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An Interdisciplinary Sports Medicine Team Model for Sunshine State Conference Athletic Programs

Larry M. Starr
Nova Southeastern University, lstarr46@aol.com

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An Interdisciplinary Sports Medicine Team Model
for Sunshine State Conference Athletic Programs

by
Larry M. Starr

An Applied Dissertation Submitted to the
Abraham S. Fischler School of Education
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

Nova Southeastern University
2013
Approval Page

This applied dissertation was submitted by Larry M. Starr under the direction of the persons listed below. It was submitted to the Abraham S. Fischler School of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

Sherilyn Poole, EdD
Committee Chair

Date

Harwick Johnson, EdD
Committee Member

Date

Program Professor Review
Applied Research Center

Date

Mary Ann. Lowe, SLPD
Associate Dean

Date
Statement of Original Work

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August , 2013
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Abstract

An Interdisciplinary Sports Medicine Team Model for Sunshine State Conference Athletic Programs. Larry M. Starr, 2013: Applied Dissertation, Nova Southeastern University, Abraham S. Fischler School of Education. ERIC Descriptors: Sports Medicine, Medical Care, Health Services, Healthcare, Preventive Medicine

This applied dissertation was designed to provide up-to-date information for the athletic trainers and administrative staff in National Collegiate Athletic Association Division II athletic programs. The National Athletic Trainers’ Association (NATA) has created recommendations and guidelines for appropriate medical coverage of intercollegiate athletics. The challenge for these athletic programs is to create a sports medicine model that will meet these recommendations and guidelines.

The researcher developed an interdisciplinary sports medicine team model that would provide the appropriate medical coverage and health care for student athletes at a National Collegiate Athletic Association Division II athletic program. Use of an interdisciplinary sports medicine team model provides athletic training departments with information in eight areas: (a) athletes’ readiness to participate; (b) risk management and prevention; (c) recognition, evaluation, and immediate treatment of athletic injuries and illnesses; (d) rehabilitation and reconditioning of athletic injuries; (e) psychosocial intervention and referral; (f) nutritional aspects of injuries and illnesses; (g) health care administration; and (h) professional development to maintain knowledge and skills.

The researcher sent out an online survey to each of the head athletic trainers of the Division II Sunshine State Conference. The survey was based on the recommendations and guidelines identified in the NATA Appropriate Medical Coverage Official Statement. The online survey was followed by a one-on-one interview of each head athletic trainer. This information was used to determine what health care models are presently in place at the Sunshine State Conference athletic departments. As a result of this research, a model for the planning and development of an interdisciplinary sports medicine team within a National Collegiate Athletic Association Division II college or university campus, based on identified best practices was completed.
# Table of Contents

Chapter 1: Introduction

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement of the Problem</td>
</tr>
<tr>
<td>Background and Justification</td>
</tr>
<tr>
<td>Definition of Terms</td>
</tr>
<tr>
<td>Purpose of the Study</td>
</tr>
</tbody>
</table>

Chapter 2: Literature Review

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose Statement</td>
</tr>
<tr>
<td>Research Questions</td>
</tr>
<tr>
<td>Participation and Injury Rates</td>
</tr>
<tr>
<td>Sport-Specific Injury Patterns</td>
</tr>
<tr>
<td>Summary of Sport-Specific Injuries</td>
</tr>
<tr>
<td>Unique and Challenging Issues</td>
</tr>
<tr>
<td>Existing Collaborations Using a Multidiscipline Approach</td>
</tr>
<tr>
<td>Summary of Literature Review</td>
</tr>
<tr>
<td>Phenomenological Strategy</td>
</tr>
<tr>
<td>Research Questions</td>
</tr>
</tbody>
</table>

Chapter 3: Methodology

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants</td>
</tr>
<tr>
<td>Instruments</td>
</tr>
<tr>
<td>Procedures</td>
</tr>
<tr>
<td>Limitations</td>
</tr>
</tbody>
</table>

Chapter 4: Results

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Care Models</td>
</tr>
<tr>
<td>Research Methods</td>
</tr>
<tr>
<td>Comprehensive Health Care Delivery System</td>
</tr>
<tr>
<td>Conclusion of Comprehensive Health Care Delivery System</td>
</tr>
<tr>
<td>Determining Readiness to Play</td>
</tr>
<tr>
<td>Comprehensive Emergency Action Plan (EAP)</td>
</tr>
<tr>
<td>Conclusion of Comprehensive EAP</td>
</tr>
<tr>
<td>Other Medical Services Provided</td>
</tr>
<tr>
<td>Conclusion of Other Medical Services Provided</td>
</tr>
<tr>
<td>The Institution’s Demographics</td>
</tr>
<tr>
<td>Summary of the Institution’s SMT Demographics</td>
</tr>
<tr>
<td>Summary of Questionnaire Scores by Sections</td>
</tr>
<tr>
<td>Summary of Data Analysis</td>
</tr>
</tbody>
</table>

Chapter 5: Discussion and Conclusions

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose of the Study</td>
</tr>
<tr>
<td>Findings of the Study</td>
</tr>
<tr>
<td>Hypothesis</td>
</tr>
<tr>
<td>Objectives of the Study</td>
</tr>
<tr>
<td>Delimitations of the Study</td>
</tr>
</tbody>
</table>
Chapter 1: Introduction

The main objective of an athletic training department at a National Collegiate Athletic Association (NCAA) Division II school is to deliver the best health care to the student athletes in the institution. How this will be obtained will be dependent upon personnel, facilities, equipment, budget restraints, and the development of specific programs and procedures in the respective universities. To provide the type of services necessary to give appropriate care, the athletic training department needs the help of medical personnel, coaches, and administrators. The services rendered include preparticipation screenings, evaluation and treatments of athletic injuries, coverage of athletic practices and events, rehabilitation programs, and administration of the department.

Based on 45 years of athletic training experience, this researcher hypothesized that necessary medical services cannot be provided effectively without the expertise of a multidisciplinary team. This team includes athletic trainers (ATs), physicians, physical therapists, sports psychologists, sports nutritionists, strength and conditioning specialists, and athletic training services. The athletic training services include the clinical support given by the athletic training staff and the support provided by the athletic training education program, if available at the respective institutions. It might also encompass some nontraditional health care, including, but not exclusively, sports massage, acupuncture, and holopathic medicine.

Statement of the Problem

Athletic injuries or illnesses are a part of participation in athletics. Reports included an indication that as many as 17 million people are injured yearly as a direct result of sports participation (Weinberg & Gould, 2003).
When illustrating the importance of research to prevent and effectively treat sport injuries, Guskiewicz (2008) found that health care professionals must be responsible and work collaboratively to minimize risks and prevent recurrence of injuries. Injuries resulting from participation in intercollegiate athletics have been well documented (Agel, Evans, Dick, Putukian, & Marshall, 2007; Agel, Olsen, et al., 2007; Agel, Palmieri-Smith, Dick, Wojtys, & Marshall, 2007; Cronly & Wilson, 2007; Dick, Hertel, Agel, Grossman, & Marshall, 2007; Dick, Putukian, Agel, Evans, & Marshall, 2007; Dick, Sauers, et al., 2007; Ellenbecker, Pluim, Vivier, & Sniteman, 2009; Marshall & Corlett, 2009; Marshall, Hamstra-Wright, Dick, Grove, & Agel, 2007; Powell & Dompier, 2004; Rumball, Lebrum, & DiCiaccio, 2005; Smoljanovic et al., 2009). Athletic training department staffs need to be prepared to deal with a litany of health care concerns when dealing with the student athletes under their care. This includes the normal muscular-skeletal injuries that occur on a daily basis and the illnesses that can occur to any student athlete. However, the athletic training department will also have to deal with psychological, nutritional, and functional movement problems that will occur often over the course of an athletic season.

The treatment and rehabilitation programs for athletic injuries often require a multifaceted approach to all of these problems. Fewster-Thuente and Velsor-Friedrich (2008) found that the level of interdisciplinary collaboration among the health care professionals directly affected the ability to give the patient positive outcomes in a timely manner. Fewster-Thuente and Velsor-Friedrich demonstrated that an interdisciplinary collaboration approach consisting of a physician, nurse, social worker, nutritionist, and pharmacist allowed patients to achieve their improvement goals in a shorter time and were discharged from the hospital faster. The NCAA leaders reported that in 2008-2009
there were a total of 37,103 athletes in women’s sports and 53,929 athletes in men’s sports participating in Division II university athletics. These numbers represented a significant increase over 1981-1982 when there were 15,666 women athletes and 35,675 men athletes (NCAA, 2010). This increase in participation brings with it concerns about providing appropriate medical care in an effective manner. The appropriate health care would include preparticipation screenings, emergency action planning, recognition, evaluation, and treatment of injuries, rehabilitation and reconditioning, psychosocial consultation, nutrition, and preventive strategies (National Athletic Trainers’ Association [NATA], 2010). In addition, appropriate medical coverage of team practices and events both at home and at away venues has to be implemented. This is necessary to supply immediate care to the respective student athletes, when warranted.

Giving appropriate medical care to the student athletes in a NCAA Division II athletic program is the foundation of any athletic training department. The implementation of appropriate medical care requires a specific plan in regard to athletic training services. The Board of Certification (BOC, 2006) has defined specific domains in the Standards of Professional Practice. The seven athletic training services follow: (a) direction by a physician; (b) prevention of injury; (c) completion of a clinical evaluation and diagnosis; (d) provision of immediate care; (e) development of treatment, rehabilitation, and reconditioning strategies; (f) recommendation of discontinuation of athletic training services; and (g) documentation of organization and administration services. Every AT must agree to comply with the standards at all times. In addition, a BOC credential holder, an AT, is mandated to comply with the Code of Professional Responsibility (BOC, 2006).

Although the literature citations support a multidisciplinary team approach,
current research does not address factors specific to NCAA Division II athletics and Sunshine State Conference (SSC) athletic health care programs. As the assistant athletic director for an athletic training department for 9 years, the researcher observed a need for further research to better understand how to give effective health care to NCAA Division II SSC student athletes.

**Background and Justification**

A number of factors have affected how health care is delivered to NCAA student athletes. Over a 16-year period, 1988-1989 through 2003-2004, the NCAA injury surveillance collected data for 15 sports: men’s football, women’s field hockey, men’s soccer (MSC), women’s volleyball (WVB), men’s basketball (MBK), women’s basketball (WBK), women’s gymnastics, men’s gymnastics, men’s ice hockey, men’s wrestling, men’s baseball (MBB), men’s spring football, women’s softball, men’s lacrosse, and women’s lacrosse. The study reviewed 182,000 reported injuries and found significant increases in anterior cruciate ligament (ACL) injuries and concussions (Hootman, Dick, & Agel, 2007). These increases necessitate different and unique health care issues, including surgical interventions, rehabilitation program, and modified conditioning programs. The passage of Title IX of the Education Amendments in 1972 greatly affected how health care is given, especially relating to female athletes. This amendment caused an influx of female athletes to intercollegiate sports that brought with it a myriad of unique injuries and concerns, such as menstrual dysfunction, eating disorders, and female differences in response to training (Mees, 2003).

This research investigated the athletic training practices of the nine members of the SSC, a NCAA Division II athletic conference. The research was limited to those 16 sports that have championships in the SSC, which are MSC, women’s soccer (WSC),
WVB, men’s cross country, women’s cross country, MBK, WBK, men’s swimming, women’s swimming, MBB, women’s softball, men’s golf, women’s golf, men’s tennis, women’s tennis, and women’s crew. Each athletic training department of the respective institutions was surveyed in the study to solicit data about some selected demographics of the institution, including student enrollment, number of student athletes, number of sports, number of coaches, strength and conditioning personnel, and female: male athlete ratio. Specific questions of the athletic training and sports medicine departments included the number of ATs, administrators, and the number of medical personnel available, either employed full time, part time, or on a consulting basis.

The survey questions examined the strengths and challenges of each SSC athletic training department. This included their respective hours of operation, coverage of athletic events and practices, access to medical and support personnel, and the relationship between the athletic director and other university administrators. The survey also addressed the athletes’ compliance with injury treatment and rehabilitation, and referrals to the team physician and other personnel. Finally, the survey solicited data regarding the facilities, equipment, and programs provided by the respective athletic training departments.

The researcher had been an AT in professional and university settings for 45 years. As documented in the literature, the researcher’s observations related to the topic of this study: (a) an increase in the number of participants in NCAA athletic sports teams; (b) an increase in the number of student athletes’ injuries; (c) an increase in the type of injuries--ACL tears, hip pathology, stress fractures, concussions, and unique female concerns; (d) an increase in emphasis of off-season, preseason, or in-season conditioning and strength training; (e) an increase in nonchampionship season practices and events;
(f) an increase in the need for consultation of medical and allied medical personnel—orthopedic surgeons, physical therapists, sports nutritionists, and sports psychologists; and (g) an increase in the number of orthopedic and other surgical procedures completed.

Past research did not include addressing factors specific to the NCAA Division II and SSC athletic programs. These five factors follow: (a) increase in the number of sports and participants, (b) increase in the number of injuries, (c) increase in unique and challenging issues involving female athletes and nutritional concerns, (d) muscle imbalance and functional testing, and (e) dealing with concussions. From the researcher’s personal observations and experiences while working in the SSC, the need to create an effective health care model for SSC Division II student athletes still exists. By exploring the need to create a model for effective health care in the SSC, university administrators and ATs can identify potential issues that could arise. In addition, coaches can better understand the factors that are required to give effective health care to their athletes, including nutritional concerns; psychological problems; rehabilitation programs; athletic training services, both clinical and educational; and general strength and conditioning procedures.

Definition of Terms

The following terms will be used in this applied dissertation and may be unfamiliar to individuals not a part of the field of education.

*Anterior cruciate ligament* (ACL) is a structure that is a primary stabilizing ligament within the center of the knee joint that prevents hyperextension and excessive rotation of the joint. A complete tear of the ACL necessitating reconstruction could require up to 12 months of rehabilitation (Prentice, 2006).
Athletic trainers (ATs), with this designation, have passed the certification exam administered by the NATA (Prentice, 2006).

Board of Certification (BOC) was incorporated in 1989 to provide a certification program for entry-level ATs. The BOC establishes and regularly reviews both the standards for the practice of athletic training and the continuing education requirements for BOC ATs. The BOC has the only accredited certification program for ATs in the United States (Board of Certification, 2006, January).

Female athlete triad: disordered eating, amenorrhea, osteoporosis is a pathological syndrome consisting of three interrelated conditions that exist on a continuum of severity: (a) energy deficit or disordered eating, (b) menstrual disturbances or amenorrhea, and (c) bone loss or osteoporosis (Bonci et al., 2008).

Genu recurvatum is a deformity of the knee joint that causes the backward curvature of the knee; hyperextension of the knee; also called back knee (Devan, Pescatello, Faghri & Anderson, 2004).

Hospice is a program that supplies homelike medical services for the health care of terminally ill patients (Demiris, Washington, Oliver, & Wittenberg-Lyles, 2008).

Interdisciplinary health care model is a multidiscipline approach to providing health care to respective patients. The model consists of health care practitioners from different specialties to make group (usually based on a consensus model) decisions about patient care facilitated by regular, face-to-face meetings (Fewster-Thuente & Velsor-Friedrich, 2008).

Internal derangement is a term used to cover a group of disorders involving disruption of the normal functioning of a joint (Rumball, Lebrum, & DiCiacco, 2005).

National Athletic Trainers’ Association (NATA) is an organization that is the
certifying and governing body of the athletic training profession (Prentice, 2006).

*National Collegiate Athletic Association* (NCAA) is a voluntary organization through which the nation’s colleges and universities govern their athletics programs. The active member schools self-determine in which of three divisions (Division I, Division II, and Division III) they will be classified and must annually meet membership criteria for that division (National Collegiate Athletic Association, 2010, February).

*Non-time-loss injuries* to athletes are defined as injuries that allow the athlete to continue to participate without missing games or practices (Powell & Dompier, 2004).

*Quadriceps angles* is a term that refers to the angle formed by a line drawn from the anterior superior iliac spine to central kneecap (patella) and a second line drawn from central patella to lower leg (tibial) tubercle (Devan, Pescatello, Faghri & Anderson, 2004).

*Sunshine State Conference* (SSC) is an athletic conference composed of nine NCAA Division II colleges, all located in the state of Florida. The SSC sponsors championships in baseball, MBK and WBK, men’s and women’s cross country, men’s and women’s golf, MSC and WSC, men’s and women’s swimming, men’s and women’s tennis, WVB, softball, and women’s crew (Sunshine State Conference, n.d.).

**Purpose of the Study**

The purpose of this applied research project was to complete a descriptive study of the SSC athletic training clinical programs and the model that was used to give appropriate medical care to the student athletes. The study identified factors that influence the extent to which the most effective health care is delivered to the student athletes. A plan for implementation and evaluation was developed using an
interdisciplinary sports medicine team (SMT) model.
Chapter 2: Literature Review

In the literature review, the researcher began by establishing that injuries resulting from participating in intercollegiate athletics are a public health problem. First, the researcher examined the patterns of injury for intercollegiate sports to determine the types of injuries for which the athletic training and sports medicine departments were responsible. Second, the sports that have championship seasons in the SSC and the respective injuries were described. This was followed by a summary of existing literature regarding issues that requires specific multidiscipline approaches. Finally, specific athletic injuries that have unique and challenging issues were explored and a summary of existing literature regarding issues that requires specific multidiscipline approaches are described.

Purpose Statement

Both quantitative and qualitative methods were used to explore the SMT models that would provide the most effective health care to SSC Division II student athletes. The SSC institutions, Institution A, Institution B, Institution C, Institution D, Institution E, Institution F, Institution G, Institution H, and Institution I are characterized by differences on how their respective athletic training departments deal with student athletes’ injuries and illnesses. The researcher assumed that these different characteristics of the schools reflected a combination of resources, staff, and budget factors. This mixed-methods research used an explanatory (quantitative followed by qualitative) design as described by Creswell (2008).

After receiving signed informed consents from each SSC Head Athletic Trainer (AT), a quantitative survey (electronic questionnaire) was conducted. The quantitative survey was conducted to identify how the SSC institutions compare on the type of sports
medicine team model they use at their respective institutions. A quantitative survey or electronic questionnaire was conducted to identify how the SSC institutions compare on the type of SMT model they use at their respective institutions. This was followed up by one-on-one qualitative interviews with the nine SSC head ATs to explore the relationships with the respective SMT models.

**Research Questions**

The literature review included a demonstration of injuries and illnesses to intercollegiate student athletes that are significant health problems. In addition, this researcher’s 45-year career in athletic training centered on providing the most effective health care to those stakeholders involved. Three research questions follow:

1. What SMT models do the respective SSC athletic departments incorporate?
2. What specific methods do these institutions employ to provide effective health care to their student athletes?
3. Finally, to what extent do the quantitative and qualitative data converge that demonstrate what sports medicine model provides the most effective health care to student athletes?

**Participation and Injury Rates**

Participation rates in intercollegiate sports have increased dramatically within all three NCAA divisions since the NCAA first started collecting statistics in 1956-1957. Much of the information has been collected in detail since 1981-1982 (NCAA, 2010). More than 375,000 student athletes participated in NCAA sports in 2003-2004 and that number continues to rise. Women’s sports have risen a remarkable 120% from 1981-1982, when data were first collected in detail (Dick, Agel, & Marshall, 2007). In 2008-2009, 426,770 men and women participated in NCAA sports activities. Looking
specifically at sports sponsored by the SSC institutions, there were 3,551 teams with 63,332 student athletes participating in Division II sports in 2008-2009 (NCAA, 2010).

The increase in participation and injury rates prompted a need to accumulate data that would provide important information to make sports safer (Hootman, 2007). In a 25-year collaboration between the NCAA and the NATA, the two organizations collected data on intercollegiate sports using the newly created Injury Surveillance System (ISS). The expert commentators, an army of volunteer ATs across the country, were asked to address the four main issues in the 15 sports researched: (a) highlight the main descriptive injury epidemiology of the sport, (b) describe notable disparities in injury rates, (c) establish the relationship between the data and injury prevention messages, and (d) recommend what future research is needed (Hootman, 2007).

The landmark research in the 25-year collaboration between the NCAA and the NATA proved to be an effective method of collecting data that would facilitate evidence-based decision making on how to make sports safer. This collaboration contracted with the Datalys Center in 2005 to improve on the data that must be analyzed, interpreted, and disseminated to facilitate evidence-based decision making (Marshall & Corlett, 2009). The compiled data on five fall sports were used: men’s football, MSC, WSC, women’s field hockey, and WVB. Changes were made to the ISS that would give additional and more detailed data, including reporting non-time-loss injuries. Because injury rates are consistently higher for non-time loss injuries, this type of injury requires significant involvement of the AT and sports medicine staff (Marshall & Corlett, 2009). Powell and Domper (2004) found that 57.9% of reported treatments were associated with non-time-loss injuries, which accounted for 52.8% of the treatments provided in men’s sports and 65.4% in women’s sports.
When examining only those fall sports sponsored by the SSC and only NCAA Division II, MSC reported 698 injuries, WSC reported 714 injuries, and WVB reported 639 injuries in the 5-year period studied, 2004-2005 to 2008-2009 (Marshall & Corlett, 2009).

**Sport-Specific Injury Patterns**

A systematic data cleaning and filtering process was created for the more than 200,000 injuries and 1,400,000 exposure records in the ISS database, the largest in the world. This filtering was necessary to eliminate keypunch error, conference differences, and changing of data collectors. The data analyses included creating injury rate ratios and negative binomial regressions to assess injury rates over time and comparing rates among the divisions. All 15 sports followed this format. In 2004, the ISS was converted to a Web-based injury tracking system for real-time access and better access, and analysis capabilities (Dick, Agel, & Marshall, 2007).

For the ISS program to be consistent and accurate, specific definitions had to be in place. Six specific definitions were given: (a) reportable injuries, (b) reportable exposures, (c) injury rate, (d) sport season, (e) academic year, and (f) time loss. The NCAA ISS study monitored team activities from the first day of formal preseason practice to the final postseason contest for all 16 collegiate sports (Dick, Agel, & Marshall, 2007).

Agel, Evans, et al. (2007) found that sprains, contusions, and strains of the lower extremities were the most common injuries and were most frequently related to player contact. Agel, Evans, et al. recommended that future research focus to provide more detailed descriptions of concussion mechanisms, lower extremity injuries, and non-time-loss injuries in MSC.
When examining injuries in NCAA WSC, Dick, Putukian, et al. (2007) found ankle ligament sprains, knee injuries, and concussions were most common. Dick, Putukian, et al. concluded that preventive efforts should center on reducing knee injuries, ankle sprains, and concussions.

With the high incidence of ankle ligament sprains and knee injuries in NCAA MBK, Dick, Hertel, et al. (2007) recommended interventions, such as bracing and neuromuscular training to reduce these injuries. More randomized controlled trials are needed to assess the effectiveness of these programs.

Additional data collected from the landmark NCAA ISS study are summarized in Appendix A and shows the sports, number of NCAA-sponsored teams, number of student athletes participating (NCAA, 2010), body part most injured, other body parts injured, additional findings, and preventive recommendations (Agel, Evans, et al., 2007; Agel, Palmieri-Smith, et al., 2007; Dick, Putukian, et al., 2007; Marshal et al., 2007).

The data summarized in Appendix A are specific to the sports in the SSC that compete for a national championship: MSC, WSC, WVB, men’s cross country, women’s cross country, MBK, WBK, MBB, and women’s softball. Those SSC-sponsored sports not reported in the NCAA ISS Study are described and summarized in Appendix B (Kibler, Press, & Sciascia, 2006).

Kucera (2010) investigated the validity and reliability of the data reported in the NCAA ISS study by comparing data from the ISS with other types of clinical records maintained by ATs. Kucera concluded that the data captured by the ISS is good but no source captured completely all time-loss or medical-attention sports injuries.

Unfortunately, the landmark 16-year study completed by the collaboration of the NCAA and the NATA (Dick, Sauers, et al., 2007) did not include data concerning the
other SSC sports that compete for a national championship. These sports follow:
(a) men’s and women’s cross-country, (b) men’s and women’s golf, (c) men’s and
women’s swimming, (d) men’s and women’s tennis, and (e) women’s crew. In a follow-
up study by the Datalys Center (Marshal & Corlett, 2009), the authors collected data on a
number of fall sports but did not include cross-country because of the individual (versus
team) nature of the sport. The data were reported with individual sports in a subsequent
ISS Qualifying Report.

Data were obtained from the literature that would supply information concerning
the level of participation, injured body parts, any additional findings, and
recommendations concerning preventive programs and evaluations. The number of teams
and corresponding student athletes was secured from the NCAA sports sponsorship and
participation rates report (NCAA, 2010). The NCAA report provided a view of the
historical trends in student athlete participation by gender, sport, and division. Since
1988-1989, there have been 2,947 men’s teams and 4,282 women’s teams added that has
created a total of 17,814 teams being sponsored by the NCAA institutions. The report
documented that in 2008-2009, 53% of all championship sports were female and the
average NCAA institution sponsored 17 sports. Female participation in sports and the
number of sports offered have increased annually for the past 26 years with the most
increases occurring in golf, cross-country and softball. Because the SSC is a NCAA
Division II conference, the research was limited to the NCAA-sponsored championship
sports for Division II played in the SSC.

Magrum and Wilder (2010) concluded that cross-country athletes require an
extensive exam to improve the evaluation, reduce the chance of reinjury, and possibly
prevent injuries. Brumitt (2009) recommended a preventive program of exercises that
addresses core and hip muscles that are frequently dysfunctional in the endurance athlete. Because female participation in running has skyrocketed since the passage of Title IX of the Education Amendments of 1972, Lynch and Hoch (2010) looked at gender specifics of the female runner. Lynch and Hoch concluded one area of concern is the female athlete triad, a critical, complex physiologic and often psychological, condition that affects runners and can cause cardiovascular dysfunction.

Although golf is a low-intensity sport, injuries do occur including low back pain, elbow pain, and forearm or wrist pain. Reed and Wadsworth (2010) found that an important factor in evaluating and treating golf injuries begins with understanding the biomechanics of the sport. Treatment may require swing techniques to develop adequate physical rehabilitation.

Wolf, Ebinger, Lawler, and Britton (2009) found that little was known about collegiate swimming injuries even though an estimated 42,000 male and female swimmers competed in the past 25 years. Wolf et al. concluded that prevention strategies should focus on shoulder activities and axial spine for cross-training activities. Wanivenhaus, Fox, Chaudhury, and Rodeo (2012) examined the epidemiology of injuries and preventive methods in competitive swimmers and concluded that musculoskeletal injuries are a common source of pain in these swimmers. Preventive methods and procedures should include identification by coaches of stroke alterations that can cause pain, strengthening exercises for the abdominal, core, scapular, and rotator cuff muscles; and lower extremity muscle strengthening and flexibility exercises. In addition, when pain occurs, the athlete’s training intensity, distance, and frequency should be modified or adjusted (Wanivenhaus et al., 2012).

Ellenbecker et al. (2009) studied injuries common to tennis players and
recommended programs to prevent injuries. Ellenbecker et al. found tennis musculoskeletal injuries occur to almost all regions of the body with the most common mechanism of injury being overuse. The shoulder, elbow, back, and hip all sustain injuries due to the repetitive demands of the sport. Ellenbecker et al. concluded that injury prevention should center on improving muscle imbalances and skill specific strengthening programs.

Even though there are only 16 institutions that sponsor women’s crew at NCAA Division II athletic programs nationally, the overuse nature of the sport brings unique injuries and problems with it. Rumball et al. (2005) found that the most frequently injured region is the low back, followed by rib injuries, shoulder pain, and knee internal derangement. Other findings by Rumball et al. are noted in Appendix B.

Smoljanovic et al. (2009) concurred with Rumball et al. (2005) adding that regularly performed posttraining stretching of more than 10 minutes significantly lowered the incidence of traumatic injuries. The rowing stroke and rowing-related injury patterns were examined by Hosea and Hannafin (2012) by obtaining data from peer reviewed journals, textbooks, and rowing coaching manuals. Although rowing injuries are due to overuse related to the rowing stroke, rowers have a significantly lower risk of obesity and have excellent aerobic conditionings with lifelong benefits (Hosea & Hannafin, 2012).

**Summary of Sport-Specific Injuries**

Hootman et al. (2007) found the NCAA ISS 16-year study of the 15 intercollegiate sports reported 182,000 injuries and slightly more than one million reported exposures. They found that injuries in games were significantly higher than in practice and that preseason practice injury rates were significantly higher than in season or postseason. More than 50% of injuries were to the lower extremities with ankle
ligament sprains accounting for 15% of those injuries. More than 50% of injuries were to the lower extremities over the sample period.

Hootman et al. (2007) concluded that the data highlighted three topics: First, intercollegiate athletics are relatively safe; second, most injuries do not result in substantial time loss; and, most importantly, third, injury rates can be reduced if injury prevention initiatives include potentially modifiable factors. These factors include gradual integration of full-contact practices, modified practice times due to environmental issues, continued modifications of the NCAA policy and general sports medicine practices, innovative protection for susceptible body parts, creation of preventive exercise and nutritional programs, institution of baseline neurological testing programs, and helmet mouth-guard design for prevention of concussions and other related injuries. Hootman et al. stated that the ISS can be used in four ways: (a) to guide issues, such as appropriate medical care staffing and sport-specific safety, (b) to identify injury rate peaks and valleys, (c) to identify new emerging issues, and (d) to evaluate safety policy implementation.

One limitation of the NCAA and NATA 16-year collaboration study was the lack of reporting injuries to players who did not lose participation time (non-time-loss injuries). Powell and Dompier (2004) found that actually non-time-loss injuries required more treatments over the course of the year than time-loss injuries. Powell and Dompier found that 77.5% of the men’s injuries and 83.3% of the women’s injuries were in the non-time-loss category.

Non-time-loss injuries rates were 0.6 times higher for men and 5.0 times higher for women than time-loss injuries among collegiate athletic programs. Athletic training staffs and physicians spend more time delivering treatments to these non-time-loss
athletes. Powell and Dompier (2004) concluded that when identifying health care workforce needs the institution should look at non-time-loss injuries that have a significant impact on providing appropriate health care to the student athletes.

**Unique and Challenging Issues**

**Female athletes.** Providing appropriate health care to student athletes was greatly affected by the passage of Title IX of the Education Amendments of 1972. This legislation prohibited discrimination on the basis of sex in all activities at educational institutions (Vest & Masterson, 2007). As a result, the influx of female athletes to the intercollegiate environment brought with it many new and different medical issues. These issues required coaches, athletes, physicians, and ATs to become more knowledgeable about the unique characteristics of female athletes and the unique medical care that was needed. Seven unique female characteristics compared to their male counterparts follow: first, body composition–hormonal and body fat differences; second, earlier bone mineral density maturation; third, physiological differences–smaller heart size, smaller heart volume and lower diastolic pressure with results in reduced oxygen supply; fourth, anatomical issues–running, landing, and jumping mechanics differences resulting in added stresses to back, hip and knee joints; fifth, psychological factors–body image, parental and coaching pressure; sixth, pregnancy issues–contraindications to exercise, postpartum concerns, and breast feeding; and, sixth, urinary issues–incontinence and stress urinary incontinence (Lynch & Hoch, 2010).

Lynch and Hoch (2010) noted a critical concern is the female athlete triad, a complex physiologic and often psychological nutritional condition that affects young females. This condition consists of disordered eating, amenorrhea, and osteoporosis components that pose significant health risks and need to be addressed to maximize
prevention, early diagnosis, and treatment (Lynch & Hoch, 2010).

Because many coaches, ATs, and health care professionals have little or limited experience in the treating the female athlete, research was needed to determine the proper medical care of these athletes and active women (Pantano, 2010). Pantano (2010) attempted to provide coaches and medical personnel guidelines to apply current scientific evidence for issues unique to the female athlete.

Pantano (2010) researched six topics: (a) reproduction function and chronic stress, (b) low energy availability, (c) menstrual dysfunction, (d) cardiovascular disease, (e) musculoskeletal injury, and, most importantly, (f) the female athlete triad. Pantano concluded that proper coaching and exercise training could prevent or reduce the risk factors associated with musculoskeletal injuries and the female athlete triad. Pantano stated, “Close communication with the team of health professionals treating the athlete, while respecting the athlete’s privacy, is likely to facilitate successful treatment and the athlete’s return to sport” (p. 71).

Agel, Arendt, and Bershadsky (2005) completed a descriptive epidemiology study that focused on understanding and preventing the higher rate of ACL injury to female student athletes. The research found soccer players consistently sustained more ACL injuries than basketball players. However, the rates for all ACL injuries were statistically and significantly higher than the rates for all men regardless of the sport. Over the 13-year study, the rate of ACL injuries to male soccer players significantly decreased while those injuries in female players remained constant. Agel et al. concluded that the rate of ACL injury is significantly higher in the female collegiate athletes in both soccer and basketball. This is occurring despite vast attention to this issue.

A systematic review by Zazulak, Paterno, Myer, Romani, and Hewett (2006) also
found female athletes to be at 40% to 60% higher risk of ACL injury compared to male athletes. Zazulak et al. centered their study on the possible effect the menstrual cycle has on anterior knee laxity. Zazulak et al. concluded, “The menstrual cycle may have an effect on anterior-posterior laxity of the knee; however, further investigation is needed to confirm or reject this hypothesis” (p. 848).

**Muscle imbalances and structural abnormalities.** Studies were completed to examine differences and what practices and procedures were needed to address the unique medical issues of female athletes. Devan, Pescatello, Faghri, and Anderson (2004) examined the influence of hamstring:quadriceps ratios on the prevalence of overuse knee injuries. The hamstring:quadriceps ratio was determined from a preseason isokinetic test on a Bidodex system. Using 53 healthy NCAA women athletes, the researchers found that all ten athletes who possessed below normal hamstring:quadriceps ratios, less than 60%, were associated with overuse knee injuries.

Devan et al. (2004) investigated whether structural abnormalities influence the prevalence of overuse knee injuries to collegiate female athletes. These abnormalities include excessive quadriceps angles and genu recurvatum that may place added stress on the knee. Devan et al. concluded that female athletes with genu recurvatum had a greater occurrence of overuse knee injuries than those not having these musculoskeletal abnormalities. This could lead to preventive exercise programs for those athletes at risk of knee injuries. Devan et al. concluded that further investigation was needed to examine the need for preseason screening procedures that could identify these susceptible women.

**Concussions.** The Centers for Disease Control and Prevention reported almost 3.2 million incidents of concussion happen in organized sports and recreational athletic activities annually (Logan, 2010). The Centers for Disease Control and Prevention
suggested that administrators and health care professionals need to develop guidelines to protect athletes from brain injury.

A concussion or traumatic brain injury as it is more aptly labeled, can occur in any sport with symptoms of headache, vomiting, balance problems, double vision, confusion, and memory problems (Centers for Disease Control and Prevention, 2010a). The Centers for Disease Control and Prevention (2010b) stated, “Repeated mild TBIs [traumatic brain injuries] occurring within a short period of time (i.e., hours, days, or weeks) can be catastrophic or fatal.”

In 2004, the NATA issued their position statement concerning the management of sport-related concussions (Guskiewicz et al., 2004). Guskiewicz et al. (2004) noted that with the large numbers of athletes participating in sports, a greater responsibility falls on everyone to provide an environment that reduces risk of injury. The purpose of this statement was to provide ATs and other health care professionals information to reduce the incidence and severity of sport-related concussion. Guskiewicz et al. gave eight recommendations of the NATA focused on the following: (a) definition and recognition of concussion, (b) evaluation and determination of the return-to-play decision, (c) concussion assessment tools, (d) decision when to refer an athlete to a physician after concussion, (e) knowledge of when to disqualify an athlete, (f) special considerations for the young athlete, (g) home care, and (h) monitoring of equipment. Guskiewicz et al. expanded in more detail on each topic: (a) mechanism of injury; (b) imaging techniques; (c) clinical evaluation; (d) determining injury severity; (e) postconcussion symptom assessment; (f) mental, postural-stability, and neuropsychological testing; (g) specific disqualifying procedures; and (h) other topics, such as medications, rest, diet, and mouth guards.
Notebaert and Guskiewicz (2005) surveyed a total of 2,750 ATs to investigate the current trends in concussion assessment and management. Notebaert and Guskiewicz found that the ATs used various assessment methods and tools in their respective programs. The authors concluded that only 3% of ATs surveyed complied with the recommendations of the NATA position paper on the management of sport-related concussion. Therefore, clinicians must continue to implement a combination of methods and tools to obtain compliance. These methods and tools should include two considerations: first, preparticipation cognitive and postural stability testing and neuropsychological assessment to establish a baseline prior to a traumatic brain injury; and, second, improved clinical exams.

At the high school and intercollegiate level, student athletes’ academic requirements can also be affected by a sport concussion. McGrath (2010) found that academic accommodations are needed for the student athlete with postconcussion symptoms that will allow the individual to return to the classroom. McGrath suggested an integrated model for the school that includes involvement of the AT, physicians, teachers, psychologist and parents.

Hunt and Trombley (2010) investigated the methods and patterns that physicians used in sport-related concussion assessment and return-to-play decisions. Examining 43 college and universities using a 19-item survey, Hunt and Trombley evaluated medical specialties, years of experience, and primary method for determining return to play. The clinical exam, symptom checklist, and self-report symptoms were most frequently used (Hunt & Trombley, 2010). However, a standard approach to concussion assessment and management was not demonstrated among collegiate team physicians. They concluded that collaboration between the university’s physician and AT is needed to incorporate a
systematic protocol for treating student athletes with sports-related concussions.

In January 2010, the NATA organized the Alliance to Address the Youth Sports Safety Crisis in America and held a Youth Sports Safety Summit. The alliance was consisted of 30 health care and sports organizations to address concerns about sport-related injuries and deaths, including sport-related concussions (McDermott, 2010). In raising awareness of concussions and other health care issues, the Summit’s major goal was to help put an end to what has been labeled a crisis. McDermott (2010) noted that presenter, Guskiewicz, emphasized that proper recognition of brain injury is important for both the short- and long-term health of the injured athlete. Guskiewicz noted that repeated brain injury could lead to long-term consequences, such as dementia, decreased neurological function, and possibly death.

In January 2010, a Youth Sport Safety Summit by the NATA, which included 30 organizations of many health care disciplines, discussed issues related to sport safety, including sport-related concussions. Based on the summit, Kaminski (2010) emphasized that the individuals who have the unique skills necessary to deal with these sport-related concerns, including concussions, are ATs. Legislators and the general public need to be aware that the AT’s role as the first responder in initial evaluation and proper health care of these stricken athletes is in the best interest of all stakeholders.

Presently, 10 states have adopted laws concerning the appropriate medical care for concussions. These adopted laws create rules and regulations concerning appropriate procedures to be followed when an athlete can return to athletic activity. There was also a discussion of the passage of a federal law regulating similar procedures (Koeske, 2010). Because a lack of funding for baseline testing and other guidelines is a major concern, the allocation of federal money will be an important component of any bill. However, that
should not deter health care professionals or lawmakers from raising awareness and educating all stakeholders regarding brain injury (Koeske, 2010).

The Second Annual Youth Sports Safety Summit reconvened in Washington on December 6 and 7, 2010. Albohm, president of the NATA, announced that the NATA was partnering with the National Football League to work for legislation passage in all 50 states that will protect young athletes from concussions (Mihoces, 2010). Mihoces (2010) noted that the National Football League has a stricter return-to-play policy following concussions. This policy was instituted because, Mihoces (2009) of USA Today reported on a brain injury symposium in October where National Football League commissioner Goodell’s address included, “We know we set the standards in sports, and we accept that responsibility that comes with that. When we change our approach, others take notice and follow” (p. 2).

In a related story concerning the Second Annual Summit, Schy (2010) noted that in 2008-2009, 400,000 concussions occurred in high school sports. However, only 42% of high schools have access to athletic training facilities. Past NATA President Albohm stated that there are still too many injuries to young athletes and that legislation is needed to address safety concerns and prevent further deaths. Albohm concluded that ATs should have input to the language in that legislation (Schy, 2010).

**Nutritional concerns.** Disordered eating is a serious concern to athletes who have increased physiological demands because of their intense training and competition. Disordered eating can lead to adverse health and performance effects and possible death. In addition, it must be recognized that athletes with disordered eating rarely self-report their symptoms and often are very defensive when the subject is approached (Bonci et al., 2008).
This concern was the reason the NATA issued a position statement on the prevention, detection, and management of disordered eating in athletes (Bonci et al., 2008). Recognizing the physical signs and symptoms is critical to prevention and treatment of eating disorders. This starts with the formation of a team of qualified caregivers who are trained in detection and treatment and who can provide assistance as needed. Bonci et al. (2008) found that all stakeholders, including athletes, coaches, ATs and other health care professionals must be involved in this process. Bonci et al. stated, “The management of athletes is complex and requires interdisciplinary collaboration among physicians, dietitians, psychotherapists, ATs, administrators, and coaches, to obtain desired outcomes” (p. 102).

Nazem and Ackerman (2012) completed a study of the components of the female athlete triad and how clinicians should manage athletes with this complicated condition. The triad affects the female athletes in three areas: menstrual dysfunction, energy availability, and bone health. All three components can have a disastrous effect on the athlete’s performance and in the female athlete’s general health. Nazem and Ackerman concluded,

That triad prevention, early recognition and a multidisciplinary treatment plan with a focus on proper nutrition and resumption of menses are extremely important and should be priorities among health care professional, coaches, and other adults involved in the lives of female athletes. (p. 309)

The use of nutritional supplements and performance enhancing substances by collegiate athletes has become widespread and has been well-documented (Jackson, Lyons, Roberts, Geary, & Williams, 2010). Because the nutritional supplement industry is not strictly regulated, it is important for health care professionals, coaches, athletes, and administrators to be aware of the risks, benefits, and potential side effects of these
products. Jackson et al. (2010) found that it is important to educate strength-training staffs on the importance of their role in this problem.

Bloomer (2007) investigated the role nutritional supplements play in the prevention and treatment of resistance exercise-induced skeletal muscle damage. These damages could include delayed-onset muscle soreness, decreased muscle force, decreased range of motion, protein degradation, membrane disruption, and increased inflammatory process. Bloomer concluded that supplements only lessen signs and no optimal pretreatment period or dosage exists. Bloomer also concluded that nutritional supplement effectiveness is specific to nonresistance-trained individuals.

Based on the research of Bloomer (2007) and Jackson et al. (2010), the data confirm that a qualified individual with knowledge concerning nutritional issues and problems should be available as a resource on the SMT. Although registered dietitians would be the logical source, frequently coaches, and strength and conditioning specialists, and fellow athletes are the resource. Torres-McGehee et al. (2012) sought to identify how athletes obtained the information, their nutritional knowledge, and the confidence level associated with this knowledge. Torres-McGehee et al. found that ATs and strength and conditioning specialists have adequate sports nutrition knowledge, but coaches and athletes have inadequate knowledge. Torres-McGehee et al. concluded that “nutrition education programs should be provided for athletes, coaches, ATs, and strength and conditioning specialists” (p. 205). In addition, even though ATs and strength and conditioning specialists have adequate knowledge, they need to defer to the expert (sports nutritionist) when situations arise beyond their scope of practice (Torres-McGehee et al., 2012).

**Psychological concerns.** Addressing the physical needs of student athletes has
always been at the forefront of any sports medicine team. However, according to Calhoun, Herring, and Iadevito (2005), “Currently, there seems to be broad recognition that the mental health needs of athletes must receive attention comparable to the attention given to the athlete’s physical health needs” (p. 929).

Although the AT is educated to recognize the signs, symptoms, and prognosis of the most common mental health disorders, their scope of practice does not allow them to actually counsel the athlete (Cuppert & Walsh, 2005). This expertise falls upon the health care professional most equipped to deal with mental and psychological concerns—the sports psychologist. The sports psychologist can advise the AT in the use of different intervention strategies that will help the athlete deal with injuries, and treatment and rehabilitation programs (Prentice, 2006). This individual plays a vital role on the SMT in providing effective health care to the student athletes. Harris (2003) states, “Referral for professional counseling is necessary whenever the ATC fears that the athlete may cause harm to himself or herself or to others or whenever the ATC recognizes his or her limitations in providing assistance” (p. 78). Pantano (2010) found that athletic coaches must be aware of predisposing risk factors and understand the psychological causes for low energy and disordered eating. They need to work with the SMT and be involved in the intervention strategies concerning the female athletic triad, sports performance, and musculoskeletal injury.

In addition to the psychological concerns when dealing with eating disorders (Bonci et al., 2008), substance use in athletics has a similar concern. McDuff and Baron (2005) examined the most common substances in athletics. The researchers found the most common substances were alcohol, tobacco, stimulants, and steroids. In addition to the possible legal ramifications, all could have negative effects on the athlete’s
performance and health. Psychiatry plays a major part in understanding the psychosocial factors that lead to drug abuse. According to McDuff and Baron, “The psychiatric aspects of drug abuse include understanding the motivation to use, as well as determining effective treatment strategies” (p. 894). Psychological concerns can also play a role in the rehabilitation programs of injured student athletes. Podlog et al. (2013) concluded that the use of psychological techniques, such as cognitive reframing, motivational interviewing, and goal setting, allow ATs to identify student athletes who are at risk of unsuccessful rehabilitation outcomes. Interventions could then be applied that would enhance the physiological aspect of the rehabilitation program.

The student athlete can benefit from integrated programs provided by a sports psychologist. Working with a sports psychologist may improve their performance and help with prevention, coping skills, relaxation training, decision-making skills, crisis intervention and life management (Hinkle, 1994). Ardern, Taylor, Feller, Whitehead, and Webster (2013) found that psychological responses before ACL surgery and in early recovery might help clinicians identify athletes at risk at not returning to their preinjury level of sport. Wiese-Bjornstal (2010) found that psychological scholarship, expertise, and services can be used to improve prevention and management of sport injuries. Johnson and Ivarsson (2011) studied the psychological factors that could lead to an increased injury risk to athletes. The researchers concluded that the main factors are life event stress, somatic trait anxiety, mistrust, and ineffective coping. These factors could explain 23% of injury occurrences.

Duve and Kornspan (2006) researched the need for and types of services NCAA athletic directors would like sport psychologists to provide. The researchers revealed that sport psychologists are being used in NCAA athletic departments. However, of the three
NCAA Divisions, Division-I schools were the most likely to use the services of a sports psychologist. Unfortunately, Division-II and Division-III athletic directors reported budget restraints as the main issue in not being able to afford the services of a sports psychologist. Gill (2008) found that a number of athletic departments recognize the need for psychological interventions. However, the researcher found that if the psychological health care professional was not employed in-house, many student athletes do not receive the needed treatment.

**Strength and conditioning programs.** Many colleges and universities and some high schools employ full-time strength and conditioning coaches to develop training and conditioning programs for their respective student athletes (Prentice, 2006). Year-round conditioning is essential in most sports to reduce injuries and achieve peak performance. Prentice (2006) emphasized that strength coaches and ATs must work cooperatively in developing strength and conditioning programs that will prevent early season injuries and modify programs necessitated by injury. The four-part conditioning can include proper warm-up, flexibility exercises, strength training, and cardiorespiratory endurance. Programs must be designed specific to the demands of their sport and follow the specific adaptation to imposed demands principle, which is the body’s ability to adapt to the stresses and overloads placed on it in sports.

Twist (2010) expanded on these demands and recommended the need for continuous progressive conditioning programs that require certain critical ingredients: first, physical tools of balance, speed, agility, coordination, power, and quickness; second, energy demands to supply endurance, strength, speed and explosive power specific to their sport; and, third, recovery time that helps athletes prevent injury. To achieve performance gains, Twist recommended the creation of a performance team that
consisted of a conditioning coach, sport coach, athletic therapist, physiotherapist, chiropractor, massage therapist, sport psychologist, nutritionist, medical doctor, and a family member. This team is needed to manage all aspects of the student athletes’ physical, mental, and emotional health.

For a student athlete to compete successfully and at less risk of injury, a student athlete must be fit (Chandler & Brown, 2008). The strength and conditioning professional plays a key role in preventing injury and decreasing the risk of injuries common to a specific sport. Chandler and Brown (2008) noted that sport injury management involves a multidisciplinary team and requires good communication with the strength and conditioning professional. It is important that all members of the SMT understand their roles and work together in a cooperative manner.

Strength and conditioning programs can play a major role in injury prevention. This has been demonstrated especially when dealing with a variety of injuries, including ankle sprains, patellar tendonitis, ACL tears, and stress fractures. When examining and preventing volleyball injuries, Briner and Perreira (2010) discussed an injury prevention program for lower extremity injuries. Briner and Perreira stressed the importance of involving the AT in the strength and conditioning program. This is especially true when dealing with rehabilitation programs. Werner (2010) added that conditioning exercises aid in the rehabilitation of injured athletes while preventing reinjury and improving performance.

Corrao, Pizzini, Palo, Hanney, and Kolber (2010) found that strength-training programs are often performance based as opposed to injury prevention based. This is especially true when dealing with individuals that have anterior shoulder instability (Corrao et al., 2010). Corrao et al. recommended that modifications were needed in
selected lifts to mitigate symptoms caused by anterior shoulder instability.

Many researchers examined and discussed strength and conditioning programs that meet the needs specific to the respective sport. Wakeham and Jacobs (2009) discussed preseason strength training for collegiate tennis players. Active rest, which includes biking, swimming, and yoga, before conditioning prepares the athletes for the demands of strength training and results in successful performances (Wakeham & Jacobs, 2009). Santos and Janeira (2008) reported that complex strength training programs improved the upper and lower body explosive levels in adolescent male basketball players. When examining the performances of throwers in track and field, Judge (2007) believed that strength training programs should have specific periodic changes to meet specific objective and produce high levels of performance. Augustsson et al. (2011) found that it is important to have individualized and closely supervised resistance training programs for young female volleyball athletes to develop strength gains, improve performance, and create compliance to the system.

Because of the recent increase in the number of sudden death in collegiate conditioning sessions, an interdisciplinary forum was held by representatives of the NATA and the National Strength Coaches Association to draft recommendations to prevent sudden death. From this collaboration and multiple other medical disciplines, an interassociation task force drafted best practices recommendations for preventing sudden death in collegiate conditioning sessions (Casa et al., 2012). The NATA consensus statement, Preventing Sudden Death in Sports, provided 10 specific conditioning recommendations with the intent of eliminating sudden death of collegiate athletes. These recommendations are centered on one theme—a credentialed strength and conditioning coach should be present during all strength and conditioning sessions. The strength and
conditioning coach should introduce new conditioning activities gradually, acclimatize progressively, do not use exercise as punishment, develop and practice emergency actions plans (EAPs), be cognizant of pertinent medical conditions, and provide adequate continuing education for the entire coaching and medical teams (Casa et al., 2012).

**Existing Collaborations Using a Multidiscipline Approach**

Although it would appear that giving appropriate and effective health care to student athletes is built on collaboration of all the health professionals involved, there are a number of barriers to achieving that model. Fewster-Thuente and Velsor-Friedrich (2008) defined collaboration in health care “as a complex phenomenon that brings together two or more individuals, often from different professional disciplines, who work to achieve shared aims and objectives” (p. 41). However, health care can have different meanings to different people, and barriers can occur that inhibit the ability to set and attain mutual goals. Five barriers follow: (a) patriarchal relationship, (b) time, (c) gender, (d) culture, and (e) lack of role clarification. Fewster-Thuente and Velsor-Friedrich concluded that to achieve quality care, health care providers must create an atmosphere of interdisciplinary collaboration and teamwork.

Belanger and Rodriguez (2008) found similar barriers in their qualitative research synthesis on multidisciplinary primary care teams. Belanger and Rodriguez found that the fundamental aspect of a health care team formation is:

The construction of a collective identity, which would involve the whole team in a shared ideal of co-operative practice. . . . [A significant segment of the literature recommended the following taxonomic analysis:]

**Strategies for Organizational Change Toward Co-operative Practice**

1. Investing time and resources toward team building.
2. Developing locally adapted and flexible organizational structures.
3. Defining clear roles and communicating effectively.
4. Sharing power and involving all health professionals.
Dimensions of Team Interactions and Work Relations
1. Developing trust and respect as necessary for co-operation.
2. Maintaining the central role of the general practitioner.
3. Redefining professional identities and the potential for conflict.
4. Promoting a team-based organizational identity. (pp. 587-591)

Supplying appropriate health care can be accomplished using several different models. Boon, Verhoef, O’Hara, and Findlay (2004) described seven different models that approach the issue from nonintegrative to fully integrated health care practices: (a) parallel, (b) consultative, (c) collaborative, (d) coordinate, (e) multidisciplinary, (f) interdisciplinary, and (g) integrative. Boon et al. found that communication between and among individuals (including the patient) must increase when going from a parallel approach to a fully integrative approach.

The differences in the various health care models are evident in their respective philosophies, structures, processes, and eventual outcomes. Examining a continuum of the models, starting with a parallel model to the integrative model, several changes occur. The philosophies of health care team members placed increased emphasis on the whole person, more diversity occurs, and more determinants of health are considered. The structure complexity of the health care models increases, but decreases a reliance on formal hierarchy and clearly defined roles. The health care model structure requires increased communication, increased participants involvement, and a synergy among the model’s services for the program and health care givers to reach a united consensus. In addition, practitioner autonomy decreases. Finally, the complexity and diversity outcomes increase (Boon et al., 2004). Table 1 includes a definition of the characteristics of the seven different team health care models.

Boon et al. (2004) concluded that health care managers and those individuals creating policy must identify their health care needs and then determine which model or
models best meets their specific setting. In addition, multiple models used in one setting require flexible health care systems that can be a major challenge to become operational (Boon et al., 2004).

Table 1

*Models of Team Health Care Practice*

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<thead>
<tr>
<th>Type of health care model</th>
<th>Definition and characteristics</th>
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<tbody>
<tr>
<td>Parallel</td>
<td>Independent health care personnel in a common setting. Professionals perform separately within their scope of practice.</td>
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<tr>
<td>Consultative</td>
<td>Experts are used via direct communication, formal letter or referral.</td>
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<tr>
<td>Collaborative (most common model)</td>
<td>Independent practitioners who share information about a patient who is seen by both on an informal case-by-case basis.</td>
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<tr>
<td>Coordinated</td>
<td>A team approach–formal structure among professionals with goal to provide treatment or therapy. Team is lead by a case coordinator to assure transfer of information.</td>
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<tr>
<td>Multidisciplinary</td>
<td>Team of professionals with leader to create health care plan; may or may not meet face-to-face; each makes own decisions and recommendations with leader’s input. It is more formal and extensive than coordinated model.</td>
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<tr>
<td>Interdisciplinary</td>
<td>This model is an outgrowth of the multidisciplinary model with a team of professionals making decisions by regular, face-to-face meetings.</td>
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<tr>
<td>Integrative</td>
<td>Interdisciplinary model that blends in complementary and alternative health care in decision-making and patient-centered care. Core values of treating the whole person that includes promoting wellness and preventive programs. The team requires mutual respect and shared vision allowing each expert to contribute with a specific plan.</td>
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Other health care professionals have also investigated the advantages and disadvantages of using an interdisciplinary team to address their patients’ health care needs. Demiris, Washington, Oliver, and Wittenberg-Lyes (2008) explored the
information flow of interdisciplinary meetings of four midwest hospice teams. They recommended guidelines to address informational gaps. These guidelines would include a structured documentation, social presence of staff, and a dynamic team leader. Demiris et al. stated, “The proposed guidelines are applicable to health care systems worldwide and aim to enhance the structure and performance of teams regardless of the specific policies or administrative processes that vary from one setting to another” (p. 628).

Bronstein (2003) examined the ability of the social work profession to use an interdisciplinary collaboration model (ICM) that would improve patient care. Similar to ATs, Bronstein found that social workers face increasing challenges, including increased workload, decreasing resources, and changing demographics of their stakeholders.

Therefore, the ICM must include cooperation, communication, coordination, and partnership components that allow professionals to work together. The characteristics of an ICM include interdependence, newly created professional activities, flexibility, collective ownership of goals, and reflection on process. Although the ICM model takes time to be formed, when created, it prevents redefining the practice needs and allows members of the team to maximize the common goal of providing appropriate health care.

Although the AT is the point person and first responder in most athletic injuries and must work closely with the respective coach, many injuries and unique challenges often require additional support. These support services and personnel include a variety of medical and nonmedical services and personnel. Headed by the certified AT, a SMT could include 12 individuals: (a) physician, (b) physical therapist, (c) sports psychologist, (d) dentist (e) sports nutritionist (f) exercise physiologist, (g) podiatrist, (h) orthopedist, (i) nurse, (j) school health services, (k) strength and conditioning personnel, and (l) massage therapist (Prentice, 2006).
A number of studies have been completed examining the appropriate medical care in various athletic settings (Almquist et al., 2004; Lewis, 2003; Wham, 2006; Wham, Saunders, & Mensch, 2010). These studies demonstrated the need for a multiple sports medicine disciplinary approach when attempting to give appropriate medical care. The multiple disciplines were shown to be necessary when dealing with nutritional concerns (Bonci et al., 2008), psychosocial components (Harris, 2003), strength and conditioning (Blazevich, 2006), and athletic training services (Almquist et al., 2004; Turner, 2003). However, none of these examinations was specific to the NCAA Division II athletic setting.

In January 2010, the NATA issued an official statement covering recommendations and guidelines for appropriate medical coverage of intercollegiate athletics (NATA, 2010). The authors mentioned that major changes have occurred in NCAA athletics over the past two decades. This includes more teams (especially women’s sports), more nontraditional seasons, and more strength and conditioning sessions. These increases translate into more events, more practices, and more workouts that create increased opportunities for injuries to occur. A second trend is the increase in sports-related lawsuits that now center on the health care delivery process. The problem is the challenge to give appropriate medical care to the institutions’ respective student athletes. The NATA started tracking NCAA injuries and making recommendations for appropriate medical coverage in 2000. This study was revised in 2003 and again in 2006 because of major changes in the NCAA sports.

The NATA developed a system to assist colleges and universities to objectively evaluate and quantify the medical coverage of their intercollegiate athletic teams. The Appropriate Medical Coverage of Intercollegiate Athletics guidelines provide universities
with a standard measure of health care units, which translate to the number of ATs required for appropriate medical services. Health care units were devised that could measure in time how much coverage should be provided. An easy-to-use worksheet can be filled out to develop the measurement numbers. This system is designed as a tool and information source for ATs to share their expertise with their administrators concerning financial, legal, health care, and athletic needs of their respective institutions. Based on the current knowledge, this system will provide a rule of thumb for those responsible for medical coverage (NATA, 2010).

**Summary of Literature Review**

The literature included suggestions that participation in the NCAA athletics has increased dramatically in the past 20 years and that injuries occur frequently to intercollegiate athletes. Since 1981, women’s sports have risen 120% and have resulted in an increase in injuries and created challenges that are unique to female athletes (Dick, Agel, & Marshall, 2007). The literature included support that injuries can require a myriad of health care professionals and disciplines to ascertain an accurate evaluation that will lead to appropriate and effective health care.

These factors, although important, do not address what health care model is most effective to deal with these injuries. An effective health care model must deliver the appropriate athletic training practices based on the recommendations and guidelines in the official statement of the NATA (2010). This requires the use of multiple health care professionals that includes physicians, ATs, rehabilitation experts, sports psychologists, sports nutritionists, strength and conditioning personnel, and orthopedic surgeons.

**Phenomenological Strategy**

According to Creswell (2012), each stage of the research process has major
characteristics. Understanding of a central phenomenon, which is the key concept, idea, or process in the study, must be explored and developed. This can be achieved using a phenomenological approach. Gathering information through qualitative methods, such as interviews, discussions, and participant observations, develops the central phenomenon. A single phenomenon is researched and this phenomenon is in a purpose statement (Creswell, 2012).

This mixed-methods research examined the procedures used to provide effective health care at SSC athletic institutions by asking the question, “What specific methods do these institutions employ to provide effective health care to their student athletes?” An interview protocol consisting of 26 open-ended questions was used. This required gathering both digital recordings and hand-written notes from each SSC head AT. The interviews provided clarification and further information that allowed the researcher to collect detailed data for the final report. All nine SSC head ATs participated in the study. The combination of both quantitative data (electronic survey) and qualitative data (one-on-one interviews) provides a better understanding of the research problem (Creswell, 2012). The data from the electronic survey were collected first, followed by the one-on-one interviews. An explanatory sequential design was used to develop the interpretation.

**Research Questions**

There were three research questions prepared, researched, and answered for this project:

1. What SMT models do the respective SSC athletic departments incorporate?
2. What specific methods do these institutions employ to provide effective health care to their student athletes?
3. To what extent do the quantitative and qualitative data converge that demonstrate what sports medicine model provides the most effective health care to student athletes?
Chapter 3: Methodology

Participants

The target audience for this research included the NCAA Division II SSC athletic training department members. The SSC is consisted of nine universities, all located in the state of Florida. The respondents to the electronic survey (quantitative data) were limited to the head AT or that individual’s designee at each institution. The survey was followed up by one-on-one interviews (qualitative data) with each head AT or that individual’s designee.

Instruments

For this study, the researcher developed a survey based upon the recommendations and guidelines identified in the NATA Appropriate Medical Coverage of Intercollegiate Athletics support statement. Six procedures follow: (a) a comprehensive review of literature, (b) the establishment of a research project formative and focus group for expert evaluation of the questionnaire and interview questions, (c) benchmark questionnaire distribution and analysis, (d) institutional interviews and analysis, (e) strategic plan development and evaluation, and (f) plans for implementation and evaluation. As a result of this research, a model for the planning and development of an Interdisciplinary SMT within a NCAA Division II college or university campus based on identified best practices was completed. The plan included an assessment instrument and a plan for implementation and evaluation. The interdisciplinary SMT model included specific plans for the athletic training program, including the full- and part-time staff, composition of the team, location, layout, and equipment.

Procedures

Design. A preliminary survey was distributed to five content experts that assessed
the questions being asked. These key informants were persons whose position or experience provided some knowledge and expertise in the assessment of athletic training programs and provided validity to the questions.

A participatory action research (PAR) design using both quantitative (questionnaire) and qualitative (personal interviews) data was used in this research. PAR has a long history that has a social and community orientation focusing on research that contributes to change in a situation (Creswell, 2008). The purpose of PAR is to improve the quality of the stakeholders involved and the organization’s programs and procedures. Kemmis and Wilkinson (1998) described six central features of PAR: first, to understand and explore the relationship of the stakeholders; second, studies the stakeholders to better understand their practice and knowledge; third, contains a practical and collaborative research approach; fourth, helps free the stakeholders from constraints brought on by bureaucratic procedures; fifth, helps free the stakeholders from constraints based on their relationships within their respective settings; and, sixth, focuses on bringing about change in their practices and procedures.

This research study included sixth areas of focus. Those areas of focus follow: (a) explored the role of each SSC head AT, (b) studied the practices and knowledge of each SSC head AT, (c) explored each SSC head AT’s acts of communication, knowledge and procedures, (d) helped each SSC head AT understand the restraints caused by bureaucratic procedures, (e) helped each SSC head AT understand the constraints placed on them by their respective athletic departments, and (f) focused on bringing change to their respective athletic training departments based on their actions.

Stringer (1999) found that action research works best when there is a spiral process of looking, thinking, and action. The looking step builds a picture by
understanding and clarifying events, gathering, recording, and analyzing information; and constructing reports. The thinking step uses the information to help the stakeholders understand the why, what, how, who, where, and when of the questions that are raised. This step also includes reviewing the information, identifying priorities for action and writing a report or final manuscript. Finally, the action step formulates practical solutions to problems that have been found in the research. This would include implementing improved communication among the stakeholders, connecting people in a supportive network, and continuing evaluation of the achievements.

This researcher gathered information through the use of a 122-question electronic survey and one-on-one personal interviews with each SSC head AT. The interviews were recorded and extensive notes were taken during the 3-4 hour interviews. Also, pertinent documents and other materials were secured and reviewed. This information was used to review each SSC athletic department’s athletic training programs, procedures, and practices, which could help the each SSC head AT understand the issues and identify priorities for action. Finally, practical solutions to the issues focused in the research were formulated. This included a plan of goals, objectives, and stakeholders’ roles in the process.

After the Institutional Review Board approval was received from each institution, an electronic questionnaire, using a cross-sectional survey design, was sent to the respective AT of the nine SSC institutions. Creswell (2008) stated, “A cross-sectional study can examine current attitudes, beliefs, opinions, or practices. Attitudes, beliefs, and opinions are ways in which individuals think about issues, whereas practices are their actual behaviors” (pp. 389-390). Using the cross-sectional design allowed the researcher to compare the sports medicine model integrated by the nine SSC athletic departments.
Included with the survey was a letter providing details about the researcher’s background and the purpose of the survey. The cross-sectional survey was followed with a face-to-face interview with the respective head AT or their designee using open-ended questions. The responses were digitally recorded to allow for in-depth review. The face-to-face interview allowed the respective ATs to provide comments beyond the initial survey (Creswell, 2008). The researcher also played the role of a nonparticipant observer during this time period.

**Data analysis.** The data collected from the questionnaires, face-to-face interviews, observational processes, and any documents secured was organized, according to the specific participants. The interviews were transcribed into text data. A computer analysis of the qualitative data was then completed.

**Limitations**

This study was limited to those nine institutions participating in the NCAA Division II SSC athletic programs. It was theorized that the data could be used by any NCAA Division II university or college and could have some application at the other NCAA Divisions I and III.
Chapter 4: Results

The athletic training practices of the nine members of the SSC, a NCAA Division II athletic conference, were investigated. The research was limited to those sports that have championships in the SSC, which are MSC, WSC, WVB, men’s cross country, women’s cross country, MBK, WBK, men’s swimming, women’s swimming, MBB, women’s softball, men’s golf, women’s golf, men’s tennis, women’s tennis, and women’s crew.

Each athletic training department of the respective institutions was surveyed in the study to solicit data about some selected demographics of the institution, including student enrollment, number of student athletes, number of sports, number of coaches, strength and conditioning personnel, and female: male athlete ratio. Specific questions for the athletic training and sports medicine departments included the number of ATs, administrators, and the number of medical personnel available, either employed full time, part time, or on a consulting basis.

The survey questions examined the strengths and challenges of each SSC athletic training department. This included their respective hours of operation, coverage of athletic events and practices, access to medical and support personnel, and the relationship with the athletic director and other university administrators. The survey also addressed the athletes’ compliance with injury treatment and rehabilitation, referrals to the team physician and other personnel. Finally, data were solicited regarding the facilities, equipment, and programs provided by the respective athletic training departments.

Health Care Models

In the research, seven different health care models were identified that were used
in an attempt to give effective health care to their patients. The responses of the nine SSC head ATs concerning medical facilities, budgeting and tracking injuries are detailed in Table 2.

Table 2

Results of Adequate Medical Facilities, Budgeting Process to Supply and Equip ATR, and Tracking Injuries to Identify Trends

<table>
<thead>
<tr>
<th>Results</th>
<th>SSC head AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate medical facilities</td>
<td></td>
</tr>
<tr>
<td>Fully in place</td>
<td>AT1, AT4, AT5, AT8, AT9</td>
</tr>
<tr>
<td>Partially in place</td>
<td>AT2, AT3, AT6, AT7</td>
</tr>
<tr>
<td>Budgeting process to supply and equip ATR</td>
<td></td>
</tr>
<tr>
<td>Fully in place</td>
<td>AT1, AT5, AT7, AT9</td>
</tr>
<tr>
<td>Partially in place</td>
<td>AT2, AT3, AT4, AT6, AT8</td>
</tr>
<tr>
<td>Tracking injuries to identify trends</td>
<td></td>
</tr>
<tr>
<td>Partially in place</td>
<td>AT1, AT7</td>
</tr>
<tr>
<td>Does not exist</td>
<td>AT2, AT8</td>
</tr>
<tr>
<td>Fully in place</td>
<td>AT3, AT4, AT5, AT9</td>
</tr>
<tr>
<td>In planning stages</td>
<td>AT6</td>
</tr>
</tbody>
</table>

Note. ATR = athletic training room, AT = athletic trainer, SSC = Sunshine State Conference.

Research Methods

A 122-question electronic survey was completed by all nine SSC head ATs. After receiving all completed surveys, one-on-one interviews were conducted by the researcher with each SSC head AT. The initials used to identify each SSC head AT were codes created by the researcher and have absolutely no relationship with the specific individual. It was hypothesized that an interdisciplinary SMT model was needed to provide effective health care to the respective student athletes in Division II SSC athletic programs. Each electronic questionnaire response was given a numerical value of zero to 3. Each section
was assigned a score, which was the percentage of the maximum score earned. Therefore, a perfect score would be 1. These scores were used to compare the six subsections and the differences between the nine institutions. In addition, scores were tabulated on specific demographics—strength and conditioning personnel, sports psychologist, and sports nutritionist. The results of all the questions are represented in Sections 1 to 7 of the electronic survey of Appendix C. The researcher decided to specifically describe those questions that contained a wide variety of responses that specifically impacted the research. The purpose of the applied dissertation was to determine the most effective health care model to provide effective athletic training practice in the SSC. The mixed-methods research was used to answer the three research questions in this research project. The results of the three research questions are presented and correspond with the procedures in chapter 3.

**Comprehensive Health Care Delivery System**

This section investigated the composition of the respective institution’s health care SMT, the medical facility, and safety checks. It also collected data on documentation of injuries and follow-up procedures.

**Facilities.** When describing the athletic training facilities at the Division II SSC institutions, 44% felt their facilities were only “partially in place” to allow them to give effective health care. The results of the summary can be viewed in Table 2.

AT6 (personal communication, June 15, 2012) who felt to achieve adequate facilities stated, “I need to increase (a) office space, (b) storage, (c) hydrotherapy area, (d) rehabilitation area, and (e) add more modalities.” AT2 (personal communication, June 19, 2012) needed to “increase square footage, a private AT’s office, a private exam room, more treatment tables, more modalities, separate pretaping area and improve
rehabilitation and cardio equipment for him to give effective health care to his student athletes.” AT6 (personal communication, June 8, 2012) complained about “limited square footage, limited rehabilitation capabilities, a small, unsafe hydrotherapy area, and poor access to outdoor fields and courts.” All ATs concluded that these restrictions affected how they could deliver effective health care.

**Budget.** Over 55% of those ATs surveyed felt that their ability to have input in the annual budgeting process to supply and equip the athletic training facility was only “partially in place.” A summary of the budget process to supply and equip the athletic training room (ATR) can be found in Table 2.

AT3 (personal communication, June 6, 2012) was pleased with AT3’s budget except “it lacked financial support to obtain continuing education units, which are necessary for national certification and state licensure.” Capital items were the biggest concern of AT6 (personal communication, June 15, 2012), “Because we are adding football, swimming/diving, and lacrosse but are not adding any significant equipment and facility improvements.” AT8 (personal communication, June 20, 2012), said, “I make a concerted effort to stockpile supplies because if I do not use my entire budget I lose that amount for the following year.”

**Tracking injuries.** When asked if the institution’s athletic program tracks injuries to identify trends to better serve the health care needs of the student athletes, only 44% of the ATs felt that this program was “fully in place.” Two ATs stated it was “partially in place,” one said it was “in the planning stages,” and two said the practice “did not exist at all” (see Table 2).

The ATs had various reasons for not having any procedure in place to track injury trends. AT2 (personal communication, June 19, 2012) shared, “Except for weekly reports
to coaches, we do not do any other documentation.” AT7 (personal communication, June 8, 2012) stated, “We use a hand written referral system and only document treatment logs.” AT8 (personal communication, June 20, 2012) says, “We do daily treatment logs and athletes’ injuries on paper and the rest on SIMS software.”

The contrast to these policies came from AT5 (personal communication, June 11, 2012) who stated,

We have instituted an injury tracking system using SportsWare software. The injuries are tracked by sport, by month, and year to year. This information is discussed and reviewed by the Sports Medicine Interdisciplinary Team (SMIT) at the weekly meetings and the two biannual sports medicine retreats.

When asked if the athletic department shares and reviews injury information with other members of the SMT, only 44% had a procedure “fully in place.” The other institutions either had a procedure “partially in place” (11%), “in the planning stages” (11%), or “does not exist” (33%; see Table 3).

Although 44% answered that they had procedures in place to share and review injury tracking information, only one institution met the specific guidelines of having the entire SMT involved in the procedure. AT5 (personal communication, June 11, 2012) stated,

We hold weekly meetings with all health/fitness disciplines in attendance to discuss the weekly injury report and decisions to move forward are formulated. In addition, the assistant athletic director meets weekly with the athletic director that includes reviewing and discussing the weekly injury report.

The AT from the institution who answered that no policy was in place for sharing and reviewing of information with other members of the sports medicine stated, “Because everyone is on the same page, monthly meetings are the only thing in place” (AT2, personal communication, June 19, 2012). AT6 (personal communication, June 15, 2012) said, “I never really considered it but that is not a bad idea.” AT7 (personal
communication, June 8, 2012) said, “We have an annual summary meeting at end of the
year, but do not plan any type of tracking.”

Table 3

*Summary of Results on Reviewing Injury Tracking Information, Assessing Athletes’
Fitness Levels, and PPE Conducted on Camps by Medical Personnel*

<table>
<thead>
<tr>
<th>Results</th>
<th>SSC head AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reviewing injury tracking information</td>
<td></td>
</tr>
<tr>
<td>Fully in place</td>
<td>AT3, AT4, AT5, AT9</td>
</tr>
<tr>
<td>Partially in place</td>
<td>AT2</td>
</tr>
<tr>
<td>In planning stages</td>
<td>AT6</td>
</tr>
<tr>
<td>Does not exist</td>
<td>AT1, AT7, AT8</td>
</tr>
<tr>
<td>Assessing athletes’ fitness levels</td>
<td></td>
</tr>
<tr>
<td>Partially in place</td>
<td>AT3, AT5</td>
</tr>
<tr>
<td>In planning stages</td>
<td>AT2, AT7, AT9</td>
</tr>
<tr>
<td>Does not exist</td>
<td>AT1, AT4, AT6, AT8</td>
</tr>
<tr>
<td>PPE conducted on camps by medical personnel</td>
<td></td>
</tr>
<tr>
<td>Most of the time</td>
<td>AT1, AT6, AT9</td>
</tr>
<tr>
<td>Always</td>
<td>AT2, AT5, AT8</td>
</tr>
<tr>
<td>None of the time</td>
<td>AT3, AT4, AT7</td>
</tr>
</tbody>
</table>

*Note.* PPE = preparticipation physical examination, AT = athletic trainer, SSC = Sunshine State
Conference. There were no responses to “fully in place” when assessing athletes’ fitness levels.

**Conclusion of Comprehensive Health Care Delivery System**

All nine institutions selected “fully in place” when asked four questions: First, if
they had a designated team physician; second, if a health care professional is designated
to coordinate health care of the student athletes; third, if a health care professional is
designated to decide student athletes’ ineligibility for health reasons; and, fourth, if
annual safety checks of modalities are completed. However, there was a wide variety of
responses when asked, 1) if their institution had an adequate medical facility, 2) if their
institution tracks injuries to identify injury trends, and 3) if they share and review injury tracking information with other members of the health care team.

**Determining Readiness to Play**

This section collected data concerning preparticipation physicals, fitness assessments, rehabilitation services, facility inspections, and equipment fitting. Written procedures on sideline preparations, nutritional issues, medical referrals, and record keeping of injuries were also assessed.

**Assessing athletes’ fitness levels.** When asked if your institution had procedures in place to evaluate and assess the fitness levels of their athletes, no one answered “fully in place.” A summary of the ATs’ responses is documented in Table 3.

Those head ATs who answered either “partially in place” or “in the planning stages” had various interview responses to this question. Three institutions (AT7, personal communication, June 8, 2012; AT3, personal communication, June 6, 2012; AT9, personal communication, June 7, 2012) responded that they only access readiness in regards to orthopedic abnormalities or cardiac issues. However, AT5 (personal communication, June 11, 2012), stated, “In addition to orthopedic abnormalities and cardiac issues, we complete impact testing on all student athletes, body composition, and selected functional movement testing. We plan on expanding these assessments to all student athletes.”

**Preparticipation physical exam.** The preparticipation physical examination (PPE) encompasses most, if not all, of the criteria necessary to develop an accurate and effective evaluation of the student athlete’s readiness to play. A collaboration of many organizations in the medical community has endorsed specific components for an effective PPE. What medical personnel were involved and how the PPE was conducted
was determined by each institution in the SSC. When asked if their institution offered a PPE on campus conducted by medical personnel specialized in sports medicine, 33% replied “always,” 33% replied “most of the time,” and 33% said “none of the time” (see Table 3).

One head AT stated, “The general medical part of the exam can be done anywhere prior to coming to campus” (AT1, personal communication, June 20, 2012). Two institutions allowed their student athletes to complete their entire PPE prior to coming to campus by any health care profession except a chiropractor or nurse practitioner (AT4, personal communication, June 5, 2012; AT7, personal communication, June 8, 2012). The final head AT whose reply was none of the time stated, “Student athletes are required to complete the PPE on their own before they report to campus. We then review any red flags” (AT3, personal communication, June 6, 2012).

When asked if their institution communicated abnormalities discovered during the PPE to the student athletes’ parents and their respective coaches, 56% replied “always;” however 33% said, “most of the time,” and 11% said, “some of the time.” A summary of PPE and communication concerning abnormalities is provided in Table 4).

Those who replied “some of the time” stated that other than a review by the team physician and respective AT, the final decision to allow the student athlete to compete was at the discretion of the team physician. In contrast to that, one head AT stated,

All abnormalities are reviewed by the specific member of the sports medicine team and a specific status is given a label, i.e. full go, limited, or no activity. That label is then communicated to all the stakeholders – student athlete, coach, and administrators. Presently, we are working on developing a medical grading system for transfers and new players prior to signing letter of intent. (AT5, personal communication, June 11, 2012)

**Written procedures on facilities.** When asked if their institution had written
procedures on how facilities would be inspected and maintained, 22% replied that they were “fully in place,” 34% were “partially in place,” and 44% did not exist. A summary of the responses regarding written procedures on facilities is provided in Table 4.

Table 4

Summary of PPE and Communication Concerning Abnormalities, Written Procedures on How Facilities Will be Inspected and Maintained, and How Athletic Equipment is Maintained

<table>
<thead>
<tr>
<th>Results</th>
<th>SSC head AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reviewing injury tracking information</td>
<td></td>
</tr>
<tr>
<td>Most of the time</td>
<td>AT1</td>
</tr>
<tr>
<td>Always</td>
<td>AT2, AT3, AT4, AT5, AT9</td>
</tr>
<tr>
<td>Some of the time</td>
<td>AT6, AT7, AT8</td>
</tr>
<tr>
<td>Written procedures on how facilities will be inspected and maintained</td>
<td></td>
</tr>
<tr>
<td>Partially in place</td>
<td>AT1, AT2, AT3</td>
</tr>
<tr>
<td>Fully in place</td>
<td>AT4, AT7</td>
</tr>
<tr>
<td>Does not exist</td>
<td>AT5, AT6, AT8, AT9</td>
</tr>
<tr>
<td>Written procedures on how athletic equipment is maintained</td>
<td></td>
</tr>
<tr>
<td>Partially in place</td>
<td>AT1, AT2</td>
</tr>
<tr>
<td>Fully in place</td>
<td>AT3</td>
</tr>
<tr>
<td>Does not exist</td>
<td>AT4, AT5, AT6, AT7, AT8, AT9</td>
</tr>
</tbody>
</table>

Note. PPE = preparticipation physical examination, AT = athletic trainer, SSC = Sunshine State Conference. There were no responses of “none of the time” for reviewing injury tracking information, as well as no responses for “in the planning stages” for written procedures on facilities’ inspections and maintenance or written procedures on how athletic equipment is maintained.

Those head ATs who said they had nothing in place all stated that they had daily, monthly, and yearly checklists that outlined the normal cleanliness and care of the athletic training facilities (AT5, personal communication, June 11, 2012; AT8, personal communication, June 20, 2012; AT6, personal communication, June 15, 2012). AT1
(personal communication, June 20, 2012) stated, “We have a work study checklist for maintaining the ATR plus the university has a specific maintenance policy. The staff assumes this has to be done.” AT2 (personal communication, June 19, 2012) stated, “Not really but there is daily cleaning by the college facility management group and we do have written procedures for MATS MRSA [Methicillin-Resistant Staphylococcus aureus] policy.” AT3 (personal communication, June 6, 2012) stated, “We have nothing written except for biohazard policy from the health center that is very generic.”

Although AT4 responded on the survey that the written policies were “fully in place,” the AT stated in the interview, “We have no specific written protocols” (AT4, personal communication, June 5, 2012). The same was true of AT7 (personal communication, June 8, 2012), who stated “We have nothing written except a checklist of responsibilities but everyone knows that things have to be done.”

**Written procedures on athletic equipment maintenance.** When asked if their respective institutions had written procedures on how athletic equipment was fitted, inspected, and maintained, 67% answered that they did not exist, 22% answered “partially in place,” and 11% had procedures “fully in place.” A summary of the results of written procedures on how athletic equipment is maintained is provided in Table 4.

The one that did answer “fully in place” stated, “We do not have anything in the athletic training department but the athletics manager created a document that I have not seen” (AT3, personal communication, June 6, 2012). Of those institutions that did not have written procedures, four institutions stated, “It is the coaches’ responsibility to maintain equipment” (AT5, personal communication, June 11, 2012; AT8, personal communication, June 20, 2012; AT6, personal communication, June 15, 2012; AT9, personal communication, June 7, 2012). AT4 (personal communication, June 5, 2012)
stated, “We have no written procedures in place except for medical devices.” Those who stated the written procedures were “partially in place,” replied the procedures only covered disinfectant issues. The other equipment is the responsibility of the coaches (AT1, personal communication, June 20, 2012; AT2, personal communication, June 19, 2012).

**Written procedures on nutritional issues.** When asked if their respective institutions had written procedures on nutritional and weight requirements, 89% answered that they did not exist and 11% said “fully in place.” A summary of the responses regarding written procedures on nutritional and weight requirements is documented in Table 5).

The one institution (AT5, personal communication, June 11, 2012) did have written procedures in place:

> We have a Nutritional Management Team that is composed of our team physician, an athletic trainer, sports nutritionist, sports psychologist and a representative from the University counseling center. The written document is a part of the Policy and Procedure Manual.

The rest of the institutions only had written procedures on those areas mandated by the NCAA for sickle cell testing and attention deficient disorder.

**Written procedures on communication issues.** When asked if their respective institutions had written procedures in place on how communication between health care providers, coaches, parents, and athletes will be conducted, 33% answered “fully in place,” 33% answered “partially in place,” and 34% answered “does not exist” (see Table 5). Some of the responses follow:

AT4. We follow HIPPA guidelines but have no written policy in place. (Personal communication, June 5, 2012)

AT9. [Fully in place institution]. Protocols are in place for referring athletes for medical evaluation but not on every day communication. We do this on an as
needed basis. (Personal communication, June 7, 2012)

AT5. [Final fully in place institution]. The team physician dictates the operational protocols that are secured in a signed document as required by state licensure. (Personal communication, June 11, 2012)

Table 5

Results of Written Procedures on Nutritional and Weight Requirements, for Communication With Health Care Providers, and for Sharing Policies and Procedures

<table>
<thead>
<tr>
<th>Results</th>
<th>SSC head AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written procedures on nutritional and weight requirements</td>
<td>AT1, AT2, AT3, AT4, AT5, AT6, AT7, AT8, AT9</td>
</tr>
<tr>
<td>Does not exist</td>
<td></td>
</tr>
<tr>
<td>Partially in place</td>
<td>AT2, AT3, AT6</td>
</tr>
<tr>
<td>Fully in place</td>
<td>AT4, AT5, AT9</td>
</tr>
<tr>
<td>Written procedures for communication with health care providers</td>
<td>AT1, AT7, AT8</td>
</tr>
<tr>
<td>Does not exist</td>
<td></td>
</tr>
<tr>
<td>Partially in place</td>
<td>AT2, AT3, AT6</td>
</tr>
<tr>
<td>Fully in place</td>
<td>AT4, AT5, AT9</td>
</tr>
<tr>
<td>Written procedures for sharing policies and procedures</td>
<td>AT1, AT5, AT7, AT8, AT9</td>
</tr>
<tr>
<td>Does not exist</td>
<td></td>
</tr>
<tr>
<td>Partially in place</td>
<td>AT3, AT6</td>
</tr>
<tr>
<td>Fully in place</td>
<td>AT2, AT4</td>
</tr>
</tbody>
</table>

Note. AT = athletic trainer and SSC = Sunshine State Conference.

The institutions had various reasons for not having any written procedures in place:

AT7. We only have one office, so I can just turn my chair and talk to my whole staff. I only talk to the team physician as needed.” (Personal communication, June 8, 2012)

AT8. I meet with my team physician twice a week, review all reports and keep the rest of staff informed. (Personal communication, June 20, 2012)

AT1. We communicate via e-mails. (Personal communication, June 20, 2012)
When asked if their institution has written procedures on how they share their written policies and procedures with athletes, parents, and governing bodies, 22% were “fully in place,” 22% were “partially in place,” and 56% answered with “does not exist.” A summary of the responses to this question is displayed in Table 5.

**Conclusion of determining readiness to play.** This section of the questionnaire demonstrated a wide variety of responses concerning PPEs and what specific written procedures were in place to determine readiness to play for their respective student athletes. Not one institution had procedures fully in place to access the student athletes’ fitness levels that could include body composition, flexibility, strength, and cardiorespiratory endurance. However, a number of institutions have something “partially in place” or “in the planning stages.”

There was a consensus among all the institutions that written documentation protocols are in place for environmental issues, record keeping, and PPEs. However, few institutions have written documentation for three concerns: first, athletic equipment fitting; second, nutritional guidelines; and, third, communication between all stakeholders involved in the student athletes’ readiness to play.

**Promoting safe and appropriate practice, competition, and treatment facilities.** This section included questions associated with safety issues, such as playing fields hazards, equipment fitting, and locker room sanitation. There were also questions about procedures for supportive braces, tape or wraps, mouth guards, and coaches’ education on equipment issues.

**Documentation of fitting equipment.** When asked if their institution documents the training of personnel who fit athletic equipment, 11% answered they do “most of the time” and 89% answered, none of the time. A summary of the responses regarding
documentation of fitting equipment is provided in Table 6.

Table 6

Summary of Results of Documentation of Fitting Equipment, Emergency Actions Plan Procedures, and Posting of Emergency Actions Plan in Athletic Facilities

<table>
<thead>
<tr>
<th>Results</th>
<th>SSC head AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written procedures of documentation of fitting equipment</td>
<td>AT1, AT2, AT3, AT4, AT5, AT6, AT7, AT8, AT9</td>
</tr>
<tr>
<td>None at this time</td>
<td></td>
</tr>
<tr>
<td>Emergency actions plan procedures—</td>
<td>AT1, AT2, AT3, AT4, AT5, AT6, AT7, AT8, AT9</td>
</tr>
<tr>
<td>Development, equipment, venues, personnel, and chain of command</td>
<td></td>
</tr>
<tr>
<td>Fully in place</td>
<td></td>
</tr>
<tr>
<td>Posting of emergency actions plan in all athletic facilities</td>
<td>AT1, AT4, AT9</td>
</tr>
<tr>
<td>None of the time</td>
<td>AT2</td>
</tr>
<tr>
<td>Always</td>
<td>AT3, AT5, AT6, AT7, AT8</td>
</tr>
<tr>
<td>Most of the time</td>
<td></td>
</tr>
</tbody>
</table>

Note. AT = athletic trainer and SSC = Sunshine State Conference.

The one who answered “most of the time,” later stated, “Not for athletic training department; maybe SSC policy. It is the coaches’ responsibility” (AT2, personal communication, June 19, 2012). The ATs that responded in the questionnaire that they did not document the training of fitting equipment all stated in the communication that it was expected to be the responsibility of the coaches to know how to do this (AT5, personal communication, June 11, 2012; AT7, personal communication, June 8, 2012; AT8, personal communication, June 20, 2012; AT3, personal communication, June 6, 212; AT4, personal communication, June 5, 2012; AT1, personal communication, June
Conclusion of promoting safe and appropriate practice competition, and treatment facilities. Except for the fact that a health care professional applied supportive tapes and wraps, there was little consensus on the other areas of this section. Only two institutions always inspected their playing fields for hazards before activities and no institutions clean mats once a day with an appropriate disinfectant. In addition, eight of the nine institutions responded that no coaches were educated in the procedures to appropriately select, fit, and maintain all athletic equipment.

Comprehensive Emergency Action Plan (EAP)

Specifics of the emergency action plan. Eleven questions were asked of the nine SSC ATs concerning the development, personnel involved, chain of command, training, communication, review, and specifics of their respective EAPs. Results concerning the development, available emergency equipment, specific to sport’s venue plans, personnel responsibilities, and chain of command were all “fully in place” (see Table 6).

When asked if the EAP was posted at all of their athletic facilities, 11% answered “always,” 44% replied “most of the time,” 11% answered “some of the time,” and 34% replied “none of the time.” A summary of the responses regarding the posting of the EAP at all of their athletic facilities is provided in Table 6.

When asked if there is communication with Emergency Medical Service (EMS) personnel before athletic events to ensure cooperation and a quick response, 11% answered “always,” 11% replied “most of the time,” 22% selected “some of the time,” and 56% selected “none of the time.” A summary of the participant responses with respect to communicating with EMS personnel before an athletic event is provided in
Table 7.

Table 7

Results of Communication With EMS Prior to an Athletic Event, and Reviewing Emergency Actions Plan Annually With Administration and Legal Counsel

<table>
<thead>
<tr>
<th>Results</th>
<th>SSC head AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication with EMS prior to an athletic event</td>
<td></td>
</tr>
<tr>
<td>None at this time</td>
<td>AT1, AT2, AT3, AT5, AT7, AT9</td>
</tr>
<tr>
<td>Some of the time</td>
<td>AT6, AT8, AT4</td>
</tr>
<tr>
<td>Most of the time</td>
<td>AT2, AT8, AT9</td>
</tr>
<tr>
<td>Always</td>
<td>AT1, AT5, AT6</td>
</tr>
<tr>
<td>Reviewing emergency actions plan annually with administration and legal counsel</td>
<td></td>
</tr>
<tr>
<td>None at this time</td>
<td>AT2, AT8, AT9</td>
</tr>
<tr>
<td>Some of the time</td>
<td>AT3, AT7, AT4</td>
</tr>
<tr>
<td>Most of the time</td>
<td>AT1, AT5, AT6</td>
</tr>
<tr>
<td>Always</td>
<td>AT1, AT5, AT6</td>
</tr>
</tbody>
</table>

*Note. AT = athletic trainer, EMS = emergency medical service, and SSC = Sunshine State Conference.*

The one institution that answered “most of the time” later stated, “There is no communication with EMS except for the rowing events” (AT4, personal communication, June 5, 2012). Six institutions stated that campus security was always directly involved and dictated how the communication should be conducted (AT1, personal communication, June 20, 2012; AT2, personal communication, June 19, 2012; AT5, personal communication, June 11, 2012; AT6, personal communication, June 15, 2012; AT7, personal communication, June 8, 2012; AT8, personal communication, June 20, 2012). When asked if the EAP was reviewed on an annual basis by the administration and legal counsel, 33% selected “always,” 11% selected “most of the time,” 22% selected “some of the time,” and 34% selected “none of the time” (see Table 7).
Conclusion of Comprehensive EAP

Based on the questionnaire responses and the interviews, each institution took their EAP responsibilities very seriously. All nine institutions selected the always response when asked concerning: (a) communication with EMS, (b) accessibility of EMS in case of an emergency, (c) the availability of first-aid and emergency equipment, (d) specific guidelines regarding lightening, (e) coaches’ education on environmental guidelines, and (f) that all coaches are certified in CPR and first-aid.

On-site recognition, evaluation, and immediate treatment of injury and illness. This section asked questions concerning the availability of the team physicians and ATs for practices and games for all the SSC teams that have a championship season. Those sports were MSC, WSC, WVB, men’s cross country, women’s cross country, MBK, WBK, men’s swimming, women’s swimming, MBB, women’s softball, men’s golf, women’s golf, men’s tennis, women’s tennis, and women’s crew.

When asked about the availability of the team physician at games and practices of their respective sports, all nine head ATs responded that their team physician was on site or on call for all home games of MSC, WSC, MBK, and WBK. A summary of the responses with respect to availability of the team physician at MSC, WSC, MBK, and WBK home games is provided in Table 8.

No sports had a team physician directly at the venue for all home games. In addition, all the sports (other than MSC, WSC, MBK, and WBK) did not have a team physician available directly at the venue or on site at any home games. Seventy-eight percent of the head ATs responded that a team physician was on call for all the other sports (other than MSC, WSC, MBK, and WBK) home games.

The response was unanimous by the head ATs concerning the availability of an
AT at all home games. Sixty-seven percent of the head ATs responded that an AT was available directly at the venue for all home practices (see Table 9).

Table 8

*Results of Availability of Team Physician at MSC, WSC, MBK, and WBK Games*

<table>
<thead>
<tr>
<th>Head AT</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On call for all home games</td>
</tr>
<tr>
<td>2</td>
<td>On call for all home games</td>
</tr>
<tr>
<td>3</td>
<td>On call for all home games--MSC and WSC Available on site for all home games–MBK and WBK</td>
</tr>
<tr>
<td>4</td>
<td>On call for all home games</td>
</tr>
<tr>
<td>5</td>
<td>On call for all home games--MSC and WSC Available on site for all home games–MBK and WBK</td>
</tr>
<tr>
<td>6</td>
<td>On call for all home games</td>
</tr>
<tr>
<td>7</td>
<td>On call for all home games</td>
</tr>
<tr>
<td>8</td>
<td>Available on site for all home games</td>
</tr>
<tr>
<td>9</td>
<td>On call for all home games</td>
</tr>
</tbody>
</table>

*Note.* AT = athletic trainer, MSC = men’s soccer, WSC = women’s soccer, MBK = men’s basketball, and WBK = women’s basketball.

**Conclusion of on-site recognition, evaluation, and immediate treatment of injury and illness.** No ATs responded that a team physician is available for evaluation and treatment of athletic injuries directly at the venue for all home games and practices. Only four sports (MBK, WBK, MSC, and WSC) have a team physician available on site or on-call for their respective games.

All nine institutions do have an AT on-site for all home competitions. However,
there were a wide variety of responses concerning the availability of an AT for the
various sports’ practices. There was also a wide variety of responses on how the various
institutions provided for the rehabilitations of athletic injuries and who was responsible
for any costs involved in the rehabilitation.

Table 9

Results on Availability of an AT for All Other Athletic Practices (Excluding MSC, WSC, MBK, and WBK)

<table>
<thead>
<tr>
<th>Head AT</th>
<th>Result</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Available directly at the venue for all home practices of other teams</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Available directly at the venue for all home practices of other teams</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Available on site for all home practices</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Available directly at the venue for all home practices of other teams</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Available on site for all home practices</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Available on site for all home practices</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Available directly at the venue for all home practices of other teams</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Available directly at the venue for all home practices of other teams</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Available directly at the venue for all home practices of other teams</td>
<td></td>
</tr>
</tbody>
</table>

Note. AT = athletic trainer, MSC = men’s soccer, WSC = women’s soccer, MBK = men’s basketball, and WBK = women’s basketball.

Other Medical Services Provided

In this section, questions were included concerning the availability of various
modalities and equipment in the athletic training facility. In addition, questions
concerning psychosocial issues, nutritional concerns, and concussion management were
also addressed.

**Conclusion of Other Medical Services Provided**

All nine ATs responded yes when asked if they had the following equipment in good working condition: (a) ice machine, (b) electrical stimulation units, (c) ultrasound units, (d) other modalities, and (e) rehabilitation equipment. However, the personal interviews and direct inspection of the specific facilities demonstrated significant differences in quantity and quality of the specific equipment.

**The Institution’s Demographics**

This section included questions concerning the composition of the institutions’ athletic programs in relation to health care issues. The composition could include ATs, graduate assistants (GAs), strength and conditioning personnel, equipment management personnel, and other health care professionals. There was also a wide disparity in how each institution dealt with psychosocial and nutritional issues.

**Summary of the Institution’s SMT Demographics**

Three institutions have at least five full-time ATs in their athletic program; one has four ATs, four have three ATs, and one institution has two ATs in place. Two institutions hired three or more AT GAs, one hires two AT GAs, two hired one AT GAs, and four institutions had no AT GAs in the athletic training department. Five institutions hired between one and three part-time ATs annually and four institutions did not hire any part-time ATs. Four institutions had strength and conditioning specialists in their athletic programs and two of the five also had GAs within the department. The remaining institutions did not have strength and conditioning personnel as a part of the SMT. Three institutions had a person serving as a full-time director of equipment and two had equipment GAs. The other institutions did not have a designated staff member in place.
for that position. Two institutions had a sports medicine fellowship as a part of their sport medicine team and four responded that they have access to a sports psychologist. Only one institution had access to a sports nutritionist and that same institution was the one with a physical therapist on staff. No other institution hires or has access to a sports nutritionist or a physical therapist. One institution had a sports podiatrist as a part of their SMT. Two institutions had a sports massage therapist as a part of their SMT. Three institutions had a person who served as an insurance coordinator. One institution had a chiropractor as a part of their SMT and one had an acupuncturist on the SMT.

Summary of Questionnaire Scores by Sections

There were six sections in the questionnaire: first, comprehensive health care delivery system—12 questions; second, determining readiness to play—18 questions; third, promoting safe and appropriate practice, competition, and treatment facilities—20 questions; fourth, comprehensive emergency action plan—21 questions; fifth, on-site recognition, evaluation, and immediate treatment of injury and illness—35 questions; and sixth, other medical services—19 questions. In addition, there were eight questions asking for the institutions’ demographics. No numerical values were assigned to this section.

Section 1 subscore. The scores in this section ranged from 1 (two institutions) to 0.75 with an average of 0.88. The only significant differences were related to adequate facilities, tracking of injuries, and reviewing of injury information. At four institutions, adequate facilities were partially in place; five institutions’ tracking of injuries were not fully in place and did not have procedures fully in place to review those injuries.

Section 2 subscore. The scores in this section ranged from 0.80 to 0.50 with an average of 0.65. With the exception that the institution’s PPE is endorsed by the medical community, the responses show significant differences. Three institutions’ PPE are
always conducted by medical personnel specialized in sports medicine. Two institutions have written procedures on how facilities will be inspected and maintained and only one institution has written procedures on how athletic equipment is fitted, inspected, and maintained. Finally, one institution has written procedures on nutritional and weight requirements for sports like rowing and cheerleading.

**Section three subscore.** The scores in this section ranged from 0.63 to 0.40 with an average of 0.55. The low scores indicated that very few head ATs responded that programs were fully in place for the following areas: first, inspection of playing fields; second, sanitizing locker rooms; third, cleaning mats for cheerleading; fourth, the training of personnel to fit athletic equipment; and, fifth, educating coaches in the procedures to appropriately select, fit and maintain all equipment associated with their respective sports.

**Section 4 subscore.** The scores for this section ranged from 0.92 to 0.79 with an average score of 0.85. This section ranked the highest of all the sections. All the institutions had specific EAPs in place and a plan that was specific to each sport venue, emergency equipment in place, identified personnel, the chain of command, and the accessibility of emergency medical personnel. In addition, each institution has written policies on weather-related emergencies. Only one head AT responded that there is communication with EMS personnel before athletic events to ensure cooperation and a quick response. Also, only one institution reviews established emergency procedures after all emergency situations.

**Section 5 subscore.** The scores for this section ranged from 0.64 to 0.48 with an average score of 0.58. The availability of a team physician directly at the venue for all home games for each sport is nonexistent in the SSC. However, a BOC AT is available at
all home sport competitions. In many cases, the head ATs responded that the BOC AT is on call for athletic sport practices.

**Section 6 subscore.** The scores for this section ranged from 0.70 to 0.42 with an average score of 0.55. Because there were many yes and no responses, scored 1 or 0 respectively, these scores are somewhat misleading. All nine head ATs responded yes concerning the following working equipment: (a) an ice machine, (b) electrical stimulation unit, (c) ultrasound unit, (d) hydrocollator, (e) other therapeutic modalities, and (f) equipment designated for rehabilitation. Two institutions had a diathermy in their athletic training facility. Four head ATs responded that a system for recognition and referral of psychosocial issues was fully in place. Two institutions provide education for their respective coaches and student athletes concerning appropriate preexercise nutrition and eating disorders.

**Institutions’ subscores and demographics.** The total scores for the institutions ranged from 0.82 to 0.63. The total scores had an average of 0.72 and a standard deviation of 0.06.

**Summary of Data Analysis**

After 40 years in the profession of athletic training, including 8 years at a SSC Division II athletic program, this researcher wanted to find data concerning giving effective health care to student-athletes. Except for one study (Wham et al., 2010) that was similar, but did not deal with collegiate settings, the researcher found no studies focused on this topic. With no precedence for referral, the researcher developed a mixed-methods research using a PAR design (Stringer, 1999) to create specific statistics. Quantitative data were collected from all nine SSC head ATs using a 122-question electronic survey. These data were coded numerically and created statistics for
comparison of strengths and weaknesses of the various sports medicine team models in the SSC. The minimum standards were based on the NATA Consensus Statement (National Athletic Trainers’ Association, 2010) on appropriate medical coverage of collegiate athletics. With no previous data as comparison, additional quantitative data were needed to create specific numerical values. The qualitative data were collected through one-on-one interviews of all nine SSC head ATs. These open-ended questions were also based on the NATA Consensus Statement and allowed each SSC head AT to be a participant in the PAR study.

As the work progressed, the researcher discovered that a number of central themes developed that would affect the ability to give effective health care to SSC Division II student-athletes. This allowed the researcher to do a cross-sectional analysis for comparison of strengths and weaknesses within the SSC athletic programs at this particular time. Four central themes were found:

1. All nine SSC head ATs felt that adding one or two additional full-time ATs to their respective sports medicine team would improve their ability to supply adequate coverage of athletic events and provide effective student-athlete health care.

2. The addition of a sports psychologist on the sports medicine team would improve the ability to give effective health care to the student-athletes. They felt that injuries, illnesses, and performance have a psychological aspect that requires the expertise of a sports psychologist.

3. The addition of a sports nutritionist on the sports medicine team was needed to address the issues and concerns due to poor or improper nutrition. These nutritional concern negatively impacted illness, injuries, rehabilitation programs, and performance in general.
4. The addition of strength and conditioning personnel on the sports medicine team was needed to address the fitness and conditioning concerns of the student-athletes. The expertise provided by these personnel would aid in providing effective health care, improve treatment and rehabilitation programs, and assist in the prevention of injuries. By reflecting on previous experiences through action research, the researcher was able to build a picture of what sports medicine team models were effective. The monitoring techniques of action research enabled the researcher to see that all nine SSC athletic programs strived to provide effective health care to the student-athletes, but the data demonstrated some weaknesses in the respective sports medicine team models.
Chapter 5: Discussion and Conclusions

Purpose of the Study

The purpose of the study was threefold: first, determine what health care models are in place at the SSC athletic departments; second, determine what specific methods these institutions employ to provide effective health care to their student athletes; and, third, determine what is the most effective health care model to provide appropriate athletic training practices. The NATA Official Statement in January of 2010 included a conclusion that, in addition to basic emergency care during sports participation, activities of ongoing daily health care of the student athlete should include the following as minimum basic requirements:

- Determination of athletes’ readiness to participate, in conjunction with the team physician (e.g., preparticipation evaluation and post-injury/illness return).
- Risk management and injury prevention.
- Recognition, evaluation and immediate treatment of athletic injuries/illnesses.
- Rehabilitation and reconditioning of athletic injuries.
- Psychosocial intervention and referral.
- Nutritional aspects of injuries/illnesses.
- Health care administration.
- Professional development to maintain and improve knowledge and skills. (p. 8)

These criteria were the basis for the formation of the 122-question electronic survey (see Appendix D) that was distributed to each SSC head AT and the subsequent one-on-one interviews (see Appendix E) that were completed. By following the guidelines and recommendations of the NATA Official Statement, effective health care could be achieved.
Findings of the Study

The findings of the study revealed that all the SSC athletic departments had the minimum basic requirements, as recommended by the NATA (2010) Official Statement, in place to give effective health care to the respective stakeholders. The study also revealed that there were differences in a number of areas, including health care personnel that consist of the SMT, facilities, recording and tracking of injuries, and determination readiness to play.

Hypothesis

It was hypothesized that an interdisciplinary SMT model was needed to give effective health care to SSC NCAA Division II student athletes. Furthermore, it was hypothesized that an interdisciplinary model could be achieved by creating a positive and constructive relationship with a cooperative university administration.

Objectives of the Study

There were two main objectives of the study. The first was to determine if the SSC athletic departments met the minimum recommendations and guidelines of the NATA Official Statement that would provide the necessary personnel and programs to provide effective health care. This was assessed through a 122-question electronic survey and one-on-one interviews with each SSC head AT. The second objective was to determine the SMT model that would provide the most effective health care to SSC student athletes based on the recommendations of the NATA Official Statement. Again, this was assessed with the electronic survey and one-on-one interviews based on the NATA Official Statement’s guidelines and recommendations.

From the data, the researcher clearly determined that those institutions that have limited resources of health care personnel, facilities, equipment, and administration
support could not provide the same services as their SSC peers. Even through all the SSC institutions are private, nonprofit, and Florida based, their specific approach to delivering effective health care to student athletes was achieved using different approaches. With limited personnel and resources, including poor facilities, lack of equipment or supplies, and office space; this would place the respective ATs at a disadvantage in their ability to provide effective health care for their student athletes.

**Health care models in place at the SSC athletic departments.** The first research question follows: What SMT models do the respective SSC athletic departments incorporate? The review of the literature provided background information on the fact that participation in NCAA athletics has increased dramatically since 1981, when the NCAA began collecting student athlete injury data, and that student athletes’ injuries are a health care problem. The literature also supported that athletic injuries require a multiple discipline approach to ascertain an accurate evaluation that will lead to appropriate and effective health care.

**Quantitative discussion.** Demographic data from the electronic survey indicated a diverse number of medical personnel within the SSC institutions. The average full-time ATs were four point seven with a range of two to five ATs on their staff. Of the nine institutions, three had athletic training GAs and no institutions had one or more interns. In addition, five institutions hire at least one part-time AT to provide athletic training services. Therefore, when you include athletic training GAs and part-time ATs, the total number of full- and part-time ATs affiliated with their respective institutions averaged five point five individuals with a range of three to eight ATs. This indicated that even the institutions (AT1, AT5, and AT9) with five full-time ATs found a necessity to hire additional ATs to provide effective health care to their respective student athletes.
When examining the support staff that made up the SMT, an even more diverse number of medical personnel were found at the respective institutions. Five institutions reported that they had strength and conditioning specialists on their SMT and three of those head ATs also have strength and conditioning GAs. Five institutions reported they hired an equipment manager or director of equipment and two of those institutions also hired equipment GAs. Other support staff included additional physicians (three institutions), sports psychologists (five institutions), sports nutritionists (two institutions), physical therapists (two institutions), podiatrists (two institutions), sports massage therapists (three institutions), acupuncturists (two institutions), insurance coordinators (four institutions), and chiropractors (two institutions). Two institutions stated they did not have any of the listed support staff.

**Qualitative data.** One of the major successes of this exploratory study was the information and subsequent clarification that was derived from the one-on-one interviews with the respective SSC head ATs. Because no previous research had been conducted that delved into the specifics of whom and what made up a SMT, the qualitative data created a more accurate picture of the sports medicine models that were in place. The one-on-one interview questions used the same sections as the electronic survey, but provided more specific and detailed data.

**Comprehensive health care delivery system.** When interviewing the head ATs, it became very clear that the majority would prefer to expand their health care team to include additional medical personnel. AT4 (personal communication, June 5, 2012) stated,

I would love to add a few people to my sports medicine team: first, internal medicine, board certified in sports medicine; second, sports nutritionist is needed at least in a consulting basis; third, a physical therapist on staff; fourth, a full-time
strength and conditioning specialist who could work with the exercise science department; and, fifth, at least one more AT.

Several head ATs also felt additional medical personnel would allow them to better serve the health care needs of their respective student athletes. The three disciplines that kept coming to the forefront of the personnel wanted and needed were strength and conditioning, sports psychology, and sports nutrition.

**Strength and conditioning specialists.** The literature included support for the recommendation that improved fitness plays a pivotal role in reducing student athletes’ injuries and improving performance (Briner & Perreira, 2010; Chandler & Brown, 2008; Werner, 2010). Chandler and Brown (2008) also noted that sport injury management involved a multidisciplinary team and requires good communication with the strength and conditioning professional. However, in the SSC, only one institution (AT5) had a comprehensive strength and conditioning department that was an integral part of the SMT. Four other institutions (AT8, AT1, AT6, and AT9) had at least a part-time strength and conditioning specialist, but did not have any significant relationship with the entire SMT. In addition to AT4’s comment about expanding medical personnel, three head ATs (AT7, AT3, and AT2) also stated that if they could, they would add at least one or more strength and conditioning personnel to their health care team. The lack of a comprehensive year-round strength and conditioning program for their respective student athletes was a major concern to all nine head ATs interviewed.

**Sports psychologists.** Although many head ATs reported that they have access to a psychologist, only one institution (AT5) had a full-time board certified sports psychologist, who was an integral part of the SMT. The other eight head ATs stated they had access to a psychologist at their health center or university counseling center.
However, this relationship had a number of issues: (a) limited access and timely availability, (b) lack of communication, (c) poor documentation of the problem, and (d) none were board certified in sport psychology. AT8 (personal communication, June 20, 2012) stated, “Our counseling center is helpful, but I have no direct contact and the center has no involvement with the rest of the sports medicine team.” AT1 (personal communication, June 20, 2012) stated, “I have tried to obtain a sports psychologist but was always turned down because of lack of financial support.” AT5 (personal communication, June 11, 2012) was extremely excited that, on the SMT, there is a full-time board-certified sports psychologist, who was available to the student athletes on a weekly basis and conducted team and individual meetings based on coaches’ desires.

Sports nutritionists. Again, only one institution (AT5) had a full-time board certified sports nutritionist on their SMT. AT9 (personal communication, June 7, 2012) stated, “I would love to have a sports nutritionist on staff, but there is no one like that in our small town.” AT1 ran into the same problem that “There was no one out there that had the qualifications” (personal communication, June 20, 2013). AT7 (personal communication, June 8, 2012) reported that they were limited on procuring a sports nutritionist because the university’s director of student wellness services had written protocols and procedures in place to deal with nutritional issues. However, the Director has no direct relationship with athletics or the SMT. AT5 (personal communication, June 11, 2013) stated, “Our sports nutritionist is available for individual and team meetings based on coaches’ desires and meets at least annually with all coaches and student athletes.”

Determining readiness to play. There were two significant differences in how the individual institutions determined how student athletes should be ready to play. This
included how they conducted the annual PPEs and how they dealt with nutritional and psychosocial issues. In the electronic survey, all nine SSC head ATs recorded that they conducted PPEs. However, the one-on-one interviews painted a more diverse picture on how the PPEs were conducted. Three institutions (AT7, AT3, and AT1) have the student athletes complete a general medical physical prior to arriving on campus by any U.S. licensed physician or walk-up clinic. It then was the responsibility of the athletic training staff to review for any abnormalities that might require further medical evaluation. The other six institutions completed the PPEs on campus by the respective sports medicine personnel. All nine institutions used the PPE form endorsed by the medical community (i.e., American Academy of Family Physicians, American Academy of Pediatrics, or American Medical Society for Sports Medicine). However, only one institution (AT5) does extensive physiological testing and functional movement screening (FMS) on the student athletes. AT8 (personal communication, June 20, 2012) stated, “We are experimenting with the FMS program in MSC, MBB, and WVB. The information is very useful and strong.” Another institution (AT1) does some physiological testing and an intern does FMS on the MBK team.

Only one institution (AT5) had a full-time board certified sports nutritionist or sports psychologist on the SMT. AT5 (personal communication, June 11, 2012) stated, “We have a nutritional management team composed of the team physician, our registered dietician, our sport psychologist, an AT, and a university counselor, which deals with all nutritional concerns, including, but not inclusively, eating disorders.” Except for the institution of AT5, the other SSC institutions sent any psychosocial issue out of the department to either the university counseling or health center or an off-campus facility.

Promoting safe and appropriate practice, competition, and treatment
facilities. Although all nine SSC Head Athletic Trainers agreed that promoting safe and appropriate practice, competition, and treatment facilities was important, none were able to produce a written protocol on how this should be done. The one exception was AT5 (personal communication, June 11, 2012) who said, “The university’s risk management/safety committee has a written document that outlines the care and inspection of campus facilities. However, we have never opened it.” The consensus was that the respective AT and coach assume the responsibility of ensuring the practice and competition areas were safe, equipment was in good condition, and facilities were clean. AT9 (personal communication, June 7, 2012) stated, “We have nothing written because it is common sense and everyone involved, AT, coaches, athletic training students, university grounds personnel, and athletes know it is a part of their duties.”

Comprehensive emergency action plan. Previously noted in the quantitative data analysis, all nine institutions had a comprehensive emergency action plan in place with written procedures for the respective venues. All institutions had automated external defibrillators and annually reviewed the plan with the pertinent sports medicine personnel. The one missing ingredient that was recommended in the NATA Official Statement is the lack of an annual or any mock staging of the EAP. All nine SSC head ATs said the problem was coordinating a mock staging with the local EMS department. Although there was practice and review within the SMT, no mock staging was completed.

On-site recognition, evaluation, and immediate treatment of injury, illness, and rehabilitation. Although all nine institutions had specific team physicians, there was wide variance in the availability and hands-on involvement of that individual. One SSC head AT (AT8, personal communication, June 6, 2013) stated, “My team physician is
very involved. He has specific clinic hours on campus, attends most home contests, and is also an adjunct faculty.” AT5 (personal communication, June 11, 2012) noted that although the team physician was not at the practice or competition (except MBK and WBK), that team physician was always on campus because that team physician is the Director of the Sports Medicine Clinic adjacent to the ATR. ATs at all nine institutions did feel that if the team physician was needed that they could contact that team physician in a reasonable length of time. AT9 (personal communication, June 7, 2012) stated, “I am comfortable with handling injuries and illnesses until medical care is needed.”

The availability of an AT on-site at practices and competitions was predicated upon a number of factors: (a) number of ATs on staff, (b) competition is home or away, (c) time of year—championship season or off-season, and (d) how the sports is designated—high or low risk of injury. Every SSC head AT said there was always an AT at all home competitions. However, only one institution (AT5) had an AT at all home and away competitions.

Other medical services provided. Although two institutions (AT5 and AT8) made major improvements in their sports medicine facilities in the last 5 years and were excellent, only two other institutions (AT3 and AT9) felt their facilities were adequate. The other institutions (AT7, AT4, AT2, AT1, and AT6) were not adequate due to limited space and lack of proper equipment (i.e., modalities, rehabilitation items). In addition, a lack of office space was a major handicap for these five SSC head ATs. Adequate office space was important for the effective management of athletic training reporting systems and other administrative duties.

Lack of sports medicine personnel, including ATs, strength and conditioning specialists, sports psychologists, and sports nutritionists was a recurring theme in the
ability to supply appropriate health care to the student athletes. When the SSC head ATs were asked what changes they would make if possible, everyone stated more staff and more space.

In addition to the differences in medical personnel, facilities, and equipment available to the respective SSC institutions, athletic injury tracking and review were lacking in many cases. Although there were reviews and meetings within the athletic training department, only one institution (AT5) had a weekly meeting with the entire SMT. This meeting included the team physician, all full-time ATs, sports nutritionist, sports psychologist, strength and conditioning specialist, and the athletic training education program director. In addition, AT5 has started a database to track athletic injuries for all the institutions’ sports teams. AT5 had been tracking athletic injuries since August 2010 and was looking at possible injury trends by sport.

Organizational models in the SSC for effective health care. The second research question follows: “What specific methods do these institutions employ to provide effective health care to their student athletes?” Although all nine institutions used similar methods in providing effective health care to the student athletes and attempted to adhere to the NATA Official Statement, there were distinct differences. Both the quantitative (electronic survey) data and the qualitative (one-on-one interviews) data demonstrated four differences in a number of distinct areas: (a) medical personnel on the SMT, (b) size and quality of the sports medicine facilities, (c) the depth and quality of PPEs and determining readiness to play, and (d) reviewing and tracking of the athletic injuries.

Medical personnel on the SMT. AT4 (personal communication, June 5, 2012) felt it would benefit the university’s program to have additional medical personnel as a
part of the SMT. This included a sports nutritionist, sports psychologist, physical therapists, strength and conditioning specialists, and an additional AT. SSC Head Athletic Trainers AT7, AT3, and AT2 expressed similar needs during the one-on-one interviews. AT3 (personal communication, June 6, 2012) added, ‘I would also like a team physician employed by the university. An academic services person should also be a part of the sports medicine team.” AT8 (personal communication, June 20, 2012) was pleased with the medical personnel but felt they were lacking a medical practitioner who would deliver more effective care of concussion injuries. AT1 (personal communication, June 20, 2012) felt the addition of an insurance coordinator would alleviate responsibilities that take away from providing effective health care. In addition, AT1 added that the lack of ATs on the sports medical team places an undue burden on the staff, which requires them to work a minimum of 55 hours per week.

Although AT9 (personal communication, June 7, 2012) did feel a sports nutritionist on campus would be nice, AT9 also stated, “I believe adding too many disciplines takes away skills from the AT. Specific physician skills can be available in a reasonable time span.”

The one institution that did meet the criteria of this researcher’s hypothesis is head AT5. AT5 stated, “We have all the needed medical personnel to meet the medical, nutritional, psychosocial, and fitness needs of the student athletes at this institution. In addition, all members of the sports medicine team know their role and do it well” (personal communication, June 11, 2012).

**Size and quality of the sports medicine facilities.** Six SSC head ATs (AT7, AT3, AT2, AT1, AT6, and AT9) felt that the sports medicine facilities were not adequate and compromised their ability to give effective health care to the student athletes. The
deficiencies follow: (a) lack of office space, (b) no private physician’s examination room, (c) lack of storage, (d) lack of rehabilitation space, (e) inadequate hydrotherapy area, (f) outdated medical modalities, and (g) lack of square footage in the ATR. In addition, all nine head ATs personally communicated on various dates, complaining that their administrations continually added sports teams, but did not reciprocate with increased facilities or medical personnel in most cases.

One SSC head AT (AT4) felt AT4’s facility was adequate, but an auxiliary ATR for outdoor sports would be an excellent addition. AT8 (personal communication, June 20, 2012) stated that the medical facilities had become antiquated and inadequate, but, fortunately, a major renovation this summer had created a “state-of-the-art” medical facility. AT5 (personal communication, June 11, 2012) was also pleased with AT5’s facility because of the recent construction of a 2,500 square foot ATR, sports medicine clinic and rehabilitation center, and an auxiliary ATR for outdoor sports.

**The depth and quality of PPEs and determining readiness to play.** The review of the literature provided evidence that prevention of injuries is the foundation of any sports medicine program (BOC, 2006). One of the criteria for prevention of injuries is screening out potential risks and injuries that can occur to student athletes because of cardiac concerns, muscular imbalances, and fitness levels that do not meet the demands of the specific sport. Although all nine institutions completed PPEs on all the student athletes, screening out cardiac concerns, and functional weaknesses and determining level of fitness appears to be lacking in most cases.

Only one institution (AT5) had a comprehensive SMT that included a sports psychologist, a sports nutritionist, and strength and conditioning specialists to administer annual PPEs on campus to all the student athletes. AT5’s annual PPE also included body
composition testing and functional movement assessments. SSC AT8 stated, “We are experimenting with functional movement programs in MSC, baseball, and volleyball and have found it to be strong and useful information” (personal communication, June 20, 2012). AT1 (personal communication, June 20, 2012) added that MBK was the only team that does some FMS.

**Reviewing and tracking of the athletic injuries.** When each SSC head AT was asked if there were procedures in place for the entire SMT to review injuries, only one head AT answered in the affirmative. AT5 (personal communication, June 11, 2012) stated that the entire SMT meets weekly to review all significant injuries and make recommendations of further health care for these student athletes. In addition, AT5 began in 2010 to collect data that is designed to track injuries and determine any specific trends that may necessitate changes or additions in conditioning and other sports medicine practices.

There were a number of reasons why the other eight institutions did not have these practices in place. The five reasons were: (a) lack of medical personnel; (b) lack of ATs; (c) lack of strength and conditioning specialist; (d) lack of facilities and equipment; and (e) not enough time in the day.

**The most effective health care model.** The third research question is to what extent does the quantitative and qualitative data converge that demonstrate what sports medicine model provides the most effective health care to student athletes? The literature review confirms that student athletes’ injuries and illnesses are significant health care problems (Agel, Evans, et al., 2007; Agel, Palmieri-Smith, et al., 2007; Dick, Hertel, et al., 2007; Dock, Putukian, et al., 2007; Dick, Sauers, et al., 2007; Marshall et al., 2007) that require the expertise of multiple health care disciplines due to the myriad of issues
that accompany these situations. The issues include gender concerns (Lynch & Hoch, 2010; Pantano, 2010), psychosocial problems (Bonci et al., 2008), nutritional concerns (Bonci et al., 2008; Torres-McGehee et al., 2012), fitness status (Chandler & Brown, 2008; Prentice, 2006; Twist, 2010), and concussions (Guskiewicz et al., 2004).

In addition, the literature research included a demonstration that a multidiscipline approach is essential in supplying effective health care (Berlanger & Rodriguez, 2008; Boon et al., 2004; Bronstein, 2003; Demiris et al., 2004; Fewster-Thuente & Velsor-Friedrich, 2008). Increased communication and increased involvement of all the participants are necessary in a multidiscipline approach. To attain a united consensus the health care professionals must create a synergy among the model’s services and programs (Boon et al., 2004).

Finally, the literature research demonstrated the need for a multiple sports medicine disciplinary approach when attempting to give appropriate medical care to student athletes (Almquist et al., 2004; Lewis, 2003; Wham, 2006; Wham et al., 2010). The researchers’ findings demonstrated that if the multidisciplinary model was not within the athletic environment the communication and health care services were oftentimes deficient. Utilization of an interdisciplinary sports medicine model will enhance the ability for all medical personnel to provide effective health care to the student athletes. The major challenges in creating an interdisciplinary sports medicine model follow: (a) resources available within the academic institution, (b) cost factors, (c) lack of necessary medical personnel, and (d) administration support or philosophy. Based on the quantitative and qualitative data, only one institution (AT5) was able to meet the recommendations of the NATA Official Statement by creating an interdisciplinary SMT model. This institution had the appropriate medical personnel, state of the art facilities,
the necessary resources, and the support of the administration to create this model. The necessary medical personal, including a sports psychologist, sports nutritionist, physical therapist, and exercise scientist were obtained within the institution’s academic programs at little or no cost to the athletic department. The administration supported the creation of the strength and conditioning department, equipped with a state of the art weight room, and the establishment of a sports medicine rehabilitation center within the confines of the athletic department. With this model, both the academic community and the athletic department benefitted, which resulted in providing appropriate and effective health care to the student athletes.

**Delimitations of the Study**

All the institutions surveyed in the study were members of the NCAA Division II SSC athletic programs. They are all private, not-for-profit academic institutions located within the state of Florida. The sports selected for this study were only those that had a conference-wide championship. Results of this study need to be compared to similar types of institutions.

**Implications of the Study**

The research was designed to identify the various SMT models in the SSC and determine which model gave the most effective health care to the respective student athletes. The criteria of effective health care were based on the recommendations of the recommendations and guidelines for appropriate medical coverage of intercollegiate athletics of the NATA (2010) Official Statement.

The results of this research demonstrated that meeting all the recommendations and guidelines of the NATA Official Statement on appropriate health care is a challenging and daunting task. Although every SSC head AT’s goal was to meet these
recommendations, many were unable to achieve that goal due to lack of medical personnel, poor facilities, and limited resources. However, when all stakeholders work together and resources are created, an interdisciplinary SMT model can be achieved, which will supply effective health care to the institution’s student athletes.

Implications for Future Research

Future research should duplicate the methods of this study in other NCAA Divisions that would support the objective standards that can be implemented by the respective institutions to evaluate the sports medicine models in place. The objective standards would establish specific areas of improvement and enhancement to meet the guidelines of the NATA Official Statement.

After 30 years as a head AT in major league baseball, this researcher took a position as the Assistant Athletic Director/Sports Medicine at a SSC Division II university. The first dilemma to be addressed was how to deliver effective health care to the 250 student-athletes on the 17 sports teams. At the major league baseball level, a head AT has unlimited resources and personnel to deliver the health care necessary to address the myriad of injuries that can occur. At the collegiate level, the literature demonstrated that the injuries are not only high in numbers, but also more diverse mainly because of the addition of female athletes.

Unfortunately, the situation at this institution had very poor, if not mediocre, facilities; limited supplies; and limited access to a sports medicine physician. In addition, there was no relationship with other medical disciplines, including physical therapists, sports psychologists, sports nutritionists, or strength and conditioning personnel. Coming from an environment that contained all of these aspects and feeling it was necessary to
have similar resources for the Division II student-athlete, this researcher decided to try to develop a similar program at this institution.

Many Division II head ATs have been placed in similar predicaments, being faced with delivering effective health care with limited resources, inadequate personnel, and poor facilities. Because the institution was a member of the SSC, the researcher decided to evaluate the sports medicine programs at the nine SSC athletic programs. Assuming the role of AT researcher, the researcher decided to undertake a PAR project to answer this dilemma.

Action research is a form of self-reflective inquiry that allows the researcher to improve the effectiveness and action of three items: (a) their practices, (b) understanding these practices, and (c) how these practices can be carried out (Creswell, 2008). Applying the detailed steps in Stringer’s (1998) action research model of look, think and act, the researcher was able to build a picture, interpret and analyze the data, and provide recommendations to aid in the resolution of the problem of delivering effective health care to SSC Division II student athletes.

The researcher needed to examine a personal knowledge and practices, which was accomplished as the Assistant Athletic Director for 8 years at the SSC Division II Athletic program. The collection of the quantitative data (electronic questionnaire) and qualitative data (personal interviews) of all nine SSC head ATs built a picture that led to an understanding, clarity, and insight into the athletic training practices and programs at the respective institutions. This allowed the stakeholders to be active participants in the understanding of the issues and aid in formulating follow-up activities. The interviews were digitally recorded and extensive notes were taken that allowed the researcher to interpret and analyze the information.
As the data collection progressed, it became apparent that a number of themes had developed. All nine institutions felt they were hampered in their ability to provide effective health care and coverage of athletic events with the full-time athletic training staff that was available. All nine head ATs felt that at least one or two additional ATs were needed to provide the services that were required for effective health care of the student-athletes. All but one institution did not have adequate access to expertise that could be rendered by four groups of specialists: (a) physical therapists, (b) sports nutritionists, (c) sports psychologist, and (d) strength and conditioning personnel. These data allowed the researcher to be more sensitive to the problems of the SSC head ATs and formulate practical solutions to these problems.

Future research can also expand the study into the NCAA Division II athletic programs that may include other sports, including equipment intensive sports like football, lacrosse, and ice hockey. These sports have unique health care needs that were not addressed in this study.

Conclusion

This study demonstrated that athletic-related injuries require multiple health care disciplines to supply effective health care to SSC student athletes. Supplying effective health care can be accomplished with various SMT models, but limitations are found when the medical disciplines are not within the confines of the respective institution. These limitations can be overcome through the cooperation of all stakeholders that will provide the necessary medical personnel, facilities, and programs to meet the recommendations of the NATA (2010) Official Statement.

The lack of specific medical personnel, especially strength and conditioning specialists, sports nutritionist, sports psychologist, and ATs was a major concern of the
participants in this research. The researcher also concluded that limited facilities and equipment and the philosophy of the respective administrators compromised the athletic training department’s ability to provide appropriate health care to the student athletes.

The final step in Stringer’s (1998) action research model was the act, resolving the problem, whose purpose is to formulate practical solutions. The creation of an interdisciplinary sports medicine team model at a SSC Division II institution can be created through the diligence of the athletic training staff and the cooperation of the administration. One institution has created this model in the SSC and has demonstrated that effective health care requires an interdisciplinary approach based on the medical needs of the student-athletes under their care. The finding of this action research provides an opportunity to try out new approaches to delivering effective health care while monitoring what is occurring. Action research can provide the possibility for improving programs, practices and facilities that will accommodate the needs of an effective sports medicine program.
References


Appendix A

National Collegiate Athletic Association Injury Surveillance Study

National Collegiate Athletic Association Injury Surveillance Study

<table>
<thead>
<tr>
<th>Sport</th>
<th>Number of teams and number of student athletes</th>
<th>Body part most injured</th>
<th>Other body parts injured</th>
<th>Additional findings</th>
<th>Preventive recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men’s Soccer</td>
<td>35% increase in number of teams to 732 teams with 18,500 student athletes participating.</td>
<td>66% of all injuries occurred to the lower extremities. Head/neck and trunk/back were second most injured.</td>
<td>Concussions occurred from player contact 80% of the time.</td>
<td>Injuries were 4 times higher in games than in practices. Slide tackling caused 16% of all game inj.</td>
<td>(a) revising rules of slide tackling, (b) shin guards, (c) muscle conditioning, (d) gradual preseason conditioning practices, (e) research focus on concussion injury mechanism.</td>
</tr>
<tr>
<td>Women’s Soccer</td>
<td>226% increase in number of teams to 879 with 19,871 student athletes participating.</td>
<td>70% of all injuries occurred to the lower extremities with injuries to the knees being the most common.</td>
<td>Head and neck were the most injured in games at 13% but only 3.9% in practices.</td>
<td>Slide tackling was the cause of 13% of all injuries.</td>
<td>a) Identify athletes at risk of injury, b) Maintain conditioning and skill training, c) AT at all practices and games.</td>
</tr>
<tr>
<td>Women’s Volleyball</td>
<td>35% increase in the number of teams to 982 teams with 13,310 student athletes participating.</td>
<td>Ankle ligament sprains and knee injuries were most injured body part followed closely by shoulder injuries.</td>
<td>Lower back strains were next frequent injured area. Severe injuries accounted for 42% of injuries in games and practices.</td>
<td>42% of all injuries were reported severe. Injuries in preseason were 2 x higher compared to regular season</td>
<td>a) Modify centerline rule, b) Improve volleyball skills techniques, c) Proprioceptive training for lower and upper extremities, d) Ankle supports and strengthening</td>
</tr>
<tr>
<td>Sport</td>
<td>Number of teams and number of student athletes</td>
<td>Body part most injured</td>
<td>Other body parts injured</td>
<td>Additional findings</td>
<td>Preventive recommendations</td>
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<tr>
<td>Women’s Softball</td>
<td>65% increase in number of teams to 912 teams with 16,079 student athletes participating</td>
<td>Ankle sprains and knee internal derangement were most injured body parts</td>
<td>Concussions accounted for 6% of all injuries. Low back injuries were also common.</td>
<td>Sliding caused 23% of all injuries and 22% of all injuries were severe.</td>
<td>a) Improved sliding techniques, b) Eliminate fix bases, c) Evaluate play d) AT involvement e) ACL and Abdominal/core programs</td>
</tr>
</tbody>
</table>

*Note. An injury that was reported as severe is any injury that requires missing 10 days or more of activity. Knee internal derangement is the term used to cover a group of disorders involving disruption of the normal functioning of the ligaments or cartilages (menisci) of the knee joint. AT = athletic trainer, ACL = anterior cruciate ligament.*
Appendix B

Championship Sports of SSC Not Reported in NCAA ISS Study
### Championship Sports of SSC Not Reported in NCAA ISS Study

<table>
<thead>
<tr>
<th>Sport</th>
<th>Number of teams and number of student athletes</th>
<th>Body part most injured</th>
<th>Other body parts injured</th>
<th>Additional findings</th>
<th>Preventive recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men and Women Cross Country</td>
<td>2008-09: Men = 239 teams, 2,929 SA Women = 269 teams, 3,117 SA</td>
<td>Most injury mechanisms are overuse with vague origins causing challenging lower extremities (knee, shin, ankle and foot) evaluations</td>
<td>Kinetic chain a major factor in injuries to runners. Poor hip strength = I-T band syndrome, patella-femoral problems, shin splints, and plantar fasciitis</td>
<td>Females are at a much higher risk of injury than males. Physiological, anatomical, and psychological issues facing female runners.</td>
<td>History to examine: a) biomechanics; b) site exam inspection, palpation, ROM, and nerves; c) functional screening; d) gait analysis; e) shoe wear; f) ancillary tests.</td>
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<tr>
<td>Men and Women Golf</td>
<td>2008-09: Men = 212 teams, 2,234 SA Women = 136 teams, 1,020 SA</td>
<td>Low back pain is the most frequent malady to both male and female golfers.</td>
<td>Elbow and forearm/wrist pain is the next most injured body part.</td>
<td>A low-intensity but still injuries occur due to excessive torque placed on low back, elbow, forearm/wrist, and lower extremities</td>
<td>Examination of biomechanics and treatment options are needed to provide an adequate diagnosis and management.</td>
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<tr>
<td>Men and Women Swimming</td>
<td>2008-09: 56 teams, 1,113 SA Women = 73, 1,462 SA</td>
<td>Shoulder is most frequently injured body part</td>
<td>Neck and back injuries were the next most injured body part</td>
<td>Over-use injuries –most often in practices but 38% outside of sport.</td>
<td>Preventive strategies should focus on shoulder activities and spine.</td>
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<td>Women Crew</td>
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<td><strong>2008-09:</strong> 16 teams, 467 SA Many Division II Intercollegiate athletes never rowed before participating at the intercollegiate level.</td>
<td>\textbf{Low back and rib injuries are most common sites.}</td>
<td>\textbf{Shoulder pain, knee internal derangement, and forearm/wrist injuries also seen in women rowers.}</td>
<td>\textbf{Blisters and abrasions and environmental issues common. Nutritional female athlete triad is prevalent in this sport}</td>
<td>\textbf{Important to monitor potential causes: over-use, changes in training, hormonal changes; improving spine strength important to lower risk of injury}</td>
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</table>
Appendix C

Electronic Questionnaire Results
Section 1 (Comprehensive Health Care Delivery System). Each institutions’ results and section subscores with means

Evaluation Scale: 3 = Fully in place, 2 = Partially in place, 1 = In planning stages, 0 = Does not exist

<table>
<thead>
<tr>
<th>Question</th>
<th>AT1</th>
<th>AT2</th>
<th>AT3</th>
<th>AT4</th>
<th>AT5</th>
<th>AT6</th>
<th>AT7</th>
<th>AT8</th>
<th>AT9</th>
<th>MEAN (3.00)</th>
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<tbody>
<tr>
<td>Our institution’s athletic program has an athletic health care team</td>
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<td>(which can include MD/DO, DPM, ATC, PT, PhD, RD/LD, LMT, athletic</td>
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<td>training education program faculty, strength and conditioning personnel,</td>
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<td>acupuncturist, 3, etc.) that functions to ensure appropriate</td>
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<td>medical care is provided for student athletes.</td>
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<td>Our institution’s athletic program has a designated team physician.</td>
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<td>Our institution’s athletic program employs a health care professional</td>
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<td>designated (i.e. ATC, MD/DO, PT) to coordinate health care for our</td>
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<td>student athletes.</td>
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<td>Our institution’s athletic program has an adequate medical facility,</td>
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<tr>
<td>such as an athletic training facility or some other on-campus medical</td>
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<tr>
<td>facility, for the treatment and rehabilitation of athletic injuries.</td>
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<tr>
<td>Our institution’s athletic program has a health care professional</td>
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<td>3</td>
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<td>3</td>
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<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3.00</td>
</tr>
<tr>
<td>(i.e. ATC, MD/DO, PT) that makes the decision when an athlete is</td>
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<td>ineligible for health reasons.</td>
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<tr>
<td>Our institution’s athletic program has an athletic health care team</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2.44</td>
</tr>
<tr>
<td>that has input in the annual budgeting process to supply and equip the</td>
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<tr>
<td>athletic training facility.</td>
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</tr>
<tr>
<td>Our institution’s athletic program documents all injuries, treatment,</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2.89</td>
</tr>
<tr>
<td>rehabilitation, and reconditioning in accordance with professional and</td>
<td></td>
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<tr>
<td>legal standards.</td>
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<tr>
<td>Our institution’s athletic program completes an annual safety</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3.00</td>
</tr>
<tr>
<td>check and calibration by a certified technician on all therapy</td>
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<tr>
<td>equipment (such as electrical stimulation units, ultrasounds, whirlpools</td>
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<tr>
<td>etc.) by</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
1. A qualified technician.

<table>
<thead>
<tr>
<th>Our institution’s athletic program tracks injuries to identify trends to better serve the health care needs of our student athletes.</th>
<th>2</th>
<th>0</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>1</th>
<th>2</th>
<th>0</th>
<th>3</th>
<th>1.89</th>
</tr>
</thead>
</table>

2. Our institution’s athletic program shares and reviews injury tracking information with other members of the health care team.

<table>
<thead>
<tr>
<th>Our institution’s athletic program shares and reviews injury tracking information with other members of the health care team.</th>
<th>0</th>
<th>2</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>1</th>
<th>2</th>
<th>0</th>
<th>3</th>
<th>1.67</th>
</tr>
</thead>
</table>

3. Our institution’s athletic program has written policies and procedures pertaining to the health care of our student athletes that include when an athlete is cleared for initial participation.

<table>
<thead>
<tr>
<th>Our institution’s athletic program has written policies and procedures pertaining to the health care of our student athletes that include when an athlete is cleared for initial participation.</th>
<th>2</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>2.89</th>
</tr>
</thead>
</table>

4. Our institution’s athletic program has written policies and procedures pertaining to the health care of our student athletes that include when an athlete is allowed to return to play after an injury.

<table>
<thead>
<tr>
<th>Our institution’s athletic program has written policies and procedures pertaining to the health care of our student athletes that include when an athlete is allowed to return to play after an injury.</th>
<th>2</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>2.56</th>
</tr>
</thead>
</table>

Section 1 Sub-score for each institution (1 being highest score)

| Section 1 Sub-score for each institution (1 being highest score) | 0.83 | 0.83 | 0.94 | 0.97 | 1 | 0.81 | 0.78 | 0.75 | 1 | 0.88 |
Section 2 (Determining Readiness to Play). Each institution’s results and section subscores with means.

Evaluation Scale: 3 = Always including tryouts, 2 = Most of the time, 1 = Some of the time, 0 = None of the time

<table>
<thead>
<tr>
<th>Question</th>
<th>AT1</th>
<th>AT2</th>
<th>AT3</th>
<th>AT4</th>
<th>AT5</th>
<th>AT6</th>
<th>AT7</th>
<th>AT8</th>
<th>AT9</th>
<th>MEAN (3.00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our institution’s athletic program requires a preparticipation physical</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3.00</td>
</tr>
<tr>
<td>exam by a physician before a student athlete is allowed to participate</td>
<td></td>
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<tr>
<td>(including try-outs).</td>
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<td></td>
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</tr>
<tr>
<td>Our institution’s athletic program assesses all components of our</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.78</td>
</tr>
<tr>
<td>athletes’ fitness levels by examining body composition, flexibility,</td>
<td></td>
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<tr>
<td>strength, and endurance before athletic participation.</td>
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<tr>
<td>Our institution’s athletic program offers a preparticipation physical</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>1.67</td>
</tr>
<tr>
<td>exam on our campus conducted by medical personnel specialized in sports</td>
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<tr>
<td>Our institution’s athletic program uses a preparticipation physical</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3.00</td>
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<tr>
<td>examination form whose components are endorsed by the medical</td>
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<td>community (i.e. American Academy of Family Physicians, American</td>
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<tr>
<td>Academy of Pediatrics, American Medical Society for Sports Medicine,</td>
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<td>American Orthopedic Society for Sports Medicine, or the American</td>
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<td>Osteopathic Academy of Sports Medicine).</td>
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<tr>
<td>Our institution’s athletic program provides parents and student</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2.56</td>
</tr>
<tr>
<td>athletes with the preparticipation physical exam medical history form</td>
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<tr>
<td>at least 1 day before the preparticipation physical exam.</td>
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<tr>
<td>Our institution’s athletic program keeps preparticipation physical</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2.89</td>
</tr>
<tr>
<td>exams on file by an on-campus health care professional.</td>
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<tr>
<td>Our institution’s athletic program communicates abnormalities</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2.22</td>
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<tr>
<td>discovered during an athlete’s preparticipation physical exam to the</td>
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<tr>
<td>athlete, his/her parents, and his/her coaches.</td>
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<tr>
<td>Our institution’s athletic program provides rehabilitation services</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2.22</td>
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<tr>
<td>when a condition requiring rehabilitation is discovered during a</td>
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<tr>
<td>preparticipation physical exam.</td>
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<td>Description</td>
<td>Score 1</td>
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<td>Score 5</td>
<td>Score 6</td>
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<td>Score 8</td>
<td>Score 9</td>
<td>Score 10</td>
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<tr>
<td>Our institution’s athletic program makes arrangements for a referral to an appropriate provider, when a condition requiring rehabilitation is discovered during a preparticipation physical exam.</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>2.11</td>
</tr>
<tr>
<td>Our institution’s athletic program has written procedures, according to the NATA position statement, on how facilities will be inspected and maintained.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1.33</td>
</tr>
<tr>
<td>Our institution’s athletic program has written procedures on how athletic equipment is fitted, inspected, and maintained.</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.78</td>
</tr>
<tr>
<td>Our institution’s athletic program has written procedures for environmental conditions.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2.78</td>
<td></td>
</tr>
<tr>
<td>Our institution’s athletic program has written procedures on descriptions of sideline preparations for practices and games.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1.89</td>
</tr>
<tr>
<td>Our institution’s athletic program has written procedures on nutritional and weight requirements for sports like rowing and cheerleading.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.33</td>
</tr>
<tr>
<td>Our institution’s athletic program has written procedures on how medical referrals will be coordinated.</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2.33</td>
</tr>
<tr>
<td>Our institution’s athletic program has written procedures on how communication between health care providers, coaches, parents, and athletes will be conducted.</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1.67</td>
</tr>
<tr>
<td>Our institution’s athletic program has written procedures on how documentation and recordkeeping regarding injuries will be kept.</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>2.11</td>
</tr>
<tr>
<td>Our institution’s athletic program has written procedures on how to share these written policies and procedures documents to athletes, parents, and governing bodies.</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.11</td>
</tr>
<tr>
<td><strong>Section 2 Sub-score for each institution (1.00 being highest score)</strong></td>
<td>0.63</td>
<td>0.76</td>
<td>0.69</td>
<td>0.74</td>
<td>0.80</td>
<td>0.50</td>
<td>0.52</td>
<td>0.56</td>
<td>0.61</td>
<td>1.89</td>
</tr>
</tbody>
</table>
Section 3: Promoting Safe and Appropriate Practice, Competition, and Treatment Facilities

Each institution’s results and section subscores with means.
Evaluation Scale: 3= Always 2= Most of the time 1= Some of the time 0= None of the time

<table>
<thead>
<tr>
<th>Question</th>
<th>AT1</th>
<th>AT2</th>
<th>AT3</th>
<th>AT4</th>
<th>AT5</th>
<th>AT6</th>
<th>AT7</th>
<th>AT8</th>
<th>AT9</th>
<th>MEAN (3.00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our institution’s athletic program inspects playing fields and courts for hazards before activity.</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1.78</td>
</tr>
<tr>
<td>Our institution’s athletic program reconditions athletic equipment in accordance with manufacturer guidelines.</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1.89</td>
</tr>
<tr>
<td>Our institution’s athletic program sanitizes locker rooms daily.</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td></td>
<td>1.44</td>
</tr>
<tr>
<td>Our institution’s athletic program cleans mats, used in such sports as cheerleading, once per day with an appropriate disinfectant.</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0.89</td>
</tr>
<tr>
<td>When an athlete needs a protective or supportive brace, a qualified health care professional fits the brace.</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2.56</td>
</tr>
<tr>
<td>When an athlete needs a protective or supportive tape/wrap job, a qualified health care professional applies tape/wrap.</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2.56</td>
</tr>
<tr>
<td>Education and services are provided to student athletes concerning the proper use of mouth guards (for sports which require mouth guards).</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>1.78</td>
</tr>
<tr>
<td>The training of personnel who fit athletic equipment is documented by a member of the athletic health care team.</td>
<td>0</td>
<td>2</td>
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<td>Coaches are educated in the procedures to appropriately select, fit, and maintain all equipment associated with the sport in which they are involved.</td>
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</table>
Section 4 (Comprehensive Emergency Action Plan) Each institution’s results and section subscores with means.

Evaluation Scale: 3= Fully in place 2= Partially in place 1= In planning stages 0= Does not exist

| Question                                                                 | AT1 | AT2 | AT3 | AT4 | AT5 | AT6 | AT7 | AT8 | AT9 | MEAN  
|-------------------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------  
<p>| Our institution’s athletic program has developed an emergency action plan with input from members of the athletic health care team, school administrators, and coaches. | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3.00    |
| The emergency action plan describes the available emergency equipment.   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3.00    |
| The emergency action plan has a portion specific to each sport’s venue.  | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3.00    |
| The emergency action plan identifies the responsibilities of personnel. | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3.00    |
| The emergency action plan addresses the chain of command.                | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3.00    |
| The emergency action plan is posted in all our athletic facilities.      | 0   | 3   | 2   | 0   | 2   | 2   | 1   | 2   | 0   | 1.33    |
| All personnel are trained in the steps of emergency management and this training is documented. | 1   | 2   | 2   | 1   | 3   | 3   | 2   | 2   | 0   | 1.78    |
| Before athletic events there is communication with EMS personnel to ensure cooperation and a quick response. | 0   | 0   | 0   | 2   | 0   | 1   | 0   | 1   | 3   | 0.78    |
| Established emergency procedures are reviewed after all emergency situations. | 2   | 3   | 1   | 3   | 0   | 2   | 2   | 2   | 2   | 1.89    |
| The emergency action plan is reviewed on an annual basis by the administration and legal counsel of our institution. | 3   | 0   | 1   | 2   | 3   | 3   | 1   | 0   | 0   | 1.44    |
| Before and during practices an AT ensures that first-aid and emergency equipment is readily available on site. | 3   | 2   | 2   | 3   | 3   | 2   | 2   | 3   | 3   | 2.56    |
| Before and during practices an AT ensures that communication is available to contact EMS services in case of a medical emergency. | 3   | 2   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 2.89    |
| Before and during practices an AT ensures that facilities are accessible to the EMS in case of a medical emergency. | 3   | 2   | 2   | 3   | 3   | 3   | 3   | 2   | 2   | 2.56    |</p>
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</table>
Section 5 (On-site Recognition, Evaluation, and Immediate Treatment of Injury and Illness and Rehabilitation) Each institution’s results and subscores with means.

Evaluation Scale: 3= Available directly at the venue for all home games/practices 2= Available on site for all home games 1= On-call for all games 0= Not available

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<thead>
<tr>
<th>Question</th>
<th>AT1</th>
<th>AT2</th>
<th>AT3</th>
<th>AT4</th>
<th>AT5</th>
<th>AT6</th>
<th>AT7</th>
<th>AT8</th>
<th>AT9</th>
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<td>1</td>
<td>1</td>
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<td>1</td>
<td>1</td>
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<td>1</td>
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<td>practices.</td>
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<tr>
<td>A BOC certified athletic trainer is available for evaluation and</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<td>3</td>
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<td>3.00</td>
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<tr>
<td>treatment of athletic injuries during softball games.</td>
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<tr>
<td>Statement</td>
<td>Score1</td>
<td>Score2</td>
<td>Score3</td>
<td>Score4</td>
<td>Score5</td>
<td>Score6</td>
<td>Score7</td>
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<tr>
<td>A BOC certified athletic trainer is available for evaluation and treatment of athletic injuries during softball practices.</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
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</tr>
<tr>
<td>A BOC certified athletic trainer is available for evaluation and treatment of athletic injuries during baseball games.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
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</tr>
<tr>
<td>A BOC certified athletic trainer is available for evaluation and treatment of athletic injuries during baseball practices.</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
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</tr>
<tr>
<td>A BOC certified athletic trainer is available for evaluation and treatment of athletic injuries during games for all other home athletic competitions.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>A BOC certified athletic trainer is available for evaluation and treatment of athletic injuries during practices for all other athletic practices.</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>Our institution’s athletic program has a health care professional who is responsible for coordinating physical rehabilitation and reconditioning programs with the physicians treating our injured student athletes.</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>Our institution’s athletic program provides for all postsurgical rehabilitation of athletic injuries for our student athletes at no cost to the athlete on our school’s campus.</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>Our institution’s athletic program provides for the rehabilitation of all injuries that do require surgery for our athletes at no cost to the athlete on our school’s campus.</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>2</td>
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Section 5 subscores for each institution (highest score = 1.00)

<table>
<thead>
<tr>
<th>Subscore</th>
<th>Score1</th>
<th>Score2</th>
<th>Score3</th>
<th>Score4</th>
<th>Score5</th>
<th>Score6</th>
<th>Score7</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.58</td>
<td>0.48</td>
<td>0.57</td>
<td>0.64</td>
<td>0.62</td>
<td>0.59</td>
<td>0.49</td>
<td>0.55</td>
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<tr>
<td>0.64</td>
<td>0.58</td>
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</tbody>
</table>
Section 6 (Other Medical Services Provided) Each institution’s results and subscores with means.

Evaluation Scale: 2= Yes 1= No (Questions 1-7, 19); 3= Always 2= Most of the time 1= Some of the time 0= None of the time (Question 8); 3= Fully in place

<table>
<thead>
<tr>
<th>Question</th>
<th>AT1</th>
<th>AT2</th>
<th>AT3</th>
<th>AT4</th>
<th>AT5</th>
<th>AT6</th>
<th>AT7</th>
<th>AT8</th>
<th>AT9</th>
<th>MEAN (3.00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Our institution’s athletic program’s athletic training facility has a functional ice machine with a ground fault interrupter.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>2.00</td>
</tr>
<tr>
<td>2) Our institution’s athletic program’s athletic training facility has a calibrated electrical stimulation unit in good working order with a ground fault interrupter.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>2.00</td>
</tr>
<tr>
<td>3) Our institution’s athletic program’s athletic training facility has a calibrated ultrasound in good working order with a ground fault interrupter.</td>
<td>2</td>
<td>2</td>
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<td>2</td>
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<tr>
<td>4) Our institution’s athletic program’s athletic training facility has a hydrocollator in good working order with a ground fault interrupter.</td>
<td>2</td>
<td>2</td>
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<tr>
<td>5) Our institution’s athletic program’s athletic training facility has a calibrated diathermy unit in good working order with a ground fault interrupter.</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1.22</td>
</tr>
<tr>
<td>6) Our institution’s athletic program’s athletic training facility has other therapeutic modalities (such as paraffin bath, intermittent compression unit, iontophoresis, traction, laser, tens, etc.) that are in good working order with ground fault interrupters.</td>
<td>2</td>
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<tr>
<td>7) Our institution’s athletic program’s athletic training facility has equipment designated for rehabilitation (i.e.- stability balls, tubing/bands, steps, BOSU, mats, foam rollers, dumbbells, etc.).</td>
<td>2</td>
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</tr>
<tr>
<td>8) A member of our institution’s athletic health care team reviews each student athletes’ preparticipation physical exam form to identify signs of psychosocial risks or warning signs.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>9</td>
<td>Our institution’s athletic program has an established system for the referral of psychosocial issues that minimizes barriers, such as insurability and payment.</td>
<td>2.11</td>
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<tr>
<td>10</td>
<td>A member of our institution’s athletic program is trained in the recognition and referral of student athletes with psychosocial issues.</td>
<td>1.78</td>
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<tr>
<td>1</td>
<td>Our institution’s athletic program provides a system (i.e., a question on PPE as screening device, nutritional management team, etc.) for reviewing an athlete’s nutritional status.</td>
<td>2.00</td>
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<tr>
<td>2</td>
<td>Our institution’s athletic program provides all our student athletes’ access to hydration fluids in a clean, noninfectious environment based on OSHA standards.</td>
<td>2.67</td>
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<tr>
<td>3</td>
<td>Our institution’s athletic program provides education for our coaches and student athletes about appropriate and inappropriate preexercise and post-exercise foods and beverages.</td>
<td>1.78</td>
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<tr>
<td>4</td>
<td>Our institution’s athletic program provides procedures to identify student athletes at risk for eating disorders.</td>
<td>1.78</td>
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<tr>
<td>5</td>
<td>Our institution’s athletic program provides a system in writing to treat those student athletes who have been identified as having an eating disorder.</td>
<td>1.67</td>
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<tr>
<td>6</td>
<td>Our institution’s athletic program provides rules restricting the use of performance enhancing drugs, supplements, and substances.</td>
<td>2.44</td>
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<tr>
<td>7</td>
<td>Our institution’s athletic program provides educational programs to inform all coaches and student athletes of the dangers of ergogenic aids.</td>
<td>2.22</td>
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<tr>
<td>8</td>
<td>Our institution’s athletic program provides working water fountains that are accessible to all student athletes.</td>
<td>2.78</td>
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</tbody>
</table>
9) Our institution’s athletic program provides a written concussion management policy outlining the roles and responsibilities of each member of the sports medicine team.

<table>
<thead>
<tr>
<th>Section 6 subscores for each institution (highest score = 1.00)</th>
<th>2</th>
<th>2</th>
<th>2</th>
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<th>2</th>
<th>2</th>
<th>2</th>
<th>2</th>
<th>2.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.56 0.65 0.60 0.79 0.84 0.80 0.71 0.56 0.68 0.69</td>
<td></td>
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</tbody>
</table>
### Question AT1 AT2 AT3 AT4 AT5 AT6 AT7 AT8 AT9

**Our institution’s athletic program has:**

<table>
<thead>
<tr>
<th></th>
<th>AT1</th>
<th>AT2</th>
<th>AT3</th>
<th>AT4</th>
<th>AT5</th>
<th>AT6</th>
<th>AT7</th>
<th>AT8</th>
<th>AT9</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 or more certified athletic trainers</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>5 or more certified athletic trainers</td>
<td>3</td>
<td>3</td>
<td>5 or more certified athletic trainers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our institution’s athletic program has:</td>
<td>3 or more graduate assistants (certified)</td>
<td>1 or more intern(s)</td>
<td>No graduate assistants</td>
<td>3 or more graduate assistants (certified)</td>
<td>No graduate assistants</td>
<td>1 or more intern(s)</td>
<td>No graduate assistants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No part-time athletic trainers</td>
<td>1 part-time certified athletic trainer</td>
<td>2 part-time certified athletic trainers</td>
<td>No part-time athletic trainers</td>
<td>1 part-time certified athletic trainer</td>
<td>3 or more part-time certified athletic trainers</td>
<td>1 part-time certified athletic trainer</td>
<td>No part-time athletic trainers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strength and conditioning specialist(s) – certified</td>
<td>Equipment graduate assistant(s)</td>
<td>Strength and conditioning specialist(s) – certified</td>
<td>Equipment manager or director of equipment</td>
<td>Equipment graduate assistant(s)</td>
<td>Equipment manager or director of equipment</td>
<td>Equipment manager or director of equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports medicine fellow(s) – physician(s) who is/are completing a sports medicine fellowship</td>
<td>Sports psychologist(s); Podiatrist</td>
<td>Sports medicine fellow(s) – physician(s) who is/are completing a sports medicine fellowship; Sports psychologist(s); Sports nutritionist(s); Physical therapist(s); Sports massage therapist(s); Acupuncturist(s)</td>
<td>Sports psychologist(s)</td>
<td>Sports psychologist(s)</td>
<td>Sports massage therapist(s); Chiropractor</td>
<td></td>
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</tr>
</tbody>
</table>

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**Section 7 (The Institution’s Demographics)**
Each year our institution’s athletic program spends the following amount for sports medicine/athletic training supplies and equipment:

<table>
<thead>
<tr>
<th>I am a(n):</th>
<th>Associate/Assistant Athletic Director/Sports Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Associate/Assistant Athletic Director/Sports Medicine</td>
</tr>
<tr>
<td></td>
<td>Senior Athletic Trainer</td>
</tr>
<tr>
<td></td>
<td>Head Athletic Trainer</td>
</tr>
<tr>
<td></td>
<td>Head Athletic Trainer</td>
</tr>
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<td></td>
<td>Head Athletic Trainer</td>
</tr>
<tr>
<td></td>
<td>Head Athletic Trainer</td>
</tr>
<tr>
<td></td>
<td>Associate/Assistant Athletic Director/Sports Medicine</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I have been at this position for:</th>
<th>14-10 years</th>
<th>4-1 years</th>
<th>14-10 years</th>
<th>4-1 years</th>
<th>9-5 years</th>
<th>9-5 years</th>
<th>14-10 years</th>
<th>14-10 years</th>
<th>4-1 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>
Appendix D

Electronic Questionnaire
Electronic Questionnaire

**Survey Purpose:** Recently, national recommendations have been developed to assist intercollegiate athletic programs improve the medical care provided for their student athletes. This survey, which is based on these recommendations, was developed to assess the care currently being provided by the Sunshine State Conference institutions for their entire athletics programs.

**Directions:** Please answer each item by clicking on the response that best describes your institution’s athletic program. It should only take 25 minutes or less to complete. Please answer all items honestly. All answers will be kept confidential. Thank you for your time!

---

**Part I – Comprehensive Health care Delivery System**

Our institution’s athletic program:

1. Has an **athletic health care team** that functions to ensure appropriate medical care is provided for the student athletes.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

2. Has a designated **team physician**.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

3. Employs a **health care professional designated to coordinate health care** for our student athletes.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

4. Has a **medical facility, such as an athletic training facility** or some other on-campus medical facility, for the treatment and rehabilitation of athletic injuries.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

5. Has health care professional that **makes the decision when an athlete is ineligible for health reasons.**
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist
(6) Has an athletic health care team that has input in the annual budgeting process to supply and equip the athletic training facility.
  o Fully in place
  o Partially in place
  o In planning stages
  o Does not exist

(7) Documents all injuries, treatment, rehabilitation, and reconditioning in accordance with professional and legal standards.
  o Fully in place
  o Partially in place
  o In planning stages
  o Does not exist

(8) Completes an annual safety check and calibration by a certified technician on all therapy equipment (such as electrical stimulation units, ultrasounds, whirlpools, etc.) by a qualified technician.
  o Always
  o Most of the time
  o Some of the time
  o None of the time

(9) Tracks injuries to identify trends to better serve the health care needs of our student athletes.
  o Always
  o Most of the time
  o Some of the time
  o None of the time

(10) Shares and reviews injury tracking information with other members of the health care team.
  o Always
  o Most of the time
  o Some of the time
  o None of the time

Our institution’s athletic program has written policies and procedures pertaining to the health care of our student athletes that includes:

(11) When an athlete is cleared for initial participation
  o Fully in place
  o Partially in place
  o In planning stages
  o Does not exist

(12) When an athlete is allowed to return to play after an injury
  o Fully in place
  o Partially in place
  o In planning stages
  o Does not exist
Part 2 – Determining Readiness to play

Our institution’s athletic program:

(13) **Requires a preparticipation physical exam** by a physician before a student athlete is allowed to participate (including try-outs).
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(14) **Assesses all components of our athletes’ fitness levels** by examining body composition, flexibility, strength, and endurance before athletic participation.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(15) **Offers a preparticipation physical exam** on our campus conducted by medical personnel in sports medicine.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(16) Uses a **preparticipation physical examination form** whose components are endorsed by the medical community.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(17) Provides parents and student athletes with the preparticipation physical exam **medical history form at least 1 day before** the preparticipation physical exam.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(18) Keeps **preparticipation physical exams on file** by an on-campus health care professional.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(19) **Abnormalities** discovered during an athlete’s preparticipation physical exam are **communicated to the athlete, his/her parents, and his/her coaches.**
   - Always
   - Most of the time
   - Some of the time
   - None of the time
(20) **Provides rehabilitation services** or makes arrangements for a referral to an appropriate provider, when a condition requiring rehabilitation is discovered during a preparticipation physical exam.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

Our institution’s athletic program has written procedures on:

(21) How **facilities** will be inspected and maintained.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(22) How **athletic equipment** is fitted, inspected, and maintained.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(23) **Environmental** conditions protocols.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(24) Descriptions of **sideline preparations** for practices and games.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(25) **Nutritional and weight requirements** for sports like rowing and cheerleading.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(26) How **medical referrals** will be coordinated.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(27) How **communication** between health care providers, coaches, parents, and athletes will be conducted.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist
(28) How documentation and recordkeeping regarding injuries will be kept.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(29) Sharing these written policies and procedures documents to athletes, parents, and governing bodies.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

Part 3 – Promoting Safe and Appropriate Practice, Competition, and Treatment Facilities

Our institution’s athletic program:

(30) Inspects playing fields and courts for hazards before activity.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(31) Reconditions athletic equipment in accordance with manufacturer guidelines.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(32) Sanitizes locker room daily.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(33) Cleans mats, used in such sports as cheerleading, once per day with an appropriate disinfectant.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(34) When an athlete needs a protective or supportive brace, a qualified health care professional fits the brace.
   - Always
   - Most of the time
   - Some of the time
   - None of the time
When an athlete needs a protective or supportive tape/wrap job, a qualified health care professional applies tape/wrap.

- Always
- Most of the time
- Some of the time
- None of the time

Education and services are provided to student athletes concerning the proper use of mouth guards (for sports which require mouth guards).

- Always
- Most of the time
- Some of the time
- None of the time

The training of personnel who fit athletic equipment is documented by a member of the athletic health care team.

- Always
- Most of the time
- Some of the time
- None of the time

Coaches are educated in the procedures to appropriately select, fit, and maintain all equipment associated with the sport in which they are involved.

- Always
- Most of the time
- Some of the time
- None of the time

Part 4 – Comprehensive Emergency Action Plan

Our institution’s athletic program has developed an emergency action plan with input from members of the athletic health care team, school administrators, and coaches.

- Fully in place
- Partially in place
- In planning stages
- Does not exist

The emergency action plan:

- Describes the available emergency equipment
  - Fully in place
  - Partially in place
  - In planning stages
  - Does not exist

- Is specific to each sport’s venue
  - Fully in place
  - Partially in place
  - In planning stages
  - Does not exist
(42) Addresses the chain of command
   o Fully in place
   o Partially in place
   o In planning stages
   o Does not exist

(43) Identifies the responsibilities of personnel.
   o Fully in place
   o Partially in place
   o In planning stages
   o Does not exist

(44) Is posted in all our athletic facilities.
   o Always
   o Most of the time
   o Some of the time
   o None of the time

(45) All personnel are trained in the steps of emergency management and this training is documented.
   o Always
   o Most of the time
   o Some of the time
   o None of the time

(46) Before athletic events there is communication with EMS personnel to ensure cooperation and a quicker response.
   o Always
   o Most of the time
   o Some of the time
   o None of the time

(47) Established emergency procedures are reviewed after all emergency situations.
   o Always
   o Most of the time
   o Some of the time
   o None of the time

(48) The emergency action plan is reviewed on an annual basis by the administration and legal counsel of our institution.
   o Always
   o Most of the time
   o Some of the time
   o None of the time

Before and during practices an AT ensures that

(49) First-aid and emergency equipment is readily available on site.
   o Always
   o Most of the time
   o Some of the time
   o None of the time
(50) **Communication** is available to contact EMS services in case of a medical emergency.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(51) **Facilities are accessible to the EMS** in case of a medical emergency.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

Before and during games an **AT** ensures that

(52) **First-aid and emergency equipment** is readily available on site.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(53) **Communication** is available to contact EMS services in case of a medical emergency.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(54) **Facilities are accessible to the EMS** in case of a medical emergency.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(55) Our institution’s athletic program has **guidelines** regarding outdoor athletic participation and **lightning**.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(56) All **coaches are educated about** our athletic program’s established **environmental guidelines**.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(57) The **percentage of all coaches** in our institution’s athletic program who are currently certified in CPR is
   - 100%-75%
   - 74%-50%
   - 49%-25%
   - 24%-0%
(58) The **percentage of all coaches** in our institution’s athletic program who are currently **certified in the use of an automated external defibrillator (AED)** is

- 100%-75%
- 74%-50%
- 49%-25%
- 24%-0%

(59) The **percentage of all coaches** in our institution’s athletic program who are currently **certified in First Aid** is

- 100%-75%
- 74%-50%
- 49%-25%
- 24%-0%

**Part 5 – On-site Recognition, Evaluation, and Immediate Treatment of Injury and Illness and Rehabilitation**

An **on-site team physician** is available for the evaluation and treatment of athletic injuries during:

- (60) Men’s soccer games
  - All games
  - All home games
  - On-call
  - No games
- (61) Men’s soccer practices
  - All practices
  - Some practices
  - On-call
  - No practices
- (62) Women’s soccer games
  - All games
  - All home games
  - On-call
  - No games
- (63) Women’s soccer practices
  - All practices
  - Some practices
  - On-call
  - No practices
- (64) Men’s basketball games
  - All games
  - All home games
  - On-call
  - No games
(65) Men’s basketball practices
  o  All practices
  o  Some practices
  o  On-call
  o  No practices
(66) Women’s basketball games
  o  All games
  o  All home games
  o  On-call
  o  No games
(67) Women’s basketball practices
  o  All practices
  o  Some practices
  o  On-call
  o  No practices
(68) Women’s volleyball matches
  o  All games
  o  All home games
  o  On-call
  o  No games
(69) Women’s volleyball practices
  o  All practices
  o  Some practices
  o  On-call
  o  No practices
(70) Softball games
  o  All games
  o  All home games
  o  On-call
  o  No games
(71) Softball practices
  o  All practices
  o  Some practices
  o  On-call
  o  No practices
(72) Baseball games
  o  All games
  o  All home games
  o  On-call
  o  No games
(73) Baseball practices
  o  All practices
  o  Some practices
  o  On-call
  o  No practices
(74) Games for all other athletic competitions
  o  All games
  o  All home games
  o  On-call
  o  No games

(75) Practices for all other athletic practices
  o  All practices
  o  Some practices
  o  On-call
  o  No practices

An on-site **BOC athletic trainer** is available for evaluation and treatment of athletic injuries during:

(76) Men’s soccer games
  o  All games
  o  All home games
  o  On-call
  o  No games

(77) Men’s soccer practices
  o  All practices
  o  In-season practices only
  o  On-call
  o  No practices

(78) Women’s soccer games
  o  All games
  o  All home games
  o  On-call
  o  No games

(79) Women’s soccer practices
  o  All practices
  o  In-season practices only
  o  On-call
  o  No practices

(80) Men’s basketball games
  o  All games
  o  All home games
  o  On-call
  o  No games

(81) Men’s basketball practices
  o  All practices
  o  In-season practices only
  o  On-call
  o  No practices
(82) Women’s basketball games
   o All games
   o All home games
   o On-call
   o No games
(83) Women’s basketball practices
   o All practices
   o In-season practices only
   o On-call
   o No practices
(84) Women’s volleyball matches
   o All games
   o All home games
   o On-call
   o No games
(85) Women’s volleyball practices
   o All practices
   o In-season practices only
   o On-call
   o No practices
(88) Softball games
   o All games
   o All home games
   o On-call
   o No games
(89) Softball practices
   o All practices
   o In-season practices only
   o On-call
   o No practices
(90) Baseball games
   o All games
   o All home games
   o On-call
   o No games
(91) Baseball practices
   o All practices
   o In-season practices only
   o On-call
   o No practices
(92) Games for all other home athletic competitions
   o All games
   o All home games
   o On-call
   o No games
(93) Practices for all other athletic practices
   o All practices
   o In-season practices only
   o On-call
   o No practices
(94) Our institution’s athletic program has a health care professional who is responsible for coordinating physical rehabilitation and reconditioning programs with the physicians treating our injured student athletes.
   o Always
   o Most of the time
   o Some of the time
   o None of the time
(95) Our institution’s athletic program provides, on our school’s campus, all postsurgical rehabilitation of athletic injuries for our student athletes and at no cost to the student athlete.
   o Always
   o Most of the time
   o Some of the time
   o None of the time
(96) Our institution’s athletic program provides, on our school’s campus, for the rehabilitation of all injuries that do not require surgery for our athletes and at no cost to the student athlete.
   o Always
   o Most of the time
   o Some of the time
   o None of the time
Part 6 – Other Medical Services Provided

Our institution’s athletic program’s athletic training room has:

(97) An ice machine
   o Yes
   o No

(98) A whirlpool in good working order and according to code
   o Yes
   o No

(99) An electrical stimulation unit in good working order
   o Yes
   o No

(100) An ultrasound in good working order
   o Yes
   o No

(101) A hydrocollator in good working order
   o Yes
   o No

(102) A diathermy unit in good working order
   o Yes
   o No

(103) Other therapeutic modalities (such as paraffin bath, intermittent compression unit, iontophoresis, traction, laser, tens, etc.)
   o Yes
   o No

(104) Equipment designated for rehabilitation (such stability balls, tubing/bands, steps, BOSU, mats, foam rollers, dumbbells, etc.).
   o Yes
   o No

(105) A member of our institution’s athletic program’s staff reviews each student athlete’s preparticipation physical exam form to identify signs of psychosocial problems.
   o Always
   o Most of the time
   o Some of the time
   o None of the time

(106) Our institution’s athletic program has an established system for the referral of psychosocial problems that minimizes barriers, such as insurability and payment.
   o Fully in place
   o Partially in place
   o In planning stages
   o Does not exist
(107) A member of our institution’s athletic program is trained in the recognition and referral of student athletes with psychosocial issues.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

Our institution’s athletic program provides

(108) A system for reviewing an athlete’s nutritional status.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(109) All our student athletes have access to hydration fluids in a clean, noninfectious environment.
   - Always
   - Most of the time
   - Some of the time
   - None of the time

(110) Education for our coaches and student athletes about appropriate and inappropriate preexercise and post-exercise foods and beverages.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(111) Procedures to identify athletes at risk for eating disorders.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(112) A system in writing to treat those who have been identified as having an eating disorder.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist

(113) Rules restricting the use of performance enhancing drugs, supplements, and substances.
   - Fully in place
   - Partially in place
   - In planning stages
   - Does not exist
(114) **Educational programs** to inform all coaches and student athletes of the dangers of ergogenic aids.

- Fully in place
- Partially in place
- In planning stages
- Does not exist

(115) **Working water fountains.**

- Fully in place
- Partially in place
- In planning stages
- Does not exist

(116) Our institution’s athletic program has

- 4 or more athletic trainers
- 3 athletic trainers
- 2 athletic trainers
- 1 athletic trainers
- No athletic trainers

(117) Our institution’s athletic program has

- 3 or more graduate assistants (certified)
- 2 graduate assistants (certified)
- 1 graduate assistant (certified)
- No graduate assistants

(118) Our institution’s athletic program has (including athletic training education program faculty)

- 3 or more part-time athletic trainers
- 2 part-time athletic trainers
- 1 part-time athletic trainer
- No part-time athletic trainers

(119) Our institution’s athletic program employs (check all that apply)

- Strength and conditioning specialist(s) – certified
- Strength and conditioning graduate assistant(s)
- Equipment manager or director of equipment
- Equipment graduate assistant(s)
- Other Who?

(120) Our institution’s athletic program employs or has on campus access to the following (check all that apply).

- Sports medicine fellow(s)
- Sports psychologist(s)
- Sports nutritionist(s)
- Physical therapist(s)
- Sports massage therapist(s)
- Acupuncturist(s)
- Insurance coordinator
- Other Who?
(121) Each year our institution’s athletic program spends the following amount for sports medicine/athletic training supplies and equipment.
  o More than $150,000
  o $149,999 – $100,000
  o $99,999 - $50,000
  o $49,999 - $0

(122) I am a (n)
  o Associate/assistant Athletic Director/Sports Medicine
  o Head Athletic Trainer
  o Assistant/Associate Athletic Trainer
  o Athletic Training Graduate Assistant
  o Other Who? ________________________________

(123) I have been at this position for:
  o 15 or more years
  o 14-10 years
  o 9-5 years
  o 4-1 year(s)
Appendix E

One-on-One Interview Questions
One-on-One Interview with SSC Head Athletic Trainers

Part 1 – Comprehensive Health care Delivery System

(1) Who comprises your athletic health care team?
(2) How is your team physician involved?
(3) How many athletic training rooms do you have?
(4) What mechanism is in place for annual budgeting of your athletic training department?
(5) What are the procedures for documentation of injuries, treatment, rehabilitation and reconditioning?
   a. Are documents reviewed by the athletic health care team?
   b. If yes, how often does the review take place?
(6) What procedures are in place for annual safety check and calibration of therapy equipment?
(7) Would you be willing to share your written policies concerning:
   a. Clearance for initial participation
   b. Return to play policy

Part 2 – Determining Readiness to Play

(1) Required preparticipation physical exam:
   a. When and where is the physical exam completed?
   b. What medical personnel are involved?
   c. Would you be willing to share your preparticipation physical exam form?
   d. Who reviews this exam and how is it maintained?
(2) If abnormalities are found in the exam, what protocols are followed?
(3) If rehabilitation is necessary, what protocols are followed?
(4) Would you be willing to share your written documentation concerning:
   a. Maintenance of your athletic training facility.
   b. Fitting and inspection of athletic equipment.
   c. Environmental protocols.
   d. Practice and Games sidelines protocols.
   e. Nutritional and weight guidelines.
   f. Medical referrals.
   g. Protocols for communication among health care team, coaches, parents, and student athletes.
   h. Record keeping on injuries.

Part 3 – Promoting Safe and Appropriate Practice, Competition, and Treatment Facilities

(1) What protocols are in place for:
   a. Inspecting playing fields.
   b. Reconditioning of athletic equipment.
   c. Sanitizing locker rooms.
   d. Disinfecting mats (Cheerleading, etc).
(2) What protocols are in place for fitting braces, mouth guards, and other supports?
(3) Are your coaches educated in selection, fitting, and maintenance of their respective equipment?
Part 4 – Comprehensive Emergency Action Plan

(1) Would you be willing to share your written emergency action plan?
(2) Who is the person responsible for setting this plan up?
(3) Is the plan practiced prior to the start of the athletic seasons?
(4) How many AEDs are available to the athletic training department?

Part 5 – On-site Recognition, Evaluation, and Immediate Treatment of Injury, Illness, and Rehabilitation

(1) What is the specific availability of your team physician concerning practice and game coverage?
(2) What is the specific availability of your athletic training staff concerning practice and game coverage?
(3) What are your specific protocols for the rehabilitation programs of your student athletes?

Part 6 – Other Medical Services Provided

(1) Your athletic training facilities:
   a. How old is/are the athletic training room(s)?
   b. Do you feel your facilities are adequate to provide appropriate health care to your student athletes?
   c. If you could improve the facilities, what would you do?
(2) Do you have a specific person in place to deal with psychosocial problems?
   a. If yes, is this person a member of the athletic health care team?
   b. What protocols are in place to deal with psychosocial problems?
(3) Do you have a specific person in place to deal with nutritional concerns or issues?
   a. If yes, is this person a member of the athletic health care team?
   b. What protocols are in place when dealing with
      i. Eating disorders.
      ii. Questions concerning preexercise and postexercise food and beverage.
      iii. Questions concerning performance enhancing drugs, supplements, etc?
(4) Do have a specific person in place to deal with strength and conditioning programs or issues?
   a. If yes, is this person a member of the athletic health care team?
   b. What protocols are in place when dealing with
      i. In-season, preseason, and out-of-season conditioning programs.
(5) Do have a specific person in place to deal with equipment, uniforms, and laundry issues?
   a. If yes, is this person a member of the athletic health care team?
   b. What protocols are in place when dealing with
      i. Purchasing and maintenance of equipment.
      ii. Laundry of student athletes’ clothing
(6) What personnel do you feel would be beneficial in your athletic health care team that would facilitate giving appropriate medical care to your student athletes?
(7) What is preventing you from incorporating this/these individual(s) into your institution’s athletic program?
(8) Would you like to add any comments concerning your sports medicine team to this interview?