Occupational Certified Athletic Trainer FAQ's

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References and Contacts

Who can I contact to learn more about industrial athletic training?

The best source for information is the NATA Website. However, if you still cannot find what you are looking for then here are some contacts:
Sue Finkam, NATA CIC Chair (cic@nata.org)
Cate Brennan Lisak, NATA staff (catel@nata.org)

What are some good references to obtain more information regarding the occupational setting?

A. The Comprehensive Guide to Work Injury Management
   1. Susan Isernhagen
   2. Aspen Publishers, 1995
   3. This guide has anything and everything you would ever want or think of related to on-site injury management programs. Talks about on-site rehab, but a number of other programs as well. Provides a step-by-step guide from the initial planning stages to implementing the program to managing the program.

B. AdvanceDR article on UAW-Ford
   1. C.A. Wolski

2. Rehab Management, April 2003
3. This article provides a case study of a successful on-site rehab program operated jointly by Johns Hopkins University and UAW-Ford. Program is called the UAW-Ford Physical Rehabilitation Project and discusses the benefits of a three-year trial providing on-site rehab at Ford

C. Industrial Expansion
1. Mark Hyland and Julianne Ruggles
2. www.rehabpub.com
3. This publication talks about expanding into the industrial setting from someone who operates or works for a sports medicine clinic. Goes over details of the proposal and the importance of staffing. Talks about billing issues and things to review and measure once the program is in place.

D. Disability Management in Industry: The New Paradigm in Injured Worker Rehabilitation
1. Donald E. Shrey
2. Disability and Rehabilitation, 1996
3. This article discusses the cost savings associated with effective injury management. Also talks about how trends in injured worker rehab are shifting from community based services to work site-based programs. It also provides strategies for positively impacting labor relations through effective injury management.

E. Right Where You Are
1. Christopher Park
2. www.rehabpub.com
3. Provides a very interesting case study that looks at EMTs and how they were able to save a company hundreds of dollars by treating non-emergency injuries at the worksite. Basically, by being on-site, the EMTs could provide the necessary care for employees as opposed to sending them to the emergency room for injuries such as strains, sprains, lacerations, and foreign objects in the eye. Company is Mobile Health Care in Portland, Oregon.

Services and Programs

What potential services could an ATC provide in the occupational setting?

- On-site physical rehabilitation
- Ergonomic job site evaluations
- Functional job descriptions
- Pre-work screenings
- Prevention education programs
- Physical conditioning programs
- Case management
- Return to work programs
- Return to work evaluations
- Fitness
- Health promotion services

What are the advantages of providing on-site rehab?

A. Accommodate referrals quickly
   1. Studies indicate the quicker rehab begins, the better the recovery and quicker the recovery

B. Accommodate patient/employee schedule
   1. Better accessibility to care so patients are more compliant and that decreases total recovery time
   2. Don't have to worry about outside conflicts interfering with treatment such as daycare, other appointments, girl scouts, little league, etc., because they were already scheduled to be at work

C. Decreased expenses
   1. Cost avoidance
   2. Insurance premium – less claims means less increase to the insurance premium
   3. Lower experience modifier – more info in Value Model.

D. No payer constraints
    1. Not limited to 6 or 8 visits because of insurance company
E. Functional rehab
    1. Improved outcomes by having health care professional (HCP) that understand the work, the worker and the worksite
    2. Beneficial in developing therapeutic exercise program
F. Improved communication
    1. Act as a liaison between worker and employer/management and physician
G. Increased employee morale
    1. Convenience factor
    2. Feeling that the company truly does care about my health
    3. Improved workability – if injured, return to work quicker which mean more dollars into their pocket
    4. Improved labor relations (in union settings)

How do the services and programs athletic trainers provide in the occupational setting relate to the domains of athletic training?

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 musculoskeletal 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 and patient education. 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, musculoskeletal disorders recognition and intervention, and injury prevention presentations.

Case Management (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.

How do the domains of athletic training relate to the occupational setting?

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.

What trends are important in Occupational Health Care?

A. Offer broad scope of services
    1. Successful programs offer broad scope of services

2. Relationship between insurance companies, employers, and HCPs is closer than ever
3. Prevention is being viewed as equally important as treatment

B. HCP needs to interact at the worksite
   1. On-site care is vital
   2. The HCP needs to go to the employee/employer not the other way

C. "Team" approach is required
   1. Team needs to consist of employer, employee nd HCP
   2. Team works together in prevention, early intervention and rehab

D. Programs are neutral
   1. Not viewed as "pro-employee" or "pro-management"
   2. Want safe and improved workplace for benefit of company and employee
   3. If viewed as "management" in a unionized company, virtually hopeless

E. Aim to prevent "disability"
   1. Disability is a very negative outcome for all parties involved
   2. Need to work diligently to prevent "disability"
   3. This is where role of case management would be useful

F. Focus on the ability of the injured worker
   1. Because of negativity associated with "disability" need to focus on the ability
   2. What can the individual safely do that will keep him/her connected to work environment
   3. Can their function be improved by rehab or modifying workstation

G. Legal credibility
   1. HCP needs to be legally credible in evaluation and management of care
      ** be familiar with your state practice act

H. Cost-effective
   1. Cost is important but effectiveness is much more important
   2. Effective programs are not always the lowest cost provider
   3. Effective programs will be cost-effective because of their outcomes
   4. Quality will always be viewed as "worth the cost"

I. Recognize ALL of your consumers
   1. Don't get too focussed on pleasing just one consumer
      ** management, union, employees, physician, insurance company, etc.

J. Communication is key
   1. Information needs to be exchanged on a regular basis, especially when rehab services are provided
   2. Open dialogue will foster trust and cooperation

Contracts, Statistics, and Other Numbers

What things need to be determined when developing a contract to provide athletic training services in the occupational setting?

A. Price
B. Determine who purchases and maintains (calibrates) equipment
C. Hours of availability
D. Needs analysis – what are the companies/employees needs

What are some of the different billing/compensation methods for occupational athletic training services?

A. Per "X" system, where "X" equals "hour" "modality" or "patient"
   1. Per hour
      a. flat fee per hour while on-site to provide treatment
      b. can set specific time period for each day when services or be available or else can do it on an as needed basis (as needed basis will result in fluctuations in total number of billed hours, which makes it difficult for the industrial company to budget)
      c. get paid same regardless of number of patients treated
         - if treat 1 patient per hour or 5 per hour, still get same hourly wage

d. charges based on staff and equipment requirements
e. amount billed varies based on number of total hours on-site
f. need to build flexibility into contract in case under or over-utilized compared to expectations
g. incentive with this structure: work as many hours as possible so try to keep patients there a long time by doing many procedures

2. Per modality
   a. payment is made for each procedure/modality provided
   b. charges based on staff and equipment requirements
   c. price based on local market and reflect "usual and customary" charges
   d. bill fluctuates (daily, weekly, monthly) depending on number of services provided
   e. difficult for company to budget
   f. incentive with this structure: the more you do the more you make so this encourages you to do as many procedures as possible
3. Per patient
   a. flat fee per each patient treated
   b. price based on local market and reflect "usual and customary" charges
   c. fluctuations in total number of patients within each day, week, month, etc., which makes it difficult for the industrial company to budget
   d. charges based on staff and equipment requirements
   e. need to build flexibility into contract in case under or over-utilized compared to expectations
   f. incentive with this structure: keep patients coming for as long as possible – don't want release them from rehab

B. Flat Fee
1. Most common
2. Both parties develop a pre-determined amount for on-site services
3. Fee is determined by projected staff, equipment, and utilization
4. Both parties accept some amount of risk with this approach
5. Easy for industrial company to budget
6. Incentive with this structure: be efficient and stress prevention
7. Overall this is the preferred method!

C. Profit sharing
1. Very risky – your pay directly depends on your performance!
2. Charge minimal fee with incentive plan built into contract
   a. For example, charge $10/hour and get 25% of "savings"
   - need to define what "savings" is
   - need to make sure numbers you get are correct
   b. previous objective and measurable stats are needed (work comp expenses, days away from work, restricted work days – the more the better).
   c. Incentive is to decrease number and severity of injuries, which benefits company because less costs paid out for injuries but also for you because of the incentive plan with the contract
   d. Some companies will be happy to pay out more with your incentive plan if it means less injuries and costs associated with those injuries.
   e. If truly successful, some companies might not be so willing to part with that much money.
   f. Other problems: open cases. If use Jan. 1 – Dec. 31 as time frame, not all cases are going to close exactly by Dec. 31. The question is what to do about open cases?
   g. Also indirect costs benefits that you may not be able to get a part of
   - typically 3-5 that of direct costs so can add up to a lot of money

D. Bill company's insurance provider
1. Use ATC/CPT codes
2. Need to be a licensed provider (know state practice act!)
3. Get pre-approval from company's insurance provider

4. Inherent danger – the more you bill, the more you make so will do lots of modalities to increase the price

What medical and health indicators are useful to know related to the occupational setting?

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 workers 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.

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

What are some of the statistics regarding workplace injuries and illnesses?
The following links provide numerous statistics related to workplace injuries and illnesses.

http://www.osha.gov/oshstats/work.html

http://www.bls.gov/news.release/osh.toc.htm

http://www.libertymutual.com/corporate/workplace/

http://www.eorm.com/ezine/pp5/WorkPlaceSafetyIndex2003.pdf

What are important cost justification formulas to know when meeting with management to provide athletic training services at an occupational company?

A. Cost Avoidance
   1. A cost avoidance is the reduction or elimination of a new cost that would have otherwise occurred.

2. 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.
3. There are two components used to calculate cost avoidance; one is the cost of service or program charged by similar service providers in the same area, and the other is the total number of services or programs provided.
4. 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)
5. Advantages
   A. simple
   B. easy to compute
   C. easy to understand
   D. Very popular
6. Disadvantages
   A. Limited applicability
      1. and because of that it is not (see "B" below)
   B. Not well accepted
      1. Bean counters like it, but don't put a lot of value into it
   C. Not a true reflection of all the benefits associated with on-site rehab

A certified athletic trainer is paid an annual salary of $55,000. The ATC provides on-site physical rehabilitation consisting of initial evaluations, ultrasound, electric stimulation and therapeutic exercise. A local sports medicine clinic charges $80 for an initial evaluation ($40 per 15 minutes), $40 per ultrasound treatment, $40 for electric stimulation and $25 for every 15 minutes of therapeutic exercise. In one month the ATC provides 5 initial assessments, 40 ultrasound treatments, 25 electric stimulation treatments and 50 therapeutic exercises sessions. The monthly cost avoidance is calculated as follows:

Monthly cost avoidance

Initial Assessment	=	($80) x (5)	=	$400
Ultrasound	=	($40) x (50)	=	$2,000
Electric Stimulation	=	($40) x (25)	=	$1,000
Therapeutic Exercise	=	($25) x (60)	=	$1,500
Grand Total of Savings (monthly)			=	$4,900

Annual cost avoidance is $4,900 x 12 = $58,800

B. Payback Period

- recover the initial investment.
- All things being equal, a project with a shorter payback period is considered better because of the lower perceived risks.
- 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

5. Advantages
   E. simple
   F. easy to compute
   G. easy to understand
   H. very popular
6. Disadvantages
   D. risky and misleading because of 1-3 below:

E. ignores time value of money – For example, you have two projects that require $30,000 initial investment. One pays back $10,000 each year for 3 years while the other pays back nothing for years 1 and 2,and then pays back all $30,000 in year 3. Both projects have a 3-year payback period, but the 1st project is more valuable because the $10,000 payments in years 1 and 2 can be earning interest.
F. ignores "profitability" of a project – does not consider that some projects will continue to payback beyond the pre-determined payback period.
G. lacks a benchmark – no set standard for deciding if projects should be accepted or rejected. 2 years is the maximum allowable period most companies use because if a project will cover its costs within 2 years it is usually viewed as being so lucrative that no further justification is necessary, but there really is no absolute acceptable period

An ATC is paid an annual salary of $55,000. The ATC provides on-site physical rehabilitation consisting of initial evaluations, ultrasound, electric stimulation and therapeutic exercise. A local sports medicine clinic charges $80 for an initial evaluation ($40 per 15 minutes), $40 per ultrasound treatment, $40 for electric stimulation and $25 for every 15 minutes of therapeutic exercise. In one month the ATC provides 5 initial assessments, 40 ultrasound treatments, 25 electric stimulation treatments and 50 therapeutic exercises sessions. The total savings of having the ATC provide on-site rehab are estimated at $58,800. 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 $58,800 the payback period is calculated as follows:

Time to payback (years) = Cost of ATC / Savings
= ($55,000) / ($58,800)
= 0.93 years

I. Return on Investment (ROI)
1. Widely accepted way of determining the efficiency of an investment.
2. 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.
3. ROI greater than 0% is considered to be cost effective.
4. The general ROI formula is:

ROI = (Return / Amount Invested) x 100
or
= (Net Present Value of Savings / Initial Investment) x 100

5. Advantages
   a. Easy to understand
   b. Relatively easy to calculate
   c. Commonly used
6. Disadvantages
   a. No consideration for the timing of cash flows
   b. No consideration for the time value of money

An ATC is paid an annual salary of $55,000. The ATC provides on-site physical rehabilitation consisting of initial evaluations, ultrasound, electric stimulation and therapeutic exercise. A local sports medicine clinic charges $80 for an initial evaluation ($40 per 15 minutes), $40 per ultrasound treatment, $40 for electric stimulation and $25 for every 15 minutes of therapeutic exercise. In one month the ATC provides 5 initial assessments, 40 ultrasound treatments, 25 electric stimulation treatments and 50 therapeutic exercises sessions. The total savings of having the ATC provide on-site rehab are estimated at $58,800. 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 $58,800 the ROI is calculated as follows:

ROI = (Return / Amount Invested) x 100
= ($58,800 / $55,000) x 100
= 1.07 x 100
= 107 %

How can I relate the cost justification formulas to the domains of athletic training?

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. The Joyce Institute (1995) developed this formula. 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 is, which is not the case in total uncertainty. The uncertainty formula states:

Injuries per year to payback = Cost of Implementation in total uncertainty
Maximum Payback Period = Cost per injury x 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.

Injuries per year to payback = Cost of Implementation in total uncertainty Maximum Payback Period
Cost per injury x 50%

$$= \frac{\$4,500}{3}$$

$$\frac{(\$8,500)(.50)}{\$4,250}$$

$$= .35$$

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. CIO's, 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:

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

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 those employees' average four 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 percent, which indicates that the employees lose no time from work 40 percent 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 and 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 result in 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 percent 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.

Misc.

What well-known companies employ athletic trainers?

- Allison Engine
- Appleton Papers
- Coca-Cola
- Daimler-Chrysler
- Dana Corporation
- Delta Faucet
- DuPont
- Frito Lay
- General Electric
- General Motors
- International Paper
- Johnson & Johnson
- John Deere
- Kodak
- Mead Westvaco
- Navistar International
- Nike
- Quad Graphics
- Roadway Express

- SquareD Company
- Subaru-Isuzu
- U.S. Marine Corp
- U.S. Navy, Navy Seals

What factors outside of one's job tasks can contribute to injury?

A. Lifestyle Risk Factors – things beyond one's work that can also contribute to injury
   1. Hobbies/part-time jobs
      A. The car mechanic or landscaper for part-time job
      B. Tennis player
   2. Diet
      A. Poor dietary habits can contribute to musculoskeletal system (MSD) problems
   3. Obesity
      A. Directly related to musculoskeletal system problems
      B. Usually less active, which limited circulatory system
      C. Obese people put body into more awkward postures as a result of their condition
   4. Smoking
      A. Reduces body's ability to carry oxygen, which makes person work harder to perform ordinary body functions, such as walking, breathing, and moving arms/legs
      B. This puts extra stress on the body, which puts them at higher risk of MSDs
   5. Sedentary lifestyle
      A. Generally people in poor physical shape more likely to have MSDs
   6. Lack of sleep
      A. Provides muscles and the body with vital recuperation and recovery time.
   7. Stress
      A. Higher stress levels (work or home) can contribute to MSDs
   8. Pregnancy
      A. Low back pain and carpal tunnel are seen frequently during pregnancy. And while often subside at the end of the pregnancy, still play a role in MSDs.
   9. Nutrition
      A. Low vitamin C reduces body's ability to build collagen, which is used by the body to build tissue.
      B. Deficiency in vitamin B6 may cause nerve irritation and malfunction of immune system

*** North Carolina Division of Occupational Safety and Health ***

What suggestions do you have for being successful in the occupational setting?

A. Remember the "team" approach
   1. Keep all parties actively involved
B. Focus on functional outcomes
   1. Goal is to return employees to work without restrictions so tailor program accordingly
C. Focus on active treatment (not passive)
   1. Make sure employees take active role in their recovery
   2. Modalities will accelerate the healing process, but therapeutic exercise is what is going to keep them healthy and injury free in the future
D. Stress early recognition and early intervention
   1. You want to treat injuries early as studies indicate the quicker the rehab process begins, the better and faster the recovery
   2. Encourage employees to seek treatment when the injury is relatively "minor" before it develops into a chronic, long-term condition
E. Communicate
   1. Need to effectively communicate to upper management and also build rapport with the plant workers
   2. May meet with Plant Manager in the morning and in the afternoon be out on the floor with the plant workers
F. Educate/Marketing

1. Make sure employees know who you are and what you can do
2. Encourage them to use your services instead of going to an off-site location
3. Market internally through company e-mail, website, bulleting boards, newsletters, etc.
4. Market externally to spread the word to area physicians that you are at the company and the services you provide – maybe do an Open House.

G. Negotiate everything up front
   1. Little details ignored in the beginning can lead to big problems down the road and may lead to an unsuccessful program
   2. Make sure to discuss any little expense that may arise down the road and figure out who pays for it when or if it occurs

H. Document – anything and everything
   1. Initially you can't over-document
      a. Phone calls
      b. Drop-ins
      c. Others, basically any contacts with employees
      d. Rehab programs
      e. May need this to justify the time spent at company (what does the ATC do all day – she's only treating four patients a day so what does she do the rest of the time?)

I. Customer focussed quality
   1. Always remember that employees have a choice in their healthcare
   2. While on-site is convenient, if employees feel they get better care down the road that is where they are going to go.
   3. Be flexible to the employees and employers needs – hours of availability, treatment protocols

J. Shout out your successes
   1. The more "good" heard about your program the better.
   2. Take an active role to attend department meetings as well as management meetings
   3. But even more important, encourage employees who had successful rehab to share the word with their co-workers and supervisors. Nothing will help you more than having the employees "on your side."

What purpose does the NATA Clinical/Industrial/Corporate Athletic Trainers' Committee serve?
The mission of the NATA is to enhance the quality of health care for athletes and those who engage in physical activity, and advance the profession of athletic training through education and research in the prevention, evaluation and management and rehabilitation of injuries.