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Perceptions of the athletic training profession by a collegiate athlete patient population

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**PERCEPTIONS OF THE ATHLETIC TRAINING PROFESSION BY A COLLEGIATE
ATHLETE PATIENT POPULATION**

A thesis submitted to
the Graduate College of
Marshall University
In partial fulfillment of
the requirements for the degree of
Master of Science
in
Athletic Training

by
Bethany Estelle Beuhring

Approved by
Dr. Suzanne Konz, Committee Chairperson
Dr. Elizabeth Pacioles
Dr. Zachary Garrett

Marshall University
December 2017

APPROVAL OF THESIS

We, the faculty supervising the work of Bethany Beuhring, affirm that the thesis, *Perceptions of The Athletic Training Profession by a Collegiate Athlete Patient Population* meets the high academic standards for original scholarship and creative work established by the Masters in Athletic Training and the College of Health Professions. This work also conforms to the editorial standards of our discipline and the Graduate College of Marshall University. With our signatures, we approve the manuscript for publication.


Dr. Suzanne Konz, Department of Biomechanics

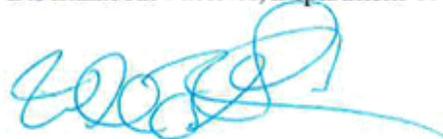
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TABLE OF CONTENTS

| | |
|-------------------------------------|----|
| List of Tables | v |
| Abstract | vi |
| Chapter 1: Introduction | 1 |
| Operational Definitions | 2 |
| Limitations | 2 |
| Delimitations | 3 |
| Assumptions | 3 |
| Statement of the Problem | 4 |
| Research Question | 4 |
| Null Hypothesis | 4 |
| Alternative Hypothesis | 4 |
| Chapter 2: Literature Review | 5 |
| Introduction | 5 |
| History | 6 |
| Research in Other Professions | 8 |
| Practice in Athletic Training | 10 |
| Athletic Population | 13 |
| Behavioral Intention | 14 |
| Conclusion | 15 |
| Chapter 3: Methodology | 16 |
| Purpose | 16 |
| Null Hypothesis | 16 |
| Alternative Hypothesis | 16 |

| | |
|---|----|
| Participants..... | 16 |
| Inclusion Criteria | 16 |
| Exclusion Criteria | 16 |
| IRB Approval..... | 16 |
| Instrumentation | 17 |
| Pilot..... | 18 |
| Procedure | 18 |
| Delimitations..... | 19 |
| Data Analysis | 20 |
| Chapter 4: Results | 21 |
| Chapter 5: Discussion | 31 |
| References..... | 39 |
| Appendix A: Office of Research Integrity Approval Letter | 43 |
| Appendix B: Office of Research Integrity First Amendment Approval Letter | 44 |
| Appendix C: Office of Research Integrity Second Amendment Approval Letter | 45 |
| Appendix D: Informed Consent..... | 46 |
| Appendix E: Questionnaire Tool | 47 |

LIST OF TABLES

| | |
|--|----|
| Table 1: Demographic Characteristics of Sample Population | 22 |
| Table 2: Response Frequencies for Athletic Training Care Questions..... | 24 |
| Table 3: Response Frequencies for Patient Perception Questions..... | 26 |
| Table 4: Spearman Rho Correlations and p-values for patient comfort and patient perception | 28 |
| Table 5: Spearman Rho Correlations and p-values for patient confidence and patient perception | 28 |
| Table 6: Spearman Rho Correlations and p-values for patient satisfaction and patient perception | 29 |
| Table 7: Spearman Rho Correlations and p-values for patient overall assessment and patient perception | 29 |
| Table 8: Response Frequencies of Overall Satisfaction Questions | 30 |

ABSTRACT

Patient satisfaction is an advancing topic amongst health care professions, but athletic training has not kept up with these advances. The purpose of this study was to assess patient satisfaction and perception of the athletic training profession as related to their exposure to athletic training services over the course of an athletic career. Four hundred one student-athletes from a single institution were sent an email containing a link to the online-questionnaire, 93 student-athletes submitted the questionnaire. Weak negative correlations were found between questions regarding patient satisfaction with athletic training care and patient perception of the athletic training profession. Results imply, with minimal effect, that as patient satisfaction with athletic training care increased, their perception of the athletic training profession decreased. This research advances athletic training when it comes to patient satisfaction evaluation and introduces a new idea of patient perception of the entire profession that can help athletic training progress as a health care profession.

CHAPTER 1

INTRODUCTION

Certified athletic trainers are health care professionals who specialize in treating the physically active population.¹ The first and most consistent contact an athlete has with the health care system at the professional, collegiate, and high school level is an athletic trainer.^{2,3} As health care professionals, athletic trainers should be concerned with patient satisfaction because they bridge the gap between the athlete and the medical community by providing student-athletes' primary source of care and connecting the athlete to more health care providers when necessary.⁴ Patient satisfaction is also strongly linked to behavioral intentions which drive the success of health care professions.^{5,6}

Patient satisfaction is an advancing topic amongst health care professions, but athletic training has not kept up with these advances. Two studies by Unruh and two master's theses are the known published research assessing athletic training patient satisfaction in a collegiate population.^{3,4,7,8} Other health care professions, such as physical therapy and nursing, have published numerous studies relating to patient satisfaction.⁹⁻¹² The impact patient satisfaction has on health care professions is substantial when evaluating success and growth of a profession.^{11,13} If athletic training is to continue progressing as a profession, improving patient satisfaction is important.¹⁴

To improve patient satisfaction, athletic trainers must have an accurate assessment of their patient's satisfaction with the care and how patients perceive the athletic training profession as a result. Athletic trainers can improve areas of weakness and advance the profession based on feedback their patients provide in anonymous surveys.¹⁵ In previous research, patients identify five characteristics of an athletic trainer as influential on perception of care: compassion, communication, commitment, integrity, and knowledge.¹⁶

The purpose of this study was to assess patient satisfaction and perception of the athletic training profession as related to the patient's exposure to athletic training services over the course of an athletic career.

Operational Definitions

Behavioral Intention is the action taken by a patient after receiving services and is commonly identified as loyalty to a provider, recommending service, speaking positively about the service and servicer, and willingness to pay more for the same services.^{6,15,17}

Certified Athletic Trainers (ATC) are health care professionals who have been certified by the Board of Certification. ATCs collaborate with physicians to provide injury and illness prevention, emergency care, clinical diagnosis, therapeutic interventions and rehabilitation. ATCs are regulated by state licensure statutes.¹

Institutional Practice Patterns are the design and method of care implemented by athletic training programs at individual institutions.

Likert-type Scale A scaled scoring system broken into Likert items which are statements participants are asked to appraise by giving them a numerical value according to subjective or objective subdivisions.¹⁸

Patient Satisfaction is the level of contentment/happiness/appreciation a patient has with the services they receive.

Recall Bias is a systematic error that results from varying levels of accuracy when recalling past experiences.¹⁹

Perception refers to the way a person regards, understands, or interprets something.

Limitations

The limitations of this study include:

1. Participants answered questions accurately and honestly according to the services they received from certified athletic trainers during their athletic career.
2. Participants received services from a certified athletic trainer.
3. Participants are from a single collegiate institution.

Delimitations

The delimitations of this study include:

1. A survey questionnaire design using a Likert-type scale and “yes,” “no” responses.
2. The participant pool contains 18-30-year-old male and female collegiate athletes.
3. Participants are from a single collegiate institution.
4. Participants have received services from a certified athletic trainer.

Assumptions

The assumptions for this study include:

1. Participants read and complied with all instructions.
2. Participants read the questions asked in their entirety.
3. Participants understood the questions asked.
4. Participants answered questions accurately and honestly according to the services they received from certified athletic trainers over the course of their entire athletic career.
5. Participants have received services from a certified athletic trainer during their athletic career.
6. Participants had ample time to complete the questionnaire.

Statement of the Problem

Athletic trainers can improve patient satisfaction by identifying areas of care that patients indicate as less than satisfactory. This survey gives patients the opportunity to evaluate the athletic training services they have received and provide a foundation from which athletic trainers can make improvements. The survey also helps athletic trainers understand how patient satisfaction affects patients' perception of the entire profession based on their behavioral intentions.

Research Question

Is a patient's satisfaction with care received from a certified athletic trainer related to their perception of the athletic training profession?

Null hypothesis

Patient satisfaction with care received from certified athletic trainers is unrelated to their perception of the athletic training profession.

Alternative hypothesis

Higher levels of patient satisfaction with care received from certified athletic trainers is related to positive perception ratings of the athletic training profession.

CHAPTER 2

LITERATURE REVIEW

Introduction

Study of patient satisfaction within health care professions began in the mid-1900s.²⁰ The motivation was to improve care by evaluating the quality of services from a patient's perspective. Quality health care service that promotes patient satisfaction contains two components: technical performance and interpersonal relationship.²¹ Technical performance is the knowledge used to arrive at the appropriate method of care and the skills used to implement those methods. Interpersonal relationship is the display of virtues that are expected to meet individual and social standards to allow for clear communication of necessary information to reach a diagnosis.²¹ Evaluation and application of technical performance and interpersonal relationship of health care service vary by health care setting based on the characteristics of care provided.²¹

The health care setting of an athletic trainer is unique from other health care professions. Athletic trainers specialize in treating the physically active population;¹ this often requires being present with student-athletes rather than having student-athletes come to them. The first and most consistent contact a student-athlete has with the health care system at the professional, collegiate, and high school level is an athletic trainer.^{2,3} As health care professionals, athletic trainers should be concerned with patient satisfaction because they bridge the gap between the student-athlete and the medical community.⁴ Athletic trainers provide student-athletes with their primary source of care and connect the student-athlete to more health care providers when necessary.⁴ Patient satisfaction is strongly linked to behavioral intentions which drive the success of health care professions.^{5,6} Thus, if athletic training is going to progress as a profession, it is

necessary to have an evaluation of patient satisfaction to ensure long-term success and advancement.^{5,14}

The alternative hypothesis being tested is that higher levels of patient satisfaction with care received from a certified athletic trainer is related to positive perception ratings of the athletic training profession. A thorough evaluation of patient satisfaction and its effect on an athlete's perception of athletic training will be assessed by administration of a questionnaire to a collegiate student-athlete population.

History

The first research on patient satisfaction with athletic training services was published in 1989 by Foster; he studied the function of athletic trainers at the 1985 Junior Olympic Games.²² Reliable and consistent research methods were not used, and grammatical and structural errors were present throughout the article; nevertheless this research provides a foundation for future studies on patient satisfaction in athletic training. The results of the study indicated that athletes and physicians were pleased with the services athletic trainers provide and deem them a competent, efficient member of the sports medicine team.²²

Since 1989, few studies on patient satisfaction with athletic training care have been published. Unruh is the lead author of two studies addressing collegiate athletes' perception and satisfaction with athletic training services.^{3,7} Unruh's first study⁷ was published in 1998 and evaluates collegiate athletes' perception of athletic training services. Unruh structured his analysis according to gender, athletic division, and sport profile. High-profile sports include men's football, men's and women's basketball, and men's baseball; all other sports are considered low profile.⁷ Results indicate a significant difference between male and female cumulative satisfaction scores, revealing that male athletes were more satisfied than female

athletes.⁷ Results also revealed a significant difference between sport profiles; athletes in high profile sports are more satisfied with the care provided by their athletic trainers.⁷ No significant difference was found between athletic divisions.⁷

Unruh's second study³, published in 2005, focuses on athletes' satisfaction with services rendered by athletic trainers rather than the perception of these services.³ Both gender and sport profile were found to have significant differences, and athletic division was not significant. In contrast to his previous research,⁷ this study indicates that men in low profile sports are least satisfied, and women in high profile sports are most satisfied.³ A potential reason for differences in satisfaction between sport profiles could be staffing issues; if not enough staff is available, low contact and profile sports may receive less care.³ Data collected in both of Unruh's studies^{3,7} demonstrated that student-athletes, as a whole, are highly satisfied with the care they receive from athletic trainers, but some student-athletes think their athletic trainers demonstrate different levels of treatment to their student-athletes.⁷ Inconsistent treatment of student-athletes by athletic trainers may cause athletes to have a warped perception of the entire profession.

As a follow-up to Unruh's studies,^{3,7} Porterfield investigated whether gender, sport played, or level of competition affects perception of care provided by athletic trainers in 2006.⁸ Sport played and level of competition had a significant effect on athletes' perception of care while gender did not.⁸ Though not organized by sport profile, sport played displayed significant differences and sports that would have been deemed "high-profile," according to Unruh,^{3,7} were found to be most satisfied. Division II and Division III student-athletes were surveyed and Division III student-athletes were significantly more satisfied than Division II. Unruh surveyed Division I and Division II athletes,^{3,7} rather than Division II and Division III, which could cause the contradictory results seen here. Unruh's studies conflicted on which gender had higher levels

of satisfaction^{3,7} and Porterfield saw no significance in gender.⁸ Reasons behind the gender discrepancies may lie in fewer number of subjects or the location of Porterfield's research.⁸

In 2015, Foster furthered the investigation of patient satisfaction in athletic training but also branched to investigate new ideas. He looked at the difference in satisfaction between services rendered by full-time athletic trainers and graduate athletic trainers and what an athlete identifies as the three most valuable qualities in an athletic trainer.⁴ Foster's research illuminates that athletes are satisfied with overall athletic training care, which is consistent with previous research.^{3,7,8} Inadequate sample size caused skewed results in satisfaction between full-time and graduate athletic trainers; more athletes who had primary exposure to graduate athletic trainers were surveyed than those with primary exposure to a full-time athletic trainer. Thus, the results of athletes being seven times more satisfied with graduate athletic trainers, should be evaluated with caution. The top three valuable qualities selected by athletes include knowledge, availability, and communication.⁴ While Foster advanced the knowledge of athletic training patient satisfaction, the implementation of questions addressing full-time athletic trainers compared to graduate athletic trainers and valuable qualities in an athletic trainer make his research distinct from Unruh^{3,7} and Porterfield.⁸

The studies by Unruh, Porterfield, and Foster are pivotal when researching care rendered by athletic trainers because they created a reliable foundation of information specific to athletic training.^{3,4,7,8} Agreement exists that student-athletes have a high level of satisfaction with care given by athletic trainers, but this result is not consistent among all athletic teams.^{3,4,8}

Research in Other Professions

Health care professions such as physical therapy and physiotherapy are comparable to athletic training because of their heavy focus on musculoskeletal conditions. Other health care

professions, such as physicians and nurses, are minimally comparable to athletic training simply because of the broad difference in scope of practice. No matter the similarities or differences, research on patient satisfaction in all health care professions can benefit research in athletic training. Areas that other health care professions define as significant determining factors of patient satisfaction should also be true of athletic training. These significant determining factors include characteristics of patients, characteristics of health care providers, and the fulfillment of expectations.^{9,11-13,23,24}

Characteristics of patients are influential on patient satisfaction because they affect how patients understand and accept diagnoses and treatment.^{9,11,13} A patient's age, health status and education are all predictors of patient satisfaction, but they tend to be less impacting predictors when compared to characteristics of health care providers.^{11,13}

Characteristics of health care providers are influential because they also affect how patients understand and accept diagnosis and treatment.^{9,11,13} Patient satisfaction with rendered care is highly correlated to the quality of contact and communication between the health care provider and patient.^{9,10} Patients tend to have lower levels of satisfaction when a health care provider does not properly understand the pathology of a patient or what action is necessary to address the condition.^{11,13} Patient satisfaction is negatively affected when health care providers do not communicate in an appropriate and effective manner.^{11,13} To ensure patient satisfaction, health care providers must sustain high levels of skill, knowledge, and communication.⁹

Another indicator of patient satisfaction is how well the expectations of patients are met.^{12,23,24} Research indicates when patients' expectations have been met or surpassed, they have high levels of satisfaction. Similarly, if expectations of care are not met, dissatisfaction will

result.²⁴ Health care providers must allow patient input.¹² Asking the patients what their needs and expectations are through all stages of treatment produces higher levels of satisfaction.¹²

Satisfied patients tend to return to the same health care provider until they are no longer satisfied with the care they receive or the provider can no longer meet their needs.¹⁰ Most health care professions depend on these loyal patients to promote and sustain business.²⁴ Athletic training in the traditional setting (high school, college, professional) does not rely on typical patient satisfaction factors because athletic trainers are assigned to teams or schools. The athletes on these teams or at these schools do not have the option to choose a different athletic trainer if they are not satisfied with the one assigned to them. Without the risk of decreasing patient numbers and thereby diminishing business, do athletic trainers provide appropriate and satisfactory care? Does their satisfaction with care affect how an athlete perceives the entire profession?

Practice in Athletic Training

Athletic trainers traditionally care for athletes at the high school, collegiate, and professional level but have extended to treating the physically active population in sport medicine clinics, physician offices, and industrial plants.²⁵ The five domains define the minimum skill and knowledge required to practice as an athletic trainer according to the Board of Certification: injury/illness prevention and wellness protection (Domain 1), clinical evaluation and diagnosis (Domain 2), immediate and emergency care (Domain 3), treatment and rehabilitation (Domain 4), and organization and professional health and well-being (Domain 5).²⁶

Domain 1, injury/illness prevention and wellness protection, requires athletic trainers to ensure safe performance and function by educating their patients and managing risk.²⁶ Domain 2, clinical evaluation and diagnosis, involves implementing evaluation skills and developing a

clinical impression to direct course of action.²⁶ Domain 3, immediate and emergency care, necessitates the application of standard care procedures for “efficient and appropriate care” of an injury.²⁶ Domain 4, treatment and rehabilitation, encompasses reconditioning patients for ideal performance and function.²⁶ Domain 5, organization and professional health and well-being, includes the adherence to approved organizational and professional practices and guidelines to guarantee the well-being of the individual and organization.²⁶

It is the athletic trainer’s duty to fulfill all five domains to meet the minimum requirements of the profession.²⁶ At the high school and collegiate setting, athletic trainers and team physicians are responsible for the health of a team as a whole while also needing to provide appropriate care for individual players.²⁷ Meeting the requirements of the profession can be difficult when faced with these two dynamics of care and the demands of a student-athlete, coach, or parent.²⁸

Athletic trainer-athlete rapport is important when making medical decisions and when providing quality care.² Athletes are more likely to communicate with their athletic trainer and adhere to treatment and rehabilitation protocols when they have a good rapport with their athletic trainer.²⁹⁻³¹ To establish good athletic trainer-athlete rapport, athletic trainers must demonstrate the characteristic of a “quality” athletic trainer: communication, compassion, commitment, integrity, and knowledge.¹⁶

The five characteristics of a “quality” athletic trainer align with the two components of quality service. Technical performance is based on the knowledge used to arrive at the appropriate method of care and the skills used to implement those methods.²¹ Interpersonal relationships allow for clear communication of necessary information to reach a diagnosis.²¹ Interpersonal care includes numerous virtues that are expected to meet individual and social

standards.²¹ Without the appropriate interpersonal care, a diagnosis is difficult to reach and technical care is compromised. Interpersonal relationship is the “vehicle by which technical care is implemented and on which its success depends.”²¹

A vital component of interpersonal care and characteristic of an athletic trainer is communication.²¹ Communication is not only speaking but also listening. Athletes communicate the necessary information to reach a diagnosis while athletic trainers diligently listen.²¹ Upon reaching a diagnosis and determining the best avenue of care, athletic trainers must then effectively communicate with athletes, parents, coaches, and physicians on levels they understand.¹⁶ An athletic trainer should continually develop their communication skills to help their athletes fully understand their injury and how it will be treated and rehabilitated.^{29,31,32} The process of communication between athletes and their athletic trainers is constantly evolving; maintaining a friendly, approachable, and trustworthy demeanor allows athletic trainer-athlete communication to improve.²⁹

Student-athletes are more likely to approach their athletic trainer when they know athletic trainers care about them.¹⁶ Compassion and empathy are crucial components of interpersonal relationships because it allows the student-athlete to know that their athletic trainer cares about them.²¹ Compassion is a trait an athletic trainer can show by spending time listening to athletes and providing them with hope and encouragement.^{2,16,33} By being compassionate and providing emotional, physical, psychological, and social support to athletes, athletic trainers promote stronger interpersonal relationships and enhance quality service.^{2,3,16,34,35}

Commitment is a characteristic of interpersonal care that clears the path for open communication and compassion.^{16,21} Athletic trainers show commitment by making themselves available to their athletes at practice, competition, and in the athletic training facility.¹⁶ Athletes

want to know that their athletic trainer will always be there when they need them; it helps athletes view their athletic trainer as dependable and trustworthy.¹⁶

Trustworthiness is not attained by commitment alone, but also integrity.¹⁶ Quality athletic trainers never intentionally mislead their athletes or coaches by using vague dishonest answers or explanations.¹⁶ An athlete will not trust an athletic trainer they believe has lied or misled them.¹⁶ Integrity, the last characteristic of interpersonal relationships, is an essential component of satisfaction in athletic training.^{16,21}

Riding on the “vehicle” of interpersonal relationships, technical performance is based on the knowledge used to arrive at the appropriate method of care and the skills used to implement those methods.²¹ Athletic trainers have knowledge in a variety of areas and should strive to secure more knowledge to advance the care they provide.¹⁶ Quality athletic trainers take opportunities to share their vast knowledge, yet common athletic trainers tend to have difficulty presenting their range of knowledge.^{16,36} By continually desiring to garner more knowledge and share it with their patients, athletic trainers will advance their technical performance and increase patient satisfaction.^{16,21}

Satisfying the five domains of athletic training care and displaying high levels of interpersonal care and technical performance by striving to embody all five characteristics of a “quality” athletic trainer will ensure patient satisfaction in the athletic training profession. The question remains, does patient satisfaction with services provided by athletic trainers affect their view of the profession?

Athletic Population

Typical athletes at high school and collegiate institutions have one thing in common, their drive to compete.²⁷ The sports medicine team, including athletic trainers, is uniquely skilled in

aggressively treating athletes and returning them to play as quickly as possible.²⁷ Athletes who have positive previous experience with athletic trainers tend to have higher expectations of their athletic trainers concerning treatment, rehabilitation, and personal commitment.³² Athletes with positive experience, along with those who have negative previous experience or no experience at all, need their athletic trainers to be positive sources of support and effective communication.^{29,32,35} Athletes claim to look to their athletic trainer as their primary means of support and strength during the rehabilitation process.³³⁻³⁵ Athletes desire competition, but athletic trainers cannot let that desire overshadow the overall health of an athlete.⁴ Disregarding the support and encouragement athletes need for complete and effective recovery to focus on an aggressive return to play criteria could result in re-injury and decrease athlete satisfaction, resulting in a skewed perception of the profession.^{33-35,37}

Behavioral Intention

Behavioral intention is the action taken by a patient after receiving services and is commonly identified as loyalty to a provider, recommending service, speaking positively about the service and servicer, and willingness to pay more for the same services.^{6,15,17} Positive behavioral intention promotes profitability and long-term success of health care professions because it is the conclusive determinate of financial well-being in the health care system.^{5,6}

Behavioral intention not only promotes success but can also reveal patient satisfaction.⁶ Research holds that patient satisfaction is of utmost importance when predicting behavioral intention.⁶ If patients are satisfied, they are more willing to spread positive word-of-mouth.⁶ The strong relationship between patient satisfaction and behavioral intention stresses the influence of patient satisfaction on patient loyalty and success.⁵ Behavioral intention, when based on their

exposure to multiple professionals in the same health care profession, is a form of measuring patient perception of an entire profession.

Conclusion

Athletic training is behind the curve when it comes to measuring and assessing patient satisfaction. Research in other health care professions helps guide future studies on patient satisfaction in athletic training because of the limited research currently available specific to athletic training. More research on patient satisfaction in athletic training is necessary because athletic training has a job description unique to any other health care profession and patient satisfaction is the driving force behind behavioral intentions, which promotes profitability and long-term success of a profession.^{5,6}

The present study furthers the body of knowledge on collegiate student-athletes' satisfaction with athletic training care by increasing the pool of student-athlete surveys. This research is different from previous studies because it provides athletic trainers with a better understanding of how the care they provide affects a patient's perception of the athletic training profession.

CHAPTER 3

METHODOLOGY

Purpose

The purpose of this study was to investigate collegiate athletes' perceptions of the athletic training profession based on the care they have received.

Null hypothesis

Patient satisfaction with care received from a certified athletic trainer is unrelated to their perception of the athletic training profession.

Alternative hypothesis

Higher levels of patient satisfaction with care received from a certified athletic trainer are related to positive perception ratings of the athletic training profession.

Participants

The participants surveyed were student-athletes from a collegiate institution. The questionnaire was completed by 82 student-athletes and included members from each athletic team associated with the institution, other than women's tennis (Table 1). No women's tennis players chose to participate in the study.

Inclusion Criteria: Participants were 1) student-athletes at Marshall University, 2) between the ages of 18 and 30, and 3) exposed to athletic training services.

Exclusion Criteria: Participants were NOT 1) student-athletes at Marshall University, 2) between the ages of 18 and 30, and 3) exposed to athletic training services.

IRB Approval

This study received approval by Marshall University's Institutional Review Board.

Instrumentation

A modified survey administered by Foster was used in this study.⁴ Foster's original survey contained ten demographic questions and 46 questions regarding athletic training care.⁴ Modifications were made to the original question set to address student-athletes at the selected institution and their overall view of the profession of athletic training. Thus, questions regarding graduate athletic trainers versus full-time athletic trainers were removed, and nine questions directed toward the student-athletes' perception of the athletic training profession were added. Examples of questions added include "To what extent do you feel athletic trainers are qualified in injury and illness prevention (e.g. taping/wrapping, equipment fitting, removing environmental hazards, performing pre-participation physical examinations, etc...)?" and "I respect the profession of athletic training."

The modified survey for the present study contained seven demographic questions (gender, sport, exposure to athletic training), 35 questions regarding athletic training care (categorized according to the five domains of athletic training), and the nine questions directed toward the student-athletes' perception of the athletic training profession. Examples of questions regarding athletic training care include "How satisfied are you with the injury prevention techniques (e.g. taping/wrapping) provided to you by your athletic trainers?" and "I am confident in my athletic trainers' decisions to remove me from a game or practice due to my injury or illness." Responses to the 35 athletic training questions and nine perception questions permitted one response to each question and used both a Likert-type scale and "yes" or "no" responses. One "yes" or "no" question was added at the end of the survey to determine if the participant wanted to participate in the \$50 Visa Gift Card incentive drawing. The winners of the incentive

drawing were randomly selected by entering the email addresses of all who chose to participate in the drawing in a computer-generated randomizer. The first five email addresses were selected to receive the \$50 Visa Gift Cards. Survey questions were presented on four separate pages and participants were forced to complete all questions before moving to the next page and submitting the survey.

The Likert-type scale used the responses “Very Satisfied,” “Satisfied,” “Neutral,” “Unsatisfied,” and “Very Unsatisfied” or “Strongly Agree,” “Agree,” “Neutral,” “Disagree,” and “Strongly Disagree” or “Extremely Qualified,” “Well Qualified,” “Moderately Qualified,” “Minimally Qualified,” and “Not at all Qualified.” To perform statistical analysis, the responses were given numeric “scores.” “Very Satisfied,” “Strongly Agree,” and “Extremely Qualified” scored a 5, “Satisfied,” “Agree” and “Well Qualified” scored a 4, “Neutral” and “Moderately Qualified” scored a 3, “Unsatisfied,” “Disagree,” and “Minimally Qualified” scored 2, and “Very Unsatisfied,” “Strongly Disagree,” and “Not at all Qualified” scored a 1. Questions eliciting “yes” or “no” responses were scored in the same manner, “yes” response scored a 1 and “no” response scored a 2.

Pilot

A pilot study was performed to improve the validity of the question set. Eleven student-athletes were solicited to participate. Minor typographical corrections were made as a result of the study. Surveys obtained were included in the final dataset.

Procedure

Student-athletes were sent an email via their university email address informing them of the study, delineating the informed consent, informing them of their chance to win a \$50 Visa Gift Card by participating in the study and providing them with a link to the survey tool.

Reminder emails were sent one week and two weeks after the first email. The survey was administered online through the survey distribution tool Qualtrics®. All participants who completed the survey did so voluntarily and confirmed they were between the ages of 18 and 30 and had read the informed consent. If the participant wanted to be entered into the gift card drawing, he/she answered “yes” to the last survey question and was directed to a separate anonymous survey, after submitting the initial survey, which asked for his/her email address. If the participant did not want to participate in the gift card drawing, he/she answered “no” to the last survey question and submitted the survey. Confidentiality of answers was assured.

After three weeks of collecting responses, the survey was closed, and responses were saved online under a username and password to which only the researchers had access. Surveys were analyzed for completeness and excluded from the data set if not fully completed. Data were then exported to SPSS (Statistical Package for the Social Sciences) for statistical analysis.

Delimitations

A single collegiate institution is used in the study as a convenient sample pool. The participants were at least 18 years of age to ensure an adult population. The maximum age was 30 years to encompass all athletes at the institution. Participants must have received services from a certified athletic trainer to participate in this study and were assumed to have received this care because athletic trainers are required to be available to all sports teams at the collegiate level. Likert-type and “yes” or “no” questions were instituted instead of other scoring systems or open-ended questions because previous research in this area used these methods and they allow subjective scoring.

Data Analysis

The data analysis consisted of examining the questionnaires for completeness followed by exporting and coding the information into SPSS. The significance level for all statistical analyses was set at $p=0.05$. Spearman-Rho Correlation was run to compare four of the 35 questions concerning athletic training care to the nine student-athlete perception questions. Each of the four athletic training care questions was individually compared to each of the nine student-athlete perception questions. The four questions concerning athletic training care included were “I feel comfortable when approaching my athletic trainers about injuries or illnesses,” “I am confident in my athletic trainer’s decisions to remove me from a game or practice due to my injury or illness,” “I am satisfied that my athletic trainers have been truly interested in helping me fully recover from my injury in a timely fashion so that I can return to competition,” and “Overall, I am satisfied with the athletic training services I have received.”

CHAPTER 4

RESULTS

The questionnaire was sent to 401 student-athletes at a single collegiate institution. Ninety-three student-athletes, between 18 and 30 years of age, responded to the survey (23% of the available population) and were included in the data analysis.

Eighty-two point eight percent of the participants were female, and 17.2% were male. Student-athletes from each sport at the institution, except women's tennis, participated in the study. The top three sports teams to participate were women's track and field (21.5%), women's swimming and diving (16.1%), and women's soccer (14.0%). Of the athletes taking the survey, 46.2% participated in athletics for 13-16 years, yet only 12.9% received care from an athletic trainer for more than six of those years. Thirty-seven point six percent of participants received care from an athletic trainer for three to four years, 34.4% received care for two years or less, 15.0% received care for five to six years, and 12.9% received care for more than six years. Most student-athletes selected that they interacted with an athletic trainer multiple times a week (60.2%). The majority of student-athletes reported seeing an athletic trainer for treatment, rehabilitation, or reconditioning (54.8%) or preventative care (21.5%).

Table 1. Demographic Characteristics of Sample Population

| Characteristics | Percentage (%) |
|---|-----------------------|
| Gender | |
| Female (n= 77) | 82.8% |
| Male (n= 16) | 17.2% |
| Sport | |
| Football (n= 4) | 4.3% |
| Women's Volleyball (n=9) | 9.7% |
| Men's Soccer (n=1) | 1.1% |
| Women's Soccer (n=13) | 14.0% |
| Women's Track and Field (n=20) | 21.5% |
| Men's Cross Country (n=5) | 5.4% |
| Women's Cross Country (n=4) | 4.3% |
| Men's Basketball (n=1) | 1.1% |
| Women's Basketball (n=4) | 4.3% |
| Men's Golf (n=1) | 1.1% |
| Women's Golf (n=3) | 3.2% |
| Cheerleading (n=7) | 7.5% |
| Women's Tennis (n=0) | 0.0% |
| Baseball (n=3) | 3.2% |
| Softball (n=3) | 3.2% |
| Women's Swimming and Diving (n=15) | 16.1% |
| Length of Athletic Participation (years) | |
| Less than 1 year (n=4) | 4.3% |
| 1-4 years (n=8) | 8.6% |
| 5-8 years (n=3) | 3.2% |
| 9-12 years (n= 26) | 28.0% |
| 13-16 years (n=43) | 46.2% |
| More than 16 years (n=9) | 9.7% |
| Length of Athletic Training Care (years) | |
| 2 years or less (n= 32) | 34.4% |
| 3-4 years (n=35) | 37.6% |
| 5-6 years (n=14) | 15.1% |
| More than 6 years (n=12) | 12.9% |
| Frequency of Interaction with ATC | |
| Multiple times a week (n= 56) | 60.2% |
| Once a week (n=13) | 14.0% |
| Once every 2 weeks (n=6) | 6.5% |
| Once a month (n=4) | 4.3% |
| Less than once a month (n=14) | 15.0% |
| Reasons for Seeing ATC | |
| Personal reasons (n= 10) | 10.8% |
| Preventative care (n=20) | 21.5% |
| Injury evaluation or diagnosis (n=5) | 5.4% |
| Immediate care or first aid (n=7) | 7.5% |
| Treatment, rehabilitation, or reconditioning (n=51) | 54.8% |

Note: n=93

The null hypothesis being tested states that patient satisfaction with care received from a certified athletic trainer is unrelated to their perception of the athletic training profession.

Spearman-Rho Correlation was run to assess the correlation between patient satisfaction with care and patient perception of the athletic training profession by individually comparing four of thirty-five questions concerning athletic training care to nine individual perception questions.

Spearman-Rho Correlations measures the relationship between two variables by quantifying strength and direction.³⁸ Correlations will fall between +1 and -1, 0 indicating no relationship.³⁸

Higher absolute values mean stronger correlations.³⁸ Positive correlation indicates variables moving in the same direction, negative correlations indicate variables moving in opposite directions.³⁸ When interpreting results, the following guidelines apply: 0 to ± 0.20 is insignificant, ± 0.21 to ± 0.40 is weak, ± 0.41 to ± 0.60 is moderate, ± 0.61 to 0.80 is strong, and ± 0.81 to ± 1.00 is very strong.³⁸ The significance level was $p = \leq .05$.

The four “yes” or “no” questions concerning athletic training care included:

1. “I feel comfortable when approaching my athletic trainers about injuries or illnesses,” which will be referred to as “patient comfort.”
2. “I am confident in my athletic trainer’s decisions to remove me from a game or practice due to my injury or illness,” which will be referred to as “patient confidence.”
3. “I am satisfied that my athletic trainers have been truly interested in helping me fully recover from my injury in a timely fashion so that I can return to competition,” which will be referred to as “patient satisfaction.”
4. “Overall, I am satisfied with the athletic training services I have received,” which will be referred to as “patient overall assessment.”

Response frequency for the four questions concerning athletic training care questions are found in Table 2.

Table 2. Response Frequencies for Athletic Training Care Questions

| Question | | Count | Percentage (%) |
|----------------------------|-----|-------|----------------|
| Patient Comfort | Yes | 83 | 89.2% |
| | No | 10 | 10.8% |
| Patient Confidence | Yes | 87 | 94.6% |
| | No | 6 | 5.4% |
| Patient Satisfaction | Yes | 86 | 92.5% |
| | No | 7 | 7.5% |
| Patient Overall Assessment | Yes | 86 | 92.5% |
| | No | 7 | 7.5% |

Note: n=93

The nine Likert-type perception questions included:

1. “To what extent do you feel athletic trainers are qualified in injury and illness prevention (e.g. taping/wrapping, equipment fitting, removing environmental hazards, performing pre-participation physical examinations, etc...)?” This question will be referred to as “Domain 1.”
2. “To what extent do you feel athletic trainers are qualified in clinical evaluation and diagnosis (e.g. looking at an injury and determining what is wrong)?” This question will be referred to as “Domain 2.”
3. “To what extent do you feel athletic trainers are qualified in immediate and emergency care (e.g. cleaning/covering wounds, handling life-threatening injuries, and implementing emergency action plan)?” This question will be referred to as “Domain 3.”
4. “To what extent do you feel athletic trainers are qualified in treatment, rehabilitation, and reconditioning (e.g. implementing exercises to promote healing, applying

ultrasound/electrical stimulation/massage, etc...)?” This question will be referred to as “Domain 4.”

5. “To what extent do you feel athletic trainers are qualified in organization and administration (e.g. leadership abilities, keeping track of your medical files, making medical appointments, etc...)?” This question will be referred to as “Domain 5.”
6. “I respect the profession of athletic training.” This question will be referred to as “Respect.”
7. “I would go out of my way to seek service from an athletic trainer.” This question will be referred to as “Seek Service.”
8. “I would encourage others to seek service from an athletic trainer.” This question will be referred to as “Encourage Others.”
9. “I believe athletic trainers are competent medical professionals.” This question will be referred to as “Competence.”

Response frequencies for the nine perception questions are found in Table 3.

Table 3. Response Frequencies for Patient Perception Questions

| Question | Count | Percentage (%) |
|--|--------------|-----------------------|
| Domain 1: Injury and Illness Prevention | | |
| Moderately qualified | 12 | 12.9% |
| Well qualified | 44 | 47.3% |
| Extremely qualified | 37 | 39.8% |
| Domain 2: Clinical Evaluation and Diagnosis | | |
| Not at all qualified | 1 | 1.1% |
| Minimally qualified | 8 | 8.6% |
| Moderately qualified | 23 | 24.7% |
| Well qualified | 36 | 38.7% |
| Extremely qualified | 25 | 26.9% |
| Domain 3: Immediate and Emergency Care | | |
| Not at all qualified | 1 | 1.1% |
| Minimally qualified | 5 | 5.4% |
| Moderately qualified | 19 | 20.4% |
| Well qualified | 37 | 39.8% |
| Extremely qualified | 31 | 33.3% |
| Domain 4: Treatment, Rehabilitation, and Reconditioning | | |
| Minimally qualified | 2 | 2.2% |
| Moderately qualified | 14 | 15.0% |
| Well qualified | 37 | 39.8% |
| Extremely qualified | 40 | 43.0% |
| Domain 5: Organization and Administration | | |
| Minimally qualified | 6 | 6.4% |
| Moderately qualified | 19 | 20.4% |
| Well qualified | 38 | 40.9% |
| Extremely qualified | 30 | 32.3% |
| Respect | | |
| Neutral | 3 | 3.2% |
| Agree | 38 | 40.9% |
| Strongly agree | 52 | 55.9% |
| Seek Service | | |
| Strongly disagree | 1 | 1.1% |
| Disagree | 7 | 7.6% |
| Neutral | 19 | 20.4% |
| Agree | 35 | 37.6% |
| Strongly agree | 31 | 33.3% |
| Encourage | | |
| Strongly disagree | 1 | 1.1% |
| Disagree | 1 | 1.1% |
| Neutral | 13 | 14.0% |
| Agree | 44 | 47.3% |
| Strongly agree | 34 | 36.5% |
| Competence | | |
| Disagree | 2 | 2.2% |
| Neutral | 12 | 12.9% |
| Agree | 39 | 41.9% |
| Strongly agree | 40 | 43.0% |

Note: If a response is not included, it was not selected by any participants. n=93

Five of the nine perception questions were significantly correlated to patient comfort (Table 4). Domain 1 was negatively correlated ($r = -0.22, p = 0.033$), Domain 2 was negatively correlated ($r = -0.34, p = 0.001$), Domain 3 was negatively correlated ($r = -0.33, p = 0.001$), Domain 5 was negatively correlated ($r = -0.26, p = 0.011$), and Seek Service was negatively correlated ($r = -0.28, p = 0.006$). No significant correlation was found between Patient Comfort and the remaining perception questions.

Patient Confidence had significant correlation to three of the nine perception questions (Table 5). In agreement with Patient Comfort results, Patient Confidence was negatively correlated to Domain 2 ($r = -0.22, p = 0.039$), Domain 3 ($r = -0.21, p = 0.047$), and Domain 5 ($r = -0.26, p = 0.012$). No remaining perception questions were significantly correlated to patient confidence.

Results for Patient Satisfaction contain the same significantly correlated questions as Patient Confidence and four of five significantly correlated questions as Patient Comfort (Table 6). Domain 1 was negatively correlated ($r = -0.22, p = 0.035$), Domain 2 was negatively correlated ($r = -0.28, p = 0.007$), Domain 3 was negatively correlated ($r = -0.28, p = 0.007$), and Domain 5 was negatively correlated ($r = -0.034, p = 0.001$).

Patient Overall Assessment was correlated to five of the nine perception questions; two of these questions were not significantly correlated to any of the other athletic training care questions (Table 7). Consistent with Patient Comfort, Patient Confidence, and Patient Satisfaction, Patient Overall Assessment was negatively correlated to Domain 2 ($r = -0.28, p = 0.007$), Domain 3 ($r = -0.28, p = 0.007$), and Domain 5 ($r = -0.39, p = 0.0001$). Two correlations unique to Patient Overall Assessment were negative correlations to Domain 4 ($r = -0.28, p = 0.007$) and Encourage Others ($r = -0.23, p = 0.027$).

Table 4. Spearman Rho Correlations and p-values for patient comfort and patient perception

| | Domain 1 | Domain 2 | Domain 3 | Domain 4 | Domain 5 | Respect | Seek Service | Encourage Others | Competence |
|----------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|---------------------|-------------------------|-------------------|
| Patient Comfort | | | | | | | | | |
| Spearman's <i>r</i> | -0.22 | -0.34 | -0.33 | -0.17 | -0.26 | -0.09 | -0.28 | -0.16 | -0.15 |
| <i>p</i> | 0.033* | 0.001* | 0.001* | 0.109 | 0.011* | 0.357 | 0.006* | 0.136 | 0.142 |

Note: N = 93. Significant values denoted by asterisk

Table 5. Spearman Rho Correlations and p-values for patient confidence and patient perception.

| | Domain 1 | Domain 2 | Domain 3 | Domain 4 | Domain 5 | Respect | Seek Service | Encourage Others | Competence |
|----------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|---------------------|-------------------------|-------------------|
| Patient Confidence | | | | | | | | | |
| Spearman's <i>r</i> | 0.12 | -0.22 | -0.21 | -0.16 | -0.26 | -0.06 | -0.19 | -0.2 | -0.15 |
| <i>p</i> | 0.259 | 0.039* | 0.047* | 0.123 | 0.012* | 0.543 | 0.065 | 0.055 | 0.164 |

Note: N = 93. Significant values denoted by asterisk

Table 6. Spearman Rho Correlations and p-values for patient satisfaction and patient perception.

| | Domain 1 | Domain 2 | Domain 3 | Domain 4 | Domain 5 | Respect | Seek Service | Encourage Others | Competence |
|-----------------------------|----------|----------|----------|----------|----------|---------|--------------|------------------|------------|
| Patient Satisfaction | | | | | | | | | |
| Spearman's <i>r</i> | -0.22 | -0.28 | -0.28 | -0.17 | -0.34 | -0.06 | -0.15 | -0.11 | -0.16 |
| <i>p</i> | 0.035* | 0.007* | 0.007* | 0.1 | 0.001* | 0.544 | 0.159 | 0.313 | 0.131 |

Note: N = 93. Significant values denoted by asterisk

Table 7. Spearman Rho Correlations and p-values for patient overall assessment and patient perception

| | Domain 1 | Domain 2 | Domain 3 | Domain 4 | Domain 5 | Respect | Seek Service | Encourage Others | Competence |
|-----------------------------------|----------|----------|----------|----------|----------|---------|--------------|------------------|------------|
| Patient Overall Assessment | | | | | | | | | |
| Spearman's <i>r</i> | -0.15 | -0.28 | -0.28 | -0.28 | -0.39 | -0.14 | -0.2 | -0.23 | -0.12 |
| <i>p</i> | 0.149 | 0.007* | 0.007* | 0.007* | 0.0001* | 0.174 | 0.055 | 0.027* | 0.27 |

Note: N = 93. Significant values denoted by asterisk.

All significantly correlated data were weak negative correlations ($r = -0.21$ to -0.40).³⁷

Response frequencies of Overall Satisfaction Questions are found in Table 8.

Table 8: *Response Frequencies of Overall Satisfaction Questions*

| Question | Count | Percentage (%) |
|--|--------------|-----------------------|
| How satisfied are you with the overall quality of care provided by your athletic trainers? | | |
| Very Unsatisfied | 1 | 1.1% |
| Unsatisfied | 4 | 4.3% |
| Neutral | 12 | 12.9% |
| Satisfied | 48 | 51.6% |
| Very Satisfied | 28 | 30.1% |
| I am satisfied with the overall quality of care I receive in athletic training facilities. | | |
| Yes | 88 | 94.6% |
| No | 5 | 5.4% |
| Overall, I am satisfied with the athletic training services I have received. | | |
| Yes | 86 | 92.5% |
| No | 7 | 7.5% |

Note: n = 93

CHAPTER 5

DISCUSSION

The purpose of this study was to investigate collegiate athletes' perceptions of the athletic training profession based on the care they have received from athletic trainers. The alternative hypothesis was that higher levels of patient satisfaction with care received from a certified athletic trainer are related to positive perception ratings of the athletic training profession. The null hypothesis states that patient satisfaction with care received from a certified athletic trainer is unrelated to their perception of the athletic training profession. Participants were collegiate student-athletes from a single institution but included numerous athletic teams.

The student-athletes who participated in this study were primarily female (83%) and in women's track and field, women's swimming and diving, or women's soccer. Many of the student-athletes had participated in athletics more than ten years, but few (13%) had received care from an athletic trainer for more than six years. The majority of student-athletes claimed to see an athletic trainer multiple times a week, either for treatment, rehabilitation, and recondition or preventative treatment.

Spearman Rho Correlation was run on the questionnaire data to evaluate the relationship between four athletic training care questions, indicating patient satisfaction, and nine patient perception questions. The four athletic training care questions were chosen because they address the patient's satisfaction with their athletic trainers' interpersonal and technical skills and overall performance.²² Patient comfort question analyzes interpersonal skill, patient confidence question analyzes technical skill, patient satisfaction question analyzes interpersonal skill and overall performance, and patient overall assessment question analyzes overall performance. The nine patient perception questions were divided into two categories: five domains of athletic training

and behavioral intent. The first five questions target each domain in which athletic trainers are required to be competent, and the last four questions target the patient's behavioral intent.

Results for each Spearman-Rho Correlation indicate weak negative correlations between patient satisfaction and patient perception (Tables 4-7). A weak negative correlation between patient satisfaction and patient perception implies, with minimal affect, that as a patient's satisfaction with athletic training care increased, their perception of the athletic training profession decreased.

Previous research in the health care system reveals that interpersonal and technical skills are two components of quality service that affect patient satisfaction.²⁰ Patient satisfaction with rendered care has shown strong positive correlation to the quality of contact and communication between the health care provider and patient; this is an interpersonal skill.^{9,10,20} Patients tend to have lower levels of satisfaction when a health care provider does not properly understand the pathology of a patient or what action is necessary to address the condition; this is a lack of technical skill.^{11,13,20} It is important to understand that the aforementioned qualities were the qualities that make up the "student-athletes' satisfaction with athletic training care" portion of the correlation.

A modified version of the questionnaire used by Unruh and Foster was used in this study.^{3,4,7} Data collected in both of Unruh's articles^{3,7} demonstrated that student-athletes are highly satisfied with the care they receive from athletic trainers. Porterfield and Foster both agree with this general level of satisfaction.^{4,8} Though an overall level of satisfaction was not calculated in this study, response frequency for overall satisfaction questions (Table 8) would suggest that this study aligns with Unruh, Porterfield, and Foster's results.^{3,4,7,8} By using the same type of questions as previous studies that went through survey validation, it could be

assumed that a reliable means of measuring patient satisfaction was implemented. However, difficulties in measuring patient satisfaction do exist and will be discussed in further detail.

The present study was different than previous studies in athletic training because it not only assessed patient perception and satisfaction with athletic training services but also assessed patient perception of the athletic training profession. No research was found on patient perception of an entire health care profession. Since no assessment of patient perception of an entire health care profession was found, the research team developed a tool to specifically evaluate patient perception of athletic training. The research team evaluated patient perception of athletic training by combining data from questions concerning the five domains of athletic training and behavioral intention. Behavioral intention was measured by evaluating the action taken by a patient after receiving services.⁶ The five domain questions measured how qualified patients believe athletic trainers are in the areas athletic trainers are expected to be competent.

Responses to the five domain questions were surprisingly low and should cause concern. Twelve percent of student-athletes felt that athletic trainers were less than “well qualified” in injury and illness prevention, Domain 1. Thirty-five percent of student athletes felt that athletic trainers were less than “well qualified” in clinical evaluation and diagnosis, Domain 2. Twenty-six percent of student-athletes felt that athletic trainers were less than “well qualified” in immediate and emergency care, Domain 3. Seventeen percent of student-athletes felt that athletic trainers were less than “well qualified” in treatment, rehabilitation, and reconditioning, Domain 4. Twenty-six percent of student-athletes felt that athletic trainers were less than “well qualified” in organization and administration, Domain 5. The five Domains of athletic training, Injury and Illness Prevention and Wellness Promotion, Examination, Assessment and Diagnosis, Immediate and Emergency Care, Therapeutic Intervention, and Healthcare Administration and Professional

Responsibility, are skills that athletic trainers are expected to exemplify, thus any response below “well qualified” should not be acceptable. Yet, we see a noteworthy portion of the participating student-athletes place athletic trainers below “well qualified” in the domains. Are athletic trainers obtaining an appropriate level and quality of education to meet the expectations placed upon them? Are athletic trainers simply not practicing up to their level of education? Answers to these questions are not found in this research, but the results from this study warrant deeper investigation into the education and practice of certified athletic trainers.

Until the present study, no research to date had been published comparing patient satisfaction to patient perception of a profession. Results of this study show a weak relationship between patient satisfaction and patient perception of athletic training. The relationship is a weak negative correlation indicating that as levels of patient satisfaction with care received from a certified athletic trainer increase, perception ratings of the athletic training profession decrease. This negative correlation should be interpreted with caution since the relationship is statistically weak. Nevertheless, the alternative hypothesis that higher levels of patient satisfaction with care received from a certified athletic trainer are related to positive perception ratings of the athletic training profession, is rejected. We also cannot accept the null hypothesis that patient satisfaction with care received from a certified athletic trainer is unrelated to their perception of the athletic training profession, as there is evidence against it.

Results comparing patient satisfaction to patient perception of a profession may have been affected by sample biases: single institution, gender, and sport. Athletic training program design and method of care, institutional practice patterns, vary from educational institution to educational institution. Examples of institutional practice patterns include protocols followed upon student-athlete injury, rehabilitation implementation, and physician referral. Variations in

institutional practice patterns may affect patient satisfaction and patient perception; this is particularly important to consider when assessing a single institution. Institutional practice pattern bias was not controlled for in this research and could be present in the current data and have affected the results. Eighty-three percent of the research sample for this study was female. Unruh and Porterfield both looked at gender's effect on patient satisfaction, but their results were inconclusive.^{3,7,8} Unruh's first study found male athletes to be more satisfied than female;⁷ his second study found that female athletes were more satisfied than male,³ while Porterfield saw no significance in gender.⁸ No assumption of gender's effect on satisfaction can be made without running an analysis on this data set. The top three sports teams that participated in this study made up 42% of the data, all of which would be considered "low-profile" sports by Unruh.⁷ Only 12% of the data for this study were collected from "high-profile" sports. Thus, sport profile likely had a significant effect on our analysis of patient satisfaction because Unruh and Porterfield^{3,7,8} agree that high-profile sports have higher levels of patient satisfaction when compared to low-profile sports. A potential reason for differences in satisfaction between sport profiles could be staffing issues; if not enough staff is available, low contact and low-profile sports may receive less care.³

Results of this research may also have been affected by the innate challenge of assessing patient satisfaction. Patient satisfaction surveys are subjective measures that reflect the values, beliefs, motives, expectations, and incentives of the participants.³⁹ Patient satisfaction is not an "object," it is an intricate, multi-dimensional assessment of a patient's perception of service that is impossible to fully capture.³⁹ However, scientific research often uses simplistic tools to capture complex phenomena and, though it should be interpreted with caution, scientific research

that uses simplistic tools plays a legitimate role in social science; this includes the evaluation of satisfaction.³⁹

Part of the multi-dimensional nature of patient satisfaction is recall bias.⁴⁰ Research has shown that negative experiences tend to result in more detailed memories than positive experiences.^{41,42} Yet, satisfied patients, those with positive experiences, are more likely to respond to patient satisfaction surveys than those who are dissatisfied.⁴³ Two things may occur as a result of this: less accurate memories of service and nonresponse bias or error. Non-response error occurs when data cannot be collected from the entire sample.⁴⁴ Patient satisfaction response rates are usually low and scores are traditionally very high with minimal variability.³⁹ Less accurate memories of service and nonresponse bias may lead to this generic overestimation of satisfaction.⁴³ Nonresponse bias occurs when data cannot be collected from the entire sample.⁴⁴ It cannot be assumed that non-respondents would respond similarly to respondents; they may evaluate service differently, potentially less favorably since dissatisfied patients are less likely to respond.⁴³

Non-response error, coverage error, sampling error, and measurement error are all forms of error that can affect not only patient satisfaction surveys, but all survey research.⁴⁴ Non-response is not usually random, but depends on the characteristics of non-respondents and the subject of research.^{45,46} However, there is no universally accepted way of correcting for this error. Coverage error can occur when not every portion of the population is included in the sample.⁴⁴ With no participants from the tennis team and limited responses from high-profile sports such as football, men's basketball, and women's basketball in our sample of student-athlete, coverage error is likely to have an effect. Sampling error refers to differences innately present in the sample;⁴⁴ some sampling errors from this research were discussed previously.

Measurement error is any misrepresentation in the assessment of the topic of interest and includes random variances or systematic biases.⁴⁴ Measurement error is a definite consideration in this research, but no corrective measure can be accurately implemented.

Developing our tool to assess patient perception of the athletic training profession was necessary but resulted in limited knowledge of reliability and validity measures. No obvious forms of error were identified during the pilot study; however, we were unable to quantify reliability and validity. Without knowing the reliability and validity of these questions, the effect on the results is unknown.

Survey research and patient satisfaction assessments come with limitations and biases that are difficult, if not impossible, to control. The measurement of patients' perception of the athletic training profession used a new tool with unknown reliability and validity. These sources of error may also have affected the result of this research.

Future research should look into other variables that can affect patient satisfaction that were not analyzed in this study, such as gender, injury severity, return to play time, health outcomes, exposure to athletic training, extent of interaction with athletic trainers, expectations, and variables specific to the patient's background. Future research should also expand to multiple educational institutions, elicit more responses from high-profile sports as well as more male student-athletes, and further examine the reliability and validity of the patient perception tool. Additional research should be performed on the education and practice of athletic trainers in light of the observations made from the questions addressing the five domains of athletic training.

Athletic training is behind other health care professions when it comes to patient satisfaction measures. This research advances athletic training when it comes to patient

satisfaction and introduces a new idea of patient perception of the entire profession. The results indicate a weak negative correlation between patient satisfaction and patient perception of the profession and the alternative hypothesis was rejected. Nevertheless, athletic trainers should strive to meet and exceed all of the qualifications expected of their profession and satisfy their patients by embodying the characteristics of a “quality” athletic trainer.¹⁶ Athletic trainers should never be content with their current skill levels, no matter how it affects the satisfaction of their patients.

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Appendix A: Office of Research Integrity Approval Letter



Office of Research Integrity
Institutional Review Board
One John Marshall Drive
Huntington, WV 25755

FWA 00002704

IRB1 #00002205
IRB2 #00003206

March 21, 2016

Suzanne Konz, PhD, ATC, CSCS
Marshall University, Dept. of Kinesiology

RE: IRBNet ID# 876605-1

At: Marshall University Institutional Review Board #1 (Medical)

Dear Dr. Konz:

Protocol Title: [876605-1] Collegiate Athletes' Satisfaction with Athletic Training Quality of Care

Expiration Date: March 21, 2017

Site Location: MU

Submission Type: New Project APPROVED

Review Type: Expedited Review

In accordance with 45CFR46.110(a)(2)(5), the above study was granted Expedited approval today by the Marshall University Institutional Review Board #1 (Medical) Chair for the period of 12 months. The approval will expire March 21, 2017. A continuing review request for this study must be submitted no later than 30 days prior to the expiration date. The approval also includes the Waiver of Informed Consent.

If you have any questions, please contact the Marshall University Institutional Review Board #1 (Medical) Coordinator Trula Stanley, MA, CIC at (304) 696-7320 or stanley@marshall.edu. Please include your study title and reference number in all correspondence with this office.

Appendix B: Office of Research Integrity First Amendment Approval Letter



Office of Research Integrity
Institutional Review Board
One John Marshall Drive
Huntington, WV 25755

FWA 00002704

IRB1 #00002205
IRB2 #00003206

April 25, 2016

Suzanne Konz, PhD, ATC, CSCS
Marshall University, Dept. of Kinesiology

RE: IRBNet ID# 876605-2

At: Marshall University Institutional Review Board #1 (Medical)

Dear Dr. Konz:

Protocol Title: [876605-2] Perceptions of the Athletic Training Profession by a Collegiate Athlete Patient Population

Expiration Date: March 21, 2017

Site Location: MU

Submission Type: Amendment/Modification APPROVED

Review Type: Expedited Review

The amendment to the above listed study was granted approval by the IRB #1 Chair. The amendment includes change of title, rewording of purpose statement, and typographical corrections to the survey tool.

If you have any questions, please contact the Marshall University Institutional Review Board #1 (Medical) Coordinator Trula Stanley, MA, CIC at (304) 696-7320 or stanley@marshall.edu. Please include your study title and reference number in all correspondence with this office.

Appendix C: Office of Research Integrity Second Amendment Approval Letter



Office of Research Integrity
Institutional Review Board
One John Marshall Drive
Huntington, WV 25755

FWA 00002704

IRB1 #00002205
IRB2 #00003206

November 28, 2016

Suzanne Konz, PhD, ATC, CSCS
Marshall University, Dept. of Kinesiology

RE: IRBNet ID# 876605-3

At: Marshall University Institutional Review Board #1 (Medical)

Dear Dr. Konz:

Protocol Title: [876605-3] Perceptions of the Athletic Training Profession by a Collegiate Athlete Patient Population

Expiration Date: March 21, 2017

Site Location: MU

Submission Type: Amendment/Modification APPROVED

Review Type: Expedited Review

The amendment to the above listed study was granted approval by the IRB #1 Chair. This amendment approves the addition of optional incentive for participating in the study. Participants will have the option to be entered into a drawing for a chance to win one of five \$50 Visa Gift Cards. This approval includes the revised consent reflecting the incentive.

If you have any questions, please contact the Marshall University Institutional Review Board #1 (Medical) Coordinator Trula Stanley, MA, CIC at (304) 696-7320 or stanley@marshall.edu. Please include your study title and reference number in all correspondence with this office.

Appendix D: Informed Consent

Title of Study: Perceptions of the Athletic Training Profession by a Collegiate Athlete Patient Population

Investigators: Bethany Beuhring, Dr. Suzanne Konz, Dr. Elizabeth Casey, and Mr. Zachary Garrett

For questions or concerns about the study, you may contact Bethany Beuhring at (740) 350-7628 or Dr. Konz at (304)- 696-2962. For questions regarding the rights of research, any complaints or comments regarding the manner in which the study is being conducted, contact Dr. Henry Driscoll with Marshall University of Research Integrity- Human Subjects at (304) 696-7320.

Purpose of the Study

You are invited to participate in a research study. The purpose of this study is to investigate collegiate athletes' perceptions of the athletic training profession based on the care they have received from athletic trainers through their entire athletic career.

Participants

You are being asked to participate in the study because you may fit this criteria: You are a collegiate student-athlete between the ages of 18 and 30 who has interacted with a certified athletic trainer.

Procedures

If you volunteer to participate in this study, you will be asked to complete an online survey that will take a total of 10-15 minutes.

Benefits of Participation

As a participant, you will help athletic trainers better understand how to assist student-athletes. You will also have the option to be entered into a drawing for a chance to win one of five \$50 Visa Gift Cards.

Risks of Participation

This study includes no known risks.

Cost/Compensation

There is no financial cost for you to participate in this study. There is no initial compensation for participating in the study, but you will have the choice to be entered into a drawing for the chance to win one of five \$50 Visa Gift Cards by entering your email address at the end of the survey.

Confidentiality

Surveys will be anonymous; they will not be linked to your email address even if you choose to participate in the prize drawing. All information gathered in this study will be kept confidential. All records will be stored in a password protected database in the primary investigator's locked office at Marshall University, GH room 114 for 5 years after completion of the study. After the storage time is complete the information gathered will be properly disposed.

Voluntary Participation

Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time.

Participant Consent:

By going to the survey link below you confirm that you have read the above information and agree to participate in this study.

Survey Link: <http://tinyurl.com/jn2eh3d>

Appendix E: Questionnaire Tool

Title: Perceptions of the Athletic Training Profession by a Collegiate Athlete Patient Population

Demographic/Background

1. Are you between the ages of 18 and 30?
 - a. Yes
 - b. No
2. What is your gender?
 - a. Male
 - b. Female
3. What sport do you currently participate in?
 - a. Football
 - b. Women's Volleyball
 - c. Men's Soccer
 - d. Women's Soccer
 - e. Women's Track and Field
 - f. Men's Cross Country
 - g. Women's Cross Country
 - h. Men's Basketball
 - i. Women's Basketball
 - j. Men's Golf
 - k. Women's Golf
 - l. Cheerleading
 - m. Women's Tennis
 - n. Baseball
 - o. Softball
 - p. Swimming and Diving
4. How long have you participated in athletics?
 - a. Less than 1 year
 - b. 1-4 years
 - c. 5-8 years
 - d. 9-12 years
 - e. 13-16 years
 - f. More than 16 years
5. How many years have you received care from a certified athletic trainer?
 - a. Less than 1 year
 - b. 1-2 years
 - c. 3-4 years
 - d. 5-6 years
 - e. More than 6 years
6. How often do/did you interact with a certified athletic trainer?

- a. Multiple times a week
 - b. Once a week
 - c. Once every 2 weeks
 - d. Once a month
 - e. Less than once a month
7. Why do you most often see a certified athletic trainer?
- a. Personal reasons (e.g., discuss non-injury related topics)
 - b. Preventative care (e.g. taping/wrapping)
 - c. Injury evaluation or diagnosis
 - d. Immediate care or first aid
 - e. Treatment, rehabilitation or reconditioning

Athletic Training Services

Instructions: Answer based on treatment/care you have received from athletic trainers during your athletic career.

Likert Scale= Very Satisfied (5), Satisfied (4), Neutral (3), Unsatisfied (2), Very Unsatisfied (1)

- 8. How satisfied are you with the overall quality of care provided by your athletic trainers?
- 9. How satisfied are you with the amount of time it takes your athletic trainers to approach you once you enter the athletic training room?
- 10. How satisfied are you about your athletic trainers' control of emergency situations?
- 11. How satisfied are you with the injury prevention techniques (e.g. taping/wrapping) provided to you by your athletic trainers?
- 12. How satisfied are you with your athletic trainers' accuracy of answers to your questions?
- 13. How satisfied are you with the courtesy shown to you by your athletic trainers?
- 14. How satisfied are you with the level of concern your athletic trainers demonstrate to all athletes no matter what sport they participate in?
- 15. How satisfied are you with the professional conduct of your athletic trainers?
- 16. How satisfied are you with the level of respect your athletic trainers give you?
- 17. How satisfied are you that your athletic trainers provide a safe environment to share information (e.g. privacy and trust)?
- 18. How satisfied are you with the level of confidentiality demonstrated by your athletic trainers concerning your medical information?

Yes/No (Yes = 1, No = 0)

- 19. My athletic trainers have been present in locations at practice and at competition to assist me in the event that I am injured.
- 20. I am satisfied with the athletic training room hours of availability to athletes prior to practice or competition.
- 21. Athletic training facilities are equipped with the necessary tools for quality care.
- 22. I am satisfied with the overall quality of care I receive in athletic training facilities
- 23. I am satisfied with the way my athletic trainers have personally treated me.

24. I am confident that my athletic trainers have been competent and knowledgeable.
25. Have you received any treatment from athletic trainers during your athletic career? (e.g. Band-Aid®, blister care, taping, ice/ice-bath, injury evaluation, rehabilitation, etc...)
 - a. Yes
 - b. No

Likert Scale= Very Satisfied (5), Satisfied (4), Neutral (3), Unsatisfied (2), Very Unsatisfied (1)

Instructions: Answer based on treatment/care you have received from athletic trainers during your athletic career.

26. How satisfied are you with the overall process used for proper rehabilitation of athletic injuries by your athletic trainers? The process includes initial evaluation, selection of rehabilitation techniques, communication to other professionals and the coach.
27. How satisfied are you with your athletic trainers' initial response to your injury during a practice or game?
28. How satisfied are you with the amount of time spent from injury onset to when you see an appropriate medical professional?
29. How satisfied are you with the terms your athletic trainers use when explaining your injury to you?
30. How satisfied are you with your athletic trainers' presentation of the nature of your injury?
31. How satisfied are you with how your athletic trainers communicate with your coaching staff about your illness or injury condition?
32. How satisfied are you with the level of concern your athletic trainers express about each injury regardless of how many you have had in the past?
33. How satisfied are you with how your athletic trainers demonstrate concern for your feelings and emotions following an injury?
34. How satisfied are you with the knowledge demonstrated by your athletic trainers regarding your injuries?
35. How satisfied are you with the assessment process your athletic trainers use to evaluate your injuries?
36. How satisfied are you with the selected treatment your athletic trainers use to rehabilitate your injuries?
37. How satisfied are you that your athletic trainers include you in the selection of your treatment plan?
38. How satisfied are you with the information provided to prevent re-injury by your athletic trainers after sustaining initial injury?

Yes/No (Yes = 1, No = 0)

39. I am satisfied that my athletic trainers have been truly interested in helping me fully recover from my injury in a timely fashion so that I can return to competition.

40. I am confident in my athletic trainers' decisions to remove me from a game or practice due to my injury or illness.
41. I feel comfortable when approaching my athletic trainers about injuries or illnesses.
42. Overall, I am satisfied with the athletic training services I have received.

Likert-scale= Extremely qualified (5), Well qualified (4), Moderately qualified (3), Minimally qualified (2), Not at all qualified (1)

Instruction: Answer questions based on your perception of athletic training.

43. To what extent do you feel athletic trainers are qualified in injury and illness prevention (e.g. taping/wrapping, equipment fitting, removing environmental hazards, performing pre-participation physical examinations, etc...)?
44. To what extent do you feel athletic trainers are qualified in clinical evaluation and diagnosis (e.g. looking at an injury and determining what is wrong)?
45. To what extent do you feel athletic trainers are qualified in immediate and emergency care (e.g. cleaning/covering wounds, handling life threatening injuries, and implementing emergency action plan)?
46. To what extent do you feel athletic trainers are qualified in treatment, rehabilitation, and reconditioning (e.g. implementing exercises to promote healing, applying ultrasound/electrical stimulation/massage, etc...)?
47. To what extent do you feel athletic trainers are qualified in organization and administration (e.g. leadership abilities, keeping track of your medical files, making medical appointments, etc...)?

Likert-scale= Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1)

48. I respect the profession of athletic training.
49. I would go out of my way to seek service from an athletic trainer.
50. I would encourage others to seek service from an athletic trainer.
51. I believe athletic trainers are competent medical professionals.