in the publication productivity of athletic training program directors and institutional Carnegie classification. The analysis of the data rejected this hypothesis.

Table 17

Difference Between Academic Appointment and Productivity While Directing Accredited Programs

Academic Appointment	Number Responses (percentage)	N Publications Mean (SD)
Tenured	18 (53.0)	8.7 (16.76)
Tenure-track w/out tenure	10 (29.4)	4.1 (5.86)
Other	6 (17.6)	4.5 (7.15)
Total	34 (100.0)	6.6 (12.92)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	170.018	2	85.009	.493	.615
Error	5340.011	31	172.258		
Total	5510.029	33			

$p \leq .05$

Publication productivity during accreditation process

A significant difference between publication productivity while pursuing accreditation and Carnegie classification ($F = 3.54$, $p \leq .05$) is demonstrated in Table 18. Subjects from Doctoral/Research Universities - Extensive reported a greater number of publications than all other Carnegie classifications. All of the mean comparisons were non-significant except for the mean difference between Doctoral Extensive and Master's I institutions.

Publication Productivity as a Program Director of an Accredited Program

Table 19 shows no significant difference between publication productivity while directing accredited programs and Carnegie classification ($F = .748$, $p = .532$).

Table 18

Difference Between Carnegie Classification and Productivity While Pursuing Accreditation

Institution Carnegie Classification*	N (percentage)	N Publications Mean (SD)
Doctoral Extensive	7 (30.0)	10.1 (9.65)
Doctoral Intensive	4 (18.0)	7.0 (5.60)
Master's I	9 (34.0)	1.7 (0.87)
Baccalaureate General	4 (18.0)	1.50 (0.58)
Total	24 (100.0)	5.00 (6.63)

* No data for Liberal Arts or Associate Baccalaureate; SD = 0 for Master's II

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	350.143	3	116.714	3.54	0.033*
Error	659.857	20	32.993		
Total	1010.00	23			

* $p \leq .05$

Tukey Post Hoc Multiple Comparisons

	Doctoral Extensive	Doctoral Intensive	Master's I	Baccalaureate
Doctoral Extensive		NS	S*	NS
Doctoral Intensive			NS	NS
Master's I				NS

* $p \leq .05$

Table 19

Difference Between Carnegie Classification and Productivity
While Directing Accredited Programs

Institution Carnegie Classification*	N (percentage)	N Publications Mean (SD)
Doctoral Extensive	13 (39.0)	10.8 (20.01)
Doctoral Intensive	4 (12.0)	7.3 (8.54)
Master's I	14 (42.0)	3.3 (2.02)
Baccalaureate General	2 (6.0)	4.0 (4.24)
Total	33 (100.0)	6.8 (13.10)

* No data for Liberal Arts or Associate Baccalaureate; SD = 0 for Master's II

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	394.146	3	131.382	.748	.532
Error	5093.915	29	175.652		
Total	5488.061	32			

$p \leq .05$

Tenure and Promotion Criteria

HO₄: There will be no significant difference in the publication productivity of athletic training program directors and institutional tenure and promotion criteria. The analysis of the data rejected this hypothesis.

Refereed Journal Publication Productivity

Refereed Journal Publication Productivity During Accreditation Process. Table 20 demonstrates no significant difference between level of response to the statement "How important is publishing refereed journals in satisfying tenure and promotion criteria at your institution?" and productivity while pursuing accreditation ($F = 1.881, p = .180$). Subjects responding "very important" reported more refereed journal publications than all

other categories.

Table 20

**Difference Between Tenure and Promotion Criteria for
Publishing Refereed Journals and Productivity
While Pursuing Accreditation**

Level of Importance	N (percentage)	N Publications Mean (SD)
Neutral	5 (23.0)	1.2 (.45)
Fairly Important	2 (9.0)	1.5 (.71)
Very Important	15 (68.0)	7.1 (7.67)
Total	22 (100.0)	5.37 (6.86)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	163.330	2	81.665	1.881	.180
Error	825.033	19	43.423		
Total	988.364	21			

$p \leq .05$

Refereed Journal Publication Productivity While Directing an Accredited Program.

Table 21 demonstrates no significant difference between level of response to the statement “How important is publishing refereed journals in satisfying tenure and promotion criteria at your institution?” and productivity while directing an accredited program ($F = 1.155$, $p = .345$). Subjects responding “very important” reported a greater number of refereed journal publications than all other categories.

Non-refereed Journal Publications

Non-refereed Journal Publication Productivity During Accreditation Process.

Table 22 demonstrates no significant difference between level of response to the statement

Table 21

Difference Between Tenure and Promotion Criteria for
Publishing Refereed Journals and Productivity
While Directing Accredited Programs

Level of Importance	N (percentage)	N Publications Mean (SD)
Fairly Unimportant	4 (13.0)	2.3 (.96)
Neutral	6 (24.0)	1.2 (1.21)
Fairly Important	6 (24.0)	3.8 (2.93)
Very Important	16 (50.0)	11.2 (17.90)
Total	32 (100.0)	6.9 (13.30)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	601.365	3	200.455	1.155	.345
Error	4861.354	28	173.620		
Total	5462.719	31			

$p \leq .05$

“How important is publishing non-refereed journals in satisfying tenure and promotion criteria at your institution?” and productivity while pursuing accreditation ($F = 2.397$, $p = .083$). Subjects responding “very important” reported more non-refereed journal publications than all other categories.

Non-refereed Journal Publication Productivity as a Program Director of an Accredited Program. Table 23 demonstrates no significant difference between level of response to the statement “How important is publishing non-refereed journals in satisfying tenure and promotion criteria at your institution?” and productivity while directing accredited programs ($F = 1.008$, $p = .420$). Subjects responding “very important” reported more non-refereed journal publications than all other categories.

Table 22

Difference Between Tenure and Promotion Criteria for Publishing Non-Refereed Journals and Productivity While Pursuing Accreditation

Level of Importance	N (percentage)	N Publications Mean (SD)
Extremely Unimportant	8 (31.0)	6.1 (6.38)
Fairly Unimportant	6 (23.0)	3.5 (6.12)
Neutral	6 (23.0)	2.2 (1.94)
Fairly Important	4 (15.0)	2.0 (.82)
Very Important	2 (8.0)	15.5 (14.85)
Total	26 (100.0)	4.7 (6.45)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	325.830	4	81.458	2.397	.083
Error	713.708	21	33.986		
Total	1039.538	25			

$p \leq .05$

Table 23

Difference Between Tenure and Promotion Criteria for Publishing Non-Refereed Journals and Productivity While Directing Accredited Programs

Level of Importance	N (percentage)	N Publications Mean (SD)
Extremely Unimportant	7 (21.0)	15.1(26.26)
Fairly Unimportant	9 (27.0)	3.8 (4.32)
Neutral	10 (31.0)	3.9 (5.90)
Fairly Important	4 (12.0)	4.5 (3.51)
Very Important	3 (9.0)	9.0 (8.66)
Total	33 (100.0)	6.8 (13.08)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	689.202	4	172.301	1.008	.420
Error	4788.313	28	171.011		
Total	5477.515	32			

$p \leq .05$

Publishing Textbooks

Textbook Publication Productivity During Accreditation Process. A significant difference between level of response to the statement “How important is publishing textbooks in satisfying tenure and promotion criteria at your institution?” and publication productivity while pursuing accreditation ($F = 9.075, p \leq .05$) is presented in Table 24. All of the mean comparisons were significant between “very important” and all other responses.

Textbook Publication Productivity as a Program Director of an Accredited Program. Table 25 demonstrates no significant difference between level of response to the statement “How important is publishing textbooks in satisfying tenure and promotion criteria at your institution?” and productivity while directing accredited programs ($F = 1.913, p = .136$). Subjects responding “extremely unimportant” to the item reported a mean of 4.0 textbook publications ($SD = 1.73$). Subjects responding “very important” reported a mean of textbook publications greater than all other categories.

Publishing Textbook Chapters

Textbook Chapter Publication Productivity During Accreditation Process. Table 26 demonstrates a significant difference between level of response to the statement “How important is publishing textbook chapters in satisfying tenure and promotion criteria at your institution?” and productivity while pursuing accreditation ($F = 8.39, p \leq .05$). A comparison of means showed significant differences between “very important” and all other responses.

Table 24

Difference Between Tenure and Promotion Criteria for Publishing Textbooks and Productivity While Pursuing Accreditation

Level of Importance	N (percentage)	N Publications Mean (SD)
Extremely Unimportant	4 (16.0)	5.8 (6.18)
Fairly Unimportant	6 (23.0)	2.0 (2.45)
Neutral	7 (27.0)	1.3 (.49)
Fairly Important	5 (19.0)	2.8 (1.79)
Very Important	4 (15.0)	16.0 (8.60)
Total	26 (100.0)	4.7 (6.45)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	658.560	4	164.640	9.075	.000*
Error	380.979	21	18.142		
Total	1039.538	25			

* $p \leq .05$

Tukey Post Hoc Multiple Comparisons

	Extremely Unimportant	Fairly Unimportant	Neutral	Fairly Important	Very Important
Extremely Unimportant		NS	NS	NS	S*
Fairly Unimportant			NS	NS	S*
Neutral				NS	S*
Fairly Important					S*

* $p \leq .05$

Table 25

Difference Between Tenure and Promotion Criteria for Publishing Textbooks and Productivity While Directing Accredited Programs

Level of Importance	N (percentage)	N Publications Mean (SD)
Extremely Unimportant	3 (9.10)	4.0 (1.73)
Fairly Unimportant	7 (21.21)	2.1 (.90)
Neutral	8 (24.24)	1.8 (1.04)
Fairly Important	8 (24.24)	7.6 (6.44)
Very Important	7 (21.21)	17.4 (25.80)
Total	33 (100.0)	6.8 (13.08)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	1175.569	4	293.892	1.913	.136
Error	4301.946	28	153.641		
Total	5477.515	32			

$p \leq .05$

Textbook Chapter Publication Productivity While Directing an Accredited

Program. Table 27 demonstrates no significant difference between level of response to the statement “How important is publishing textbook chapters in satisfying tenure and promotion criteria at your institution?” and productivity while directing accredited programs ($F = 1.79, p = .158$). Subjects responding “very important” reported a mean of chapter publications greater than all other categories.

Academic Workload

Administrative Activities

H_{O5} : There will be no significant difference in the publication productivity of athletic training program directors who have greater administrative responsibilities when compared to those with reduced responsibilities. This hypothesis was not rejected by the

analysis of the data.

Table 26

Difference Between Tenure and Promotion Criteria for Publishing Textbook Chapters and Productivity While Pursuing Accreditation

Level of Importance	N (percentage)	N Publications Mean (SD)
Extremely Unimportant	5 (19.2)	4.6 (5.86)
Fairly Unimportant	5 (19.2)	2.6 (2.61)
Neutral	7 (27.0)	1.1 (.38)
Fairly Important	5 (19.2)	2.8 (1.79)
Very Important	4 (15.2)	16.0 (8.60)
Total	26 (100.0)	4.7 (6.45)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	639.481	4	159.870	8.39	.000*
Error	400.057	21	19.050		
Total	1039.538	25			

* $p \leq .05$

Tukey Post Hoc Multiple Comparisons

	Extremely Unimportant	Fairly Unimportant	Neutral	Fairly Important	Very Important
Extremely Unimportant		NS	NS	NS	S*
Fairly Unimportant			NS	NS	S*
Neutral				NS	S*
Fairly Important					S*

* $p \leq .05$

Table 27

Difference Between Tenure and Promotion Criteria for Publishing Textbook Chapters and Productivity While Directing Accredited Programs

Level of Importance	N (percentage)	N Publications Mean (SD)
Extremely Unimportant	5 (15.2)	3.8 (1.64)
Fairly Unimportant	6 (18.2)	2.3 (1.21)
Neutral	7 (21.2)	2.0 (1.15)
Fairly Important	8 (24.2)	6.9 (6.98)
Very Important	7 (21.2)	17.4 (25.80)
Total	33 (100.0)	6.8 (13.08)

Analysis of Variance Table

Source	SS	DF	MS	F	p
Item	1116.793	4	279.198	1.79	.158
Error	4360.723	28	155.740		
Total	5477.515	32			

$p \leq .05$

Hours Spent Per Week in Administrative Activities. Table 28 demonstrates a significant difference between hours spent per week administrating accredited programs and publication productivity ($p = .045$). Subjects spending less than 10 hours per week in administrative activities were more productive than other respondents.

Table 28

Difference Between Administrative Activities and Productivity While Directing Accredited Programs

Administrative Activities (hrs/wk)	N Responses (percentage)	N Publications Mean (SD)	t	p
≥ 10	21 (63.6)	3.2 (4.01)	-2.088	.045*
< 10	12 (36.4)	12.7 (20.24)		
Total	33 (100.0)			

* $p \leq .05$

Athletic Team Coverage

HO₆: There will be no significant difference in the publication productivity of athletic training program directors who have greater athletic team coverage responsibilities when compared to those with reduced responsibilities. This hypothesis was not rejected by the analysis of the data.

Hours Spent Per Week in Athletic Team Coverage Activities. Table 29 demonstrates no significant difference between hours spent per week covering athletic teams and publication productivity ($p = .286$). However, subjects spending 10 or more hours per week covering athletic teams reported a greater number of publications than other respondents.

Table 29

Difference Between Athletic Team Coverage and Productivity While Directing Accredited Programs

Covering Athletic Teams (hrs/wk)	N Responses (percentage)	N Publications Mean (SD)	t	p
≥ 10	9 (29.0)	10.7 (23.85)	1.087	.286
< 10	22 (71.0)	4.9 (5.55)		
Total	31 (100.0)			

$p \leq .05$

Clinical Instruction

HO₇: There will be no significant difference in the publication productivity of athletic training program directors who have greater clinical teaching responsibilities when compared to those with reduced responsibilities. This hypothesis was not rejected by the analysis of the data.

Hours Spent Per Week in Clinical Instruction. Table 30 demonstrates no significant difference between hours spent per week in clinical instruction and publication productivity ($p = .428$). However, subjects spending 0 to 9 hours per week in clinical instruction reported more publications than other respondents.

Table 30

Difference Between Clinical Instruction and Productivity
While Directing Accredited Programs

Clinical Instruction (hrs/wk)	N Responses (percentage)	N Publication Mean (SD)	t	p
≥ 10	8 (29.0)	3.6 (6.26)	-.806	.428
< 10	20 (71.0)	8.4 (16.13)		
Total	28 (100.0)			

$p \leq .05$

Writing for Publication

H_{0g} : There will be no significant difference in the publication productivity of athletic training program directors who spend more time writing for publication when compared to those who spend less time writing. The analysis of the data rejected this hypothesis.

Hours Spent Writing for Publication. Table 31 demonstrates a significant difference between hours spent per week writing for publication and publication productivity ($p = .001$). Subjects spending 10 or more hours per week writing for publication reported a significantly greater number of publications than other respondents.

JRC-AT Self-Study

H_{0g} : There will be no significant difference in the publication productivity of

athletic training program directors while completing the JRC-AT self-study when compared to subsequent productivity directing CAAHEP accredited programs. The analysis of the data rejected this hypothesis.

Table 31

Difference Between Time Writing for Publication and Productivity While Directing Accredited Programs

Writing for Publication (hrs/wk)	N Responses (percentage)	N Publication Mean (SD)	t	p
≥ 10	5 (14.7)	23.4 (29.14)	3.70	.001*
< 10	29 (85.3)	3.7 (4.06)		
Total	34 (100.0)	6.6 (12.92)		

* $p \leq .05$

Completing Self-Study and Subsequent Publications as a Program Director.

Table 32 demonstrates a significant difference between past completion of a JRC-AT self-study and the subsequent publication productivity while directing accredited programs ($p \leq .05$). Subjects not completing a self-study reported a significantly great number of publications than all other respondents.

Table 32

Difference Between Past Completion of Self-Study and Productivity While Directing Accredited Programs

Completed Self-study	Number Responses (percentage)	N Publication Mean (SD)	t	p
Yes	29 (85.3)	4.8 (5.32)	-2.036	.050*
No	5 (14.7)	17.0 (31.96)		
Total	(100.0)			

* $p \leq .05$

Publication Productivity While Completing Self-Study and Subsequent Publication Productivity as Program Director of Accredited Program. Table 33 demonstrates a significant difference between the publication productivity during the completion of a JRC-AT self-study and the subsequent publication productivity as a program director of an accredited program ($p = .000$). Subjects with 5 or more publications while completing self-study reported a significantly great number of publications than all other respondents.

Table 33

Difference Between Productivity While
Completing Self-Study and Directing Accredited Programs

N Publications During Self-study	Number Responses (percentage)	N Publication Mean (SD)	t	p
≥ 5	4 (21.0)	14.8 (6.85)	3.634	.000*
< 5	15 (79.0)	3.6 (3.31)		
Total	19 (100.0)	6.0 (6.18)		

* $p \leq .05$

Summary

The publication productivity of athletic training program directors is the problem of this study. The purposes of the study were 1) to determine if publication productivity is affected by specific academic and institutional factors and 2) to answer the following research questions:

1. What is the relationship between the program director's academic degree earned and publication productivity?
2. What is the relationship between the program director's academic rank and publication productivity?

3. What is the relationship between the program directors institutional Carnegie classification and publication productivity?
4. What is the relationship between institutional tenure and promotion criteria and publication productivity?
5. What is the relationship between athletic training education program administrative load and publication productivity?
6. What is the relationship between having a team coverage assignment in the Athletic Department and publication productivity?
7. What is the relationship between having clinical teaching responsibilities and publication productivity?
8. What is the relationship between the time spent writing research reports and publication productivity?
9. What is the relationship between completing the JRC-AT self-study and subsequent publication productivity as a program director of an accredited program.

The population consisted of 122 athletic training program directors of undergraduate programs listed on the NATA accredited-programs web page. A self-report questionnaire was created with validated research questions by the researcher and subsequently e-mailed to each program director. The questionnaire requested information on individual demographics, institutional demographics, and professional activities.

The data were first analyzed using descriptive statistics. The characteristics of the average program director responding to this investigation were: male, age forty-one,

employed at either a Doctoral/Research - Extensive or Master's Comprehensive institution, and earned masters or doctoral degree. Their academic load was split equally between clinical instruction, athletic team coverage, and athletic training program administration. Participants completed a self-study for CAAHEP accreditation in an average of one and a half years. Program directors completed approximately the same number of publications while completing the self-study as compared to when they directed an accredited program.

Independent t-test and analysis of variance were used for selected each research question with a level of significance at $p \leq .05$. The major findings rejected four and failed to reject five hypotheses.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to identify variables that influence the publication productivity of athletic training program directors. The data analysis compared the differences between individual characteristics, institutional classification, professional activities and publication productivity. The variables of significance in this study were: academic workload, institutional tenure and promotion criteria, Carnegie classification of the institution, and completing the JRC-AT self-study. The following sections of this chapter will include the discussion of data findings, conclusions, implications for change, and recommendations for further study.

Discussion

The relationship between the type of degree held and publication productivity of athletic training program directors was not significant. Seventy-nine percent of the responding program directors with doctorate degrees were more productive while completing the self study (mean = 5.8 publications) than those with masters degrees (mean = 1.4 publications). Sixty-eight percent of the sample population with doctorate degrees published more (mean 7.0 = publications) than those with masters degrees (mean = 2.5 publications) while directing accredited programs. There was also a difference between program directors with an EdD (mean = 5.8 publications) and PhD (mean = 12.2

publications) while directing accredited programs. This may be attributed to the decreased pressure to publish to attain tenure at non-research institutions or the lack of previous research experience by the low producers. Similar results were found in studies of allied health faculty in medical, dental, and medical technology education. Faculty with doctorate degrees published more than those with lesser degrees (28, 39, 45, 48, 88, 96). The increase in publications was shown to be attributed to the training and socialization experiences of faculty as doctoral students. Some of these experiences included: increased expertise in a specific field of study, improved research methods, and the development of mature research values (59).

There was no significant difference in publication productivity between program directors who were tenured and those who were categorized as tenure-track without tenure (pre-tenured). During the self-study process, program directors with non-traditional appointments published more (mean = 8.8 publications) than those who were pre-tenured (mean = 5.2 publications) or tenured (mean = 3.1 publications). These differences may be the result of the non-traditional faculty holding three to five year employment contracts, not being required to fulfill the research component to attain tenure, and receiving release time to conduct research and complete the self-study. These results differ from the research of allied health faculty publication productivity. In two studies with 11,000 and 2,000 allied health faculty, the increase in publication productivity was significantly related to being tenured (28, 45). Tenured faculty with high publication rates spent less time teaching and engaged in more administrative and research activities (59).

The current study found a significant relationship between Carnegie classification and publication productivity. Program directors employed by Doctoral Extensive institutions published significantly more than those at Master's I and II institutions. These differences were demonstrated while pursuing accreditation and directing an accredited program, though the second comparison was not significant. One study showed that administrators at research institutions expect their faculty to spend approximately 50% of their work-time in research activities (85). Other studies concluded that faculty who have not published in the past will increase their productivity if their department colleagues are productive. Conversely, highly productive scholars will also continue their level of productivity regardless of the publication rates and activities of other faculty in their department (7, 13, 74, 75, 83).

This study indicated that institutional tenure and promotion criteria affected the publication productivity of athletic training program directors. When institutions classified publishing textbooks and textbook chapters as very important in satisfying tenure and promotion criteria, total publications increased. Thirty-eight percent of the program directors reported more total publications when either textbooks or textbook chapters were considered very important in attaining tenure (mean = 8.6 publications). These significant differences were for publications while pursuing accreditation. In comparison, the institutional tenure and promotion criteria had no significant affect on the publication productivity of program directors while directing an accredited athletic training program. These results may be attributed to the low rates of publications reported for all categories. Less than 33% of the sample population reported publishing textbooks (N =

21, group mean = 0.34 publications) and textbook chapters (N = 21, group mean = 0.50 publications) while directing an accredited athletic training program. Less than 50% of the sample population reported publishing non-refereed journals (N = 33, group mean = .049 publications) while over 80% of the sample population reported publishing in refereed journals (N = 55, group mean = 0.47 publications). These publications in refereed journals is a positive trend for the future of athletic training faculty research. In a related study, there was a significant relationship between nursing faculty publication productivity and the attitudes they held regarding institutional tenure and promotion processes. The more dedicated faculty were in supporting and adhering to their institution's promotion policies, the more they published (81).

There was a significant relationship between the amount of time spent on work related tasks and publication productivity. Time spent directing the athletic training program and writing for publication were shown to affect publication totals ($p = .045$). Program directors who spent 10 or more hours per week administrating (64 percent, mean = 4.0 publications) published less than those who spent less time in the same activity (36 percent, mean = 20.2 publications). Program directors directing an accredited program who spent 10 or more hours per week writing for publication published significantly more (15 percent, mean = 23.4 publications) than those who spent less time in the same activity (85 percent, mean = 3.7 publications). This significant relationship ($p = .001$) may result from program directors using their administrative release time for research activities. This relationship was also reported in time spent covering athletic teams. Program directors who spent 10 or more hours per week covering a sport published more (29

percent, mean = 10.7 publications) than those who spent less time performing the same duties (71 percent, mean = 4.9 publications). Although this difference is not significant ($p = .286$), these results may indicate that program directors are utilizing down-time while traveling with athletic teams to complete literature reviews or write manuscripts. The difference between publication productivity for program directors who spent 10 or more hours per week in clinical instruction (29 percent, mean = 3.6 publications) and those who spent less time in the same duties (71 percent, mean = 8.4 publications) is a concern during the transformation of athletic training programs to an accredited status. The literature shows that other allied health professionals were concerned that work activities deter their research productivity. Medical faculty suggested improving the following barriers to research productivity: lack of personnel, funding, and allocation of release time for research (40, 70). Further studies found a proliferation of nursing faculty publications when time spent per week in research activities increased and clinical instruction activities decreased (81).

There was a significant relationship between the publication productivity of program directors while directing an accredited program and past experiences of completing a JRC-AT self-study ($p = .050$). Eighty-five percent of the respondents who completed a self-study produced fewer publications ($N = 29$, mean = 4.8 publications) when compared to those with no self-study experience ($N = 5$, mean = 17.0 publications). Using the lifetime publication productivity of program directors may indicate that high publication producers have developed as academic researchers over time. A significant relationship was then shown between the number of publications produced while

completing the self-study and number of publications while directing an accredited program ($p = .000$). Twenty-one of the respondents published five or more publications while completing the self-study process. This same group subsequently published more textbooks, chapters, and journal articles while directing an accredited program (mean = 14.8 publications). The balance of the respondents (79 percent) who reported less than five publications while completing the self-study published less while directing an accredited program (mean = 3.6 publications).

This discussion presented significant relationships between athletic training program directors publication productivity and individual, institutional, and work activity variables. Education faculty in family medicine, radiology, internal medicine, and nursing also found a positive relationships between number of publications per year and: 1) internal and external grants, 2) working with productive members of the faculty, 3) having beliefs about the desirable relationship between publication productivity and tenure and promotion (44, 64, 95). The conclusions of these studies suggest that athletic training program directors completing the self-study process may develop or maintain their publication productivity by increasing grant awards, collaborating with productive colleagues, and believing in the process of employment assessment in higher education.

Conclusions and Implications

The questions of this study were designed to investigate the variables that affect publication productivity of athletic training program directors. While the promotion and tenure criteria and academic workload were significant variables, the two most influential

conclusions drawn from this study were 1) the Carnegie classification of an institution and 2) completing the JRC-AT self-study for CAAHEP accreditation.

Program directors employed at research institutions produce more publications than program directors from all other classifications. One reason for this outcome may be the completed questionnaire return rate by type of degree. Program directors with an earned masters degree comprise 58 percent of the total population (71/122). Their return rate of completed questionnaires was only 45 percent (32/71). They may have the following productivity reporting limitations: decreased research experience, no institutional tenure and promotion research requirement, or lack of publications. There are program directors who have a masters as their terminal degree, are employed as faculty with renewable contracts, and have no research requirements. It is possible that they are employed at less prestigious institutions where teaching is a priority over publishing. This being the case, the differences in publication productivity between degrees may be even more significant than reported.

Program directors with an earned doctorate degree comprise 42 percent of the total population (51/122) and had a considerably higher return rate of 71 percent (36/51). They may have increased rates of publication from: 1) choosing a research mentor while completing their doctoral degree, 2) increasing their research and publishing experiences while completing their doctoral degree, 3) seeking employment at institutions or in departments that have a high rate of publication productivity, 4) aligning themselves with highly productive individuals, and 5) applying for employment at institutions that have already attained CAAHEP accreditation.

Program directors who completed the JRC-AT self-study process produced fewer publications subsequently while directing an accredited program. Those who had low publication productivity while completing the self-study continued this trend when they became directors of accredited athletic training programs. The following variables may influence the rate of publishing while completing the JRC-AT self-study for CAAHEP accreditation: lack of self-study experience, minimal release time to complete self-study, decrease in faculty or staff collaborative efforts, and publication history not established prior to beginning the self-study.

The following are speculations derived from the findings of this study.

Administrators from Carnegie institutions with less emphasis on publishing (Master's and Baccalaureate institutions) may first consider redefining scholarship to increase faculty productivity. Boyer proposed four categories of redefined scholarship. The first is the traditional mode of scholarship, that of discovery. Through the communication of research findings, contributions are made to the body of new knowledge. The second category is the scholarship of integration. This can be achieved by developing collaborative research efforts with experts in other fields and presenting research findings to an audience of other disciplines. Thirdly, researchers are encouraged to fulfill the objectives of the scholarship of application by reaching out to the community, employing their concepts in real-world situations. The fourth is centered around teaching. Researchers are given the opportunity to create and compare new teaching techniques, develop new curriculum, and enhance departmental methods of outcomes assessment. (1, 11, 18). The addition of a fifth category could include the development of a non-

traditional faculty productivity scale (2). This scale would evaluate each faculty member on what uniqueness they bring to the institution, not how well they can fit into a pre-existing matrix. This would allow each department the opportunity to design evaluation scales to accentuate the strengths of each faculty member. The non-traditional faculty productivity scale may include the following:

- A. Number of undergraduate committees served on
- B. Number of graduate committees served on
- C. Number of non-student committees served on
- D. Number of hours per week spent teaching for credit
- E. Number of hours spent per week on individual instruction
- F. Number of classroom credit hours

Administrators and athletic training program directors from Carnegie Doctoral research institutions may wish to add the following in support of faculty publication productivity (34, 94):

- A. Develop mentoring programs between new faculty and those who have research and publication experience.
- B. Develop workshops that improve the ability to apply for grants, write for scholarly publications, and present research findings.
- C. Encourage collaboration of research efforts between disciplines.
- D. Assign release time to conduct research and write for publication.

Athletic Training program directors from these research institutions must take responsibility to improve their research and publication productivity. A productive researcher develops methodological skills, acquires skills to investigate topics relevant to their discipline, and has in-depth knowledge in their research area. Efficient work habits are cultivated early in their career, they align themselves with productive mentors, and aggressively explore research interests in other disciplines (10, 37, 38).

Productive publishers should research target audiences, accepted writing styles, and suggested formats of journals of interest (43, 47, 53, 55, 56, 67). Faculty who publish productively attend writing workshops to assess and improve their writing skills (92). The most common obstacle to increasing publication productivity is the lack of time. To circumvent the negative impact of academic time constraints and to satisfy the requirements of attaining tenure, faculty must publish early and often. Suggestions to overcome barriers to publishing in higher education include initiating long- and short-term research projects. Short-term projects will generate publications early in the tenure-track process and satisfy the criteria for tenure. The long-term projects will provide material for promotion and have more meaning to the researcher (98). It is also the program director's responsibility to educate administrators and members of tenure committees. Both groups need to become aware of significant contributions by program directors beyond the standard tenure triad of teaching, research, and service. The development of a non-traditional faculty productivity scale for athletic training program directors would make a great educational tool and help assure a thorough tenure evaluation process. This productivity scale would assess the contributions made from: developing an athletic

training curriculum from the NATA educational competencies, writing the JRC-AT self-study, hosting a JRC-AT accreditation site-visit, and maintaining an accredited program. Program directors have an obligation to improve their professional status while contributing to the health care of the physically active. By improving their command of the allied sciences and taking initiative to report research findings, athletic training program directors will establish themselves as qualified members of the research community (49).

Recommendations for Further Study

The following are recommendations for further study:

- A. A follow-up study should be conducted on the athletic training program directors in this study to determine the long term affects of completing a self-study.
- B. A study should be conducted of journal citations to determine the publication productivity of athletic training program directors at Carnegie Doctoral Research institutions.
- C. A study should be conducted to measure the quality of publications produced by athletic training program directors.
- D. A study should be conducted comparing the productivity of athletic training program directors to other allied health education program directors.
- E. A study should be conducted comparing the scholarship productivity of certified athletic trainers in higher education, secondary education, professional, and clinical settings.

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APPENDIX A
LETTER OF INTRODUCTION

APPENDIX A - Letter of Introduction

October 21, 2000

Dear Athletic Training Program Director:

In partial fulfillment of the requirements for the Doctor of Education degree at Oklahoma State University, I am writing a dissertation measuring the correlates of Athletic Training Program Directors' publication productivity.

A three page questionnaire assessing the characteristics of your professional activities will be arriving by e-mail in one week. Please take a few minutes to supply this study with findings that may assist athletic training educators in continuing their research and publication endeavors.

Sincerely,

Chris T. Harman, ATC/L
405-744-2197
hchris@okstate.edu

APPENDIX B
SURVEY COVER LETTER

APPENDIX B - Survey Cover Letter

October 28, 2000

Dear Athletic Training Program Director:

In partial fulfillment of the requirements for the Doctor of Education degree at Oklahoma State University, I am writing a dissertation measuring the correlates of Athletic Training Program Directors' publication productivity. The study is designed to determine if individual demographics, institutional demographics, teaching responsibilities, athletic department responsibilities, or administrative load affect publication productivity.

Your name was chosen from the list of accredited graduate and undergraduate athletic training programs in higher education posted on the National Athletic Trainers' Association web-site <<http://www.nata.org/departments/membership/accredited.htm>>. To determine these publication productivity correlates, a peer-reviewed questionnaire has been attached. Please return the completed questionnaire by e-mail or, if you prefer, printing and mailing it to the address below.

All information gathered from the study will be held strictly confidential and you will not be identified in any way. By completing this questionnaire you have agreed to voluntarily participate in a study conducted by Chris T. Harman at Oklahoma State University. By not placing your name on the questionnaire all information will remain confidential and anonymous.

Thank you for your prompt assistance and cooperation in this research process. If you have any questions, please contact me at 405-744-2197 or hchris@okstate.edu.

Sincerely,

Chris T. Harman, ATC
102 N. University Pl #6
Stillwater, OK 74075

Enc (1)

APPENDIX C
FOLLOW-UP LETTER

APPENDIX C - Follow-up Letter

November 4, 2000

Dear Athletic Training Program Director:

A week ago you were sent a questionnaire that is assessing the publication productivity of athletic training program directors. If you have returned the completed questionnaire already, I appreciate your professional input. If you have not completed the questionnaire, please take a few moments out of your busy schedule to participate in my doctoral dissertation research.

If you have misplaced the questionnaire, I have enclosed an additional copy for your convenience. Please return the completed questionnaire by e-mail. If you prefer, print and mail it to the address listed below or contact me and I will mail a paper copy to you immediately. Thank you for your continued support in the research endeavors of your fellow certified athletic trainers.

Sincerely,

Chris T. Harman, ATC
102 N. University Pl #6
Stillwater, OK 74075

Enc (1)

APPENDIX D
SURVEY INSTRUMENT

**Athletic Training Program Director
Publication Productivity Questionnaire**

Statement of Confidentiality: All information gathered from the study will be held strictly confidential. Your participation is anonymous and you will not be identified in any way. By completing this questionnaire you have agreed to voluntarily participate in a study conducted by Chris T. Harman at Oklahoma State University. Do not place your name on the questionnaire.

Instructions: Please fill in the blank or check the appropriate response for the following questions.

I. Individual and Institutional Demographics

- 1) Age at your last birthday: _____ years
- 2) Gender: _____ Male _____ Female
- 3) Last degree earned: _____ Master's _____ Doctorate
- 4) Present academic appointment:
_____ Tenured
_____ Tenure-track without tenure
_____ Other (specify) _____
- 5) Institution's Carnegie Classification (please refer to page 3 for definitions)
_____ Doctoral/Research Universities – Extensive
_____ Doctoral/Research Universities – Intensive
_____ Master's (Comprehensive) Colleges and Universities I
_____ Master's (Comprehensive) Colleges and Universities II
_____ Baccalaureate Colleges – Liberal Arts
_____ Baccalaureate Colleges – General
_____ Baccalaureate/Associate's Colleges
_____ Do not know

II. Professional Activities

- 1) During this Fall semester, approximately how many **hours per week** do you devote to the following activities:
_____ Clinical instruction
_____ Writing for publication
_____ Athletic Training education program administration
_____ Team coverage in your Athletic Department (including travel)

2) Have you completed a self-study for program accreditation?

____ Yes (number of years to complete _____)
 ____ No (if no, proceed to question 3b.)

3) Indicate the number of items published or accepted for publication:

While completing a self-study for program accreditation

	Single	Co-Author	Multiple
Textbook	_____	_____	_____
Textbook chapter(s)	_____	_____	_____
Refereed journal	_____	_____	_____
Non-refereed journal	_____	_____	_____

As an Athletic Training Program Director of an accredited program

	Single	Co-Author	Multiple
Textbook	_____	_____	_____
Textbook chapter(s)	_____	_____	_____
Refereed journal	_____	_____	_____
Non-refereed journal	_____	_____	_____

4) How important are the following items in satisfying the **tenure and promotion** criteria at your institution? Please use the scale:

1 - extremely unimportant 2 - fairly unimportant 3 - neutral 4 - fairly important 5 - very important

	Low			High	
Publishing in refereed journals	1	2	3	4	5
Publishing in non-refereed journals	1	2	3	4	5
Publishing textbooks	1	2	3	4	5
Publishing textbook chapters	1	2	3	4	5

I appreciate your response to my request for assistance in investigating the Publication Productivity of Athletic Training Program Directors. Please return the questionnaire by e-mail. If you prefer, print the completed questionnaire and drop it in the mail.

The Carnegie Classification of Institutions of Higher Education¹ Definitions of Categories

Doctorate-granting institutions

Doctoral/Research Universities—Extensive: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the doctorate. They award 50 or more doctoral degrees per year across at least 15 disciplines.

Doctoral/Research Universities—Intensive: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the doctorate. They award at least ten doctoral degrees per year across three or more disciplines, or at least 20 doctoral degrees per year overall.

Master's (Comprehensive) Colleges and Universities

Master's (Comprehensive) Colleges and Universities I: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the master's degree. They award 40 or more master's degrees per year across three or more disciplines.

Master's (Comprehensive) Colleges and Universities II: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the master's degree. They award 20 or more master's degrees per year.

Baccalaureate Colleges

Baccalaureate Colleges—Liberal Arts: These institutions are primarily undergraduate colleges with major emphasis on baccalaureate programs. They award at least half of their baccalaureate degrees in liberal arts fields.

Baccalaureate Colleges—General: These institutions are primarily undergraduate colleges with major emphasis on baccalaureate programs. They award less than half of their baccalaureate degrees in liberal arts fields.

Baccalaureate/Associate's Colleges: These institutions are undergraduate colleges where the majority of conferrals are at the sub-baccalaureate level (associate's degrees and certificates), but bachelor's degrees account for at least ten percent of undergraduate awards.

1. <http://www.carnegiefoundation.org/home.htm>

APPENDIX E

PROTECTION OF HUMAN SUBJECTS

Oklahoma State University
Institutional Review Board

Protocol Expires: 10/18/01

Date : Thursday, October 19, 2000

IRB Application No ED0139

Proposal Title: CORRELATES BETWEEN ATHLETIC TRAINING PROGRAM DIRECTIONS'
PUBLICATION PRODUCTIVITY AND COMPLETING PROGRAM ACCREDITATION

Principal
Investigator(s) :

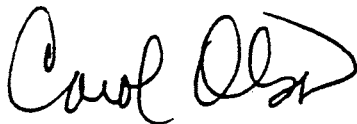
Chris Harman
102 N University #6
Stillwater, OK 74075

Bert Jacobson
101 Colvin Center
Stillwater, OK 74078

Reviewed and
Processed as: Exempt

Approval Status Recommended by Reviewer(s) : Approved

Signature :



Carol Olson, Director of University Research Compliance

Thursday, October 19, 2000

Date

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modifications to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office MUST be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

2

VITA

Chris Tina Harman

Candidate for the Degree of

Doctorate of Education

Thesis: PUBLICATION PRODUCTIVITY OF ATHLETIC TRAINING
PROGRAM DIRECTORS' WHILE PURSUING ACCREDITATION

Major Field: Higher Education

Biographical:

Education: Received a Bachelor of Science degree in Physical Education from the University of Vermont, Burlington, Vermont in December 1980. Received a Master of Science degree in Athletic Training from Indiana University, Bloomington, Indiana in August 1984. Completed the requirements for the Doctorate in Education with a major in Higher Education Administration at Oklahoma State University on May, 2001.

Experience: Employed as a certified athletic trainer since 1987. Taught physical education, health, and athletic training in higher education from 1988 to the present at: Triton College and Chicago State University in Chicago, Illinois; Oklahoma State University in Stillwater, Oklahoma; and Xavier University in Cincinnati, Ohio.

Professional membership: American College of Sports Medicine, National Athletic Trainers' Association, National Strength and Conditioning Association.