Value Model of the Certified Athletic Trainer in the Occupational Setting

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Purpose

The overall purpose of the committee preparing the Value Model of the Certified Athletic Trainer in the occupational setting is to create and purposefully evaluate the following:

- Determination of a finite methodology that can be used across all the working arenas of Athletic Training that will objectively and financially document the effectiveness and efficiency of employing a Certified Athletic Trainer (ATC).

In order to fulfill this overall objective the following must be evaluated:

- Can determining the role of value produce a better prepared, specifically skilled, highly respected and financially valuable healthcare professional with the credentials of ATC to benefit the profession and those individuals in the occupational arena?

- By establishing a method of measuring value beyond the use outcome measures, can athletic trainers and the profession effectively demonstrate that the ATC brings significant monetary improvement to the bottom line of the end user whether the user is the occupational setting, schools, hospitals, or professional sporting organizations?

As a sub-set of these questions, the NATA leadership will be provided with information to furnish solutions to the following:

- Do the current educational domains, knowledge base, and entrance skill levels of the ATC meet the requirements of those individuals being employed in the role of the Certified Athletic Trainer in Industry? And further do these skills bring financial value to the end user?

- Are there needs for future skill requirements, advanced education, specialty credentials or specific knowledge requirements which will make the ATC the best allied healthcare professional to be performing services in the occupational setting?

- How can a value model with an objective and measurable formula be used to begin, improve, or sustain the present levels of both internal and external marketing of the ATC in the occupational setting. Further, how can this information be translated to improve the employment of all professionals choosing a career in the prevention, treatment, and rehabilitation of physically active individuals.

Using this value model effectively will strengthen the credibility and visibility of the Certified Athletic Trainer in the occupational setting by critically evaluating the

perceptions, needs, and expectations of the occupational customer. While taking a deeper look into the skill set requirements of the ATC in the occupational setting and presenting to the NATA leadership necessary and potential educational changes this will better equip the professional wishing to make a career in this arena.

Introduction

Athletic training has traditionally been a profession concerned with an individual's health and well being. An athletic trainer is an individual who specializes in athletic training. The history of athletic training is quite complex as it involves elements from such disciplines as exercise, medicine, physical rehabilitation, physical education, and sport.

The specialty of athletic training as it is known today came into existence during the late nineteenth century. At this time, athletic trainers were primarily involved with intercollegiate and interscholastic athletes in the United States. During these early years the skills of athletic trainers were limited to "rub downs" and occasionally the prescription of various home remedies and poultices (Arnheim and Prentice, 1993).

The growth of athletic training has changed dramatically from the role of providing rub downs to now being an allied health professional recognized by the American Medical Association. The athletic trainer of today is concerned with the health and well-being of athletes and has taken on the responsibility of overseeing the total health care of the athlete (Arnheim and Prentice, 1993).

While many athletic trainers are still employed in athletic-related settings, there are a number of certified athletic trainers employed in a variety of other settings. For example, the modern athletic trainer can now be found offering valuable knowledge and expertise in the military, physician offices, professional rodeo, auto racing, performing arts, and occupational companies.

The diverse skills of athletic trainers make them an attractive health care professional in the occupational setting. These skills are discussed in Appendix A and are related to the Domains of Athletic Training as established by the National Athletic Trainer's Association Board of Certification. From these domains a cost effective understanding can be placed on the importance of an ATC.

Background

Liberty Mutual calculates U.S. businesses are paying $120 billion to $240 billion on workers compensation annually ("More Liberty Mutual Data," 2001). Overexertion, defined as injuries from excessive lifting, pushing, pulling, holding, carrying, or throwing of an object, was the leading cause of disabling injuries that resulted in employees missing five or more days of work in 1999 ("Liberty Mutual," 2002). Repetitive motion was the sixth leading cause. Both overexertion and repetitive

motion injuries can be effectively managed through an ergonomics and injury prevention program.

The costs of workplace injuries and illnesses are broken down into direct costs (payments to injured employees and their medical providers) and indirect costs (such as overtime costs, lost productivity, lower employee morale, time spent on accident investigation, product damage, and possibly increased insurance premiums). The direct cost of workplace injuries was tallied at $40.1 billion in the 2002 Safety Index by Liberty Mutual ("Liberty Mutual," 2002). Both OSHA and Liberty Mutual estimate that indirect costs associated with a workplace injury can be as much as two to five times the direct costs. Therefore, according to the 2002 Safety Index, the total financial impact for direct and indirect costs is estimated to be as much as $240 billion ("Indirect Costs," 2002). The important difference between direct and indirect costs is that the company absorbs all of the indirect costs of a workplace injury whereas the direct costs are dependent on the company's specific workers compensation program.

In 1999 the Secretary of Labor, Alexis M. Herman, stated that work-related musculoskeletal disorders were the prevalent, most expensive, and most preventable workplace injuries in the country ("Ergonomics Proposal," 1999). To occupational companies and the athletic trainer, the key phrase in that quotation should be "most preventable workplace injuries." The field of athletic training has always had a primary focus on injury prevention and these skills are easily transferred into working with those employed in the occupational setting.

To combat these staggering work-related injuries and illnesses statistics, both insurance and occupational companies are searching for programs to decrease work-related musculoskeletal disorders. Currently many different programs exist as do a high number of health care professionals working in the occupational setting. The athletic trainer is one of the many health care professionals employed in the occupational setting.

As employers explore new avenues to prevent work-related musculoskeletal disorders and decrease workers compensation costs, both injury prevention and post-injury management programs will play significant roles.

Most experts agree that taking a pro-active approach through injury prevention programs will keep health care costs to a minimum. However, as long as humans are the primary labor work force, work-related injuries and illnesses will continue to occur. This is when effective post injury control program will be valuable.

The athletic trainer can serve numerous roles with respect to injury prevention programs. Such programs include ergonomics, wellness, nutrition, physical readiness, safety, injury prevention, and educator. Each role is discussed in greater detail below and is correlated with the Athletic Training Domains.

Injury Prevention

Ergonomics (Recognition, Evaluation, and Assessment – Domain II): Certified Athletic Trainers work in occupational companies to identify ergonomic stressors and then can assist in recommending and implementing both engineering and administrative controls. Along with developing control measures, athletic trainers can also provide specific workplace ergonomic training and education. Similar to analyzing the mechanics of an athlete, such as the throwing motion of a pitcher, the knowledge a certified athletic trainer has in biomechanics are valuable skills used to analyze a workstation for potential ergonomic risk factors.

Job Analysis (Recognition, Evaluation, and Assessment – Domain II): The goal of the job analysis is to provide detailed information that can create an environment that enhances human productivity and human well-being. The primary purpose of the analysis is to identify the root cause of work-related problems that may contribute to musculo-skeletal disorders (Albensi, 2002). The athletic trainer's education in human factors and biomechanics makes the athletic trainer a valuable professional when identifying potential musculoskeletal disorder risk factors through a job analysis.

Wellness (Prevention - Domain I): The education and knowledge of a certified athletic trainer make him/her a valuable asset in a wellness program. Along with encouraging and developing healthy lifestyles, the certified athletic trainer can manage fitness, stress management, and smoking cessation programs. The certified athletic trainer can also manage company sports leagues, run incentive programs, and obtain guest speakers to present on a wide array of topics.

Nutrition (Prevention – Domain I): It has been shown that obesity and insufficient vitamin levels are directly related to musculoskeletal disorders (North Carolina Division of Occupational Safety and Health) and that nutrition is an important component of injury prevention (Arnheim, 1993). Furthermore, being overweight costs over $70 billion a year in unnecessary health care expenses (Ficca and Streator, 2002). The certified athletic trainer can provide valuable information on numerous issues related to nutrition, such as the dietary guidelines established by the US Department of Agriculture and the Department of Health and Human Services. Additional nutrition education can be provided on weight loss and gain, dietary supplements, and fad diets.

Physical Readiness (Prevention – Domain I): Just as certified athletic trainers have been developing conditioning programs for athletes and athletic teams for years, athletic trainers are now applying these same principles to develop programs for occupational athletes. Using the principles of conditioning (warm-up, overload, consistency, specificity, progress, intensity, individuality, and safety) the athletic trainer is a qualified health care professional to develop physical readiness programs for individuals or entire departments.

Safety (Prevention – Domain I): The athletic trainer can serve as a valuable member in a safety department. The diverse skills of the certified athletic trainer provides a solid foundation for working with safety issues. For example, the athletic trainer could manage lockout-tagout, hearing protection, and machine guarding programs.

Injury Prevention (Prevention – Domain I): From their beginning, certified athletic trainers have always focussed on injury prevention. By using the same principles applied to athletes, the certified athletic trainer can develop and manage effective injury prevention programs. The occupational athletic trainer can create and implement a variety of injury prevention programs, such as lifting schools, stretching programs, pre-shift exercises, musculo-skeletal disorders recognition and intervention, and injury prevention presentations.

Injury Management

It has been shown that the human body operates at a mechanical efficiency level of less than 25% (Arnheim and Prentice, 1993). Furthermore, a high number of work-related injuries and illnesses are exacerbated by a person's lifestyle and hobbies. These factors, along with an aging workforce, indicate that post-injury management programs will be beneficial in containing health care costs.

While certified athletic trainers are knowledgeable in injury prevention programs, ATC's are equally adept at providing post-injury programs that will enable the worker to return to activity as quickly and safely as possible. Various roles the certified athletic trainer can serve for post-injury programs include case manager, employee advocate, primary care, on-site rehabilitation, and recommendations for return to work. Each role is discussed in greater detail below.

Case Manager (Immediate Care – Domain III): Certified Athletic trainers are a natural fit to provide case management services as the emphasis is on early detection and intervention in the management of work injuries. The athletic trainer can be a valuable case manager by facilitating on-going communication between employer, physician, rehabilitation providers, insurance, and the employee. Additionally, the certified athletic trainer can serve to support the injured employee, monitor medical care, promote efficient reporting and investigation, and assist in finding light-duty work available within physician restrictions (Wickman, 2002).

Employee Advocate (Immediate Care – Domain III): Serving as an employee advocate may be one of the most important roles an athletic trainer can serve in the occupational setting. Employees trust the certified athletic trainer, and this can be beneficial as the ATC serves a liaison between the employee and management. Also, the certified athletic trainer may provide education to management on an employee's injury and recovery time, thereby assisting in easing pressure on the employee to return to work.

Physician Extender (Immediate Care - Domain III): As musculoskeletal injuries become a larger percentage of all occupationally induced injuries and illnesses, many physicians recognize the benefits of the ATC's expertise in managing these cases. In the role of physician extender the ATC can employ the skill, knowledge and abilities in managing these conditions earlier in the injury cycle. In the physician extender role, the barrier of "referring to therapy" is brought down to the benefit of all involved.

On-Site Rehabilitation (Treatment, Rehabilitation, and Reconditioning – Domain IV): As health care costs continue to escalate companies will need to find alternatives to effectively manage injuries. Working under the direction of a physician, athletic trainers are effective health care professionals to provide physical rehabilitation services on-site. The rehabilitation skills of a certified athletic trainer provides numerous benefits for treating injuries on-site, such as no co-pays for employees, avoidance of high health care costs at outside rehabilitation facilities, and no wage loss traveling to and from a facility or sitting in the waiting room. Also, by treating workers like occupational athletes and using aggressive rehabilitation methods honed on athletes that has traditionally been a strong point of sports medicine businesses can save money because workers will return to work faster (White, 1996).

Return to Work (Treatment, Rehabilitation, and Reconditioning ; Immediate Care – Domains IV & III): According to an article in Occupational Health and Safety, an early return to work program is the one single practice that can bring the greatest reduction in direct costs for worker's compensation programs (Kaplan and Smith, 2000). The skills of a certified athletic trainer in returning athletes to play are precisely the same skills required to return employees to work. There are multiple forms of return to work programs; however, consistent aspects of any return to work program consists of stretching, strengthening, and job simulation (Gatz, 2002). The knowledge and diversity of the athletic trainer in these areas make them attractive health care professionals to implement, manage, and conduct return to work programs.

Determining Results

Determining results in an occupational setting as a factor of value is often difficult. Many factors play a part in the actual determination of value. Some of the factors include: defining value that includes or at least consistently and objectively integrates all of the stakeholders; how value is determined both currently and in the future; successfully and objectively measuring its components; and then objectively associating those values to the skills and educational domains of the Certified Athletic Trainer.

In order to successfully define and measure the value of a variable on the outcomes or success of a specific program or idea, an attempt to define the stakeholders and the specific components of which drive each stakeholders "value model" must be made. In the case

of prevention, management and treatment, and rehabilitation of occupational clients, the ATC must be able to understand the reward mechanisms of those individuals and then attempt to define measurable variables, which link directly to those "value model rewards".

What & How to Measure

Effectiveness and efficiency are both measures of outcomes. Healthcare providers are becoming reasonably good at determining outcomes but have not taken the basic components of those outcomes and placed a hard dollar value on them. This hard dollar value is what the market place is requiring, and it is the measure the profession is going to be required to present if the "value model" for the ATC in the occupational setting is going to be taken seriously by insurers, employers, unions, and fellow healthcare professionals. ATC's can no longer state that they are doing good things – it must be proved in a manner that these stakeholders understand. The bottom line - if the stakeholders are going to invest in certified athletic training services, programs, and ideas - what is the return on investment going to be, and how long it is going to take the stakeholder to receive that return?

The basic premise of this project is to come to an understanding and agreement as a group that ATC's in the occupational setting will collect and demonstrate good outcomes. Additionally, standardized methods will be used to place a dollar amount on those outcomes, and also provide standardized business principles to market services, thereby demonstrating value in the market place and to potential customers.

Understanding Stakeholders and Their Needs

In order to truly and effectively demonstrate the value of an ATC in the occupational setting there must be a thorough understanding of the stakeholders and the role they play in determining the standard measures and the language that is used to quantify that value.

Each of the following stakeholders has placed different values on the role of prevention, management, treatment, and rehabilitation both prior to and after a work injury is sustained. The goal of this project is to evaluate the linking variable of success and what each stakeholder needs in order to be successfully rewarded in each of the scenarios.

This document will begin with Management and work through the process to the suppliers of product and outline the role each stakeholder assumes in the value model.

Corporate Management

Facility Managers: From a regulatory standpoint, these are the people who have a legal responsibility to provide a reasonably safe environment and a proper reporting of injuries within the facility. Generally, this group of people is responsible for all financial aspects of injuries and also sets the tone for the cultural attitudes towards

injuries at that particular workplace. In most instances, daily management of these issues is delegated to others.

Line Supervisors: This group focuses on getting the work product finished. They need and want healthy employees working without restrictions. Anything that distracts from this is a nuisance and a detriment to the creation of the end product. In many instances, line supervisors are held accountable for the injuries in their areas both financially and culturally. Generally however, the focus in on the work product.

Union

Unions: Unions were developed and implemented to create a collective voice for the employee and to sit at the negotiation table with management to develop a fair, safe, and equitable environment for its membership. Value is generally viewed as providing very effective medical care, elimination of job site risk factors, and fair treatment of the employee's.

Employees

Employees: As in all settings, people want excellent care, in a positive environment. They value caring and understanding, with a positive medical outcome. Employees expect that they have the right to earn a paycheck in a safe and healthy environment that will not cause any injury or illness in the present or future.

Insurance

Insurance: Insurance companies manage risk. Risks in the workers' compensation world are costs associated with work related injuries and illnesses. These costs of medical care, and wage replacement are generally measured and tracked by average case cost, and the number of cases. Frequency and severity of injuries are obvious major factors. Decreasing these two issues wins advocates almost every time. Nearly all large employers are self-insured, or at the very least "self-funded". Meaning they have very large deductibles, and the insurance coverage is for catastrophic events. Insurance companies are more focused on a companies past health and safety performance, and are slow to get excited about quick fixes, or programs that impact a small portion of the continuum. They are steadfast in focusing on the overall performance and costs of the entire workers' compensation system.

Third Party Administrators: They are the conduits between employees, insurer, and employer. TPA's value solid reliable information, in a timely manner. Excellent medical care is expected, in addition to respectful relationships with the employee population. Pet peeves are poor information, lack of definitive opinions regarding work relatedness, and the "dragging out" of cases.

Case Managers: They are the conduit between employee, insurer, and medical community and are typically charged with managing workers' compensation claims. This may be due to a significant injury, unusual delay in returning to work, litigated claims, and claims that are suspected of being fraudulent. They expect solid reliable information that speaks to their clients (patient) status as it relates to their current and future employability. The objective of a case manager is to bring a claim to resolution in the most cost efficient manner possible. This extends to recommendations to employers on nearly all matters concerning occupational health and safety.

Medical Departments

Medical Departments: usually consist of physicians and nurses who are charged with the entire continuum of health related services for the employee populations. This can take on a very wide spectrum from non-occupational wellness and preventative medicine services and initiatives, to safety programming, work related injury/illness medical management, disability administration, regulatory compliance, to physical examinations. The scope is wide, and so are the demands. Many sensitive issues and decisions arise from the medical staff, that affect employees and employers in many ways. ATC's must focus on providing value to the issues specific to each medical department in a way that fit into the departments overall assigned duties.

Defining Value

Value from a financial sense relates to the literal definition as stated by the *Merriam-Webster Dictionary* and that is:

Value
1 : a fair return or equivalent in goods, services, or money for something exchanged
2 : the monetary worth of something **:** marketable price
3 : relative worth, utility, or importance
4 : a numerical quantity that is assigned or is determined by calculation or measurement
7 : something (as a principle or quality) intrinsically valuable or desirable <sought material *values* instead of human *values* -- W. H. Jones>

Value from a cultural point of view actually takes its definition from valuable:

Valuable
1 a : having monetary value **b :** worth a good price
2 a : having desirable or esteemed characteristics or qualities <*valuable* friendships> **b :** of great use or service <*valuable* advice>

Many times it is difficult to separate the two ideas. An implementation or idea may be valuable from a cultural perspective such as wellness and its relationship to happy, healthy workers, but in order to prove value those qualities must be translated into hard dollars. This is where it becomes difficult to standardize the quantification process.

The difficulty in quantification is partly related to the fact that healthcare professionals rarely have to prove their value simply because they are able to demonstrate they are valuable.

Two examples are discussed below.

Example 1: If the ATC is able to better manage a case or create fewer treatment visits, then the athletic trainer is valuable because the employee return to the job sooner. But objectively, the value in dollars of this efficiency is difficult to precisely quantify.

Example 2: If the ATC is able to prevent a *potential* musculoskeletal injury from occurring in the first place, then the ATC becomes valuable from the standpoint of decreased medical costs, less paper work, fines, pain, and loss time (which has a value in dollars and cents). This is also valuable in a cultural environment of "The company will not hurt its' employees". In many instances this will reign over the financial model of value. For example, a company may spend tens of thousands of dollars to manage or eliminate a work area with potential injury risks that may only cost the company hundreds of dollars in injuries.

Value Formula

A simple Value Formula simply illustrates the equal importance of four factors that shape a customers' perception of value. Quality and Service are factors that all healthcare professionals market, but Cost and Time are factors that relate to hard dollars.

$$V_p = \frac{Q_p \times S_p}{C \times T}$$

where,
Q_p = perceived quality
S_p = perceived service
C = cost
T = time

Quality

"Quality" refers to quality as *perceived by our customers.* All healthcare practitioners believe their work is high quality. This is an expected given in the healthcare arena, but just speaking with patients, clients, and customers it is well noted that not all healthcare offices are the same. Take the example of wait time in a physician office. Some physicians schedule an appointment for a patient, the patient is "expecting to be seen with in a few minutes of that scheduled time" unfortunately in most offices the wait can be up to an hour after the scheduled time. This is an example of perceived quality. The stakeholder must help define quality.

Service

Most consumers believe that "service" goes beyond responding to the customer's requests. Most organizations would state that they attempt to exceed expectations. The availability of accurate and objective information is an important factor to the occupational

based consumer. This consumer is used to dealing with real-time data, not data that are results of the past month. Value would be gained if ATC's could accurately and objectively project the cost of work related injury management, treatment, and rehabilitation rather than state what it has already cost. This is increasingly important in the area of prevention education and ergonomics.

Service also involves trust. The consumer of ATC services in the occupational setting must believe what the profession states. It gets down to reputation, something every Athletic Trainer values highly and takes very seriously. By having the ability to objectify and measure performance - what it costs, what is saved and what will be saved will aid in the ability for the consumer to gain trust.

Cost

"Cost" of providing services is determined by the vendor. Some vendors of injury management services use the prevention component as a loss leader, thereby nullifying the importance of prevention and ergonomic intervention. Others are paid without any objective and documentable success in outcomes whether effectiveness or efficiency. Thus, pricing is going to be the largest determination factor in the successful documentation of value. Unfortunately, cost also is the determining factor in most purchasing decisions so without demonstrating objective numbers and dollars the low bid will likely get the job. Being able to demonstrate the ATC's value in the occupational setting will aid in reducing this problem.

Time

Time is equivalent to dollars in most occupational markets. This is no different than the professional athletic arena where having a star athlete injured can cost the team wins and ultimately significant dollars. In the occupational setting, the same is true. The hard dollars related to time need to be objectified and documented. The time loss component of a work related injury is one of the single most measurable and costly components. Quality, service and cost mean little if the company can't get the products out the door.

In our specific issue of measuring value, the time component is perhaps the most significant of all the variables. The time savings associated with on-site certified athletic trainers can be difficult to precisely quantify but easily justified. For example, if on-site physical rehabilitation services are performed both the employee and employer are benefiting in terms of time savings. The employee benefits because there is no lost wage travelling to an off-site facility along with sitting in a waiting room. Furthermore, when an employee attends off-site rehab the department is running short-handed for a period of time, thereby negatively affecting production numbers for the employer.

Methods of Measuring Value

Understanding that one of the roles of this project is to determine what objective measures can be implemented in order to consistently define and measure the value of

the ATC in the occupational environment. There are numerous measures.

Cost Savings

Cost savings is the most frequent method of being able to document value of a product or service. It must be both identifiable and measurable. A cost savings must be the result of a planned and deliberate action taken to:

- reduce purchase or ownership costs;
- avoid a higher cost that would have otherwise occurred; or,
- improve the total value of a purchased goods or services.

  An unsolicited price reduction, caused by factors such as market conditions, does not qualify as a cost savings for which purchasing can take credit.

Purchase Cost Reductions

A purchase cost reduction occurs when a lower than previously paid cost results for the acquisition of the same, or comparable, goods and services. This may be accomplished by a number of means, including:

- "Bidding" (i.e., RFPs, RFQs, etc.)
- Negotiation
- Modified product/service specifications
- Blanket orders or other types of formal purchasing agreements
- Product substitution or standardization
- Favorable times and costs
- Operational Efficiencies
- Strategic Supplier Partnerships

Ownership Cost Reduction

Ownership cost refers to the expenses associated with receiving, holding and distributing inventory. These expenses include:

- Cost of Money (i.e., borrowing cost &/or the potential return on investment)
- Facility (example: staffing, space utilization, storage equipment, etc.)

  A reduction in inventory related expenses is an ownership cost reduction.

Cost Avoidance

A cost avoidance is the reduction or elimination of a new cost that would have otherwise occurred. A published supplier price increase that is negated or reduced is an example of a cost avoidance. A cost avoidance for a unique or first time purchase, as well as for a purchase for which there is an inadequate price history, can also be the difference between the average quoted price and the price paid. (The principle here is that without deliberate action such as bidding, a buyer would, over time, pay the average market price.)

The cost avoidance principle can be used effectively in the value model if the appropriate measures are known in advance and the stakeholders have agreed upon which objective measures to evaluate.

Improved Value

There are many ways in which purchasing can improve the value of purchased goods and services, however not all of them would fit the definition of a cost savings.

> *The successful negotiation of free maintenance for a year with an equipment purchase is a cost savings if such a contract would have otherwise been purchased. It might also qualify as a cost savings if an employee of the organization would have otherwise performed the maintenance, but only if the division or organization as a whole can reduce the expenses associated with having that maintenance employee. Reducing maintenance workload without reducing expenses, while admirable, is more of an operational efficiency than a true cost savings.*
>
> *Likewise, arranging for a computer to be delivered pre-configured and pre-loaded with software is adding value, but would qualify as a true cost savings only if someone would have been paid to do the same thing.*

Operational Efficiencies

Operational efficiencies are actions that result in less work effort being needed to achieve an end result. Just as value improvements do not automatically qualify as cost savings, the same is true of operational efficiencies. Operational efficiencies, such as the elimination of procedural redundancies, qualify as cost savings only if they reduce associated expenses such as regular staff salaries, temporary employment fees, overtime or per diem payments.

> *For example, increased transactional velocity could result in a cost savings if an organization were able to reduce inventory by cutting back on the amount of safety stock or lowering the re-order point.*

Cost Savings Opportunities

Cost savings opportunities exist not only in what athletic trainers do, but also in how ATC's do it; however, it would be mistakenly unwise and has been the current model to only pursue cost savings as the sole determining factor in demonstrating value when competing to provide services.

Formulating Value With Accounting Principles

There are multiple methods to determine product or in this model case service valuations. They can be any one, or a combination of, the following techniques. It is not uncommon to combine techniques to achieve a higher degree of accuracy and confidence in the ROI (Return on Investment) calculations. Some of the more commonly used valuation techniques are:

- Payback Period
- Net Present Value (NPV)
- Return on Investment (ROI)
- Cost Avoidance

Payback Period

The payback period provides the number of months or years required to recover the initial investment. All things being equal, a project with a shorter payback period is considered better because of the lower perceived risks. Likely candidates for payback period are customers who are concerned with getting a quick turnaround of their investment. Generally, this method is very risky since its perspective is very narrow. The general payback period formula is:

Payback Period = Cost of Project / Expected Return

or

= Cost of Investment / Annual Cash Flow

or

= Initial Investment / Expected Savings

Significant advantages of employing a certified athletic trainer are the diverse training and background which enables the ATC to be the sole provider for a number of programs and services. Relating the general role of an athletic trainer to all of the Domains collectively can be expressed through use of the payback period. An example of the effect of an ATC on the payback period is illustrated below:

An ATC is paid an annual salary of $55,000. The ATC provides on-site physical rehabilitation, ergonomics, and educational programs. Through the employment of an ATC the occupational company avoids direct costs of $35,000 annually by providing on-site ultrasound, electric stimulation, and therapeutic exercise. Additionally, the company avoids an annual cost of $20,000 to an ergonomics consultant and another $13,000 annually for guest speakers. The total savings of having the ATC on-site are estimated at $68,000. It is important to note that these are direct cost savings and there are other soft dollar benefits that can significantly impact the bottom line. With an annual salary of $55,000 and savings of $68,000 the payback period is calculated as follows:

Time to payback (years) = Cost of ATC / Savings
= ($55,000) / ($68,000)
= 0.81 years

Domain I is also known as the "prevention" domain. With this in mind, *one* formula applicable to Domain I is the uncertainty formula, which is a derivative of the simple payback period formula. This formula was developed by the Joyce Institute (1995). Within the formula, the value of .50 is used. This value represents 50%, which is the likelihood of an event occurring with total uncertainty. If the ratio was 49% to 51% it would imply that one outcome is more likely than the other, which is not the case in total uncertainty. The uncertainty formula states:

$$\text{Injuries per year to payback in total uncertainty} = \frac{\text{Cost of Implementation}}{\text{Maximum Payback Period}} \times \text{Cost per injury} \times 50\%$$

A sample problem relating Domain I to the injuries per year to payback in total uncertainty is illustrated below:

There have been no injuries to date, but an ergonomic analysis of the shipping department indicates that employees are at risk for sustaining lifting related low back pain when loading 40-pound boxes onto skids. The risk can be decreased with the installation of a lift table at a cost of $4,500. The average cost of a low back injury at the company is $8,500. The company will use a 3-year payback period to recommend the purchase of this lift table.

$$\text{Injuries per year to payback in total uncertainty} = \frac{\text{Cost of Implementation}}{\text{Maximum Payback Period}} \cdot \frac{}{\text{Cost per injury x 50\%}}$$

$$= \frac{\$4{,}500}{3} \cdot \frac{}{(\$8{,}500)(.50)}$$

$$= \frac{\$1{,}500}{\$4{,}250}$$

$$= .35$$

The last step to the uncertainty formula is to convert the decimal (.35 in this example) into a rate of occurrence. This is accomplished using a simple algebraic formula and then solving for "X." Since .35 is the same as 35/100, the ratio of 35/100 is on the left side of the formula. The right side of the equation is always 1/X so the entire equation is written as:

$$\frac{35}{100} = \frac{1}{X}$$

Solving for "X" would result in:

$$35X = 100$$

$$X = 2.9$$

This indicates that if the ergonomic modification with a cost of $4,500 would prevent at least one low back injury in 2.9 years, the modification would payback within the maximum allowable payback period of 3 years.

Net Present Value (NPV)

The net present value (NPV) uses the value of future cash flows in terms of today's dollars. By discounting the future cash flows against the cost of capital, or any other rate the user might prefer, NPV gives a true indication of future savings in terms of today's dollars. For example, a positive NPV indicates that the value of the future savings exceeds the total investment, that is: the benefits exceed the costs. CIOs, CFOs, and finance and accounting executives may seek NPV's. Some customers who do not have extensive knowledge in finance and prefer hard numbers as opposed to percentages often prefer NPV to other techniques. The general formula for NPV is:

Present Value = (F) x $\{(1/1 + i)^n\}$

Where,

F = future worth of a present sum of money
i = interest rate
n = number of interest periods

Domain I is best summarized as the "prevention" domain and because of that the focus of the occupational certified athletic trainer is to help prevent injuries from occurring at the work place. As injuries at work are avoided, so too are the costs associated with those injuries. One formula applicable to Domain I is NPV. A sample problem relating Domain I to net present value is illustrated below:

Employees have to load 50-pound bags of powder into a hopper. The typical load is 1,000 pounds (20 bags) and employees have to make up to 15 loads per day. A company expects to save $50,000 on an annual basis in productivity and work-related injuries by implementing an ergonomic modification. The cost of the modification is a one-time, up-front cost of $100,000. The interest is assumed at 10% over the expected life of the proposal being 5 years. The present value of savings over 5 years, compounded annually, of the ergonomic modification is calculated below.

Yr	Com-pounded	=	PV Factor	*	Savings	=	Present Value
1	1.10	=	.91	*	$50,000	=	$45,500
2	1.21	=	.83	*	$50,000	=	$41,500
3	1.33	=	.75	*	$50,000	=	$37,500
4	1.46	=	.68	*	$50,000	=	$34,000
5	1.61	=	.62	*	$50,000	=	$31,000
							$189,500

Subtracting the initial cost of the investment ($100,000) in our example from the present value ($189,500) results in a net present value of $89,500. Because this is a positive value (the present value is greater than the initial cost) the company would more than likely want to accept this project and implement the ergonomic modification.

Return on Investment (ROI)

Return on investment (ROI) is a widely accepted way of determining the efficiency of an investment. It provides the annual return (in a percentage) that an investment would generate. It is a linear number, therefore the higher the ROI, the better the investment. Since ROI is so widely accepted, this measure can target a broader audience. ROI estimates are not exempt from the law of "garbage in, garbage out." Calculations must be based on actual business data - not the occupational setting averages or benchmarks. Mathematically the formula is expressed as a percentage. The general ROI formula is:

ROI = (Return / Amount Invested) x 100

or

= (NPV of Savings / Initial Investment) x 100

The ATC can offer a wide variety of services and programs in the occupational setting. This is advantageous because companies can have a single employee, and therefore a single salary, for just one individual who can offer multiple programs. Relating the general role of a certified athletic trainer to all of the Domains collectively can be expressed through use of the return on investment formula. A sample problem of the effect an ATC can have on the ROI is calculated below:

An ATC is paid an annual salary of $55,000. The ATC provides on-site physical rehabilitation, ergonomics, and educational programs. Through the ATC the occupational company avoids direct costs of $35,000 annually by providing on-site ultrasound, electric stimulation, and therapeutic exercise. Additionally, the company avoids an annual cost of $20,000 to an ergonomics consultant and another $13,000 annually for guest speakers. The total savings of having the ATC on-site are estimated at $68,000. It is important to note that these are direct cost savings and there are other soft dollar benefits that can significantly impact the bottom line with an annual salary of $55,000 and savings of $68,000 the ROI is calculated as follows:

ROI = (Return / Amount Invested) x 100
= ($68,000 / $55,000) x 100
= 1.24 x 100
= 124 %

Cost Avoidance

Cost avoidance is a simple formula that illustrates how providing specific programs and services can have a direct benefit. Cost avoidance can be calculated based on a number of factors, such as per treatment, per program, per hour, per month, and per year among many others. There are two components used to calculate cost avoidance; one is the cost of service or program charged by another facility, and the other is the total number of services or programs provided. The general formula for monthly cost avoidance is:

Monthly cost avoidance =
(Customary and accepted cost of program/services)
X (Number of times programs/services provided)

It is important to realize that overhead and equipment costs may need to be factored into each cost avoidance formula. For example, in some instances the company may provide the necessary equipment to provide the services, whereas other companies will require the service provider to use their own equipment. Additionally, someone with office space on-site will have to consider additional overhead expenses (electricity, lighting, square footage of office, phone, computer, etc.) as opposed to someone working off-site.

Domain II is the "recognition, evaluation, and assessment" domain. Recognition, evaluation, and assessment refers to services such as ergonomic analysis, functional capacity evaluation, injury recognition, and pre-employment screenings. An example illustrating the relationship of the cost avoidance formula and Domain II follows.

An on-site certified athletic trainer performs initial injury evaluations for those individuals referred for physical rehabilitation. The average cost for an initial injury evaluation is $125 per new patient. Company statistics show that on average there are 8 injuries each month that requires an employee to go to an off-site location for an injury evaluation and subsequent rehabilitation. Additionally, the athletic trainer provides ergonomic analysis for the company. The usual and customary charge for this service is $90 per hour. The athletic trainer provides 80 hours (20 hours a week) of ergonomics analysis each month. Based on these values, the monthly cost avoidance for providing "recognition, evaluation, and assessment" services on-site are:

Monthly cost avoidance:

Initial injury evaluation	=	($125) x (8)	=$1,000
Ergonomic analysis	=	($90) x (80)	= $7,200
Grand Total of Savings	=		$8,200

By using the cost avoidance formula, it is evident that an on-site athletic trainer can help a company avoid direct costs of $8,200 per month just by providing on-site injury evaluations and ergonomic analysis.

Domain III is also referred to as the "immediate care" domain. Immediate care can entail a number of different services. In the example that follows, immediate care refers to general first aid treatment.

An on-site athletic trainer provides immediate care at an occupational company consisting of general first aid treatment. Basically, the athletic trainer is evaluating non-emergency injuries right at the workplace immediately after the injury has occurred. Typical injuries include strains, sprains, foreign body in the eye, contusions, abrasions, and splinters. Company statistics indicate that employees average 4 visits per month to the emergency room for strains, sprains, foreign body in the eye, contusions, abrasions, and/or splinters. Actual costs measured by one company that provides this "immediate care" service shows the average cost for an emergency visit is $1,000 whereas the average cost of a visit to the on-site immediate care is just $200; a total cost avoidance of $800 per occurrence. Based on these values, the monthly cost avoidance for on-site immediate care services is:

Monthly cost avoidance:

Emergency room visits	=	($800) x (4)	= $3,200
Grand total	=		= $3,200

Along with the direct cost avoidance, there are a number of other benefits associated with the certified athletic trainer providing immediate care services. According to internal statistics from a company that provides on-site emergency care, their "treat and release" rate is 40%,

which indicates that the employees lose no time from work 40% of the time. Additionally, the services are considered first aid treatment so no workers' compensation claims need to be filed. There is also a significant decrease in lost production time from the employee, along with the co-worker or supervisor who must accompany the patient to an off-site facility.

Domain IV is associated as the "treatment, rehabilitation, and reconditioning" domain. Since the cost avoidance component is similar to Domain II, the same monthly cost avoidance formula can be applied to Domain IV. An example using monthly cost avoidance is as follows:

An ATC provides on-site physical rehabilitation consisting of ultrasound, electric stimulation and therapeutic exercise. A local sports medicine clinic charges $40 per ultrasound treatment, $40 for electric stimulation and $25 for every 15 minutes of therapeutic exercise. In one month the ATC provides 25 ultrasound treatments, 10 electric stimulation treatments and 35 therapeutic exercises sessions. The monthly cost avoidance is calculated as follows:

Monthly cost avoidance

Ultrasound	=	($40) x (25)	=	$1,000
Electric Stimulation	=	($40) x (10)	=	$400
Therapeutic Exercise	=	($25) x (35)	=	$875
Grand Total of Savings			=	$2,275

Along with the direct cost avoidance benefits there are a number of additional benefits associated with providing on-site physical rehabilitation. For the employee, there is no travel time to an off-site facility, which means the employee is able to spend more of the working day actually at work, thus increasing the take home pay. The employer benefits for the simple fact since the employee is at work more time during the workday that production will likely be improved compared to the output from a crew running short-handed. Lastly, the National Council on Compensation Insurance indicates that for every $1 sent through an insurance or third party administrator will end up costing the employer $1.80 in the end.

The role of the athletic trainer as an educator is well-accepted. An example that relates this role as an educator to all of the domains through the cost avoidance formula is below.

Safe work practices involves the athletic trainer going onto the production floor and analyzing the various job tasks employees perform throughout the day. From here the athletic trainer will apply general ergonomics principles to specific job tasks within each department. A few examples would be the ATC education employees that pushing is preferred to pulling and to avoid extended reaching by trying to reposition the body. Back/lifting schools are one-hour long programs that educate employees on the anatomy and physiology of the low back, common injuries, treatment procedures, ways to avoid low back pain, and proper lifting techniques. Health and wellness includes educational programs on cholesterol, blood pressure, nutrition, diabetes, and general health topics. The company expects 40 hours of

safe work practice education, two hours of back/lifting school and one hour of health and wellness each month. The formula uses $100 as the market cost per hour for a consultant to provide educational programs. The formula is calculated as:

Monthly cost avoidance

Safe work practices	= ($100) x (40)	=	$4,000
Back/Lifting schools	= ($100) x (2)	=	$200
Health and wellness	= ($100) x (1)	=	$100
Grand Total of Savings		=	$4,300

It is important to realize that these are direct costs. There are a number of indirect cost benefits. For example, encouraging a healthy lifestyle helps with minimize current and long term health care costs, which will ultimately cost the company money in terms of increased health care costs and insurance premiums. Promoting safe work practices and providing a back/lifting school can positively impact workers' compensation claims and associated costs.

Net Savings of Return to Work

Sentry Insurance claims companies could expect an average savings of 47-60% of the company's current workers compensation costs with a return to work program. Sentry's calculation was to find the cost estimate by dividing the savings from the post-injury control program by $9, the midway point of an average return on investment of $8-10 obtained from the Washington Business Group on Health. Then the cost estimate is subtracted from the savings of the return to work program and ultimately a total net savings is calculated for a return to work program. The savings from a return to work program can be found using the following formula:

Estimated net savings from RTW program =
Savings from RTW program
- Cost Estimate

Where,

Savings from RTW program =
(Current Worker's Comp Costs)(.54)

$$\text{Cost estimate} = \frac{\text{(Current Worker's Comp Costs)(.54)}}{\$9}$$

Domain V is summarized as the "organization and administration" domain. This domain is also similar to the role of a case manager. Domain IV involves reconditioning. An example relating Domain IV and Domain V to the net savings for return to work is illustrated below. Annual worker's compensation costs for the ABC Company is $175,000. Applying this value of $175,000 to the formula yields the following result:

Step 1:

Savings from RTW program = $175,000 x .54 = $94,500

Cost estimate	=	$94,500 / $9.00
	=	$10,500

Step 2:

Net savings =

= Savings from RTW program - Cost Estimate
= $94,500 - $10,500
= $84,000

Estimated net savings of $84,000 annually for a return to work program.

Insurance Premiums and Mod Rates

Insurance costs are not as simple as they may seem and can be affected by a number of factors. Those factors can include one or a combination of the following some of which this value model could directly impact.

Loss history: This is how much and how often insurance has had to pay for a company's claims. Loss history varies widely from region to region, the occupational setting to occupational setting, and company to company, which is why there is such a wide variation in what two different companies can expect to pay for workers' compensation insurance.

Geographic location: Most insurance companies take location into consideration for fixing premium amount. For example, a company doing heavy construction on a pipeline project in Alaska could expect to pay more than a company that constructs prefabricated housing modules in Atlanta. State regulations can vary widely on benefits paid.

Type of business: This affects the rating applied to a company's premium because the type of work performed influences worker injury. A company that does computer training, for instance, could reasonably be expected to have fewer serious injury claims than a steel mill.

Years of experience: Assuming that companies get better at managing workplace safety as they grow older, the company's track record is figured into the overall insurance analysis. Age is not necessarily an assurance of wisdom, however, and even the most well-established companies need to carefully consider what they are paying for workers' compensation, why they are paying it, and how to pay less within the law and still get quality medical services for their employees. As odd as it sounds, the cost-control approach to workers' compensation is a relatively new idea, and one can teach an old dog new tricks.

Number of employees: A company with more employees is, of course, exposed to greater risk of employee injury claims. The larger and more geographically diverse the company, the more important an integrated workers' compensation management system becomes, but it does not necessarily have to be - and in some cases should not be - centralized.

Types of coverage: The basic workers' compensation benefits are regulated on a state-by- state basis. Policies

can vary in the kinds of coverage, choice of providers, waiting periods, average weekly wage payments, and other benefits. Traditionally workers' compensation has provided first dollar, unlimited medical coverage to injured or ill workers.

Experience modifiers: A company's premium is figured by multiplying total payroll by the premium rate and a number called an experience modifier. The experience modifier is based on the average experience for companies in the same the occupational setting in the same state. Obviously, these modifiers can differ drastically.

Deductibles: A premium can be affected when the policy holder agrees to make certain dollar payments before benefits begin. Generally, the higher the deductible, the lower the premium, although other factors can mitigate this effect.

Exclusions: Certain activities, processes, procedures, and tangible items may be excluded from coverage. Many insurance policies, for example, exclude civil unrest and warfare from coverage.

Ratings of riders: Insurance premiums can be affected by certain specific additions that stipulate coverage at extra cost for a specific item, need, liability, or time frame. A rating for limited duration hazard or a rider for special equipment can effect the premium amount.

Special programs or safety incentives: Discounts or special rates can be earned from safety programs that cut incidence of severe injury. Special safety equipment frequently can qualify an employer for additional insurance discounts.
The above are well understood numbers in the occupational setting as they affect the cost of work injuries from a premium perspective.

The Mod Rate is a formula developed by the National Council on Compensation Insurance (NCCI). The formula compares actual losses to expected losses. It has several built-in factors to give more consideration to certain areas. For instance, more consideration is given to the actual losses more so than the expected losses.

The experience rating formula produces a modification expressed as a percentage of premium. An employer with a better than average E-mod, below 1.00, is awarded a credit (decrease). An employer with a poorer than average E-mod, above 1.00, receives a debit (increase).

The best way to implement this component as a measure of value is to use the NCCI web site and formula worksheets.

It can be found at http://www.ncci.com/e_ratingprod/understandwksht.htm

This experience rating is then used in the formula to calculate the workers compensation insurance premium.

Thus, if providing effective services can decrease the mod rate, then the total workers compensation insurance premium can also be affected.

Total Premium = Manual Rate
X Experience Modification Factor
x Payroll ÷ 100

Manual Premium: Workers' Compensation premium calculated by multiplying payrolls by appropriate rates, before application of Experience Modifier, Schedule Credit, or Premium Discount.

Since this is a measure easily calculated and performed exactly the same for any employer large or small and has been determined by an outside entity it is likely to be a good measure of value for this model.

Medical and Health Indicators

The National Institute on Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) use methods of determining injury rates that may also be of value at least in the general overview of value.
This information comes from a recordable injury classification system.
Determining whether work-related musculoskeletal problems are apparent and whether job conditions exist that pose a significant risk for such disorders involves different but interrelated data collection methods.

Entries of musculoskeletal problems from a company's medical records and OSHA Form 300 logs can be tallied for use in calculating incidence and prevalence measures. These measures, in turn, may be compared with those from other departments or those reported for the occupational setting as a whole in making judgments concerning excess cases.

The incidence rate (IR) is defined as the number of new cases per 100 worker per year. The incident rate assumes the average worker spends 2,000 hours (8 hours a day, 5 days a week, 50 weeks a year) at work each year. It may be computed for all musculoskeletal disorders and by disorders of body part (i.e., disorders specific to the wrist, back, shoulders, etc.)

The following formula is used in these IR calculations:

$$IR = \frac{\text{\# of new cases during a time period x 200,000 hrs}}{\text{Total hours worked by all workers for that time period}}$$

The prevalence rate (PR) calculation is similar, except that all existing numbers of cases for a given time period are used in the formula.

$$PR = \frac{\text{\# of all cases during a time period x 200,000 hrs}}{\text{Total hours worked by all worked for that time period}}$$

The severity rate (PR) calculation reflects the cost (in terms of lost workdays) of new injuries and illnesses occurring in a specific job task, work area, department, or company.

SR = $\frac{\text{Total lost workdays per year x 200,000}}{\text{Total hours worked (per job or department)}}$

These formulas can also be used to collect data important to impacting insurance premiums including:

Days lost from work - a quantifiable and expensive result of employee injury or illness for employers.

Early return-to-work - one of the most important results both employer and employee can achieve because early return to work cuts to the heart of workers' compensation system waste, overtreatment, fraud, and undermanagement.

Quality care outcomes - critical to an employee's perception of how well a system is working.

Actual long-term costs - will have an effect on the bottom-line for employers and the ultimate success or failure of any cost-control approach.

Incurred Losses

This may be a measure that could be used as it is the paid losses plus loss reserves for estimated future claims costs. Many loss sensitive insurance policies adjust premium based on incurred losses rather than just on paid losses.

For example, an employee has a very significant fracture that is going to require several surgeries that must be sequenced over a period of 2-3 years (well beyond the "measured" time period). Each surgery and any subsequent rehabilitation, and indemnity costs are calculated, and the total cost of this case is approximated and posted in the current time period. Therefore the future costs of this claim will influence the cost of the premium today.

Reserves

Carriers typically set up case "reserves" that are estimates of future or continuing liability for a case. Quarterly reviews of the status of the reserves is encouraged because the changing nature of injury cases may make a reserve too low or too high. Employers should demand that the insurance company provide a rationale for highly reserved claims. This is where the ATC can help to manage the case more effectively thereby improving value by objectively reducing reserves. These reserve dollars go directly to the bottom line of the company.

Measuring Workers Compensation Benefits as a Value

Understanding that workers compensation benefits entail more than just the direct costs of treatment and measuring the effects of services on each of those components would be valuable. The main issue that exists in using these components as measures of value is the ability to have accurate data at the start of the project and having an employer who is willing to openly

and accurately share this information or have an insurance company who is willing to work with the project to assist in the data collection process to assure updating and accuracy.

The employee is entitled to medical treatment, at no cost, to cure and relieve the effects of the occupational injury. The employee is also entitled to be reimbursed for costs of mileage going to and from medical appointments, but not entitled to mileage reimbursement for attending court hearings or traveling to the insurance company's office.

Direct costs measurable and associated with this type of benefit include:

Medical expenses. These include:

- Injury and illness diagnosis and treatment;
- Inpatient care;
- At-home rehabilitative care; and
- Psychological evaluation and counseling.

*Payments for lost time***.** Indemnity payments include:

- Temporary total disability;
- Permanent total disability;
- Temporary partial disability; and
- Permanent partial disability.

*Claim expenses***.** These include:

- Processing fees;
- Attorney fees and court costs;
- Investigation costs;
- Fines; and
- Remediation from safety hazards.

Administrative fees. In addition to other self-insurance costs, these include fees paid to:

- The Third Party Administrator (TPA);
- Case managers; and
- Utilization review companies.

*Fees paid to the Workers' Compensation Commission***.** There are numerous fees that employee will receive if injured. For more information about theses fees, please see Appendix B.

Treatment Guidelines

The development and use of treatment guidelines is a new but fast growing area in workers' compensation cost containment: almost 20% of the jurisdictions have adopted treatment guidelines within the past year. The most prominent use of guidelines is in the treatment of low-back injuries and pain. The ATC would be a financial asset in the implementation and improvement of these guidelines. These guidelines would aid in objectively documenting sound treatments and rehabilitation procedures, collect time loss data associated with those guidelines and directly and specifically monitor dollars associated with changes in treatment guidelines based on baseline measures.

Conversion rates of 1st symptom report to actual recordable injury data

In the world of OSHA, in an attempt to evaluate what is an injury versus what is an ache/pain or minor injury, there is a distinction between the first reporting of an injury and an injury. Minor injuries can be treated with first aid and are not considered "recordable" until certain provisions are met. (See www.osha.gov for more specifics). The ability to manage these first reports of injury and prevent these from becoming recordable can be an extremely valuable service, especially in companies that measure health and safety performance by the number of OSHA recordables.

Ergonomic related MSD data comparison to total MSD data

Comparing ergonomic related MSD data, such as incidence and severity rates, to total MSD data within a company can be a valuable measure. It may also be valuable to analyze the percentage of dollars spent on ergonomic related MSDs compared to dollars spent on all MSDs or even all injuries at the company. Analyzing the effectiveness of a program and focussing solely on total MSD data does not effectively measure the success or benefits of a program because there are a number of injuries that may still occur regardless on the prevention programs implemented.

Return to work

As a measure of value or effectiveness, return to work has been documented as having too many variables to make it an effective measure of either component and should not be considered a measure in this model.

Verifying the Data

No matter what measures are determined to be the actual measures of value, it is exceptionally important that those measures be verified and reported in the literature in an effort to demonstrate the role of the ATC in the occupational setting is a value to the customer and not just a valuable asset.

NATA Occupational Athletic Trainer Survey

In 2003 the National Athletic Trainers' Association developed a survey to help substantiate anecdotal evidence that on-site occupational athletic training programs provide companies with decreases in the dollar payout of workers' compensation claims, increased worker productivity through decreased restricted workdays, and decreases in injury and illness incident and severity rates. Respondents were primarily human resource or safety managers.

The primary objectives were to determine return on investment for occupational athletic training programs and the most-common corporate profiles for future employment opportunities for ATC's. Another primary objective was to gain basic information on how athletic training programs run on-site by companies provide a return on investment through improved employee productivity and positive impact on health care costs. Secondarily, the survey determined what types of services certified athletic trainers offered to occupational athletes.

- 100% of companies report the athletic trainer provides a return on investment (ROI)
- Of companies that know specific ROI amount:
- 30% indicate the ROI is at least $7
- 83% indicate the ROI is more than $3
- 94% of companies indicate the severity of injuries has decreased by at least 25%
- Almost 2/3 of the companies indicate that the athletic trainer has helped to decrease restricted workdays and worker's compensation claims for musculoskeletal disorders (MSDs) by more than 25%
- 50% of companies report that the number of injuries has decreased by at least 50%
- Almost 1/2 of the companies that provide on-site physical rehabilitation indicate that health care costs have decreased by more than 50%.

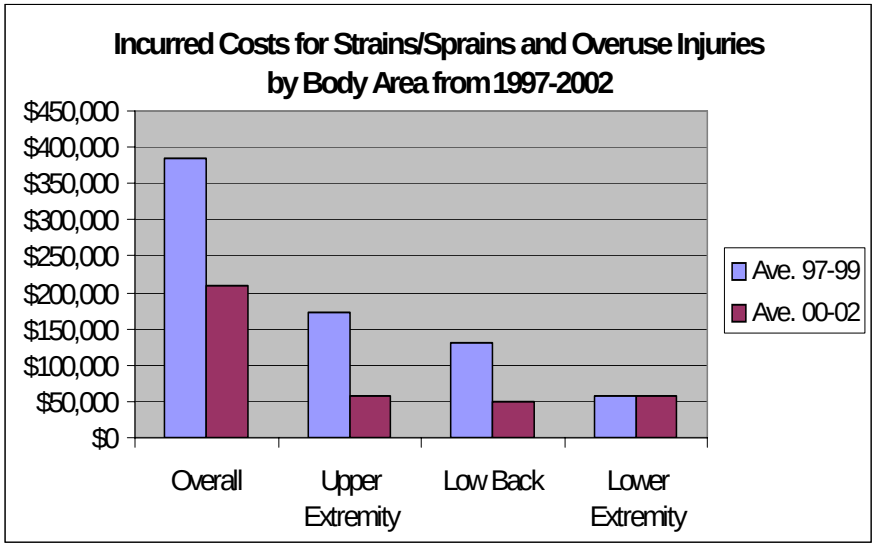
For the complete report see Appendix C.

Case Study: Appleton Papers, Inc.

Appleton Papers is headquartered in Appleton, WI, and has manufacturing facilities in Wisconsin, Ohio and Pennsylvania. The company employs approximately 2,500 people including approximately 1,400 people in the Appleton area. Appleton Papers is the largest producer of carbonless paper, typically used to make multipart business forms. The company is known globally for its capabilities in microencapsulation and coating and also makes thermal papers used for point-of-sale, tag, ticket and label applications, and offers document and product authentication solutions for business and government.

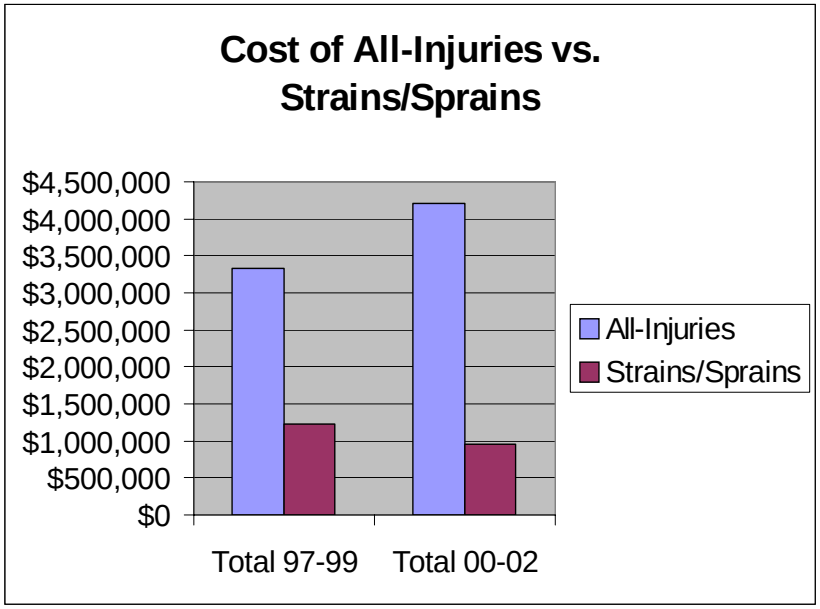
Appleton Papers established its Appleton wellness facility, named the John P. Reeve Wellness Center in honor of a former CEO, in 1994. In 2000, the Wellness Center hired a full-time Certified Athletic Trainer as its Corporate Wellness Site Manager. The John P. Reeve Wellness Center occupies over 4,000 square feet with an aerobics studio, cardiovascular exercise area, weight-training room and a physical rehabilitation room. The Wellness Center offers four primary areas of programming for Appleton Papers. These include on-site physical rehabilitation, ergonomics/injury prevention, fitness and education.

Since the Certified Athletic Trainer has been employed, a number of statistics related to workplace injuries and illnesses have been measured. The chart below represents the significant decrease in work-related costs from strains, sprains, and overuse injuries since the employment of the Certified Athletic Trainer in 2002.



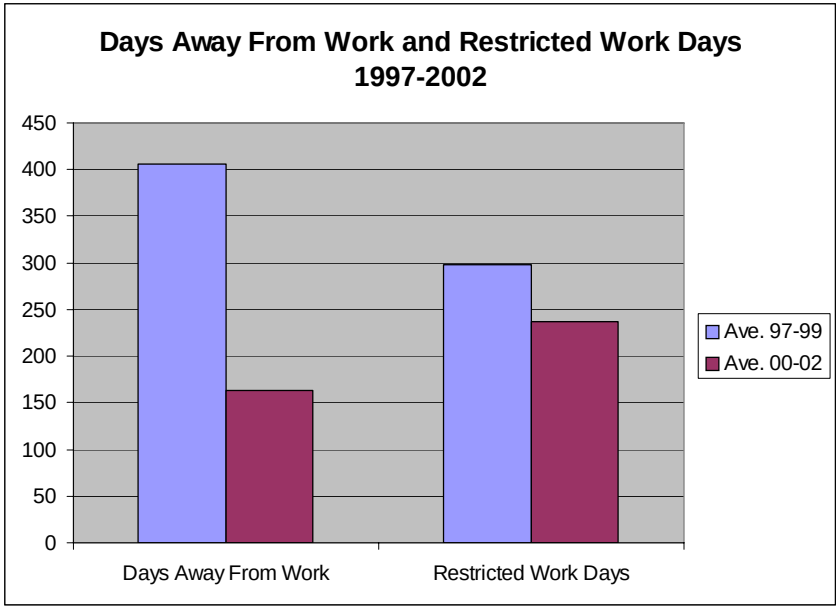
Based on the above chart, the overall cost of workplace strains, sprains, and overuse injuries have decreased from an annual average of $383,000 in 1997-1999 to $207,000 in 2000-2002 (a decrease of 46%). Additionally, costs of upper extremity strains, sprains and overuse injuries decreased from an annual average of $173,000 in 1997-1999 to just $57,000 in 2000-2002 (a decrease of 67%). Low back strains, sprains, and overuse injuries decreased from an annual average of $132,000 in 1997-1999 to $50,000 during 2000-2002 (a difference of 62%). Lastly, costs for lower extremity strains, sprains, and overuse injuries decreased from $58,000 annually to $56,000 (a decrease of 4%).

Another interesting objective measurement was a comparison of the cost of strains and sprains to all injuries at the company. As the chart below indicates, from 1997-1999 strains and sprains represented 37% of all expenses paid out for work-related injuries. In 2000-2002, the cost of strains and sprains had decreased to 22.5% of all expenses paid out for work-related injuries.



In terms of actual dollar values for the above chart, from 1997-1999 Appleton Papers paid out over $3.32 million dollars for all injuries. In this same time period, the company spent over $1.22 million for strains and sprains. During 2000-2002 Appleton Papers spent $4.21 million dollars on all injuries and just over $951,000 on strains and sprains.

The next chart shows the positive impact the Certified Athletic Trainer has had on days away from work on restricted workdays over the past three years. The change in days away from work represents a 60% decrease compared to the previous three years and restricted workdays decreased by 20% over the same time period.



During 1997-1999, the number of days away from work was 406, but this decreased to just 163 days away from 2000-2002. Restricted workdays numbered 298 days from 1997-1999 and this number decreased to 237 restricted workdays from the time period of 2000-2002.

Conclusion

The value model and formulas for objectively monitoring, tracking and defining value as it relates to the services of the occupational Athletic Trainer have been discussed in this document. It is the opinion of this committee that by implementing and assisting all ATC's in using these formulas correctly and in direct relationship to there particular settings that the overall professionalism, and marketability of the ATC as healthcare provider can be solidified and compared to other similar service providers.

By objectifying value through the use of well accepted financial formulas the profession of the Certified Athletic Trainer can effectively be strengthen improving credibility and the visibility of the Certified Athletic Trainer not only in the occupational setting, but all service settings.

This document is only a starting point to the work that needs to be completed to implement and objectify the value of the Athletic Trainer. This committee would recommend:

- Develop a specific evaluation and monitoring tool for each of the specific ATC service areas that will allow the financial impact formulas suggested in this document to be used across all service areas and educational domains.
- Collect and monitor data using the developed tool for statistical comparison and marketing purposes
- Use the financial impact formulas to promote the value of the ATC in the occupational setting with employers, insurers, case managers, and physicians
- Develop a system of education for all ATC's in the importance and use of financial impact formulas to improve salaries, budgets, reimbursement, and effectiveness outcomes.

As a conclusion, this committee has spent over a year developing this document and the resources to be used by the entire profession. The time has been well spent, educational, and our hope is that it will prove to be enlightening not only to our fellow colleagues in the occupational setting, but also can be used to help educate and promote an understanding of the need to "prove" value not just understand that it exists. Our committee of Craig Halls, Sam Bradbury, Tom Schnefke, Kim Kandler, along with the NATA CIC want to thank the Board for allowing us the time to complete and professionally present the document "Value Model of the Certified Athletic Trainer in the Occupational Setting" and look forward to an action oriented response to our work.

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Appendix A

Domains of the Certified Athletic Trainer in Relationship to Industry

Domain I - Prevention of Occupational Athletic Injuries and Illnesses: The certified athletic trainer is able to develop and implement specific programs for the workers. With these programs, the athletic trainer can help prevent injuries from occurring at the work place. Programs can be improved upon with knowledge of proper body positions and the muscle physiology that is required in the work place, as well as safety principles that are inherent. Joint mobility is extremely important for all individuals, and various stretching and strengthening programs can be developed to enhance the flexibility and endurance of the occupational athlete. The knowledge a certified athletic trainer possesses regarding splints and braces can be beneficial in the occupational setting. The occupational athlete will have the optimal readiness to perform a job for the work place through the certified athletic trainer identifying preexisting conditions and even monitoring environmental conditions.

Domain II - Recognition, Evaluation, and Assessment of Occupational Athletic Injuries and Illnesses: Once an occupational athlete has been injured, the certified athletic trainer begins an investigation of the injury with a thorough history of the injury, which will include the type, location, and extent of pain. Any predisposing factors and obvious pathologic signs and symptoms will be discovered through inspection of the injured area of the occupational athlete using knowledge of human anatomy, physiology, and kinesiology. The certified athletic trainer will use palpation to determine the severity of the trauma as well as determine any range of motion deficiencies. Specific tests will be performed which may also include functional capacity tests that relate to the specific injury. Once these signs and symptoms of pathologic anomalies of illness are recognized, then the appropriate course of health care can be determined.

Domain III - Immediate care of Occupational Athletic Injuries and Illnesses: The injury evaluation and recognition skills of a certified athletic trainer are valuable for referring injured employees to the appropriate medical personnel for medical evaluation, diagnosis, and treatment. Likewise, athletic trainers are equally adept at providing treatment and rehabilitation skills as needed. Certified athletic trainers are required to be certified in CPR and first aid, and therefore highly qualified at managing an acutely injured occupational athlete. Emergency care can be given through the certified athletic trainer or when the EMS service is activated. Standards of verbal and written protocols can be administered to the occupational athlete on or off the work site to expedite thorough treatment.

Domain IV – Treatment, Rehabilitation, and Reconditioning of Occupational Athletic Injuries and Illnesses: Restoring the occupational athlete to normal functional status by use of therapeutic modalities and/or

exercise becomes imperative to the work place. Professionally accepted literature is used to evaluate of the theory of operation of rehabilitation equipment, as well as evaluation of the appropriate use and application of manual techniques and therapeutic modalities. The certified athletic trainer is able to develop functional participation to return to the work place.

Domain V - Organization and Administration of Occupational Athletic Training Programs: Maintenance of the occupational athlete's records is imperative in order to document all treatments and services rendered by health care professionals through an organized recording procedure. A routine inspection of the facility, the equipment, and the modalities is necessary to ensure all are clean and sanitary. Maintenance records, dates of purchased equipment, and supplies for the facility are all beneficial for a well-organized clinic. The occupational athlete deserves to have a well planned, organized, health care services system implemented, which has policies and procedures for professional, institutional, and support staff, as well as an established emergency triage plan. These standardized written procedures will render the occupational athlete the best delivery of medical services.

Domain VI – Professional Development and Responsibility: Domain VI deals with regulatory and compliance issues with which the ATC in the industrial setting must have a greater knowledge. The cost of the ATC not knowing current regulations associated with employee drug testing, employee confidentiality including HIPPA, and ADA personnel record keeping, state specific or federal workers compensation issues, OSHA regulations and record keeping, could exceed the real value. However, when well trained in these areas, the ATC can continue to add value and bring additional cost avoidance dollars to the bottom line.

Appendix B

Fees Paid to the Worker's Compensation Commission

Temporary Disability. The employee is entitled to receive monetary payments while off of work and temporarily disabled due to injury. The amount of temporary disability is based upon two-thirds of the average weekly wage, with established maximums, depending upon the date of the injury.

Permanent Disability. If the injury affects ability to participate in the open job market in the future, the employee may receive a set dollar amount as compensation. How much is determined by the part of body that is injured, age, occupation and any work restrictions as determined by various doctors. These factors are plugged into a standard rating schedule to determine how much an employee can recover. If 70% to 99.75% disabled, the employee may additionally receive a small pension for the rest of his/her life. If 100% (totally) disabled, the amount the employee is entitled to receive increases substantially.

Vocational Rehabilitation Benefits. If the employee cannot return to the former job because of limitations caused by an occupational injury, the employee may be entitled to assistance in finding other employment. Vocational rehabilitation is a program designed to assist an employee in returning to the labor market. To this end, vocational rehabilitation employs a number of means, including possibly a retraining program designed to help the employee acquire the skills necessary to return to suitable gainful employment.

Death Benefits. If the employee were killed on the job a total or partial dependent (one who relied upon another for support) may have the right to recover certain benefits, including burial expenses and a sum of money.

State Disability ("SDI"). Most workers have a small amount deducted from each check for "SDI." In the event of disability for any reason (work or otherwise), the employee may be entitled to disability payments. SDI is usually paid where workers' compensation temporary disability is not being paid.

Social Security Benefits. If the employee injury is severe enough, he/she may qualify for social security disability, which is paid by the federal government.

Claims or Lawsuits for Personal Injuries. If the work injury was caused, entirely or in part, by an outside third party (someone not working for the employer), the employee may be able to sue that person or entity in civil court for damages.

Claims or Lawsuits Based on Discrimination. In some instances where the employee has been discriminated against, he/she may be able to file a claim under the Americans with Disabilities Act.

Appendix C

Executive Summary: Certified Athletic Trainers Deliver ROI in Occupational Work Settings

A Report from the Clinical/Industrial/Corporate Athletic Trainers' Committee

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Overview

A penny saved is a penny earned. The adage is true with certified athletic trainers working in the industrial and commercial settings. Certified athletic trainers (ATC's) working full-time in occupational settings provide a measurable, positive return on investment for each dollar spent on athletic training programs, no matter the size of the company, according to a new survey by the National Athletic Trainers' Association (NATA). Certified athletic trainers (ATC's) greatly influenced decreases in company health care costs through a stunning variety of programs designed to meet the needs of their occupational athletes.

The 2003 NATA survey helps substantiate long-standing anecdotal evidence that on-site occupational athletic training programs add value to the corporation. This value is evidenced by decreases in frequency, severity, and overall cost of workers' compensation claims for musculoskeletal disorders, and increases in worker productivity through fewer lost or restricted workdays. Both workers and companies benefit from wellness and fitness programs offered by certified athletic trainers. Respondents, who were primarily human resource or safety managers, recommend employing two ATC's per 1,000 employees.

Survey highlights:

- 100 percent of companies report that the certified athletic trainer provides a positive return on investment (ROI).
- Of companies that track ROI,
    - 30 percent indicate the ROI is at least $7,
    - 83 percent indicate the ROI is more than $3.
- 94 percent of companies indicate the severity of injuries has decreased by at least 25 percent.
- Almost two-thirds of the companies indicate that the certified athletic trainer has helped to decrease restricted workdays and workers' compensation claims for musculoskeletal disorders (MSDs) by more than 25 percent.
- 50 percent of companies report that the number of injuries has decreased by at least 50 percent.
- Almost half of the companies that utilize certified athletic trainers to provide on-site physical rehab indicate that health care costs have decreased by more than 50 percent.

Summary of Data

The purpose of the Industrial Athletic Trainers' survey sponsored by the National Athletic Trainers' Association was to determine the baseline cost/benefit numbers for athletic trainers working in occupational settings. The primary objectives of the survey were to determine return on investment for occupational athletic training programs and the most-common corporate profiles for future employment opportunities for ATC's.

Another primary objective was to gain basic information on how athletic training programs run on-site by companies provide a return on investment through improved employee productivity and positive impact on health care costs. Secondarily, the survey determined what types of services certified athletic trainers offered to occupational athletes.

Employment Trends

Employment outlook for ATC's in the industrial and corporate setting appears positive through 2010. The market segment has had strong growth over the past five years. According to the survey, 12 companies reported that they would hire additional ATC's within three years, with eight and nine companies reporting that they would hire additional ATC's within five and 10 years respectively. Some companies reported that they would hire certified athletic trainers in all categories.

ATC's were full-time employees by a wide margin (63%). The second most-favored option was optimizing ATC's on an outreach basis (25%). The remaining ATC's were either independent contractors or part-time employees.

A wide variety of services are offered by occupational ATC's, which is a professional strength of those in the athletic training profession. The variety of programs offered is reflective of the wide range of capabilities, and diverse training and education of ATC's. Injury prevention was the most cited and highest rated service, with 31 companies (97%) reporting that it was very important or important to their programs. Wellness programs were offered by 26 companies, and 25 companies offered physical conditioning, ergonomics and education/outreach training.

Twenty-four companies offered rehabilitation services, 22 offered fitness services, and 20 companies offered nutrition and safety programs. Nine companies had medical case management, and seven companies had work hardening programs.

Nine companies offered nine different ongoing services, and five companies each offered seven or eight different services. Four companies offered six programs, and three companies offered 11 programs. The remaining companies offered from three to five different programs concurrently.

Return on Investment

Of the 32 respondents, 31 (97%) say their athletic training programs provided a positive impact on the company's health care costs. The other company did not know whether results were positive or negative. In particular, 30 out of 32 respondents (94%) reported that the individual ATC himself or herself provided a positive return on investment. This affirms that the ATC's education and training in injury prevention, assessment, treatment and rehabilitation are ideally suited for occupational settings.

Of the respondents that tracked specific dollar figures, 100 percent reported positive ROI. The results were:

- 3 companies reported ROI in the $1-$3 range (per $1 invested)
- 6 companies reported ROI in the $3-$5 range (per $1 invested)
- 3 companies reported ROI in the $5-$7 range (per $1 invested)
- 1 company reported ROI in the $7-$10 range (per $1 invested)
- 4 companies reported ROI of greater than $10 (per $1 invested)
- The remaining survey respondents did not track this information.

Twenty-four companies (75%) provided on-site rehabilitation services. The other eight companies did not provide this service, so ROI tracking on this issue was not applicable.

The decreased health care costs by providing rehabilitation services on-site were significant. Four companies reported a 0-25 percent decrease in health care costs. Three companies in each of the following categories reported decreased health care costs: 26-50 percent decrease, 51-75 percent decrease and 76-100 percent decrease.

Workers' Comp Issues; Injury and Illness Incident and Severity Rates

Incident rate: Twenty-eight of 32 respondents (88%) noted that occupational ATC's helped the company decrease the incident rates for musculoskeletal injuries and illnesses. Four companies did not track the information. Of those that specified a percent of decrease, 38 percent reported a 51-75 percent decrease in incidence rate. Twenty-five percent of the companies reported either a 0-25 percent decrease or 26-50 percent decrease in incidence rate. Twelve percent of the companies reported 76-100 percent decrease in incidence rate.

Severity rate: Twenty-two (69%) of 32 respondents noted that the individual ATC helped decrease the company's severity rate for musculoskeletal injury and illness. Two companies reported no decrease in severity rates and eight companies did not track the information. Fifty percent (8 companies) reported a 26-50 percent decrease in severity rates. Thirty-one percent (5 companies) reported a 51-75 percent decrease in

severity rates. The final three companies reported either the highest or lowest category of decrease.

Worker productivity and decreased lost or restricted workdays are important issues in manufacturing, industrial and other corporate settings. Twenty-one (66%) of 32 companies reported a decrease in restricted workdays. Of those reporting a specific percentage, all 15 companies reported a decrease, ranging from 0 to 75 percent decrease.

Workers' compensation claims were also decreased with 75 percent of the total companies reporting. Of those reporting specific percentages, 37 percent reported a 0-25 percent decrease in workers' comp claims related to musculoskeletal injuries. Thirty-two percent of companies reported a 26-50 percent decrease, and 26 percent reported a 51-75 percent decrease. One company reported a 76-100 percent decrease. This information was tracked through the use of OSHA logs, workers' comp premiums and internal cost analysis.

The types of companies responding to the survey include: aerospace products, automotive manufacturing, beverages, carbonless/thermal paper, chemicals/plastics, disability management, drugs/medical manufacturing, energy/electricity, entertainment, health care, logistics/warehousing and less-than-truckload freight.
Representative titles are: health/worksite promotion director, operations health manager, director of safety and security, fitness director, medical directory, safety/ergo training manager, division risk manager and personnel manager.

Demographics

The greatest number of certified athletic trainers was employed by companies with 2,501-5,000 employees (9 respondents for 28% of employer category). Interestingly, seven (7) companies (22%) employed between 101-500 employees. Two employer size categories tied for the third largest size (511-1,000 and 1,001-2,500 employees). Five companies (16%) in each the 101-500 and 1,001-2,500 employee categories tied for third. Four companies (13%) employed fewer than 100 people, and two (6%) companies employed more than 5,000 people.

Of the 32 respondents, the mean number of ATC's per company was 5.5, and the mode was 1 (at 12 companies). The mean number of ATC's employed per facility was 1.35. The mode was one (representing 23 companies). Human resource managers noted that about two (mean 1.9) ATC's per 1,000 employees were ideal. The mode of ATC's per 1,000 employees was 1-2 (18 companies using this figure).

Methodology

The survey was e-mailed to National Athletic Trainers' Association members who listed industrial or corporate as their primary work setting. Members in this category without e-mail addresses were sent the survey via U.S.

mail. Only U.S. members were sent the survey. A total of 460 surveys were sent, 378 by e-mail and 82 by postal service.

A total of 75 surveys were received, which is a 16 percent response rate. However, only 32 surveys were usable, which equals to 7 percent. The response rate on usable surveys was lower than usually received by NATA because the survey audience was not the actual member. NATA members received the survey with a request that it be filled out by the person responsible for the financial and/or human resource aspects of the athletic training program, which was usually the human resource manager or safety manager. This means that a person less vested in the results of the success of the survey was responsible for completing it. However, a 16 percent response rate is very acceptable, and the survey is valid as a trend indicator and reliable industry segment sample.