CERTIFIED ATHLETIC TRAINERS' PERCEPTION OF ASTHMA

by

DOUGLAS S. GARDENHIRE

(Under the Direction of Jay W. Rojewski)

ABSTRACT

Asthma is a chronic respiratory disease characterized by episodes of impaired breathing caused when muscles constrict in the airways. This disease affects more than 23 million people and is the most common long-term disease in children in the United States. Asthma is also commonly found in athletes. Physical exertion can trigger asthma symptoms in athletes, as well as in non-athletes, who have asthma. Asthma can be managed by several different types of healthcare professionals, including certified athletic trainers. Therefore, the purpose of this survey study was to ascertain a set of athletic trainer's perceptions about asthma and its treatment and to evaluate if any variables could be used to predict behavior.

Descriptive statistics were used to describe the participant's perception of asthma and asthma management. A Person product correlation, Spearman Rho correlation, and *t*-test were used to evaluate predictor variables based on participant responses.

The sample for this study was 349 certified athletic trainers, all members of the Southeastern Athletic Trainers Association (SEATA). Self-reported responses were

collected from each participant concerning asthma knowledge and asthma management.

Overall, participants in this study had a high perception of asthma knowledge and asthma management. However, self-reported behaviors toward asthma knowledge and asthma management were lower than beliefs and peer beliefs. None of the studied variables were useful in predicting the behavior in certified athletic trainers.

INDEX WORDS: Asthma, Certified Athletic Trainer, Perception, Belief, Behavior

CERTIFIED ATHLETIC TRAINERS' PERCEPTION OF ASTHMA

by

DOUGLAS S. GARDENHIRE

B.H.S., Wichita State University, 1995

M.S., Pittsburg State University, 2000

A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

DOCTOR OF EDUCATION

ATHENS, GEORGIA

2010

CERTIFIED ATHLETIC TRAINERS' PERCEPTION OF ASTHMA

by

DOUGLAS S. GARDENHIRE

Major Professor: Jay W. Rojewski

Committee: Thomas Valentine
Myra Womble

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
December 2010

TABLE OF CONTENTS

Page

LIST OF TABLES vii

LIST OF FIGURES viii

CHAPTER

1 INTRODUCTION 1

Purpose 4

Research Questions 4

Theoretical Framework 5

Significance of Study 6

2 REVIEW OF LITERATURE 8

Perception 9

Theory of Planned Behavior 16

Asthma Education 19

Certification and Licensure 22

Summary 27

3 METHODOLOGY 28

Research Questions 28

Design 29

Population and Sample 31

Logical Framework 33
Instrume ntation 37
Data Collection 42
Data Analysis 43
4 FINDING 45
Research Questions 45
Findings Related to Research Question 1 46
Findings Related to Research Question 2 47
Findings Related to Research Question 3 48
Findings Related to Research Question 4, 5, and 6 50
Summary 51
5 INTERPRETATION OF FINDINGS 53
Overview of Study 53
Discussion of Findings 56
Implicat ions of Practice 62
Implicat ions for Theory and Research 63
Recommendatio n for Future Study 64
REFERENCES 66
APPENDICIES
A Item Pool Generation 75
B Item Critique Questions 79
C Content of Survey Instrument 83

D Request for Participation..... 86

E Implied Consent..... 88

F Second Request Postcard for Participation..... 90

G Final Request for Participation 92

LIST OF TABLES

Page

Table 3.1: *Operational Versus Theoretical Terminology* 31

Table 4.1: *Certified Athletic Trainers' Beliefs of Asthma Knowledge and Asthma Management*..... 47

Table 4.2: *Certified Athletic Trainers' Peer Beliefs of Asthma Knowledge and Asthma Management*..... 48

Table 4.3: *Certified Athletic Trainers' Self-Reported Behavior When Dealing with Asthma Knowledge and Asthma Management*..... 49

Table 4.4: *Operationalized Study Constructs* 50

LIST OF FIGURES

Page

Figure 2.1: Theory of reasoned action 11

Figure 2.2: Theory of planned behavior 16

Figure 3.1: Operational model for testing in the study..... 33

CHAPTER 1

INTRODUCTION

Asthma is a chronic respiratory disease characterized by episodes of impaired breathing caused when muscles constrict in the airways. This disease affects more than 23 million people in the United States and is the most common long-term disease in children in this country (Centers for Disease Control [CDC], 2010.). It is estimated that more than 12 million Americans have had an asthma attack in the last 12 months; 4 million were children under 18 years of age. Every year asthma accounts for 14 million lost school days for those under 18 years of age and 14.5 million lost workdays for those over 18 years of age. The cost of lost school days and work days together total over $14 billion annually. Asthma care in the United States now exceeds the combined total cost of care for individuals with AIDS or tuberculosis, a number that exceeds $18 billion annually (American Lung Association [ALA], 2010.; CDC, 2010.).

Many factors trigger asthma, primarily respiratory infections, allergic reactions, temperature changes and exercise. Running has been linked to more than 80% of the asthma attacks in children (ALA, 2010). Contrary to common opinion, asthma is also commonly found in athletes (Helenius, Tikkanen, & Sarna, & Haahtela, 1998; Weiler, Layton, & Hunt, 1998). Physical exertion can trigger asthma symptoms in athletes, as well as in non-athletes who have asthma (Nastasi, Heinly, & Blaiss, 1995; Sandsund, Faerevik, & Reinertsen et al., 1997).

Hannaway (2002) noted that exercise-induced asthma or bronchospasm is an under diagnosed condition. Current practice guidelines for treating asthma stress the need for patient and family to manage asthma exacerbations in collaboration with a healthcare professional. Healthcare professionals at various positions should be able to improve asthma care in his/her clinical practice using an improved knowledge of the disease (National Heart, Lung, & Blood Institute, National Institutes of Health National Asthma Education and Prevention Program [NAEPP], 2007).

Asthma can be managed by several different types of healthcare professionals ranging from physicians to school nurses. One difficulty in managing asthma is that healthcare professionals may mistake respiratory symptoms for something other than asthma and misdiagnosis the disease. Misdiagnosis may lead to improper treatment and management. Healthcare professionals that are able to recognize the symptoms of asthma will be more likely to properly manage the disease. The ability to properly manage the disease is the result of formal training and experience.

A deficiency of practical asthma knowledge in physicians often results from a lack of experience in treating asthmatics and a heavy patient load (Calabrese et al., 1999; Conway, Hu, Bennett, & Niedos, 1999). Researchers in a number of other studies have indicated a lack of knowledge about asthma and its treatment among school nurses. This situation may be attributable to nurses having limited experience in treating asthmatics or nurses having no formal training (Bevis & Taylor, 1990; Brookes & Jones, 1992; French & Carroll, 1997; Gibson et al., 1995; Rodehorst, 2003).

Asthma prevalence is increasing in the elite athletic population. Voy (1986) found that 11% of all U.S. Olympic athletes in the 1984 Summer Games had asthma or exercise-induced bronchospasms. Weiler, Layton, and Hunt (1998) found an increased number of athletes with asthma (16.7%) at the 1996 Olympic Summer Games. A similar study was conducted at the 1998 Winter Olympics, finding that 22.4% of the athletes surveyed had asthma (Weiler & Ryan, 2000). Asthma incidence also affects non-elite athletes. Becker, Rogers, Rossini, Mirchandani, and D'Alonzo (2004) reported that 30% of competitive athletes in the authors' study had died of an asthmatic attack while participating in an organized sport. Almost 23% died while practicing and just over 6% died at sometime during an organized athletic event.

The effect of asthma on athletes is apparent; the evidence shows athletes need supervision by trained healthcare professionals at all athletic practices and events. Athletic training is recognized by the American Medical Association as an allied health care profession (Delforge & Behnke, 1999). As part of a complete health care team, certified athletic trainers work under the direction of a licensed physician and in cooperation with other healthcare professionals, athletics administrators, coaches, and parents. The presence of certified athletic trainers in high school, college, and professional sports place them as likely healthcare providers of patients with asthma. There is little research examining what training or knowledge certified athletic trainers have with which to manage asthma episodes in the athletes under his/her care.

Purpose

The purpose of this survey study was to ascertain certified athletic trainer's perceptions about asthma knowledge and asthma management. Differences in perceptions were analyzed based on three independent variables including years of experience, education level, and type of education, defined as internship or curriculum-based program. The dependent variable was certified athletic trainers self-assessment of his/her perceptions of asthma knowledge and asthma management.

Research Questions

1. What were perceptions of certified athletic trainers about the importance of asthma knowledge and asthma management?
2. What were perceptions of certified athletic trainers about peer beliefs concerning asthma knowledge and asthma management?
3. What were the behaviors of certified athletic trainers toward asthma knowledge and asthma management?
4. To what extent did years of experience, educational level, and type of preparation explain the variance in perceived importance of asthma knowledge and asthma management?
5. To what extent did years of experience, educational level, and type of preparation explain variance in perceived peer beliefs concerning asthma knowledge and asthma management?

6. To what extent did years of experience, educational level, and type of preparation explain the variance in behaviors toward asthma knowledge and asthma management?

Theoretical Framework

The theoretical model used in this study was the Theory of Planned Behavior (TPB), which is an extension of Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA). The TPB is a model that has been successful in predicting behavior in a wide variety of domains (Ajzen, 1991). The theory of reasoned action was established in order to describe the relationship between beliefs, attitudes, and behaviors, and is based on two assumptions. The first assumption is that humans are rational beings that have the ability to process and use available information. The second assumption is that the information humans have can be used to arrive at a reasonable behavioral decision (Azjen & Fishbein, 1980; Fishbein & Azjen, 1975).

A third element known as perceived behavioral control was added to the theory in 1988. Perceived behavioral control refers to the degree of control a person believes he/she has in performing a particular behavior based on experience and anticipated obstacles. The addition of this third element resulted in the Theory of Planned Behavior (Ajzen, 1991).

Attitudes are views that one holds toward an object, person, behavior, or event. Johns (1988) considered attitude to be shaped by what humans think and feel. In contrast, Fishbein and Azjen (1975) believed that attitudes come from beliefs that lead to behavior, either favorable or unfavorable.

Attitudes are the first determinants of behavioral intention. If a person holds a positive belief or experience toward a particular behavior, his/her intention may be to actually perform the behavior. However, if a person feels other important people in his/her life have a negative belief about the particular behavior he/she will consider this before performing the behavior. The basis for Ajzen's (1985) construct of perceived behavioral control is that attitudes are a precursor toward behavior. If one can measure attitude, then you can predict behavior.

Significance of Study

An extensive search of the literature revealed no studies that examined certified athletic trainer's perception toward asthma and asthma management. There is a need to investigate and summarize certified athletic trainer's knowledge of asthma and asthma management to aid in the education of certified athletic trainers about asthma and asthma management. The number of organized athletic events in the United States is enormous. The need for trained healthcare professionals to have knowledge and to be able to recognize persons with asthmatic symptoms at these events may help reduce hospitalizations and perhaps even prevent death. Since certified athletic trainers are the healthcare professionals most likely to provide first-line care for athletes, it is important to share this information with those who can help disseminate it to the population.

Information from this study will provide the National Athletic Trainers Association (NATA) and academic institutions offering athletic training programs information that may shape his/her position and curriculum on asthma. Currently, the NATA does not have a stated practice for asthma or the treatment of asthma when an athlete is in the

care of a certified athletic trainer. Moreover, academic institutions can evaluate the results of this study to either increase or decrease the level of education related to asthma and asthma management that students in athletic training programs receive.

CHAPTER 2

REVIEW OF LITERATURE

This study examined certified athletic trainers' perceptions of asthma knowledge and asthma management. This chapter reviews research literature relevant to the National Asthma Education and Prevention Program (NAEPP, 2007), which utilizes clinical guidelines for the diagnosis and management of asthma. These guidelines underscore the importance of asthma management and introduce new approaches for monitoring asthma beyond a physician's office. Specifically, this study focused on certified athletic trainers, who regularly see individuals during sport practice and game coverage. For example, an athlete may have an asthma exacerbation while running on a newly-cut grass field, which would require a certified athletic trainers' care.

The chapter is organized into three main sections. The first section reviews perception as a psychological construct and its connection to attitudes and human behavior. The theory of reasoned action (TRA); (Fishbein & Ajzen 1975) will be described to establish a foundation for the theory of planned behavior. The theory of planned behavior (Ajzen, 1985), which is an extension of the TRA, will be outlined. The second section reviews current understanding of asthma and the importance of treatment with a particular emphasis on the practice of athletic training. The final section summarizes the certification and licensure standards for athletic trainers.

Perception

Attitude

The concept of attitude has more definitions than any other concept in social psychology. Allport (1933) considered attitude the main concept in social psychology. The different ways in which the concept of attitude is used in different psychological studies by various theorists and researchers lends itself to multiple definitions.

Attitudes are typically defined as learned predispositions to respond to an object or class of objects in a consistently favorable or unfavorable manor (Allport, 1935). The importance of studying attitudes rests on the connection between an attitude toward a particular object and the consequent behavior toward the object that this attitude will produce (Allport, 1935; Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975; Rosenberg & Hovland, 1960; Staw & Ross, 1985). If attitudes and behavior are highly correlated, then the behavior of a person can be predicted once his/her attitude has been established (Ajzen & Fishbein, 1977).

Anderson (1985) identified five characteristics of attitude, including emotion, consistency, target, direction, and intensity. An emotion is a mental and physiological state associated with behavior. Emotions are subjective experiences or experienced from an individual point of view. Consistency refers to the behavior being the same over time. Consistency leads to the same response no matter if it is favorable or unfavorable. A target behavior is one that is attainable. Since attitudes are shaped over time the target is a behavior toward an inanimate object that has been attained. Direction is a

characteristic held by an individual that due to personal experiences or input by others that deemed important influences in his/her life. Intensity refers to strength or time an individual has performed a particular behavior. The longer a person has believed, whether it be positive or negative a behavior the more conviction that individual will have about that particular behavior. Anderson (1985) argued that, like any other trait, attitude possesses consistent emotions. This means that a person has specific emotions to create an attitude toward the fact. Moreover, value, and self-esteem are more intense emotions than attitude. Geis, Carter, and Bulter (1982) defined perception as a stimulus that may be a person, object, or event that a person views, hears, tastes or even feels. The word perception signifies attitude with less intensity towards changing behavior (Krech, 1962).

Attitude measurement has defined attitude in terms of the intensity of one's affect for or against a known fact. Fishbein and Ajzen (1975) defined attitude using three components; cognitive, affective, and behavioral. Cognition is the ability of an individual to reduce information to factual knowledge. Affective pertains to an individual's emotion toward information received. Behavior is the action or reaction an individual has to internal or external stimuli.

Theory of Reasoned Action

Attitudes have a direct link to understanding behavior. To describe this association, the theory of reasoned action asserts that individuals' beliefs and attitudes towards a behavior actually predict behavior. According to Fishbein and Ajzen (1975), attitudes come from beliefs. Beliefs are a state of mind that an individual creates to

understand a topic. For example, as individuals develop an understandings of his/her environment from his/her observations and experiences or learned facts, he/she creates what he/she believes to be the correct interpretations or beliefs. From these beliefs, a behavior is exhibited as an outcome. Behavior is created based on the individual's beliefs, regardless of whether the beliefs are true or not. In addition, attitudes are affected by the opinions of other people and our motivation to comply with his/her ideas. Attitudes tend to be fairly stable over time and tend to lead to action (Ajzen, 1988). However, influences by others can change attitudes. Although change would not occur unless an individual has incentive to change, change takes time. This model of beliefs, attitudes, and intentions has formed the theory of reasoned action (TRA) (see Figure 2.1.

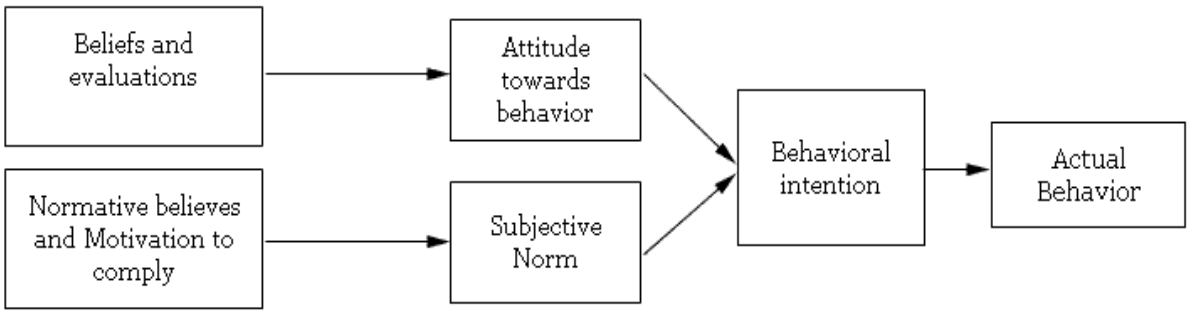

Figure 2.1. Theory of reasoned action (Fishbein & Ajzen, 1975).

Ajzen and Fishbein (1980) formulated the TRA, which resulted from attitude research on expectancy value models. The TRA is a value-expectancy model with emphasis on attitudes, subjective norms, intentions, and behaviors directed toward a specific focus. Expectancy value models provide a context for understanding the relationship between a person's attitudes and his/her underlying beliefs. Outcome expectancy is the anticipatory beliefs that given behaviors end in a given outcome,

whereas outcome value is a person's evaluation of subjective worth placed on that outcome (Baranowski, Perry, & Parcel, 1997). Ajzen and Fishbein (1980) mathematically defined attitude as the sum of expectancy multiplied by value. Therefore, it was shown that an individual is more motivated to perform a behavior that will result in highly valued outcomes. If individuals do not believe that an act will lead to a specific outcome or the outcome is not valued, he/she will be less motivated to perform the behavior, which will create an attitude. This offers an approach to understanding and predicting behavior through the TRA model. The TRA assumes that human beings are rational individuals that make systematic use of the information available to them. It is believed that people consider the implications of his/her actions before he/she decide to engage or not engage in a behavior. The TRA was formulated by Ajzen and Fishbein to help estimate observed discrepancies between attitude and behavior. Ajzen and Fishbein related the TRA to a person's voluntary behavior. However, the authors discovered that behavior was not always voluntary or under individual control. It is not clear that the TRA components are sufficient to predict behavior when voluntary control is reduced. For example, if a certified athletic trainer's motivation to learn about asthma or treat an athlete with asthma is high, the behavior may not actually occur due to environmental or other contextual factors beyond personal control. In order to explain involuntary control another component, perceived behavioral control was added.

The addition of perceived behavioral control to the TRA became known as the theory of planned behavior (TpB). Perceived behavioral control refers to individuals'

perceptions of his/her ability to perform a given behavior. Perceived behavioral control has an indirect effect on intentions and a direct effect on behavior. Intention can lead to behavior, however, the TpB can predict deliberate behavior, because behavior can be planned (Ajzen, 1991). Perceived behavioral control is a reflection of actual control and may be considered a substitute for actual control (Ajzen, 1988). Positive attitude and the perceptions of behavioral control lead to a stronger intention to perform the considered behavior.

The objective of the TRA is to predict and understand individual behavior. To make this possible, it is necessary to identify and measure the behavior of interest. Since it is assumed that most behaviors are under volitional control, the theory views a person's intention to perform or not perform a behavior as the immediate determinant of the action. Although intentions are understood to be the immediate precursor of actions, the observed relationship between intention and behavior depends on two factors. First, a measure of intention must correspond to the behavior in question. For instance, if a person collapsed, the intention for some would be to aid the individual. This action is deliberate because an individual would observe the collapsed individual and make his/her way to the person. However, someone may not aid the individual and walk away, which is also deliberate in action. Second, a measure of intention will predict behavior only if the intention does not change before the behavior is observed. For example, intentions may change based upon experiences or situations, both present and in the future. Therefore, to maximize behavioral prediction, the intention should be

assessed immediately prior to the behavior (Ajzen & Fishbein, 1980). The only way to assess behavior prior to action is to survey individuals by presenting vignettes.

Intention, in turn, is a function of two basic determinants, one personal and the other social. The personal factor, *attitude toward the behavior*, is an individual's favorable or unfavorable evaluation of performing a specific behavior. It simply refers to judgment that performing the behavior is good or bad. For example, if an individual has an unfavorable evaluation of smoking the individual will believe those that smoke are choosing a negative behavior. Beliefs that underlie a person's attitude toward a particular behavior are called *behavioral beliefs*. The second factor, *subjective norm,* is a function of beliefs about the expectations that others hold and our motivation to comply. For example, if a group of friends all believe that smoking is a bad behavior then an individual may accept this social pressure as motivation to not smoke. Beliefs that underpin a person's subjective norms are called *normative beliefs*. Individuals who believe his/her peers would want them to comply with a specific behavior will perceive social pressure to do so. On the contrary, individuals who believe his/her peers would not want them to comply to a subjective norm that places pressure to avoid performing the behavior. In short, attitudes toward a behavior are determined by beliefs that performing the behavior lead to certain outcomes and are affected by evaluations of those outcomes (Ajzen & Fishbein, 1980). The relative importance of the components in determining intentions may vary from one behavior to another and from one individual to another. In general, individuals will intend to perform a behavior when he/she evaluate it positively and when he/she believe that others think he/she should perform

it. Based on this model, attitude toward a given behavior and the perceived subjective norms concerning the given behavior should provide accurate prediction of intention to behave.

Among the most notable problems associated with the TRA is that the theory is used to predict behavior that is not under full volitional control. An individual may have total control when there are no constraints of any type in adopting a particular behavior. At the other end of the spectrum, there may be a total lack of control, both internal and external, if adoption of a given behavior requires resources or skills that may be deficient or absent. Internal factors are such things as skills, abilities, information, and emotions such as stress. External factors include age, sex religion, education, personality traits, and attitudes towards people and institutions. External variables may influence the beliefs a person holds or the relative importance attached to attitudinal and normative considerations, thereby influencing behavior. However, there is no necessary relation between any given external variable and behavior. In other words, an external variable will have an effect on behavior only to the extent that it influences the determinants of that behavior (Fishbein & Ajzen, 1975). The limitation of the TRA is that it assumes that attitude and social norms can fully determine intention, and intention is the only antecedent of behavior. However, the TRA model is not sufficient when the control of the behavior is not complete (Ajzen & Madden, 1986). To overcome limitation of volitional control, Ajzen (1985) modified the TRA by adding a third component of intention called perceived behavioral control. The addition of a third component resulted in the theory being renamed the TpB.

Theory of Planned Behavior

The TpB (see Figure 2.2) is an extension of the TRA with the addition of a third component of intention called perceived behavioral control. As with the TRA, the central focus of the TpB is the individual's intent to perform a given behavior (Ajzen, 1985, Ajzen & Madden, 1986, Godin & Kok, 1996). Intentions are assumed to summarize the motivational factors that influence a given behavior. In other words, intentions are indications of how hard a person is willing to work and how much effort a person is willing to put forth to perform a given behavior (Ajzen, 1991).

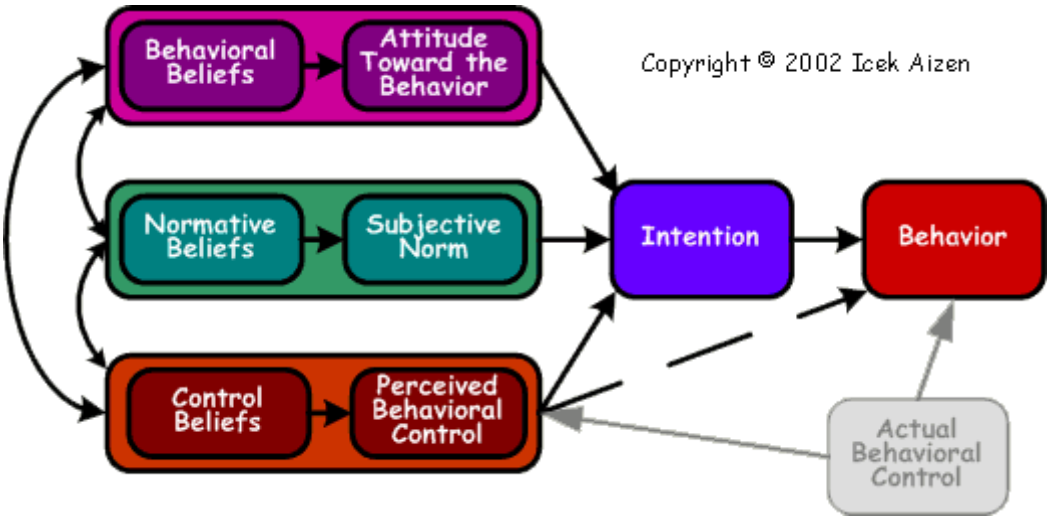

Figure 2.2. Theory of Planned Behavior (Ajzen, 1985).

Ajzen's (1985) addition of *perceived behavioral control* separates it from the TRA. This component refers to individual's perception of the existence or nonexistence of required resources needs to perform the behavior of interest (Ajzen & Madden 1986; Mathieson, 1991). To make precise predictions of behavior when individuals may not have complete behavior control, the extent to which individuals have controls over the

behavior should be assessed (Ajzen and Madden, 1986). This aspect is important in studying certified athletic trainers' behavior toward asthma and asthma management. Those with less resources and opportunities will interfere with the ability to gain knowledge in treating a common disease in athletes, especially young and adolescent children. Perceived behavioral control is determined by a set of accessible *control beliefs* that reflects individuals' perception of the available knowledge, resources, and opportunities (Ajzen, 1985; Ajzen & Madden 1986; Mathieson, 1991).

The limitation of the TRA is that it assumes attitude toward a behavior and subjective norms can determine behavioral intention, which can predict behavior. However, TRA will not be sufficient when the control over the behavior in not completely controlled by the individual (Ajzen & Madden, 1986). TRA is a special case of TpB in which individuals are assumed to have full volitional control over necessary knowledge, resources, and opportunities (Ajzen 1985). TpB, on the other hand, can cover these situations in which individuals may not have full volitional control over necessary resources and thus gives a wider range of application.

The relevance of the theory to the study at hand is twofold. First, is the ability to predict the beliefs of athletic trainers regarding the use of the National Asthma Education and Prevention Program (NAEPP). This will allow the researcher to determine what perceptions a sample of athletic trainers hold toward common the NAEPP. Secondly, the ability to predict the behavior of athletic trainers, specifically the treatment of an asthma exacerbation, can be derived from the theory. The central question is from the perspective of TpB, do athletic trainers have the perceived

behavioral control to perform therapy or to recognize the danger involved in an asthma exacerbation?

Levin (1999) demonstrated that intention, attitude, and perceived risk were predictors of healthcare worker's behavior to wear gloves. Healthcare workers that were identified as being more likely to wear gloves were more likely to report wearing them. Healthcare workers who had a negative attitude toward wearing gloves or who did not perceive themselves as being at risk for blood borne diseases were not as likely to wear gloves. Perceived behavioral control was the variable that contributed to an understanding of glove use. If healthcare workers felt he/she had control over wearing gloves or not, if he/she had a positive assessment that glove use would protect them, and if he/she had confidence in the ability to wear gloves he/she did so. However, healthcare workers were not swayed to wear gloves by co-workers, supervisors, or the Occupational Safety and Health Administration (OSHA).

Walker, Grimshaw, and Armstrong (2001) studied physicians' intentions and beliefs when prescribing antibiotics to patients with a sore throat, even though antibiotic use could lead to bacterial resistance. The authors discovered that attitudes and perceived behavioral control were the most important predictors of intention. The more negative attitude a physician had about antibiotics the more control he/she had on factors that promote prescribing. A physician's past prescribing of antibiotics was an indication of future prescribing.

Puffer and Rashidian (2004) examined the intentions of nurses with to use clinical guidelines on smoking cessation for secondary prevention of coronary heart

disease (CHD). The authors found no correlation between subjective norm and intention. However, the authors did find that attitude and perceived behavioral control were predictors of intentions. Nurses that had a positive evaluation of the guidelines, were confident in his/her ability to follow the guidelines, and could direct a patient through the guidelines would do so. Nurses' intentions were not controlled by the opinions co-workers and patients.

O'Boyle, Henly, and Larson (2001) discovered that the TpB predicted intention for nurses to wash his/her hands, however, intention was self-reported. Predicted observed hand washing was thought to be due to the nature of the job rather than attitudes, subjective norm, or perceived behavioral control. Pittet et al. (2004) studied beliefs and perceptions of physicians' hand hygiene. The authors found that adherence to hand washing averaged 57%, but were drastically higher when a hand-rub solution was available. Physicians were more likely to use proper hand hygiene when being observed. Physicians' beliefs and perceptions of hand hygiene included a positive attitude toward hand hygiene after patient contact and s belief in being a good role model for colleagues.

Asthma Education

Asthma is a chronic respiratory disease characterized by episodes of impaired breathing caused by constriction of the muscles in the airways and inflammation of the tissues. This narrowing of airways in the lungs decreases the ability of an individual to properly breath, leading to increased work of breathing, increased work of the heart, and a decrease of oxygen in the blood. This disease affects more than 23 million people

in the United States and is the most common long-term disease in children (ALA, 2010; CDC, 2010). It is estimated that more than 12 million Americans have had an asthma attack in the last 12 months, of this total 4 million were children under 18 years of age. Every year asthma accounts for over 14 million lost school days for children under 18 and 14.5 million lost workdays for people over 18 years of age costing $14 billion annually. Asthma care in the United States now exceeds the combined total cost of AIDS and tuberculosis, a cost that exceeds $18 billion annually.

Asthma has many triggers such as respiratory infections, allergic reactions, temperature changes, and exercise. Running has been linked to more than 80% of asthma attacks in children (ALA, 2010). Asthma is also commonly found in athletes (Helenius et al., 1998; Weiler et al., 1998). Physical exertion can trigger asthma symptoms in athletes, as well as non-athletes (Nastasi et al., 1995; Sandsund et al., 1997). Hannaway (2002) noted that exercise-induced asthma and exercise-induced bronchospasms are underdiagnosed conditions. Current practice guidelines for treating asthma encourage healthcare professionals to expand educational opportunities to reach patients in a variety of settings, including pharmacies, schools, community centers, and patients' homes. Healthcare professionals should be able to improve asthma care in his/her clinical practice (NAEPP, 2007).

Asthma can be managed by different healthcare professionals ranging from physicians to school nurses. Physician's general lack of knowledge about asthma seems to be influenced by a lack of experience in treating asthmatics and a heavy patient load. Physicians are not taught how to treat a specific disease, moreover, when learning as a

resident he/she often may learn inaccuracies in how treat a specific disease. The other problem that is seen is the sheer number of patient visits to a emergency room or office. Many physicians see 8 or more patients per hour which does not allow for proper diagnosis or treatments. (Calabrese et al., 1999; Conway et al., 1999; Juhn et al., 2002). A number of studies also indicate a low level of knowledge about asthma among school nurses. Limited knowledge may be attributable to the same lack of experience in treating asthmatics or no formal training (Bevis & Taylor, 1990; Brookes & Jones, 1992; French & Carroll, 1997; Gibson et al., 1995; Rodehorst, 2003).

A review of asthma literature reveals no research with respect to athletic trainers. However, the prevalence of asthma is increasing in the athletic population. Voy (1986) found that 11% of all U.S. Olympic athletes in the 1984 summer games had asthma or exercise-induced bronchospasms. Weiler et al. (1998) found an even greater number of athletes with asthma (16.7%) at the 1996 Summer Games. A similar study was conducted at the 1998 winter Olympics, finding that 22.4% of athletes surveyed had asthma (Weiler & Ryan, 2000). This increase in incidence is close to the national trend that asthma is on the rise. However, this increase could be inflated from the thought that beta agonist, medicine used to treat asthma may in fact increase performance of an athlete. Although the dose used to treat asthma is minimal and should not have an effect on performance, although a larger dose could affect performance (Weiler, 2003).

Asthma incidence also affects non-elite athletes. Becker, et al. (2004) reported that 51% of athletes who had died while participating in an organized sport from an

asthmatic attack. In studying certified athletic trainers' perception of asthma and asthma management, I will identify how athletic trainers perceive this treatable disease. The results could lead to more continuing education for athletic trainer exposing them to national guidelines. Exposure to the guidelines will offer a document that will educate and allow for standard practice of asthma which may lead to decreasing the number of asthma attacks experienced by athletes in organized sports.

Athletic training is recognized by the American Medical Association as an allied healthcare profession (Delforge & Behnke, 1999). As part of a complete healthcare team, certified athletic trainers work under the direction of a licensed physician and in cooperation with other healthcare professionals, athletics administrators, coaches, and parents. Certified athletic trainers in high school, college, and professional sports are mandated as healthcare providers of patients with asthma.

Certification and Licensure

From 1967 until 2004 two approaches were available to become an athletic trainer. The first was a supervised internship program that was conducted via an accredited university or college program with certified athletic trainers overseeing students' clinical practice skills. In this type of program, each student was required to complete a specific number of contact hours and complete required courses that led to a baccalaureate or masters degree. After successful program completion, the student was granted qualification to sit for the national examination.

The second path to becoming an athletic trainer was a curriculum that is still being used at present to educate all athletic trainers. The program of study consists of

completing courses and clinical training before graduating with a 4-year college degree. Completion of an accredited program is now required for students to sit for the national examination. All programs that offer athletic training as a program of study must meet specific standards and thresholds to become accredited.

In 2004, the National Athletic Training Association (NATA) withdrew the internship program. Now, all athletic trainers must attend a Commission on Accreditation of Allied Health Education Programs (CAAHEP) accredited athletic training program. CAAHEP is the largest programmatic accreditor in the health sciences field. In collaboration with the health science Committees on Accreditation (CoA), CAAHEP reviews and accredits more than 2000 educational programs in 21 health science occupations across the United States and Canada. Prior to 1994, accreditation in most of these disciplines was a function of the Committee of American Health Education Accreditation (CAHEA) within the American Medical Association (AMA). The CAHEA reported directly to the federal Department of Education. When the AMA decided to remove itself from the practice of accreditation, it relinquished accreditation authority of these programs to another entity. This allowed the formation of CAAHEP.

Accreditation is an effort to assess the quality of institutions, programs, and services, measuring them against prescribed standards and thereby assuring that institutions, programs, and services meet specific standards. In the case of postsecondary health science education and training, there are two types of accreditation: institutional and programmatic (or specialized). Institutional accreditation helps to assure potential students that a school is a satisfactory institution and has met

certain minimum standards in terms of administration, resources, faculty, and facilities. Programmatic accreditation examines specific schools or programs within an educational institution (e.g., law school, medical school, nursing program). The standards used to measure these programs have generally been developed by the professionals involved in each discipline and are intended to reflect what a person needs to know and be able to do to function successfully within that profession (Commission on Accreditation of Allied Health Programs [CAAHEP], n.d.).

Athletic training uses a competency-based approach in both didactic and clinical education. Athletic trainers are educated to serve as physician extenders, with an emphasis on clinical reasoning. Educational content is based on effective competencies, knowledge, psychomotor skills and clinical proficiencies. Students must receive formal instruction in foundation courses such as anatomy and physiology, kinesiology, nutrition, and acute care of injury and illness. Furthermore, professional courses such as pharmacology, therapeutic modalities and exercise, pathology, and assessment of injury and illness are required. Students are also required to participate in clinical education using an outcomes-based approach. Objective testing examines the link between knowledge, skill, and attitude that is needed for clinical application. The structure of the clinical education component varies drastically between programs (Arnheim & Prentice, 1997; Board of Certification [BOC], n.d.a; NATA, n.d.a; Pfeiffer & Mangus, 2002).

Under previous internship guidelines, when students did not attend a CAAHEP-accredited program he/she may have been eligible to practice athletic training by

completing an internship. Each student was required to present documentation that he/she attained a minimum of 1500 hours of athletic training experience under the direct supervision of a NATA-certified athletic trainer. The hours had to been attained over a minimum of 2 years, but not more than 5 years. Of the 1500 hours, at least 1000 hours had to be attained in a traditional athletic setting at an interscholastic, intercollegiate, or professional sports level. The additional 500 hours could be attained from some other allied health setting under the supervision of a NATA-certified athletic trainer. Each student also needed to complete courses in the following seven areas: health, human anatomy, kinesiology, human physiology, exercise physiology, basic athletic training and advanced athletic training (Arnheim & Prentice, 1997; Board of Certification [BOC], n.d.a; NATA, n.d.b; Pfeiffer & Mangus, 2002).

Upon completion of a CAAHEP education program, students are eligible to sit for the NATA examination. He/she is evaluated on the following domains; prevention, recognition, evaluation and assessment, immediate care, treatment, rehabilitation and reconditioning, organization and administration, and professional development (BOC, n.d.b). The three-part examination consists of written, practical and simulation sections.

The written exam consists of a 150 multiple-choice questions that assess the knowledge and skills necessary to become a competent entry-level practitioner. The practical section of the exam evaluates the psychomotor skills relevant to athletic training. The examinee is only graded on performance; there is no penalty for incorrect spoken analyisis. The written simulation portion consists of eight scenarios depicting athletic training-related situations designed to approximate real-life decision-making.

The portion evaluates athletic trainers' ability to resolve cases similar to those one might encounter in actual practice. The written simulation is the newest portion of the total examination procedure. It was first incorporated in the exam in 1986, but was only used to establish validity. The simulation became a permanent pillar of the examination in 1987 (BOC, n.d.b; NATA, n.d.c).

Individuals that pass all three parts of the examination are awarded credentials as a certified athletic trainer (ATC). If an examinee fails a segment of the examination he or she is able to retake that section. Currently, all states that are members of the Southeastern Athletic Training Association (SEATA) have practice acts that legislate the practice of athletic training. Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, and Tennessee make up SEATA. Each state processes applications, administers examinations, and when warranted, conducts investigations into possible professional misconduct and may suspend or revoke licensure. After a verification of credentials from the National Athletic Training Association Board of Certification and approval from a four-person panel, a license is granted for two years.

To continue to practice as a certified athletic trainer, the NATA requires competency to be maintained and so trainers must complete continuing education programs. The NATA requires 80 contact hours every three years. Those states regulating athletic training require some form of continuing education on an annual or biannual basis. The State of Georgia requires 40 CEUs biannually to maintain licensure as an athletic trainer (BOC, n.d.c; Joint Review Committee on Athletic Training [JRC-AT], n.d.).

Summary

The major components of the TpB include, attitude toward the behavior, subjective norm, and perceived behavioral control. The model of the TpB emphasizes the relationships between intentions, perceived behavior control and behavior. The occupational functioning of certified athletic trainers has been detailed from educational requirements to discussion of continuing education hours certified athletic trainers possess to keep certification and licensure. Athletic training is an occupation that will continue to evolve, due to the need for on-the-field care. The best practice for an athletic trainer is to be a well-rounded healthcare provider by continuing to gain knowledge in all areas pertaining to athletes and the physically active; including the diagnosis, management and treatment of asthma.

CHAPTER 3

METHODOLOGY

I investigated the perceptions of certified athletic trainers about asthma and its treatment. Differences in perceptions were analyzed on three independent variables; years of experience, education level, and type of education. The dependent variable was certified athletic trainers self-assessment of his/her perceptions of asthma knowledge and asthma management.

Research Questions

1. What were perceptions of certified athletic trainers about the importance of asthma knowledge and asthma management?
2. What were perceptions of certified athletic trainers about peer beliefs concerning asthma knowledge and asthma management?
3. What were the behaviors of certified athletic trainers toward asthma knowledge and asthma management?
4. To what extent did years of experience, educational level, and type of preparation explain the variance in perceived importance of asthma knowledge and asthma management?
5. To what extent did years of experience, educational level, and type of preparation explain variance in perceived peer beliefs concerning asthma knowledge and asthma management?

6. To what extent did years of experience, educational level, and type of preparation explain the variance in behaviors toward asthma knowledge and asthma management?

This chapter presents the method used to answer the research questions. Specific sections include the procedures employed to identify the study sample, identify and develop an instrument to measure certified athletic trainers perceptions toward the use of asthma guidelines, and data analysis. The chapter is organized in to seven sections describing the design, population, logical framework, instrumentation, data collection, data analysis.

Design

A cross-sectional survey design was employed to describe certified athletic trainer perceptions toward asthma knowledge and asthma managment. Survey research is the most appropriate and effective way to elicit information from a large population. According to Gall et al. (2003), survey research is used to collect data about experiences, knowledge, opinions, and characteristics from a sample or population. Surveys collect data from a sample at some point in time to accurately represent the population being studied. One advantage associated with survey research is an ability to gather a breadth of information from numerous participants by a single instrument (DePoy & Gitlin, 1998). Low cost is often associated with survey research given the large number of people that can be contacted at one time. However, costs for mailing several hundred surveys to potential participants can add up quickly.

Disadvantages of using survey research also exist. Researchers must be informed about the population being studied. Respondent's negative attitudes toward the survey process or a lack of seriousness may lead to response error. To address these concerns, surveys should be short and simple. Salant and Dillman (1994) noted that if surveys are not clear or only provide vague direction response errors can ensue. Surveys do not allow for follow-up questioning or probing. Therefore, direct and accurate questions must be provided to elicit the desired information. Researchers should be cognizant to errors associated with survey research. The researcher has no control over respondent's interpretations of questions. However, ensuring instrument validity and pilot testing questionnaire items can decrease measurement error. Nonresponse error occurs when a number of survey participants do not respond and are different than other participants. Whipple and Muffo (1982) demonstrated that late respondents are similar to nonrespondents. Early respondents can be compared with late respondents; if no response bias is detected then nonrespondents can be treated as late respondents. The researcher would conclude that the number returned would be a representative sample.

In the mail survey method, researchers cannot be certain who completes and returns the survey. A recipient could easily forward the survey to another person believed to be more qualified. Another error in survey method is related to response bias. Some participants may respond in a random fashion or deliberately lie or distort his/her answers because the questions make them uneasy (DePoy & Gitlin, 1998).

Population and Sample

The population of this study was certified athletic trainers in the southeast United States. This population was restricted to certified athletic trainers that were members of the Southeastern Athletic Trainers Association (SEATA) which included the states of Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, and Tennessee. The population was chosen due to the researcher's geographical location and the ability to gain access to population. The perceptions of certified athletic trainers were compared based on experience, education level, and type of preparation. The advantage of including numerous states allowed research to be more broadly applicable. However, a disadvantage is that results can only be generalized to this population.

In the past there were two ways to become a certified athletic trainer, complete a curriculum program leading to a baccalaureate degree or complete an internship program. However, the internship program was discontinued in 2004. Athletic trainers are employed in high schools, universities, clinics, and by professional sports teams. By investigating the perceptions of certified athletic trainers about his/her current knowledge of asthma and asthma knowledge, gaps pertaining to asthma knowledge and asthma management can be ascertained (Arnheim & Prentice, 1997; BOC, n.d.d.; NATA, n.d.a.; Pfeiffer & Mangus, 2002).

Factors guiding the decision to study certified athletic trainers were three-fold. First, after an exhaustive search of the research literature no prior studies investigating asthma and athletic training were located. Secondly, the American Medical Association (AMA) recognizes athletic training as an allied healthcare profession (Delforge &

Behnke, 1999). The mission of the NATA (n.d.a) is to enhance the quality of health care provided by certified athletic trainers and to advance the athletic training profession. Because exercise and athletic activity can precipitate an asthma attack, athletic trainers should have knowledge, perceptions, or experiences with the disease, its characteristics, and treatments. Finally, information gained from this study about certified athletic trainer's perception using asthma guidelines might lead to additions in the athletic training curriculum.

The sample was composed of certified athletic trainers selected from the Southeastern Athletic Trainers Association (SEATA). A systematic random sampling procedure will be used. Gall et al. (2003) described systematic random sampling as selecting every *nth* person randomly from a list containing the names of all members of the target population. The selection process included only certified athletic trainers that were current members of SEATA. There were 1476 listed as certified and living in the southeastern United States. According to Krejcie and Morgan (1970), 306 participants were needed to gain a representative sample from this size of target population. The likelihood of a high response is low. Salant and Dillman (1994) suggested projecting a response rate of approximately 60% for the general population when using mail surveys. I used an over-sampling strategy and anticipated a 50% return rate. Using this conservative rate, I doubled the total number of surveys administered to obtain the required minimum number of returns. A table of random numbers was used to select a number between 1 and 1476, so that everyone in the population had a change of being selected. I selected every 9^{th} person on the list to reach a sample size of 306.

Logical Framework

The theoretical framework for this study was the theory of planned behavior (TPB), which is an extension of Fishbein and Ajzen's (1975) theory of reasoned action (TRA). The TPB states that an individual's behavior is determined by his or her behavioral intentions. Ajzen (1991) stated that intentions are assumed to secure the motivational factors that control behavior, which are indications of how hard a person is willing to try to perform the behavior. Basically, the stronger a person's intentions to perform a behavior, the more likely the person will actually perform that specific behavior.

Ajzen (1991) argued that behavioral intentions are influenced by attitudinal, cognitive, and social factors. The power of a person's intentions to initiate behavior is determined by his or her attitude toward the behavior, subjective norms regarding the behavior, and perceived behavioral control (PBC). Each of these will be described in subsequent paragraphs. Figure 3.1 provides the operational model used for this study.

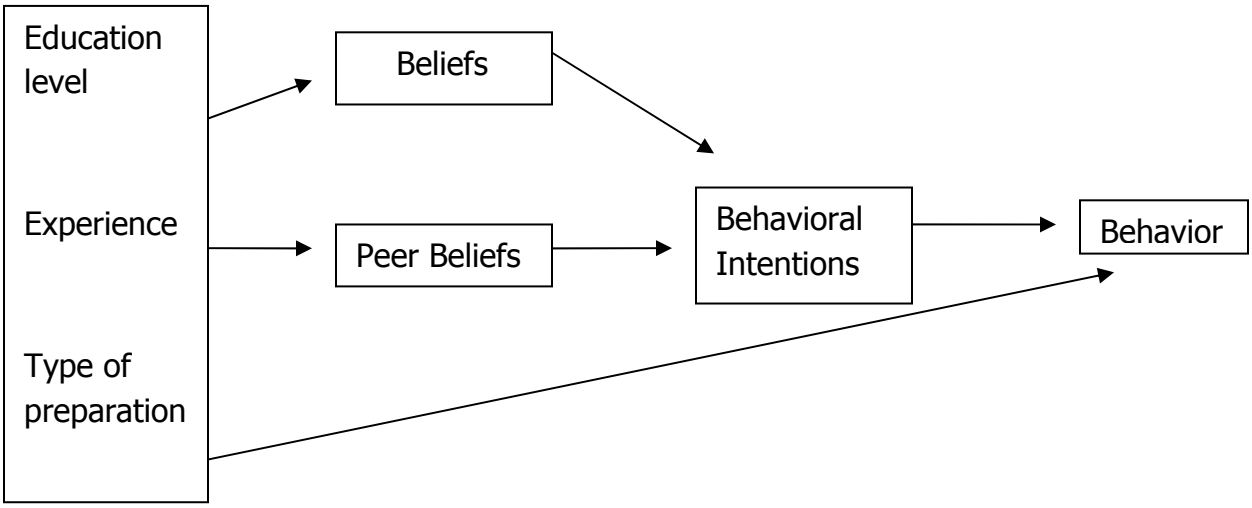

Figure 3.1 Operational model for testing in the study.

Attitudes

Attitudes reveal a person's feelings toward performing a behavior and are determined by an evaluation of important *behavioral beliefs* and the strength that the person holds these beliefs (Fishbein & Ajzen, 1975). Behavioral beliefs are defined as the perceived likelihood that a behavior will produce a particular outcome. Individuals may hold a large number of beliefs about a particular behavior, but only some of these are likely to be salient at any given time Ajzen (1985, 1991).

A belief is multiplied by the perceived value of the expected outcome, whether it is positive or negative, to determine the attitude a person develops toward performing a particular behavior. The evaluation of each outcome contributes to the attitude in direct proportion to the perceived probability that the behavior produces that outcome. (Ajzen, 2002). To better operationalize behavioral beliefs, which are attitudes one holds toward a likely outcome of a behavior, I utilized the term beliefs. An overview of the terminology can be seen in Table 3.1.

For asthma and asthma management, the perceived likelihood in using the National Asthma Education Program and Prevention (NAEPP, 2007) asthma guidelines will help prevent an asthma attack is a behavioral belief. The strength of a person's positive attitude toward using the guidelines will greatly depend on how strong his/her belief in that the guidelines will actually prevent an asthma exacerbation.

Subjective Norms

Subjective norms are cognitions that reflect a perceived social pressure to perform or not perform a given behavior. A person's subjective norms regarding a behavior are determined by his/her evaluation of *normative beliefs* concerning the expectations of important others multiplied by the person's motivation to comply with these important others. Normative beliefs are perceived expectations of important individuals such as a parent, spouse, friend, or groups such as a church, sorority, or team. A person's belief is multiplied by the motivation to comply with the different individuals or groups expectations to help determine the subjective norm regarding a given behavior (Ajzen, 1991).

Motivat ion to comply with a set of normative beliefs falls along a continuum, from none to very high, depending on the importance of the individual or group. It is expected that a person will behave in a particular way only when there is perceived social pressure from important others to do so, plus a high level of motivation to comply with the important others. If not, the person will be less inclined to perform the behavior. The higher the noramative beliefs and subjective norm the more like the person will perform the behavior (Ajzen, 2002). To better operationalize subjective norm, which come from normative expectations of others and motivation to comply toward a behavior, I utilized the term peer beliefs. An overview of the terminology can be seen in Table 3.1.

In the case of asthma and asthma management, peers may not feel that it is his/her responsibility to be aware of asthma and how to manage asthma (i.e. behavioral

belief), and you are motivated to do what your peers want (i.e., motivation to comply), it is likely that you will have a low behavioral intention to seek education on asthma and asthma management. On the other hand, if your parents feel that it is in your best interest to learn about asthma and asthma management (i.e., behavioral belief), and you are motivated to do what your parents want (i.e., motivation to comply), it is likely that your behavioral intention to learn about asthma and asthma management will be high and you will seek to learn the information. In addition to attitudes and subjective norms, a third predictor, perceived behavioral control, has been used to predict intentions (Ajzen, 2002).

Perceived Behavioral Control

Perceived behavioral control (PBC) represents a person's subjective evaluation of his/her ability to perform a given behavior. Ajzen (1991) believed that PBC has a direct influence on behavior, as well as reflect a person's actual control over a behavior. PBC is a measure of actual control and a measure of a person's confidence in his/her own ability to perform the behavior. Similar to both attitude and subjective norm, PBC is determined by a person's evaluation of *control beliefs* regarding a particular behavior.

Control beliefs are the perceived presence of factors that may help or inhibit performance of a given behavior. The idea of control can best be described as a scale with easily executable behaviors at one end and the most demanding or those requiring more specialized skills on the other. In conditions that are under complete volitional control (i.e., easily executable behaviors), PBC is expected to exert little influence on

intentions. On the other hand, when behavior in not under complete volitional control (i.e., demanding behaviors), PBC has a greater influence on intentions (Ajzen, 1991).

Control beliefs are similar to behavioral and normative beliefs in that he/she is evaluated at any one time. Control beliefs, multiplied by the ability to perform the behavior will aid or inhibit the performance of the behavior and determine a person's overall PBC regarding the behavior (Ajzen, 2002). Due to the operationalization of the theory, control beliefs and PBC were not directly measured. The actual behaviors of certified athletic trainers were ascertained from the wording of the questions to elicit a behavioral response.

Table 3.1

Operational Versus Theoretical Terms

Theoretical	Operational	Meaning
Attitudes	Beliefs	Likely outcomes from the evaluation of outcomes that result in behavior.
Subjective norm	Peer Beliefs	Expectations of others and the motivation to comply with expectations.
Behavior	Behavior	Intentions to carry out the behavior in question.

Instrumentation

The instrument used in this study was a questionnaire designed to determine the perceptions of certified athletic trainers about asthma and asthma management in athletes. No questionnaire existed to collect this type of information, so an instrument

was constructed using a manual prepared for researchers utilizing the TpB. The manual addressed question construction for attitude, subjective norm, and perceived behavioral control items (Francis, et al., 2004).

Reliability and Validity

Reliability refers to the consistency or stability of a measuring device over time. A reliable question will have the same meaning to all members of the population being studied (Huck 2004; M.D. Gall, Gall, & Borg, 2003). Reliability refers to the consistency of the scores for each individual over time.

Validity is concerned with inferences made from scores, obtained from a survey or other type of data collection instrument. While reliability only indicates if consistent scores were obtained from an instrument, validity reveals whether scores have meaning. If test scores are valid, then an instrument does measure what it purports to measure. In this study content, criterion, and construct validity were used. Fraenkel and Wallen (2000) discussed content, criterion, and construct validity as evidence that relates to validity of scores.

Content validity means that the items on an instrument are a representative sample of the behavioral domain of interest. To determine if items are appropriate and the questionnaire contains all relevant items related to the topic, content validity is required. Content validity can be determined by convening an advisory panel of three or more healthcare providers. These advisors should be knowledgeable about asthma and issues in asthma care.

A construct is any concept that cannot be identified, but can be operationalized to explain behavior. Construct validity is concerned with the degree to which the constructs are measured (Huck, 2004; Gall et al., 2003). For this study items will be constructed from relevant published material such as the NAEPP guidelines, or borrowed from existing measures. The current study addressed asthma knowledge and asthma management. Specifically signs and symptoms will be addressed, as well as use of inhaled medication.

Questionnaire items were selected based on the following: comprehensiveness of questions; avoiding redundancy; and, balance of questions represented. Once a pool of questions was accumulated, selection of questions began. The pool of questions will be reduced through a modified Q sort procedure by an advisory panel. A Q-sort procedure has each member on the panel "sort" each question into piles for categorization (Block, 1961). If items are redundant, then one of the questions will be kept and the others excluded. In order for an item to be included on the questionnaire, a majority of panel members had to agree on category placement.

Item Pool Generation

It is important that questionnaire items measure what they purport to measure. To make sure that appropriate statements and questions were generated I used information from the National Asthma Guidelines (NAEPP, 2007) and information from *Constructing Questionnaires Based on the Theory of Planned Behavior* (Francis et al., 2004).

The NAEPP (2007) provided a definition of asthma and implications for the treatment of asthma. Moreover, the guidelines provided information to diagnosis, and manage acute and long-term asthma. The manual on constructing TpB questionnaires (Francis et al., 2004) provided steps for constructing a questionnaire and provides instruction on measuring each behavioral construct. A pool of 41 questions was created and is included in Appendix A.

Item Critique Group

A committee consisting of a certified athletic trainer, a certified asthma educator, and myself critiqued the 41 survey items. The committee was selected for his/her experience with asthma and the selected population being surveyed. Each member was given definitions of each construct and asked to retain questions and statements that reflected the TPB constructs as it dealt with asthma and the treatment of asthma. Committee members were also asked to consider appropriate wording.

Instructions to the committee were to keep good items, eliminate poor items, rewrite vague items, and to determine if a construct had been omitted. The committee held one meeting lasting 2 hours. A total of 34 items were kept and can be found in Appendix B. The seven questions eliminated from the pool were considered redundant.

Development of Prototype Survey Instrument

Development of the prototype survey instrument occurred in collaboration between the researcher and committee. Items were placed on a scale to obtain respondents evaluation of specific behavior. Ajzen (2002) recommended that adjectives, such as good-bad be used to secure an overall evaluation. This was done and reviewed

by the researcher's major professor. After two revisions, demographic questions were entered at the end of the questionnaire for a completed survey.

At this point, I met with the study's methodologist to gain input and support. After meeting with the methodologist and participants of his graduate course on survey construction, items were further eliminated due to redundancy and clarity. A 6-point Likert scale to gain uniformity for the overall survey was added, which can be found in Appendix C.

Development of Prototype Cover Letter

Development of the prototype cover letter occurred between the researcher and major professor. After examining several sample letters from previous surveys, a final prototype cover letter, as well as follow-up reminder and final letter were created (see Appendix D).

Pilot Study

The 23-item questionnaire was administered by the researcher using paper and pen during a seminar of pilot study participants. The seminar instructor was present. The questionnaire included demographic information questions. Each participant entered his/her name on a roster so that if selected for the actual study he/she could be excluded. Each participant was also provided an opportunity to enter his/her email address to receive a copy of the research results.

The purpose of the pilot study was to test and refine the survey instrument to determine the perceptions of certified athletic trainers toward asthma knowledge and

asthma management. Specifically, the pilot study attempted to answer the following two questions:

1. Do the proposed data collection methods work?
2. Is the survey instrument technically adequate?

To answer the questions, a pilot of 19 certified athletic trainers at the researcher's place of employment was conducted. While the data collection methods were successful, response seemed to fall to the middle more than anticipated. I decided to add an intensifier to the questions. An intensifier is a word that modifies the context of a question. The intensifier I used was *very*. This was done in an attempt to make the respondents select a higher or lower side for each question. The final questionnaire can be found in Appendix C.

Data Collection

Before data collection began, a letter was written by R. T. Floyd, Director of the Southeast Athletic Training Association (SEATA) to request support. The study was also approved by the Institutional Review Board at the university. The statement and a letter from me were mailed to all participants explaining the purpose and importance of the research and to inform them that he/she had been randomly selected to participate.

A week after the initial mailing participants were mailed a brochure containing a cover letter with detailed instructions for completing the survey, the survey, and a stamped, pre-addressed envelope for returning the survey. Return labels were coded with a number to identify nonrespondents for follow-up procedures.

Approximately one week after the initial mailing of the survey, a follow-up postcard was sent thanking those who responded and requesting response from those who had not. After an additional two weeks, participants were sent a brochure containing a new cover letter informing them he/she has not responded and the importance of his/her response. The brochure also included a survey and a stamped, pre-addressed envelope. This mailing procedure yielded a response rate of 47%.

Data Analysis

Data collected for the study was entered in to the statistical program Statistical Package for the Social Sciences (SPSS) for analysis. Analysis of the data conducted to address the six research questions as follows:

1. What are the perceptions of certified athletic trainers about the importance of asthma and asthma management? To answer question one, a mean was calculated and descriptive statistics were used to address the perception level certified athletic trainers have regarding asthma.
2. What are the perceptions of certified athletic trainers about peer expectations concerning asthma and asthma management? To answer question two, a mean was calculated and descriptive statistics were used to address the perception level certified athletic trainers have regarding asthma.
3. What are the self-reported behaviors of certified athletic trainers related to asthma and asthma management? To answer question three, a mean was calculated and descriptive statistics were used to address

the perception level certified athletic trainers have regarding asthma.

4. To what extent do years of experience, educational level, and type of preparation explain variance in perceived importance of asthma and asthma management? To answer question four, a Person product moment correlation, Spearman Rho correlation, and *t*-test were calculated to explain the perception level certified athletic trainers have regarding asthma.

5. To what extent do years of experience, educational level, and type of preparation explain variance in perceived peer expectations concerning asthma and asthma management? To answer question five, a Person product moment correlation, Spearman Rho correlation, and *t*-test were calculated to explain the perception level certified athletic trainers have regarding asthma.

6. To what extent do years of experience, educational level, and type of preparation explain variance in self-reported behaviors related to asthma and asthma management? To answer question six a Person product moment correlation, Spearman Rho correlation, and *t*-test were calculated to explain the perception level certified athletic trainers have regarding asthma.

CHAPTER 4

FINDINGS

The purpose of this survey study was to ascertain certified athletic trainers' perceptions toward asthma knowledge and its treatment. This chapter presents results of the statistical analysis described in the preceding chapter. Findings are presented separately for each of the six research questions.

Research Questions

1. What were perceptions of certified athletic trainers about the importance of asthma knowledge and asthma management?
2. What were perceptions of certified athletic trainers about peer beliefs concerning asthma knowledge and asthma management?
3. What were the behaviors of certified athletic trainers toward asthma knowledge and asthma management?
4. To what extent did years of experience, educational level, and type of preparation explain the variance in perceived importance of asthma knowledge and asthma management?
5. To what extent did years of experience, educational level, and type of preparation explain variance in perceived peer beliefs concerning asthma knowledge and asthma management?

6. To what extent did years of experience, educational level, and type of preparation explain the variance in behaviors toward asthma knowledge and asthma management?

Findings Related to Research Question 1

The first research question asked, "What are the perceptions of certified athletic trainers about the importance of asthma knowledge and asthma management?" Table 4.1 depicts mean scores of the 5 questions concerning certified athletic trainers' perceptions about the importance of asthma knowledge and asthma management. Overall, the means are reasonably high with scores well above 4.0 on a 6.0 scale and the range is constrained with a standard deviation between 0.81 and 1.08 demonstrating less variation. This is not unexpected based on the fact that the items reflected standards of care that most certified athletic trainers would value for themselves as healthcare practitioners. The item means range from 4.37 to 5.64 on a 1.0 (Strongly disagree) to a 6.0 (Strongly agree) scale.

Table 4.1

Certified Athletic Trainers' Beliefs of Asthma Knowledge and Asthma Management

Item	Item language	M	SD
2	It is very important for me to recognize common signs and symptoms of asthma to practice as a certified athletic trainer.	5.64	.82
3	It is very important for me to understand the treatment of asthma to practice as a certified athletic trainer.	5.50	.81
1	It is very important for me to identify the causes of asthma to practice as a certified athletic trainer.	4.93	.99
4	It is very important for me to utilize the National Asthma Education and Prevention Program (NAEEP) guidelines to practice as a certified athletic trainer.	4.45	1.08
5	It is very important for me to attend continuing education offerings on asthma and asthma management.	4.37	1.02

Findings Related to Research Question 2

The second research question asked, "What are the perceptions of certified athletic trainers about peer expectations concerning asthma knowledge and asthma management?" Table 4.2 depicts mean scores of the 5 questions concerning certified athletic trainers' perception about peer expectations concerning asthma knowledge and asthma management. Overall, mean scores were high, averaging over 3.9 on a 6.0 scale, although lower than the belief construct. The range was restricted with a standard deviation between 1.01 and 1.20. This is interesting in that certified athletic trainers perceive that peers exert a pressure on them to comply with the behavior

associated with asthma knowledge and asthma management. The item means range from 3.92 to 5.11 on a 1.0 (Strongly disagree) to a 6.0 (Strongly agree) scale.

Table 4.2

Certified Athletic Trainers' Peer Expectations of Asthma Knowledge and Asthma Management

Item	Item language	M	SD
7	My peers believe that I should recognize common signs and symptoms of asthma to practice as a certified athletic trainer.	5.11	1.01
8	My peer believe that I should understand the treatment of asthma to practice as a certified athletic trainer.	4.97	1.03
6	My peers believe that I should understand the causes of asthma to practice as a certified athletic trainer.	4.45	1.11
10	My peers believe that I should attend continuing education offerings on asthma and asthma management.	4.03	1.17
9	My peers believe that I should utilize the National Asthma Education and Prevention Program (NAEEP) guidelines to practice as a certified athletic trainer.	3.92	1.20

Findings Related to Research Question 3

The third research question asked, "What are the self-reported behaviors of certified athletic trainers related to asthma knowledge and asthma management?" Table 4.3 depicts mean scores of the 5 questions concerning certified athletic trainers' perception about self-reported behavior related to asthma knowledge and asthma management. Overall, the mean scores are favorable; greater than 3.0 on a 6.0 scale. Scores on this construct are lower than both the belief and subjective norm constructs and the range has increased considerably demonstrating more variation in how certified

athletic trainers actually perform behaviors. The perception of certified athletic trainers to actually perform the behavior associated with asthma knowledge and asthma management is much lower than his/her beliefs or the pressure he/she may experience from peers. The item means range from 3.29 to 5.24 on a 1 (Strongly disagree) to a 6 (Strongly agree) scale.

Table 4.3

Certified Athletic Trainers' Self-Reported Behavior When Dealing with Asthma Knowledge and Asthma Management

Item	Item language	M	SD
12 behavi	I recognize common signs and symptoms or of asthma to practice as a certified athletic trainer.	5.24	.88
13	I understand the treatment of asthma to practice as a certified athletic trainer.	5.15	.91
11	I understand the causes of asthma to practice as a certified athletic trainer.	4.85	.94
15	I attend continuing education offerings on asthma and asthma management.	3.30	1.39
14 Prevention	I utilize the National Asthma Education and Program (NAEEP) guidelines to practice as a certified athletic trainer.	3.29	1.41

The mean item score for the 3 different constructs ranged from 4.36 to 4.98. The total means of each construct has a theoretical range from 5-30; however, the totaled means ranged from 21.82-24.89. Certified athletic trainers have high beliefs concerning asthma knowledge and asthma management. However, when it comes to actually performing the behavior, he/she believe that is less likely to occur. A summary of the means can be seen below in Table 4.4.

Table 4.4

Operationalized Study Constructs

Scale	M	SD	Mean Item Mean	Alpha
Beliefs	24.89	3.44	4.98	.77
Peer Beliefs	22.47	4.43	4.49	.86
Behavior	21.82	3.96	4.36	.74

Findings Related to Research Questions 4, 5, and 6

Questions four through six asked, "To what extend do years of experience, educational level, and type of preparation explain variance in *perceived importance, peer expectation, and self-reported behaviors* of asthma knowledge and asthma management?" The type of analysis was determined based on the measurement of each variable. To determine relationships between constructs and predictor variables, a variety of analyses were used including Pearson Product Moment correlation, Spearman Rho correlation, and simple *t*-tests. All predictors were found not to be statistically significant, with the exception of years of experience and subjective norm. Demonstrating that the predictors determined to be useful are not predictors to determine certified athletic trainers' perceptions of asthma and asthma management. *Years of experience* and subjective norm are significant, demonstrating substantive, but an unimportant correlation. Although statistically significant, the correlation was low. Moreover, squaring the correlation demonstrates that only 1% of the variance can be explained from this predictor, seemingly not making it a good predictor.

The type of analysis was determined based on the measurement of the variable. To determine relationships, Pearson correlation coefficients were obtained for the predictor variable *years of experience* with each of the totaled constructs.

- Years of experience to belief, r=-.06, p=.26
- Years of experience to subjective norm, r=-.11, r^2=.01, p=.05
- Years of experience to perceived behavior, r=.02, p=.75

The type of analysis was determined based on the measurement of the variable. To determine the relationships, the Spearman Rho was obtained for the predictor variable *education level* with each of the totaled constructs.

- Education level to belief, r_s=-.01, p=.86
- Education level to subjective norm, r_s=-.01, p=.81
- Education level to perceived behavior, r_s=.08, p=.16

The type of analysis was determined based on the measurement of the variable. To determine the relationships, the independent sample t-test was obtained for the predictor variable *type of preparation* with each of the totaled constructs.

- Type of Preparation to belief, *t* (335)=-.28, p=.78
- Type of Preparation to subjective norm, *t* (331)=-.57, p=.57
- Type of Preparation to perceived behavior, *t* (333)= .38, p=.71

Summary

This chapter presented findings of the research study. The major finding of the was descriptive in nature. Most certified athletic trainers placed a high importance on asthma knowledge and asthma education. Certified athletic trainers determined that

peer importance was less important than their own belief toward asthma knowledge and asthma management. Certified athletic trainers demonstrated that he/she place a higher importance on his/her own belief and the role peers play toward the importance of asthma knowledge and asthma management than actual behavior. The actual behavior was the lowest of all constructs.

CHAPTER 5

INTERPRETATION OF FINDINGS

This chapter interprets findings presented in Chapter IV. The chapter is divided into five major sections, including an overview of the study, discussion of findings, implications for practice, implications for research, and recommendations for future research.

Overview of the Study

The purpose of this study was to understand certified athletic trainers' perceptions of asthma knowledge and asthma management. The six research questions guiding the study were:

1. What were perceptions of certified athletic trainers about the importance of asthma knowledge and asthma management?
2. What were perceptions of certified athletic trainers about peer beliefs concerning asthma knowledge and asthma management?
3. What were the behaviors of certified athletic trainers toward asthma knowledge and asthma management?
4. To what extent did years of experience, educational level, and type of preparation explain the variance in perceived importance of asthma knowledge and asthma management?

5. To what extent did years of experience, educational level, and type of preparation explain variance in perceived peer beliefs concerning asthma knowledge and asthma management?
6. To what extent did years of experience, educational level, and type of preparation explain the variance in behaviors toward asthma knowledge and asthma management?

A 23-item survey instrument was developed to specifically address the six research questions. The survey gathered data from certified athletic trainers practicing in the southeastern United States. The mailed questionnaire was designed as a self-report of certified athletic trainers' perceptions about the importance of asthma knowledge and asthma management. The three constructs (beliefs, subjective norm, and behavioral) operationalized from the theory of planned behavior (Ajzen, 1985) and was developed through a review of literature and interactions with key stakeholders, particularly certified athletic trainers. The theory of planned behavior served as the central framework of the instrument which gathered Certified Athletic Trainers' beliefs, peer demands, and actual behavior toward asthma knowledge and asthma management. The questionnaire included, five questions for each construct. One question asked about respondents' total continuing education hours spent on asthma and asthma management. Seven questions were used to gather demographic data.

The 738 certified athletic trainers who were members of the Southeastern Athletic Trainer Association (SETA) served as the population for this study. The entire population was sampled and 358 responded to the study; 4 were unreachable and 5

returned surveys were not usable. Of the 358 returned surveys, 349 were deemed usable resulting in a 47% adjusted response rate. The completed surveys were acquired through a data collection plan which closely followed the method outlined by Gall, Gall, and Borg (2003). The collection plan included an initial mailing invitation with questionnaire included, one follow-up postcard, and one final letter with questionnaire.

Usable data were entered into a SPSS database for statistical analysis. In addition to descriptive statistics, analysis included bivariate and rank correlation and simple *t*-test analysis. To address the first three questions, item means were calculated. The last three research questions were addressed by determining the relationship between predictor variables and the construct scales.

All predictor variables, *years of experience, educational level,* and *type of preparation* were not useful predictors of the behavior of certified athletic trainers in relationship to asthma knowledge and asthma management. The exception was a statistically significant relationship between years of experience and peer expectation (*subjective norm*) ($r=-.11$, $r^2=.01$, $p=.05$), meaning that the less experience certified athletic trainers have the more he/she valued peer expectation. However, the magnitude of this correlation was low, according to the Davis (1971) conventions In fact, only 1% of the variance could be explained by this calculation. Thus, even though this result was statistically significant, it is not an important measure due to the low strength.

The most important findings came from the descriptive statistics. For the most part, all questions received high responses on a scale from 1.0 (strongly disagree) to

6.0 (strongly agree). However, Certified Athletic Trainers had a much stronger perception of themselves and peers understanding of asthma and utilizing guidelines to treat asthma than his/her actual behavior.

Discussion of Findings

Findings Related to Research Question 1

Mean scores of the 5 questions concerning certified athletic trainers' perceptions toward asthma knowledge and asthma management were used to answer the question, "What are the perceptions of certified athletic trainers about the importance of asthma and asthma management?" Mean scores reflected the self-assessed belief Certified Athletic Trainers had about his/her own perception of asthma knowledge and his/her use of asthma guidelines to treat asthma on a scale of 1.0 (Strongly disagree) to 6.0 (Strongly agree). Overall, Certified Athletic Trainers placed a high importance on asthma. However, his/her perception of importance was lower on utilizing asthma guidelines (4.45) and attending continuing education (4.37) than the other three questions concerning causes, signs and symptoms, and treatment.

Overall, results revealed that certified athletic trainers perceive he/she has the knowledge to recognize and treat asthma in his/her athletes. This is not surprising given the fact that the items reflect standards of care that most certified athletic trainers would value for themselves as healthcare practitioners. Responses should also be viewed in the context that this study used a self-assessment instrument. Therefore, the responses depend on the certified athletic trainers' personal awareness of his/her practice and may be influenced by other means, such as where they work and

experiences with asthmatic athletes. Regardless, it is positive to find that certified athletic trainers perceive themselves as highly attuned to asthma and asthma management.

It is not surprising that respondents gave high marks on his/her perception of asthma. Geis et al. (1982) defined perception as a stimulus. In this study the stimulus, asthma, was perceived as highly important for certified athletic trainers. The perception of asthma knowledge or the beliefs in this study are a state of mind that the certified athletic trainer created at some time to understand asthma (Fishbein & Ajzen, 1975).

Levin (1999) demonstrated that healthcare workers who had a positive perception to wearing exam gloves did so, while healthcare workers with negative perceptions were less likely to wear gloves. Another study by Walker et al. (2001) assessed the perceptions of physician's perceptions on prescribing antibiotics to patients with a sore throat. The authors' found that perception was one of the most important factors. The more positive the perception, the more likely doctors were to prescribe. Puffer and Rashidian (2004) discovered that nurses with a positive evaluation on smoking guidelines could utilize the guidelines in educating patients. In the current study, the perception toward asthma knowledge and asthma management was high with scores on the survey greater than 4.0 on a 6.0 scale. These studies have similar findings to the current study. Certified athletic trainers have demonstrated positive perceptions toward asthma signifying that he/she is more likely to have the appropriate knowledge to treat athletes with asthma.

Findings Related to Research Question 2

Calculating mean scores of the 5 questions concerning certified athletic trainers' perceptions toward peer expectations toward asthma knowledge and asthma management were used to answer the question, "What are the perceptions of certified athletic trainers about peer expectations concerning asthma knowledge and asthma management?" The mean scores reflected the self-assessed belief that certified athletic trainers perceive peers expectations of asthma and his/her use of asthma guidelines to treat asthma on a scale of 1 (Strongly disagree) to 6 (Strongly agree). Overall, certified athletic trainers had a strong perception of what peers believed asthma is and how to treat it. However, his/her perception of peers was lower on attending continuing education on asthma (4.03) and utilizing asthma guidelines (3.92) than the other three questions concerning causes, signs and symptoms, and treatment.

Overall, the study revealed that certified athletic trainers perceive peers expectations to be important to recognize and treat asthma in athletes. This too is not surprising given that many certified athletic trainers work together with others to evaluate and treat athletes. Responses should also be viewed in the context that this study used a self-assessment instrument. Therefore, responses depend on the certified athletic trainers' personal awareness of his/her practice and may be influenced by other means, such as other trainers, coaches, or athletes.

Subjective norm is a construct of the theory of planned behavior that underpins a person's ability to comply with a behavior is based on peer or social pressure. Ajzen and Fishbein (1980) believed that this social pressure can lead to actual behavior. In a

study by Puffer and Rashidian (2004), subjective norm was not found to correlate in the use of smoking cessation guidelines by nurses. As well, in a study by Levin (1999), healthcare workers were not swayed to wear gloves by co-workers, supervisors, or the Occupational Safety and Health Administration. In the current study, the subjective norm had an overall lower average than Certified Athletic Trainer's perception of asthma and asthma management. Peer importance played a role in how Certified Athletic Trainers perceive asthma with an average score of greater than 3.9 on a scale of 1.0 to 6.0. Certified athletic trainers, as with any healthcare practitioner rely on input from others regarding any illness or problem. In this study certifies athletic trainers demonstrated that peers play a role in his/her importance of asthma knowledge and asthma management.

Findings Related to Research Question 3

Calculating mean scores of the 5 questions concerning certified athletic trainers' self-reported behavior on asthma and asthma management were used to answer the question, "What are the self-reported behaviors of certified athletic trainers related to asthma knowledge and asthma management? " The means reflected the self-assessed behavior certified athletic trainers actually perform the behavior of asthma and the use of asthma guidelines to treat asthma on a scale of 1.0 (Strongly disagree) to 6.0 (Strongly agree). Overall, certified athletic trainers had a lower self-assessed behavior of asthma and asthma management. His/her self-assessed behavior on attending continuing education on asthma (3.30) and utilizing asthma guidelines (3.29) was the lowest assessed means on the survey.

Overall, the study revealed that certified athletic trainers have a different perception from what he/she and peers deem important to actual behavior. Both, belief and subjective norm constructs had overall higher means than self-reported behavior. More importantly, utilizing national asthma guidelines had the lowest of all means from all constructs.Therefore; responses depend on the certified athletic trainers' personal awareness of his/her practice and may be influenced by other means, such as other trainers, coaches, or athletes.

Ajzen (1991) believed that behavior can be predicted based on behavioral control because behavior is planned. Perceived behavior control can be a substitute for actual control (Ajzen, 1988). Walker et al. (2001) found that if physicians' past prescribing history of antibiotics was an indication for future prescribing meaning the more often a physician prescribed the more likely he/she would do so again. In a study by Pittet et al. (2004) found that a relative low adherence to hand washing, but were more likely to perform hand washing when being observed. The current study utilized a self-report for certified athletic trainers' behavior toward asthma knowledge and use of national asthma guidelines. Behavior held the lowest average score (3.3) of all constructs leading to the conclusion that certified athletic trainers have a high perception toward asthma knowledge and asthma management, but did not practice the behavior. Since the current study used self-reporting, it is possible that if certified athletic trainers were being observed the actual behavior may increase as described by Pittet et al. This may also be due to intentions. Ajzen (1991) believed that intentions are indications of how hard a person is willing to work and how much effort a person is willing to put forth to

perform a behavior. If a certified athletic trainer knows that he/she is being observed he/she may have more willingness and put forth more effort to practice asthma management guidelines.

Findings Related to Research Questions 4-6

Parametric and non-parametric tests were implemented to answer questions four through six. Questions four through six asked, "To what extend do years of experience, educational level, and type of preparation explain variance in *perceived importance, peer expectation, and self-reported behaviors* of asthma knowledge and asthma management?"

Person Product Moment correlations were implemented to see if years of experience correlated with any of the dependent variables. The use of Spearman Rho was utilized in the evaluation between educational degree and the dependent variables. Simple *t*-tests were used to assess whether certified athletic trainers' programs made a difference on the dependent variables. Of the three predictor and dependent variables only *years of experience* exhibited a significant correlation with the construct subjective norm.

The relationship between years of experience and subjective norm was statistically significant, exhibiting a low association between years of experience and the pressure certified athletic trainers perceive from others. For certified athletic trainers this may exist between other trainers, coaches, or athletes. However, only 1% of the variance can be explained from this predictor, seemingly not making it a good predictor.

O'Boyle et al. (2001) discovered in a self-reported survey that the perception of nurses to wash his/her hands was high. This was thought to be due to the nature of the job and not behavioral control. In the current study the perception of the importance toward asthma knowledge was high. However, the self-reported behavior was much lower. This too may be due to the job as a certified athletic trainer believing it is important, but not actually performing the behavior to manage asthma or having the skills needed to manage asthma.

Implications for Practice

I found that certified athletic trainers have a higher perception of himself/herself to recognize, appreciate causes, treat, utilize guidelines, and gain training on asthma and asthma management than his/her actual self-reported behavior. Findings also bring to light that none of the predictor variables were useful in predicting the behavior of certified athletic trainers.

The literature does not clearly point out a correlation of perception to behavioral control in healthcare practitioners. It has shown that healthcare providers have high beliefs on topics in healthcare. It also reveals that peers do not play a role in the decisions made by practitioners. In the current study, certified athletic trainers place a high importance on asthma knowledge and asthma management. Certified athletic trainers place a strong importance towards peer expectation, however, not as strong as his/her beliefs on the importance toward asthma knowledge and asthma management. The major implication of this finding is that certified athletic trainers believe he/she has knowledge about asthma and asthma management, but, the knowledge about asthma

management is not being put to use. Developing a more focused education and training program that would include on-site evaluation of athletes with asthma may foster a better use of the information and practice guidelines on asthma.

Implications for Theory and Research

This study was informed by the literature of the theory of planned behavior (Ajzen, 1991) to assess the perception of certified athletic trainers with regard to his/her beliefs, perceived social and professional pressure, and actual behavior. Driven by the literature, this study was able to determine the perceptions certified athletic trainers hold towards asthma knowledge and asthma management.

This study contributes to the literature as it demonstrates that the predictor variables thought to be predictors of behavior for the group studied are in fact not useful. This could be due to the developed instrument used to survey the population. The instrument, although piloted was developed by the researcher. The researcher, using common variables ascertained by the key stakeholders utilized easily answerable variables may in fact not been the best variables.

Descriptive statistics helped to reveal that certified athletic trainers perceive themselves differently than he/she behave. Therefore, the results assist in narrowing the field of possible predictors in regards to the theory of planned behavior (Ajzen, 1985).

Perhaps the more important outcome of this study is its no significance finding from predictor variables used may provide a model for further study. This study can easily be replicated utilizing different predictor variables for any healthcare practitioner.

The principle requirement is a population in which to survey. The main issue may be the validity of the instrument. New predictor variables may need to be validated prior to usage. The current instrument may be of convenience; however, a researcher might consider developing a new instrument.

Recommendations for Future Study

This quantitative study is a beginning to understanding the perceptions of Certified Athletic Trainers in regards to asthma. Future research could continue to investigate the findings of this study or approach the research from a different perspective. The following section outlines a few paths for future research.

My findings are limited to the population of certified athletic trainers that are members of the Southeastern Athletic Trainers Associations. One plan for future research is to repeat the study with a national sample of certified athletic trainers from the National Athletic Trainers Association to determine if the predictors utilized in this study are useful across other geographic sectors. Additionally, the instrument could be revised to better detail perceived behavior control. The current instrument used language that directly measured self-reported behavior. The measurement of perceived behavioral control would be better used to predict what actual behavior would be in a situation.

As with many quantitative studies, this study revealed information from findings based on a written set of questions. However, a qualitative study could be used to further explore the perceptions on asthma knowledge and asthma management. A qualitative study attempts to gather more in-depth understanding of the behavior. A

smaller, focused sample would be needed; however, this smaller sample may better help find why and how a certified athletic trainer behaves. Additionally, a qualitative study could uncover the conditions which drive the implementation of certain practices.

One of the key findings in the study was that none of the predictor variables utilized were able to predict behavior in this group of certified athletic trainers. This raises the question of whether some or all of the predictors could be used to predict behavior in other medical professions. Future studies could look at the perception and behavior of nurses, respiratory therapists, and physicians. All of these professionals have a high likelihood of treating asthmatics.

Asthma is one of the fastest growing lung diseases in the United States and is one of the most treatable. This study took interest in certified athletic trainers' perception and behavior towards asthma and asthma management. While the study provided some answers, there is still much to explore as we try to discover how certified athletic trainers perceive and manage asthma.

REFERENCES

Adams. G. S. (1982). Attitude measurement. In H. Mitzel (Ed.), *Encylopedia of educational research* (5th ed). New York, NY: Macmillian and Free Press.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer.

Ajzen, I. (1988). *Attitudes, personality, and behavior.* Milton-Keynes, England: Open University Press.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50,* 179-211.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology,* 32, 665-683.

Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin, 84,* 888-918.

Ajzen, I. & Fishebein, M. (1980). *Understanding attitudes and predicting social behavior.* Englewood Cliffs, NJ: Prentice Hall.

Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology, 22,* 453-474.

Allport, G. (1933). *Institutional Behavior*, Chapel Hill, NC: University of North Carolina Press.

Allport, G. (1935). Attitudes. In C. Murchison (Ed.), *A handbook of social psychology* (pp. 798-844). Worchester, MA: Clark University Press.

Anderson, L. W. (1985). Attitudes and their measurement. In T. Husen & T. Postlethwaite (Eds.), *The international encyclopedia of education: Research and studies* (pp. 352-358). New York, NY: Pergamon.

American Lung Association. (2010, February). Asthma and children fact sheet. Retrieved from http://www.lungusa.org/lung-disease/asthma/resources/facts-and-figures/asthma-children-fact-sheet.html

Arnheim, D., & Prentice, W. E. (1997). *Principles of athletic training* (9th ed.). Chicago, IL: Brown & Benchmark.

Baranowski, T., Perry, C. L., & Parcel, G. S. (1997). How individuals, environments and health behavior interact: Social Cognitive Theory. In K. Glanz, F. M. Lewis & B. D. Rimer, (Eds.), *Health behavior and health education: Theory, research, and practice* (2nd ed., pp. 153-178). San Francisco, CA: Josey-Bass.

Becker, J. M., Rogers, J., Rossini, G., Mirchandani, H., & D'Alonzo Jr, G. E. (2004). Asthma deaths during sports. *The Journal of Allergy and Clinical Immunology, 113,* 264-267.

Bevis, M., & Taylor, B. (1990). What do schoolteachers know about asthma? *Archives of Disease in Childhood. 65*, 622-625.

Block, J. (1961), *The Q-sort method in personality assessment and psychiatric research.* Springfield, IL: Charles C. Thomas Publisher.

Board of Certification for Athletic Training. (n.d.a). *Defining athletic training.* Retrieved from http://www.bocatc.org/athtrainer/DEFINE/

Board of Certification for Athletic Training. (n.d.b). *Education and training.* Retrieved from http://www.bocatc.org/athtrainer/PREP/

Board of Certification for Athletic Training. (n.d.c). *Accreditation.* Retrieved from http://www.bocatc.org/athtrainer/ACCRED/

Brookes, J., & Jones K. (1992). School teacher's perceptions and knowledge of asthma in primary schoolchildren. *British Journal of General Practice, 42*, 504-507.

Calabrese, B. J., Nanda, J. P., Huss, K., Winkelstein, M., Quartey, R. I., & Reed, C. S. (1999). Asthma knowledge, roles, functions, and educational needs of school nurses. *Journal of School Health, 69(6),* 233-238.

Centers for Disease Control and Prevention. (2010). *Healthy youth asthma*. Retrieved from http://www.cdc.gov/HealthyYouth/asthma/

Commission on Accreditation of Allied Health Education Programs. (n.d.). *What is CAAHEP?* Retrieved from http://www.caahep.org/Content.aspx?ID=63

Conway, T., Hu, T. C., Bennett, S., & Niedos, M. (1999). A pilot study describing local residents' perceptions of asthma and knowledge of asthma care in selected Chicago communities. *Chest , 116,* 229-34.

Davis, J. A. (1971). *Elementary survey analysis*. Englewood, NJ: Prentice-Hall.

Delforge, G., & Behnke, R. (1999). The history and evolution of athletic training education in the United States. *Journal of Athletic Training*, *34* (1), 53-61.

Depoy, E., & Gitlin, L. N. (1998). *Introduction to research understanding and applying multiple stragegies* (2nd ed.). Chicago, IL: Mosby.

Eagly, A. H., and Chaiken, S. (1993). *The psychology of attitudes.* Fort Worth, TX: Harcourt Brace Jovanovich.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Fraenkel, J. R., & Wallen, N. E. (2000). *How to design and evaluate research in education* (4th ed). Boston, MA: McGraw-Hill

Francis, J., Eccles, M., Johnston, M., Walker, A., Grimshaw, J., Foy, R., Kaner, E., Smith, L., & Bonetti, D. (2004). *Constructing questionnaires based on the theory of planned behavior: A manual for health services researchers.* Newcastle Upon Tyne, United Kingdom: Centre for Health Services Research.

French, D. J., & Carroll, A. (1997). Western Australian primary school teachers' knowledge about childhood asthma and its management. *Journal of Asthma, 34,* 469- 475.

Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational Research: An introduction* (7th ed.). Boston: Allyn and Bacon.

Geis, F., Carter, M., & Butler, D. (1982). *Research on seeing and evaluating people.* Newark, DE: University of Delaware. (ERIC Document Reproduction Service No. ED 262 312)

Gibson, P. G., Henry, R. L., Vimpani, G. V., Halliday, J. (1995). Asthma knowledge, attitudes, and quality of life in adolescents. *Archives of Disease in Childhood, 73,* 321-326.

Godin, G., & Kok, G. (1996). The theory of planned behavior: A review of its applications to health-related behaviors. *American Journal of Health Promotion, 11,* 87-98.

Hannaway, P. J. (2002). *Asthma: An emerging epidemic.* Marblehead, MA: Lighthouse Press.

Helenius, I. J., Tikkanen, H. O., Sarna, S., & Haahtela, T. (1998). Respiratory pathophysiologic responses. Asthma and increased bronchial responsiveness in elite athletes: Atopy and sport event as risk factors. *Journal of Allergy and Clinical Immunology*, *101*, 646-652.

Huck, S. W. (2004). *Reading statistics and researc*h (4th ed.). Boston, MA: Allyn and Bacon.

Joint Review Committee on Athletic Training (n.d.). *Frequently asked questions.* Retrieved from http://www.jrc-at.com/plb/faqs/17%20faqs.htm

Johns, G. (1988). *Organizational behavior: Understanding life at work* (2nd ed.). Boston, MA: Scotts, Foresman and Company.

Juhn, Y. L., Sauver, J. S., Shapiro, E. D., & McCarthy, P. L. (2002). Child care program directors' level of knowledge about asthma and factors associated with knowledge. *Clinical Pediatrics, 41,* 111-116.

Krech, D. (1962). *Individual society.* New York, NY: McGraw-Hill.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational & Psychological Measurement, 30,* 607-610.

Levin, P. F. (1999). Test of the Fishbein and Ajzen models as predictors of health care worker's glove use. *Research in Nursing & Health, 22,* 295- 307.

Mathieson, K. (1991). Predicting user intentions: Comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research, 2(3),* 173-191.

Nastasi, K. J., Heinly, T. L., & Blaiss, M. S. (1995). Exercise-induced asthma and the athlete. *Journal of Asthma*, *32*, 249-257.

National Athletic Training Association. (n.d.a). *Athletic training education overview.* Retrieved from http://www.nata.org/education/education-resources

National Athletic Training Association. (n.d.b). *Facts about certified athletic trainers and the national athletic trainers' association*. Retrieved from http://www.nata.org/sites/default/files/AT_Facts.pdf

National Athletic Training Association. (n.d.c). *NATA history.* Retrieved from http://www.nata.org/nata-history

National Heart, Lung, and Blood Institute, National Institutes of Health, National Asthma Education and Prevention Program. (2007, April). *Guidelines for the diagnosis and management of asthma*. Retrieved from http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf

O'Boyle, C. A., Henly, S. J., Larson, E. (2001). Understanding adherence to hand hygiene recommendations: the theory of planned behavior. *American Journal of Infectious Disease Control*, *29,* 352-360.

Pfeiffer, R. P., & Mangus, B. C. (2002). *Concepts of athletic training* (3rd ed.). Sudbury, MA: Jones and Bartlett.

Pittet, D., Simon, A., Hugonnet, S., Pessoa-Silva, C.L., Sauvan, V., Perneger, T.V. (2004). Hand hygiene among physicians. *Annals of Internal Medicine, 141*, 1-8.

Puffer, S., & Rashidian, A. (2004) Practice nurses' intentions to use clinical guidelines. *Journal of Advanced Nursing, 47,* 500-509.

Rodehorst, T. K. (2003). Rural elementary school teachers' intent to manage children with asthma symptoms*. Pediatric Nursing, 29* (3), 184-192.

Rosenberg, M. J., & Hovland, C. I. (1960). Cognitive, affective, and behavioral components of attitude. In M. Rosenberg, C. Hovland, W. McGuire, R. Abelson, & J. Brehm (Eds.), *Attitude organization and change* (pp, 1-14). New Haven, CT: Yale University Press.

Salant, P. & Dillman, D. A. (1994). *How to conduct your own survey.* New York, NY: Wiley & Sons.

Sandsund, M., Faerevik, H., Reinertsen, R., & Bejermer, L. (1997). Effects of breathing cold and warm air on lung function and physical performance in asthmatic and non-asthmatic athletes during exercise in the cold. *Annals of the New York Academy of Sciences, 813*, 751-756.

Straw, B. M., & Ross, J. (1985). Stability in the midst of change: A dispositional approach to job attitudes. *Journal of Applied Psychology, 70,* 469-480.

Voy, R. O. (1986). The U.S. Olympic Committee experience with exercise-induced bronchospasm. *Medicine and Science in Sport and Exercise, 18,* 328-330.

Walker, A. E., Grimshaw, J., & Armstrong, E. (2001). Salient beliefs and intentions to prescribe antibiotics for patients with a sore throat. *British Journal of Health Psychology, 6,* 347-360.

Weiler, J. M. (2003). Why must Olympic athletes prove that they have asthma to be permitted to take inhaled beta2-agonsits? *The Journal of Allergy and Clinical Immunology, 111,* 45-50.

Weiler, J. M. & Ryan III, E. J. (2000). Asthma in U.S. Olympic athletes who participated in the 1998 Olympic Winter Games*. The Journal of Allergy and Clinical Immunology, 106,* 267-271.

Weiler, J. M., Layton, T., & Hunt, M. (1998). Asthma in United States Olympic athletes who participated in the 1996 Summer Games. *Journal of Allergy and Clinical Immunology*, *102*, 722-726.

Whipple, T. & Muffo, J. (1982). *Adjusting for nonresponse bias: the case of an alumni survey.* Paper presented a the 22nd annual meeting of the Association for Institutional Research., Denver, CO.

APPENDICIES

APPENDIX A

INITIAL ITEM POOL GENERATION

1. It is important for me to understand the etiology of asthma (for me to practice as an ATC).
2. It is important for me to recognize common signs and symptoms of asthma.
3. It is important for me to understand the treatment of asthma.
4. It is important for me to utilize the NAEPP guidelines.
5. It is important for me to educate my athlete(s) regarding asthma.
6. During the past year, what percentage of continuing education has been devoted to asthma management that you have attended?
7. During your formal training as an athletic trainer what percentage of your education included asthma topics?
8. Most people who are important to me think that I should attend continuing education courses on asthma and asthma management.
9. For me to attend continuing education courses on asthma and asthma management is good.
10. I plan to attend continuing education courses on asthma and asthma management is likely.
11. Whether or not I gain information on asthma and asthma management is completely up to me.
12. Most of the athletic trainers I associate with know about asthma and asthma management
13. For me to gain information in asthma and asthma management is worthwhile.

14. My profession expects me to gain information on asthma and asthma management.
15. I will make an effort to gain information on asthma and asthma management.
16. For me to gain information on asthma and asthma management is unlikely.
17. Most people whose opinions I value would believe asthma is an important topic.
18. For me asthma is interesting.
19. I intend to learn more about asthma.
20. Generally speaking, how much do you care what your coach or athletic director thinks you should do?
21. Generally speaking, how much do you care what your parents think you should do?
22. Generally speaking, how much do you care what your close friends think you should do?
23. Generally speaking, how much do you care what your peers think you should do?
24. Attending meetings on asthma and asthma management will help me to gain a better understanding of the disease.
25. Attending meetings on asthma and asthma management will give me an opportunity to interact with other healthcare professionals.
26. Attending meetings on asthma and asthma management will help me to get information and explanations regarding athletes with asthma.
27. Attending meetings on asthma and asthma management will help me better manage athletes with asthma.
28. Attending meetings on asthma and asthma management will subject me to tedium and boredom.

29. How often do you encounter unanticipated events that place demands on your time?
30. How often do you feel ill, tired or listless?
31. How often do family obligations place unanticipated demands on your time?
32. How often does work or employment place unanticipated demands on your time?
33. If I encountered unanticipated events that placed demands on my time, it would make it more difficult for me to attend meetings on asthma and asthma education.
34. If I felt ill, tired, or listless, it would make it more difficult for me to attend meetings on asthma and asthma education.
35. If I had family obligations that placed unanticipated demands on my time, it would make it more difficult for me to attend meetings on asthma and asthma education.
36. If work or employment placed unanticipated demands on my time, it would make it more difficult for me to attend meetings on asthma and asthma education.
37. My coach or athletic director thinks I should attend meetings on asthma and asthma education.
38. My parents think that I should attend the meetings on asthma and asthma education.
39. My close friends think that I should attend the meetings on asthma and asthma education.
40. My peers think that I should attend the meetings on asthma and asthma education.
41. If a continuing education course was held on asthma and asthma management would you attend?

APPENDIX B

ITEM CRITIQUE QUESTIONS

1. It is important for me to understand the etiology of asthma (for me to practice as an ATC).
2. It is important for me to recognize common signs and symptoms of asthma.
3. It is important for me to understand the treatment of asthma.
4. It is important for me to utilize the National Asthma Education and Prevention Program (NAEPP) guidelines
5. It is important for me to educate my athlete(s) regarding asthma
6. During the past year, what percentage of continuing education has been devoted to asthma management that you have attended?
7. During your formal training as an athletic trainer what percentage of your education included asthma topics?
8. Most people who are important to me think that I should attend continuing education courses on asthma and asthma management.
9. For me to attend continuing education courses on asthma and asthma management is a good idea.
10. I plan to attend continuing education courses on asthma and asthma management.
11. Whether or not I gain information on asthma and asthma management is completely up to me.
12. Most of the athletic trainers I associate with know about asthma and asthma management.
13. For me to gain information in asthma and asthma management is interesting.
14. My profession expects me to gain information on asthma and asthma management.

15. I will make an effort to gain information on asthma and asthma management.
16. For me to gain information on asthma and asthma management is.
17. Most people whose opinions I value would believe asthma is an important topic.
18. For me asthma is interesting
19. I intend to learn more about asthma.
20. Generally speaking, how much do you care what your coach or athletic director thinks you should do?
21. Generally speaking, how much do you care what your parents think you should do?
22. Generally speaking, how much do you care what your peers think you should do?
23. Attending meetings on asthma and asthma management will help me to gain a better understanding of the disease.
24. Attending meetings on asthma and asthma management will give me an opportunity to interact with other healthcare professionals.
25. Attending meetings on asthma and asthma management will help me to get information and explanations regarding athletes with asthma.
25. Attending meetings on asthma and asthma management will help me better manage athletes with asthma
27. Attending meetings on asthma and asthma management will subject me to tedium and boredom
28. How often do you encounter unanticipated events that place demands on your time?
29. How often does work or employment place unanticipated demands on your time?

30. If I encountered unanticipated events that placed demands on my time, it would make it more difficult for me to attend meetings on asthma and asthma education.
31. If work or employment placed unanticipated demands on my time, it would make it more difficult for me to attend meetings on asthma and asthma education.
32. My coach or athletic director thinks I should attend meetings on asthma and asthma education.
33. My peers think that I should attend the meetings on asthma and asthma education.
34. If a continuing education course was held on asthma and asthma management would you attend?

APPENDIX C

CONTENT OF SURVEY INSTRUMENT

Certified Athletic Trainers Asthma Survey

Please answer each of the following questions by circling the number that best describes your opinion.

To what extent do you agree with each of the following statements?	***Strongly Disagree***			↔		***Strongly Agree***
1. It is important for me to identify the causes of asthma to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
2. It is important for me to recognize common signs and symptoms of asthma to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
3. It is important for me to understand the treatment of asthma to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
4. It is important for me to utilize the National Asthma Education and Prevention Program (NAEPP) guidelines to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
5. It is important for me to attend continuing education offerings on asthma and asthma management.	1	2	3	4	5	6
6. My peers believe that I should understand the causes of asthma to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
7. My peers believe that I should recognize common signs and symptoms of asthma to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
8. My peers believe that I should understand the treatment of asthma to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
9. My peers believe that I should utilize the National Asthma Education and Prevention Program (NAEPP) guidelines to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
10. My peers believe that I should attend continuing education offerings on asthma and asthma management.	1	2	3	4	5	6
11. I understand the causes of asthma to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
12. I recognize common signs and symptoms of asthma to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
13. I understand the treatment of asthma to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
14. I utilize the National Asthma Education and Prevention Program (NAEPP) guidelines to practice as a Certified Athletic Trainer.	1	2	3	4	5	6
15. I attend continuing education offerings on asthma and asthma management.	1	2	3	4	5	6

Part II.

Please answer the questions below to the best of your knowledge.

16. In your last CEU reporting period, approximate how many CEU hours were devoted to asthma or asthma management to maintain your credential?

_____ /80 CEU hours

Part III.

Please answer the following background variables.

17. What is your gender?

18. What is your race/ethnicity?

19. What year were you born?

20. How many years of experience do you have as a Certified Athletic Trainer (include this year):

21. What is the highest degree you have earned (please check the appropriate level of education attained):

_____ Bachelor's degree
_____ Master's degree
_____ Doctoral degree
Other, please specify _____

22. How did you become NATABOC eligible:

_____ Internship Program
_____ Curriculum Program
Other, please specify _____

23. What is your primary place of employment:

_____ Hospital/outreach
_____ PT Clinic/outreach
_____ High school
_____ University/college
_____ Industrial
_____ Physicians office
_____ Professional sports
Other, please specify _____

Thank you for participating in this survey.

APPENDIX D

REQUEST FOR PARTICPATION

<DATE>

Dear Certified Athletic Trainer:

The mission of the National Athletic Trainers' Association is "to enhance the quality of health care provided by certified athletic trainers." I believe that you chose this profession to provide quality health care to your athletes and patients. While your profession is very rewarding, the challenges you face are widespread. Therefore, it is critical for you to identify and assess the entire health of your athletes and patients.

I am writing to request your participation in a research study to identify perceptions of asthma and asthma treatment among certified athletic trainers. You have been chosen as one of the certified athletic trainers whose input will benefit the profession; therefore, your input is very valuable. The results of this research will advance the athletic training profession to better understand asthma treatment in athletes.

As a healthcare provider, I recognize the value of your time. Your participation is completely voluntary, however, your input is extremely valuable and I would appreciate your consideration. To complete the survey, simply follow the directions on the enclosed document. I personally, guarantee the confidentiality of your responses. The survey is designed to take you less than 15 minutes.

If you would like to receive an executive summary of the research study at its conclusion, please send your contact information to the email provided below. Thank you again for your consideration.

Best Regards,

Doug Gardenhire	Jay W. Rojewski
Doctoral Candidate	Professor
University of Georgia	University of Georgia
Athens, Georgia	Athens, Georiga
dgardenhire@gsu.edu	rojewski@uga.edu

Additional questions or problems regarding your rights as a research participant should be addressed to IRB Chairperson, Human Subjects Office, University of Georgia, 612 Boyd Graduate Studies Research Center, Athens, Georgia, 30602; Telephone (706) 542 3199; E-mail Address IRB@uga.edu.

APPENDIX E

IMPLIED CONSENT FORM

CERTIFIED ATHLETIC TRAINERS' PERCEPTION OF ASTHMA
Research Information Sheet

Dear Certified Athletic Trainer:

We are currently conducting a study entitled "Certified Athletic Trainers' Perception of Asthma", to identify the insight certified athletic trainers have when treating athletes with asthma or symptoms of asthma. We are trying to better understand the manner in which certified athletic trainers obtain knowledge on the topic of asthma and utilize the knowledge to treat athletes. The study is being conducted by Doug Gardenhire, a doctoral candidate from the Department of Workforce Education, Leadership and Social Foundations at the University of Georgia, under the guidance of Dr. Jay W. Rojewski, Professor of Workforce Education. The information you provide will be used in a dissertation prepared by Doug Gardenhire and supervised by Dr. Jay W. Rojewski.

Your participation in this study is completely voluntary. If you agree to participate, you will be asked to complete a survey. You can refuse to participate or stop taking the survey at any time without penalty or loss of benefits to which you are otherwise entitled. Most people will be able to complete the survey in less than fifteen minutes.

In order to protect your confidentiality each survey has been coded with a number to protect so that no names appear on any document sent or received. However, a password protected spread sheet file has been created to match the participants in identifying if a follow-up survey is needed to be mailed in the event one is not received. The file will be destroyed after all surveys have been collected. We hope that you will return a completed survey. However, if you choose not to participate in this study, simply place a blank survey inside the envelope provided and mail.

When we publish our findings, we will report our findings base on groups, not on individuals. If you would like an executive summary, please send your information to dgardenhire@gsu.edu

We do not foresee this study causing you any harm or discomfort. However, should you be uncomfortable about completing the survey, simply return a blank survey.

If you have any questions about this research, now or in the future, please contact Doug Gardenhire at dgardenhire@gsu.edu or Dr. Jay W. Rojewski at rojewski@uga.edu**.** The department's mailing address can be found at the bottom of this page.

Please note: Completion and return of this survey implies that you have read this information and consent to participate in the research.

Thank you for your help with this important research.

Additional questions or problems regarding your rights as a research participant should be addressed to IRBChairperson, Human Subjects Office, University of Georgia, 612 Boyd Graduate Studies Research Center, Athens, Georgia, 30602; Telephone (706) 542-3199; E-mail Address IRB@uga.edu

APPENDIX F

SECOND REQUEST POSTCARD FOR PARTICPATION

A few weeks ago we sent you a survey about athletic trainers' perception of asthma . If you have already filled it out and returned it, please accept our sincere thanks. If you have not gotten to it yet, please take some time to fill out the survey and return it. Your responses to the survey are important because they represent the views of many athletic trainers like yourself. You may be assured of complete confidentiality. Your name will not appear on the survey or any reports of the research. Please complete and return the survey today. If for some reason you did not receive a survey, please call or email me and I will send one out right away. The telephone number is 770.757.3839. The email is dgardenhire@gsu.edu Thank you for your assistance.

Doug Gardenhire
Doctoral Candidate
University of Georgia

Jay W. Rojewski
Professor
University of Georiga

APPENDIX G

FINAL REQUEST FOR PARTICPATION

<DATE>
Dear Certified Athletic Trainer:
As certified athletic trainers, I understand you are very busy. So, I wanted to remind you that I still need your assistance. About a month ago, I sent you a survey to complete and return. The purpose of the survey is to seek your help in better understanding athletic trainers' perception of asthma. As of today, I have not received your completed survey. I am writing you again because I still need your help to successfully complete this study. Your input is important to understanding how athletic trainers view asthma management. The survey will take no more than 15 minutes of your time. I would like to ask you to please complete and return the enclosed survey today.
I am available to answer any questions you might have. Please feel free call or e-mail. The telephone number is 770.757.3839. The e-mail address is dgardenhire@gsu.edu

Best Regards,

Doug Gardenhire
Doctoral Candidate
University of Georgia
Athens, Georgia

Jay W. Rojewski
Professor
University of Georgia
Athens, Georgia