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Train-the-trainer office ergonomics program

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TRAIN-THE-TRAINER OFFICE ERGONOMICS PROGRAM

by

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This Scholarly Project Paper, submitted by Aaron Schenck in partial fulfillment of the requirement for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

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Title Train-the-Trainer Office Ergonomics Program
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ABSTRACT

It may be a common perception in the general public that the daily tasks carried out in an office environment are not typically considered physical demanding. Office tasks, such as typing, filling out forms and filing paperwork typically do not require a significant amount of force. Work tasks associated within an office environment, especially computer use, can increase stress on the soft tissues of the body, such as muscles, tendons and nerves over time (Department of Labor, 2005). This can result in what is called musculoskeletal disorders (MSD)’s.

The negative impact of MSDs affects employers through decreased work attendance, productivity and increased workers compensation expenses. MSDs negatively impact employees through physical and psychosocial distress, lost time from work, decreased efficiency at work and decreased earning capacity.

A review of the literature focused on three areas: 1) the work related injuries in the office environment, 2) the physical, psychological, and societal costs and 3) ergonomic best practices. The literature review culminated with the development of a proposed office ergonomics program designed to address office work injuries utilizing occupational therapy assessment and intervention.

The Train-the-Trainer-Ergo Office Program was developed to be marketed as an injury prevention tool for employers looking to reduce workers compensation expenses and improve the health of the workforce. This program is implemented by an occupational
therapist on-site to supervisors, who will then educate their employees regarding ergonomic principles related to their work activities. The four sections of this training program include: 1) the impact of work injuries; 2) musculoskeletal disorders; 3) risk factors and; 4) prevention.

The Model of Occupational Adaptation is utilized as the basis of this training program because it views the employees as the agents of change. The training will provide information that will allow the employees the opportunity to adapt within their work environment in order to decrease risks and work injuries. Modifying the work environment and work tasks will be more effective when the employees are able to change their behavior in relation to their jobs (Fontana, 2002). The more that the employees understand how improper work habits can have a negative impact on their health and productivity, the more willing they will be to incorporate the necessary modifications to decrease their risk factors for MSDs.
CHAPTER I
INTRODUCTION

Musculoskeletal disorders (MSDs) are the most common type of work injuries seen among employers with office environments. "Musculoskeletal injuries associated with computer use account for at least half of all reported work-related injuries" (Bohr, 2000, p. 243). Bohr (2000) reports "musculoskeletal injuries are a leading cause of disability among working age individuals resulting in over 12 million annual visits to physicians" (p. 243). The Bureau of Labor Statistics (BLS) reported that in 2002, there were "92,576 repetitive trauma cases associated with typing or data entry; 55 percent of these injuries affected the wrist, seven percent affected the shoulder, and 6 percent affected the back" (Fischer, Konkel & Harvey, 2004, p. 195).

MSDs have resulted in increasing workers compensation expenses, decreasing productivity and increasing expenses associated with overtime pay, training and/or hiring new employees to maintain productivity. All of these have had an impact on the overall profitability for employers. Because MSDs are often preventable, some employers are willing to incur the initial expense of implementing injury prevention programs. The expectation with implementing an injury prevention/ergonomic program is that the employer will save money in the long term through decreased workers compensation and associated expenses along with maintaining or improving productivity. The purpose of
this scholarly project was to design an ergonomic program that meets the unique needs of the office environment utilizing occupational therapy assessment and intervention.

Occupational therapists play a significant role regarding injury prevention and ergonomic intervention programs. Occupational therapists possess a combination of knowledge regarding: 1) MSDs and subsequent treatment; 2) ergonomic principles; and 3) psychological and psychosocial issues associated with injury prevention or return to work following a work injury. This wide base of knowledge and skills make occupational therapists an excellent option for employers seeking injury prevention and return to work services.

Program Design

The *Train-the-Trainer Ergo Office Program* is an education program designed for an occupational therapist to train individuals in supervisors in prevention. Train-the Trainer means that occupational therapists train human resource personnel, risk management personnel and work/shift supervisors in basic ergonomics strategies. Upon completion of training, these employees are then responsible to train the employees they supervise.

Theoretical Model

Education plays a major role in any injury prevention or injury program. Employees and employers need to be educated regarding identifying MSD risk factors including; postural issues, body mechanics, work station design/modification and task modification to allow them to make changes as needed during the work day to minimize work injuries.
The Model of Occupational Adaptation (MOA) is chosen to provide the educational design for this training program. MOA views the employees as the agents of change. The Train-the-Trainer Ergo Office Program will provide information that will allow the employees the opportunity to adapt within their work environment in order to decrease risks and work injuries.

A component of the education process associated with an ergonomics program is to help employees and employers modify behavior. Often, employees have learned to performing their work activities in a certain manner, even if it produces and or prolongs MSDs. Implementing ergonomic interventions requires employees to alter their work behavior and interrupt unhealthy habitual patterns that have developed over time. Modifying the work environment and work tasks will be more effective when the employees have learned which behaviors to change and why in relation to their jobs (Fontana, 2002). The more the employees understand how improper work habits can have a negative impact on their health and productivity, the more willing they will be to incorporate the necessary modifications to decrease their risk factors for MSDs.

**Key Concepts/Terminology**

The following are concepts and terminology that will be addressed within this scholarly project:

1. MSDs occur over time as the result of awkward posture, force and high repetition with inadequate recovery time.
2. MSDs are preventable through ergonomic intervention, which focuses on fitting the task to the worker.
3. Ergonomic programs, such as the *Train-the-Trainer Ergo Office Program* are utilized by employers as cost containment measures to decrease workers compensation expenses and maintain or improve productivity through a healthy work force.

4. Two key components of the *Train-the-Trainer Program* are 1) education regarding MSD risk factors and ergonomic principles and 2) self efficacy: the belief by employees that they have control over adapting to their work environment to decrease the negative effects of MSDs.

5. Commitment by both employers and employees to follow through with the ergonomic training they receive through the *Train-the-Trainer Program* is vital to the success of this program.

**Conclusion and Introduction**

Education plays a major role in any injury prevention or injury program. Employees and employers need to be educated regarding identifying MSD risk factors including; postural issues, body mechanics, work station design/modification and task modification to allow them to make changes as needed during the work day to minimize work injuries. The *Train-the-Trainer* program is a tool than can be utilized by employers to improve the employees’ interaction with the work environment through increased knowledge regarding injury prevention and fostering self-efficacy to improve healthy behavior.

The scholarly project is presented in the following four chapters. Chapter II presents the review of professional literature regarding the negative effects of MSDs,
including increased workers compensation expenses, lost time from work, decreased productivity and increased psychological tension among co-workers. This review also includes the benefit of ergonomic programs to the employer and employees as well as components of an ergonomics program. Chapter III will review the methodology related to how the information from the literature review was utilized to develop the Train-the-Trainer Office Ergo Program. Chapter IV presents the Train-the-Trainer product in its entirety. This includes the instructional information that will be used by occupational therapist instructor as well as by the supervisors after they have been trained. Chapter V will present the limitations and recommendations for the Train-the-Trainer Ergo Office Program.
CHAPTER II
INTRODUCTION

It is not surprising that workers in physically demanding jobs such as construction and firefighting have a significant risk for work related injuries; yet these are not the only workers who are at risk for injuries. Office workers who sit at a desk or work at a computer for eight hours a day may not have their jobs classified as “physically demanding,” but they are also exposed to conditions, that contribute to work related physical injuries. These are the employees who are the focus of this project in relation to musculoskeletal disorders (MSD’s), risk factors and treatment intervention.

The Department of Labor (2005) defines a MSD as “an injury or disorder of the muscles, nerve, tendons, joints, cartilage, or spinal discs. MSDs do not include disorders caused by slips, trips, falls, motor vehicle accidents, or similar accidents” (¶. 10). Multiple risk factors related to musculoskeletal injuries are present in an office environment. Amell and Kumar (2002) indicate that risk factors associated with MSDs include: high repetition in conjunction with high force, high repetition in awkward postures and lack of sufficient time for recovery between tasks. MSD’s are usually associated with repeated strained muscle actions of the neck, shoulders, arms, forearms or wrists and could include; carpal tunnel syndrome, tennis elbow, deQuervain’s and rotator cuff tendonitis. Musculoskeletal, vision, and hearing problems are also common in the workplace (OSHA, 2006).
“Musculoskeletal injuries associated with computer use account for at least half of all reported work-related injuries” (Bohr, 2000, p. 243). Bohr (2000) reports that “musculoskeletal injuries are a leading cause of disability among working age individuals resulting in over 12 million annual visits to physicians” (p. 243). The Bureau of Labor Statistics (BLS) reported that in 2002, there were “92,576 repetitive trauma cases associated with typing or data entry; 55 percent of these injuries affected the wrist, seven percent affected the shoulder, and 6 percent affected the back” (Fischer, Konkel & Harvey, 2004, p. 195).

One aim of this scholarly project is to demonstrate the impact that injury prevention, such as an ergonomic program can have on productivity. If the frequency and number of injuries decreases, productivity is expected to increase. This can be measured by identifying; 1) the amount of increased hours worked, 2) cost savings, an essential measure necessary to sell an injury prevention program, and 3) a decrease in overhead operating costs. Of the three measures, workers compensation costs, both direct and indirect, can give employers the best overview of the effectiveness an injury prevention program may have. Due to the high cost associated with workers compensation, it continues to remain a large consumer of operating costs, and when this expenditure can be directly addressed with reductions, savings are a good measure of how injury prevention is effective. The literature review will present: 1) the work related injuries in the office environment, 2) the physical, psychological, and societal costs and 3) ergonomic best practices. The literature review will culminate with the presentation of a proposed office ergonomics program designed to address office work injuries utilizing occupational therapy assessment and intervention.
The Office Environment

As previously described, it may be a common perception in the general public that the daily tasks carried out in an office environment are not typically considered physical demanding. Office tasks, such as typing, filling out forms and filing paperwork typically do not require a significant amount of force. However, these tasks are repetitive in nature.

The increased utilization of computers has increased productivity as well as the risk for MSD’s in the work place. Fleishcer, Keller and Strasser (2004) noted that “increased use of computers and long periods of typing in the course of work processing or manually entering text may lead to pain in muscles, tendons, and joints” (p. 105).

Feuerstein, Nicholas and Suchday (2005) propose that:

despite a decrease in the total rates of musculoskeletal disorders in the US workplace from 2000 to 2001, musculoskeletal disorders of the upper extremity continue to be associated with the longest median absences from work when compared with any other work-related disabling illness and injury(¶ 6).

Work related injuries affect everyone at every level; employee, employer and even societal. Each of these areas will be presented in a general overview as to how it is impacted by work related injuries.

Impacts on Employee

Employees who sustain a work related injury could be impacted physically, psychologically, socially and financially. The combination of these components can ultimately increase the duration of treatment and time away from work. MSDs can
decrease an employee’s ability to perform essential job duties as well as the ability to perform daily activities at home, resulting in decline in quality of life.

*Physical Impact:* The physical impact of a work injury can result in the inability to perform the essential functions of his or her job. Depending on the type and severity of the injury, the employee could experience decreased strength, sensation, coordination and endurance along with increased pain. Lateral epicondylitis is an example of an injury that can have chronic effects on an employee’s functional ability. Often, employees with this diagnosis continue to experience ongoing symptoms on the job following treatment and some employees require permanent work restrictions because of the presence of ongoing symptoms or dysfunction.

*Psychological Impacts:* There are psychological impacts for the injured employee such as fear, depression, stress and anxiety. Miller (2004) indicated that “psychosocial issues such as depression, adjustment disorder, or stress can be factors that compound the length of lost work days and can render the return to work process particularly difficult” (p. 16). Miller (2004) went on to note that:

Depression can lead to decreased productivity, burnout, and poor work habits, and it can cause problems with concentration, memory, morale, and decision making. According to a study printed in the San Antonio Business Journal in 2003, depression costs the United States an estimated $44 billion annually. Fifty-five percent of these costs can be attributed to some combination of reduced productivity ($12.1 billion) and excess absenteeism from work ($11.7 billion). (p. 16).

According to Corcoran (2004), work plays a significant role in regards to establishing and maintaining self-image. If an employee is unable to work due to a work injury, a portion of self-image is altered, which can lead to difficulty in the recovery process. The uncertainty of the future is often stressful for injured workers. Following a
work injury, many employees do not know if they will fully recover from their injury, even with proper medical treatment. If the employee cannot return to work in the same vocational area she or he has been working in for a number of years, he or she may feel displaced.

**Social Impact:** Social stressors can also impact an employee following a work injury. Relationships can be strained with supervisors and co-workers if the injured employee exhibits impaired job performance. Co-workers may also have apprehension that the injured employee’s job performance will put them at risk of injury. Miller (2004) wrote:

Employees who return to their pre-injury job may need some time to adjust to the workload, pace, and structure of a work schedule. They may not be able to work at the same speed as everyone else. If the job includes productivity standards, they may begin to fall behind and internalize the experience as their own failure. They may experience pressure from their supervisor and coworkers to “keep up,” and in doing so may expose themselves to risk factors on the job that they are not ready to handle. Additionally, if they are not able to keep up, and their sense of failure escalates, these employees may become more susceptible to reinjury. (p. 16)

**Financial Impact:** A work injury can have a financial impact on the employee. In many states the reimbursement paid by workers compensation insurers to employees unable to work, is typically less than the wage the employee would earn if able to work. For example, the state of Minnesota reimbursement rate is two thirds of the employee’s average weekly wage dating back six months prior to the injury (MN Department of Labor, 2002). Minnesota also limits their Temporary Total Benefits (wage loss when an employee is completely off work) to a maximum of 104 weeks. If an employee exceeds this 104 week limit and cannot return to work due to extended medical treatment, he or
she does not get paid. In certain situations employees’ income is earned by piecework or productivity incentives. If an employee is off work or on restricted duty due to a work injury, his or her income can be diminished.

The impact on the employee is considerable as is the impact on the employer. Although the impact is not presented in the personal context in the next section, it is still significant considering it includes the employee’s co-workers as well.

Impact on Employer

**Social/Psychological Impact:** Work injuries can have a significant impact on the work environment such as decreased employee morale. If a work environment is not considered safe and healthy the employees may not be as productive. The employer may also have a decreased attendance, frequent employee turnover, and increased insurance costs.

**Financial Impact:** Employers are affected by work injuries in multiple aspects. The Bureau of Labor Statistics (2005) report for 2003 confirmed that nationally: 1) 1.3 million work injuries resulted in lost work tie across all occupational areas; 2) the median number of lost work days due to an occupational injury was eight days; 3) over 25% of work injuries resulted in 31 or more days of lost work; and 4) MSDs resulted in 33% of all work injuries nationally in 2003.

When considering the multiple components of the workers compensation system, MSDs produce more of an economic burden compared to other health related issues (Fluharty, 2003). MSDs are costly in multiple aspects, including; medical treatment, wage loss reimbursement and decreased productivity (Amell and Kumar, 2001).
Litigation, replacing injured workers, along with overtime pay for the remaining healthy workers to maintain productivity also adds to the expense of MSDs (Fluharty, 2003).

Work injuries often produce increased insurance premiums. Zaidman (2004) reported that in 2003, there were 111,600 work injuries reported in the state of Minnesota with 29,000 resulting in at least one day of lost work. Fifty seven thousand of the reported work injuries resulted in lost time from work, a change of jobs or work restrictions (Zaidman, 2005). The overall cost of Minnesota work injuries in 2003 was nearly $1.5 billion (Zaidman, 2005). The average expense of a Minnesota workers’ compensation claim in 2003 was $6,500 (Zaidman, 2005).

The impacts of MSD’s are considerable at a variety of levels for the individual, the employer and society. These impacts can be changed by anyone who is wishes to minimize the risk of MSD’s developing. There are interventions or prevention strategies that require an awareness of how to fit the job to the worker and not the worker to the job.

**Prevention Programs**

The ultimate goal of an injury prevention program is to prevent injuries. The ultimate reward for the employer is increased productivity, and cost savings. An injury prevention program helps to reduce costs by identifying risks, preventing their reoccurrence and when needed, evaluating, designing and implementing interventions.

Both the employee and employer benefit financially from office ergonomic programs. Fontana (2002) states “job and people-specific ergonomic programs help keep people at work longer and return people to work sooner following problems” (p. 14). For the injured worker who is off work or on work restrictions, this means a return to earning
a wage in a more timely fashion. For some employees, a portion of their earnings is dependant on working overtime or productivity incentives so they may want to return to work as soon as possible. Employers also benefit financially through decreased medical expenses and increased productivity. In 1997 the General Accounting Office confirmed ergonomic programs were beneficial in reducing MSDs and time away from work due to injury, which decreased workers compensation expenses (Amell and Kumar, 2001).

The professional literature identified cost savings associated with ergonomic intervention. Direct medical savings can be as high as $1,195 per injury (Arnetz, Beritz & Meisel, 2003). In a five-year study, Barnett (2002) confirmed that an employer, who participated in an injury prevention program, was able to realize a $623,040 annual savings from an annual investment of $273,955. This resulted in a $2.30 return for every dollar spent by the employer towards health promotion (Barnett, 2002).

The cost of an injury prevention program greatly outweighs the costs a company incurs in comparison to the costs of insurance. Fontana (2002) proposes that there is an increased awareness by employers regarding the necessity of ergonomic programs both to prevent injury and assist in return to work following an injury. By lowering the cost of treatment and improving work performance, ergonomic programs can improve profitability and allow the employer to be competitive in the market place (Fontana, 2002).

The indirect costs are difficult to completely calculate, however, the cost savings associated with an injury prevention program offset the implementation, and can be attributed to an increase in production. Savings that are accrued can be used to enhance an injury prevention program, or even pay for premiums it seeks to avoid using.
“Prevention pays for itself in decreased medical care claims, reduced injury rates, and reduced insurance premiums to the company. Prevention programs are also responsible for increased production in some industries” (Key, 1995, p. 13). Based upon all of the information presented thus far from the review of literature, the following office ergonomic program was developed.

The professional literature was also reviewed to identify ergonomic best practices. Correct working postures and alignment are a component of ergonomic intervention. The Department of Labor (2007) identified general working postures that will minimize stress on muscles, tendons, ligaments and nerve tissue during computer activities. These postures include: 1) the back, neck and head in an upright posture, 2) thighs parallel with the seat pan, 3) elbows at the sides of the body, 4) wrists and forearms maintained in a straight line. Fisher identified that “neutral position for the elbows, hips and knees is 90 while neutral for the wrists is straight; (i.e. not flexed or extended)” (p. 198). Along with correct postures, studies have confirmed that regular rest breaks and stretching also contribute to decreased muscle pain and tension (Fluharty, 2003).

Amell (2001) identified three methods of injury prevention: Primary, Secondary and Tertiary

1. Primary: Primary Prevention focuses on preventing a MSD from occurring. An example of this would be the use of proper body mechanics and a split keyboard to prevent carpal tunnel symptoms from occurring in an employee that is otherwise injury-free.
2. **Secondary:** "The goal of secondary prevention is the early detection and treatment of asymptomatic injury or illness before symptoms occur. Secondary prevention relies extensively on occupational injury and illness surveillance." (Amell, p. 260)

3. **Tertiary:** Tertiary Prevention focuses on preventing an existing injury from recurring. An example of this would be decreasing or breaking up repetitive activities for an employee with a previous history of lateral epicondylitis.

With any injury prevention program, the employer needs to be aware of the training, assessment and intervention process (Lagrossa, 2003). This includes face-to-face meetings to discuss the employer’s policies and expectations regarding on-site activities by the occupational therapist. Any recommendations regarding equipment adjustments or the purchase of new equipment needs to be facilitated via the employer (Lagrossa, 2003). Maintaining contact with an employer following implementation of an injury prevention program will allow the OTR to address any questions or concerns that may arise from management or the employees once they have had an opportunity to utilize ergonomic principles in the work environment (Lagrossa, 2005).

An essential component to injury programs is to have the support of management. Kaletsky (2005) proposes that being a coach is one of the roles of a manager. This included teaching employees regarding injury prevention along with fostering a desire among their employees to adhere to safety recommendations. Supervisors must also set an example for their employees by utilizing prevention methods (Kaletsky, 2005).
Train-the-Trainer Ergo Office Program

A review of professional literature confirms that ergonomic intervention can reduce the multiple negative effects associated with MDSs for both employers and employees. The *Train-the-Trainer Ergo Office Program* is an education program designed for an Occupational Therapist to use in training individuals who are in supervisory roles. Train-the Trainer means that occupational therapists trains human resource personnel, risk management personnel and work/shift supervisors in basic ergonomics strategies. Upon completion of the training, these employees are then responsible to train the employees they supervise. This program is an introduction to office ergonomics as a prevention method. If there are significant health issues related to ergonomics in an organization it is recommended that a professional, such as an occupational therapist be directly contracted. Significant issues would be beyond the training of supervisors.

Occupational therapists can play a significant role regarding injury prevention and ergonomic programs. Occupational therapists possess a combination of knowledge regarding MSDs and subsequent treatment, ergonomic principles along with the psychological and psychosocial issues associated with injury prevention or return to work following a work injury. This wide base of knowledge and skills make occupational therapists an excellent option for employers seeking injury prevention and return to work services.

**The Role of Occupational Therapy**

"The role of the occupational therapist in the ergonomics field is to offer cost-effective solutions that will benefit employees while supporting the employer’s goals and
enhancing the bottom line” (Fontana, 2002, p. 15). The American Occupational Therapy Association (AOTA, 2005, p. 677-678) provided the following examples of occupational therapy intervention aimed at improving work performance:

1. Education related to injury prevention, stress management, safety, proper body mechanics, postural awareness, pain management strategies, joint protection, and symptom awareness as applied to work and productive activities.
2. Development of graded activities that allow the individual to perform physical work tasks essential for his or her worker role.
3. Development of occupational activities to increase or improve productive behaviors and skills.
4. Development of individualized work transition programs, job modifications, or job adaptations to facilitate successful work performance.
5. Provision of recommendations about adaptation of work tasks, tools and equipment, or the work environment for the worker and/or the employer.
6. Consultation with the employer on injury management and prevention services to reduce the incidence of disability related to injury.
7. Collaboration with other team members, employers, services, and agencies in coordinating services provided to the worker.
8. Case management services to assist in the coordination and planning for transition or return to work.

**Theoretical Model**

The Model of Occupational Adaptation (MOA) is chosen to provide the education design for this training program. MOA views the employees as the agents of change. The training will provide information that will allow the employees the opportunity to adapt within their work environment in order to decrease risks and work injuries.

Education plays a major role in any injury prevention or injury program. Employees and employers need to be educated regarding identifying MSD risk factors including; postural issues, body mechanics, work station design/modification and task modification to allow them to make changes as needed during the work day to minimize work injuries.
Implementing ergonomic interventions requires employees to alter their work behavior and interrupt unhealthy habitual patterns that have developed over time. Modifying the work environment and work tasks will be more effective when the employees are able to change their behavior in relation to their jobs (Fontana, 2002). The more that the employees understand how improper work habits can have a negative impact on their health and productivity, the more willing they will be to incorporate the necessary modifications to decrease their risk factors for MSDs. Fonanta (2002) provides another example of why employee education is so important:

“If you always do what you always did, you will always get what you always got.” If employees want different results (in other words, if they don’t want to be tired at the end of the day or experience the pain they feel after long hours or years of work) then they are going to have to change their behavior. But the have to understand the “why” before they will implement any changes. For example, after employees understand that the intervertebral disc pressure substantially increases in the low back to as much as 4 times their body weight simply with bending over to tie their shoes, they can appreciate the necessity of using good body mechanics in everything they do. (p. 16)

The literature also indicated that changing health related behavior requires more than education alone. A study by Nieuwenhuijesen (2004) identified self-efficacy as a key component for changing health related behavior. Self-efficacy entails an individual’s ability to implement and maintain behaviors to improve health. When self-efficacy is nurtured and employees believe they have control over certain MSD risk factors, they may be more inclined to utilize ergonomic principles to improve their health (Nieuwenhuijesen, 2004).
Organization

The *Train-the-Trainer Ergo Office Program* utilizes a classroom PowerPoint lecture titled: *Principles of Ergonomics in the Office Environment*. Lecture and discussion are used for the first portion of the training, with no more than 10 participants at a time. The second portion of the program is followed by a workstation assessment to include working postures allowing the participants to have hands-on experience. The classroom portion of the training will address four separate sections that include learning tasks to enhance the participants learning experiences:

- Impact of Work Injuries,
- Musculoskeletal Disorders,
- Musculoskeletal Disorder Risk Factors and
- Prevention

Summary

The literature identifies the significant impact of MSD’s on the employee, employer and society as a whole. The purpose of this scholarly project was to design an ergonomic program that met the unique needs of the office environment utilizing occupational therapy assessment and intervention. The Train the Trainer program is a tool than can be utilized by employers to improve the employees’ interaction with the work environment through increased knowledge regarding injury prevention and fostering self-efficacy to improve healthy behavior.

In Chapter III the methodology that was used to establish the Train the Trainer Program is outlined. This will include a description regarding how the information was
obtained and a brief review of the OSHA Checklist that will be used as an assessment tool in Chapter IV.
A literature review was conducted to determine the economic impact of office environment injuries. In addition, the best practice methods for prevention and intervention to delay, minimize or eliminate these costs was also reviewed. Information was obtained from clinical-based textbooks, research and journal articles.

The professional literature verified the negative effects associated with work injuries in the office environment. The data reviewed from OHSA, the Minnesota Department of Labor and Industry along with other professional literature confirmed occurrence, and types of injuries associated with office work, specifically, Musculoskeletal Disorders (MSDs). The literature review also verified the negative impacts on both employers and employees associated with MSDs. These negative impacts include; increased workers compensation premiums, lost productivity, pain, depression and hostile work environments along with secondary expenses, such as hiring or training new employees to fill in for an injured employee or legal expenses.

The professional literature identified several factors that have been found to increase the risk of developing MSDs. These risk factors include; high repetition with
insufficient recovery time, high force and awkward postures. Along with risk factor, symptoms of common MSD injuries in the office environment were also reviewed.

Finally, the literature was analyzed to verify preventative measures to reduce the negative impacts of MSDs. The data revealed that correct posture, adequate work station and equipment set up along with sufficient rest breaks could minimize the impact of MSDs. The OSHA Work Station Checklist was identified as comprehensive evaluation tool that could be utilized by supervisors as they educate and assess their employees. Education and self-efficacy were also identified as measures to improve healthy behavior in the office environment.

Based upon the information elicited from the literature review, the *Train-the-Trainer Program* was designed to prevent injuries that can occur from everyday activities within an office environment. Materials were critiqued for literacy level and an easy to read format.

Information from the review of professional literature was utilized to create the four training components of the *Train-the-Trainer Program* that include: 1) Impact of Work Injuries, 2) Musculoskeletal Disorders (MSDs), 3) MSD Risk Factors, 4) Prevention.

Emphasis was placed on ensuring the educational materials are using an 8th grade reading level. Diagrams were used to enhance participants understanding of the information to ensure compliance with implementing the program. Materials were then critiqued for literacy level and ensure the information is in an easy to read format.
After completing this ergonomics program, the participating supervisors will demonstrate an understanding of the negative impact of MSDs, be able to identify MSD risk factors along with symptoms associated with common MSDs in the office environment. The supervisors will also be able to demonstrate the ability to implement ergonomic principles related to work postures, job design and work station set up so they will be able to educate their employees regarding injury preventions.
CHAPTER IV
THE PRODUCT

The *Train-the-Trainer Ergo Office Program* is designed to be approximately four and a half hours of training presented by an Occupational Therapist. Its design and purpose is to train human resource and risk management personnel as well as work supervisors. These individuals are then responsible to train the employees they supervise. The supervisors, through gaining assessment and observation skills, can then ensure their employees are utilizing the ergonomic principles on a regular basis in the work environment using a preventative approach.

Facilities that would benefit the most from utilizing this training program have employees that are exposed to MSD risk factors on a regular basis. The ultimate goal is to use prevention to decrease the frequency and severity of MSDs within an office environment. This program is an introduction to office ergonomics as a prevention method. If there are significant health issues related to ergonomics in an organization it is recommended that a professional, such as an occupational therapist be directly contracted. Significant issues would be beyond the training of supervisors. Any recommendations regarding the adjustment of current equipment or purchasing of new equipment needs to be addressed through the supervisor.
Program Design

The Model of Occupational Adaptation (MOA) is chosen to provide the education design for this training program. MOA views the employees as the agents of change. The Train-the-Trainer Ergo Office Program provides the employee with the necessary information that will allow them the opportunity to adapt within their work environment in order to decrease work injuries. The educational design of training will focus on improving the employer and employees’ understanding of the consequences of MSDs and the subsequent benefits of implementing ergonomic principles in the office environment in relation to improved health and productivity. Modifying the work environment and work tasks will be more effective when the employer and employees are able to change their behavior in relation to their jobs (Fontana, 2002). Incorporated in this process is a heavy emphasis on prevention. The Train-the-Trainer Ergo Office Program utilizes three primary methods of injury prevention: Primary, Secondary and Tertiary

1. Primary: Primary Prevention focuses on preventing a MSD from occurring. An example of this would be the use of proper body mechanics and a split keyboard to prevent carpal tunnel symptoms from occurring in an employee that is otherwise injury-free.

2. Secondary: “The goal of secondary prevention is the early detection and treatment of asymptomatic injury or illness before symptoms occur. Secondary prevention relies extensively on occupational injury and illness surveillance.” (Amell, p. 260)
3. **Tertiary:** Tertiary Prevention focuses on preventing an existing injury from recurring. An example of this would be decreasing or breaking up repetitive activities for an employee with a previous history of lateral epicondylitis.

**Program Implementation**

The *Train-the-Trainer Ergo Office Program* is designed to be implemented in four phases: Pre-visit, Classroom, Workstation and Onsite. Each of these is described in the following:

**Phase I Pre-visit:**

One month prior to completing this program, the Occupational Therapist will visit the facility to identify a workstation that best represents what a majority of the participants will encounter in the work environment. This workstation will be utilized for the hands-on-portion of the training. During this initial visit, the OTR will also have the intended participants complete a brief survey to outline their areas of concern regarding specific jobs/job tasks that tend to produce injuries along with common injuries that they have dealt with in the past as well as to verify if they have received any ergonomic training previously, and if so, what this training covered. The OTR will review these surveys prior to the on-site training to better understand the participants’ areas of concern. Also, the importance of management and supervisors taking on the role of coach and teacher for this training process will be reviewed. This includes fostering an environment that promotes self-efficacy among the employees.
Phase II Classroom/Lecture:

The *Train-the-Trainer Ergo Office Program* utilizes classroom lecture and discussion for the first portion of the training, for no more than 10 participants at a time. The classroom portion of the training will address four separate sections:

- Impact of Work Injuries,
- Musculoskeletal Disorders,
- Musculoskeletal Disorder Risk Factors and
- Prevention

Phase III Workstation Assessment:

The third phase of the program is followed by a workstation assessment to provide the participants with hands-on experience. This includes utilizing the OSHA work station check list to: 1) identify risk factors regarding the environment, employee and tasks and 2) implement the correct ergonomic principles to reduce or eliminate the identified risk factors.

Phase IV Onsite Follow-up:

The final portion of the program involves an on-site follow up visit. The OTR will return to the employer one month after training has been completed. The purpose of this meeting is to allow the OTR to address questions or concerns the supervisors may have after they had an opportunity to implement the ergonomic training with their employees.
Take Time to Work Safely

Train-the-Trainer

Ergo Office Program
The *Train-the-Trainer Ergo Office Program* is designed to be approximately four and a half hours of training presented by an Occupational Therapist. Its design and purpose is to train human resource and risk management personnel as well as work supervisors. These individuals are then responsible to train the employees they supervise. The supervisors, through gaining assessment and observation skills, can then ensure their employees are utilizing the ergonomic principles on a regular basis in the work environment using a preventative approach.

Facilities that would benefit the most from utilizing this training program have employees that are exposed to MSD risk factors on a regular basis. The ultimate goal is to decrease the frequency and severity of MSDs within an office environment. This program is an introduction to office ergonomics as a prevention method. If there are significant health issues related to ergonomics in an organization it is recommended that a professional, such as an occupational therapist be directly contracted. Significant issues would be beyond the training of supervisors. Any recommendations regarding the adjustment of current equipment or purchasing of new equipment needs to be addressed through the supervisor.

**Program Design**

The Model of Occupational Adaptation (MOA) is chosen to provide the education design for this training program. MOA views the employees as the agents of change. the *Train-the-Trainer Ergo Office Program* provides the employee with the necessary
information that will allow them the opportunity to adapt within their work environment in order to decrease work injuries.

The educational design of training will focus on improving the employer and employees’ understanding of the consequences of MSDs and the subsequent benefits of implementing ergonomic principles in the office environment in relation to improved health and productivity. Modifying the work environment and work tasks will be more effective when the employers and employees are able to change their behavior in relation to their jobs (Fontana, 2002). The *Train-the-Trainer Ergo Office Program* utilizes three primary methods of injury prevention: Primary, Secondary and Tertiary

1. **Primary:** Primary Prevention focuses on preventing a MSD from occurring. An example of this would be the use of proper body mechanics and a split keyboard to prevent carpal tunnel symptoms from occurring in an employee that is otherwise injury-free.

2. **Secondary:** “The goal of secondary prevention is the early detection and treatment of asymptomatic injury or illness before symptoms occur. Secondary prevention relies extensively on occupational injury and illness surveillance.” (Amell, p. 260)

3. **Tertiary:** Tertiary Prevention focuses on preventing an existing injury from recurring. An example of this would be decreasing or breaking up repetitive activities for an employee with a previous history of lateral epicondylitis.

**Program Implementation**

The *Train-the-Trainer Ergo Office Program* is designed to be implemented in four phases: Pre-visit, Classroom, Workstation and Onsite. Each of these is described in the following:
Phase I Pre-visit:

One month prior to providing the on-site workshop, the Occupational Therapist will visit the facility. The purpose is to identify a work station that best represents what a majority of the participants will encounter in the work environment. This workstation will be utilized for the hands-on-portion of the training. During this initial visit, the OTR will also have the intended participants complete a brief survey. The information attained will be used to identify their areas of concern regarding the specific jobs/job tasks that tend to produce injuries along with common injuries that they have dealt with in the past. In addition, to verify if they have received any ergonomic training previously, and if so, what this training covered. The OTR will review these surveys, prior to the on-site training, to gain a better understanding of the participants’ areas of concern. The goal is to design a workshop that meets the needs of all of the participants involved.

Phase II Classroom/Lecture:

The Train-the-Trainer Ergo Office Program utilizes classroom lecture and discussion for the first portion of the training, for no more than 10 participants at a time. The classroom portion of the training will address four separate sections:

- Impact of Work Injuries,
- Musculoskeletal Disorders,
- Musculoskeletal Disorder Risk Factors and
• Prevention

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The third phase of the program is followed by a workstation assessment to provide the participants with hands-on experience. This includes utilizing a modified OSHA workstation check list to; 1) identify risk factors regarding the environment, employee and tasks and 2) implement the correct ergonomic principles to reduce or eliminate the identified risk factors.

**Phase IV Onsite Follow-up:**

The final portion of the program involves an on-site follow up visit. The OTR will return to the facility one month after training has been completed. The purpose of this meeting is to allow the OTR to address questions or concerns the supervisors may have after they had an opportunity to implement the ergonomic training with their employees.

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**Workshop Schedule/Agenda**

• **First Hour:**

  - **Impact of Work Injuries:** This section addresses the negative effects of work injuries in relation to increase symptoms, increase medical expenses and decreased productivity and lost time from work.
- **Musculoskeletal Disorders**: This section outlines common work injuries in the office environment and how subsequent symptoms can be utilized to verify if further assessment or intervention is needed.

- **10 Minute Break**

- **Second Hour:**
  - **Musculoskeletal Disorder Risk Factors**: This section addresses activities and postures that increase the risk of developing MSDs.

- **Minute Break**

- **Third & Final Hour:**
  - **Prevention**: This section addresses correct working postures, equipment utilization, including review of the modified OSHA workstation assessment form.

**Preparation**

1. Review the information prior to presenting.

2. The objectives will be outlined at the beginning of each section in order to provide measurable information to verify the participants’ understanding of the presented material.

3. Make sure you have all of the handouts you will need for each section presentation.

4. Arrive early to:
   a. Set up and prepare the space.
Resources (will remain the same for each section):

1. Audio visual requirements
   a. Laptop computer and Power Point software.
   b. Portable projector and table or computer cart.
   c. Projection screen

2. Print out of the Power Point presentation to allow the participants to take notes.

3. A classroom large enough to accommodate up to 10 participants, the instructor, the audio video equipment and several tables.
SECTION 1

Impact of Work Injuries
Introduction

The focus of this section is to outline the negative impact work injuries can have on an office environment in relation to:

- Medical/Indemnity expenses
- Lost time from work
- Decreased morale and
- Decreased productivity

Section Goal(s)

1. To gain an understanding of why implementation of ergonomic principles in the work environment is important to minimize the negative effects of work injuries.

2. The participants will demonstrate an understanding of the difference between medical and indemnity expenses.

3. Identify two injuries that they typically encounter in their work environment.

Time

This section should take approximately 45 minutes to complete.

Resources (will remain the same for each section):

1. Audio visual requirements
   a. Laptop computer and Power Point software
   b. Portable projector and table or computer cart
   c. Projection screen

2. Print out of the Power Point presentation to allow the participants to take notes.
3. A classroom large enough to accommodate up to 10 participants, the instructor, the audio video equipment and several tables.

**Teaching Strategies**

**Step I:** Prior to beginning the training, the instructor will have already had the participants complete a brief survey that outlines their areas of concern and if they have received any ergonomic training previously, and if so, what this training covered.

**Step II: Question & Discussion**

1. Choose three participants to share with the group an example of how work injuries have affected their departments regarding:
   a. lost time from work
   b. productivity
   c. staffing issues
   d. employee interactions

**Step III: Power Point Slides: 1-11**

1. Review the Power Point slides regarding the Impact of Work Injuries. Answer questions as they arise during the Power Point review.

**Step IV: Review, Summary and Conclusion**

2. Answer the participants’ questions.
3. Conclusion: Call on the same three participants to compare their experience with work injuries to the information presented in relation to:
   a. lost time from work
   b. productivity
   c. staffing issues
   d. employee interactions

4. Provide the start time for the next session (10 minute break).

5. Break until the next session.
Instructor’s PowerPoint Notes: SECTION I

Office Ergonomics Instructor Notes

Impact of Work Injuries

Goals:
1. Understand the physical, psychological and social impact of work injuries.
2. Understand the financial impact of work injuries in relation to medical and indemnity expenses.
3. Identify how work injuries have affected your work environment.

Impact of Work Injuries

Describe how work injuries have affected your department in relation to:
1. Lost time from work
2. Productivity
3. Scheduling
4. Employee interaction
Impact of Work Injuries

Nationally

The Bureau of Labor Statistics (BLS, 2005) report for the year 2003 confirmed that:

- 1.3 million work-related injuries accounted for lost time from work.
- Median days of work lost per work injury: 8
- 25% of work injuries resulted in 31 or more days of lost work.

Impact of Work Injuries

State Level: Minnesota

111,000 work injuries were reported in 2003.
- 20,000 of these injuries resulted in a minimum of one lost day from work.
- 57,000 of these work injuries produced work restrictions, lost work days, or a transfer of jobs.
- The total cost of work injuries was approximately $1.5 billion.
- $9,500 was the average cost of a work injury.

Impact of Work Injuries

There are two primary areas of cost in the workers’ compensation system:

1. Medical: Expenses associated with medical treatment of following work injury, such as medications, occupational therapy or surgery.
2. Indemnity: Expenses associated with compensating the injured worker for lost wages as a result of the work injury.
Impact of Work Injuries

Physical: unable to perform the essential functions of the job due to:

1. Decreased strength, sensation, and endurance at the site of injury
2. Increased pain, stiffness, swelling, and discomfort at the injury site.
3. Limitation of function.

Impact of Work Injuries

Psychological:
Decreased Morale

Following a work injury, psychological issues such as depression, adjustment disorder, and stress can be factors that complicate the process of returning to work. Return to work can be particularly difficult (Miller, 2010).

Impact of Work Injuries

Physical:
• Injuries can lead to lost time from work
• Work restrictions
• Decreased productivity
• Overtime/training for other employees to make up for decreased productivity

13
Impact of Work Injuries

Social:
- An injured employee may not be able to keep pace with productivity standards due to the injury and its restrictions.
- This can result in pressure to "keep up" by co-workers and supervisors.
- Tension in the work environment can prompt injured employees to perform tasks they may not be ready for, which may expose them to injury.
SECTION 2

Musculoskeletal Disorders
Introduction

This section will focus on the various cumulative trauma injuries that may be encountered in the office environment. This information will aide the participants in identifying early symptoms of musculoskeletal disorders (MSDs). The reasoning behind this is that the earlier MSD symptoms can be identified, the earlier intervention can begin such as: assessment of the work station.

Section Goal(s)

1. Identify the characteristics of MSDs.
2. Understand the definition of tendonitis.
3. Identify the symptoms of carpal tunnel syndrome
4. Identify conservative treatment options for MSDs.

Time

This section should take approximately one hour to complete, including the lecture and review.

Teaching Strategies

Step I:

1. Choose three participants to identify a work injury they have previously dealt with in their department.

Step II: Power Point Slides: 12-26

1. Review the Power Point slides regarding musculoskeletal disorders and answer questions accordingly.
Step III: Review, Summary and Conclusion

1. As a group, the participants will verbally complete the MSD review section at the end of the Power Point presentation.

2. Answer questions as needed.

3. Provide the start time for the next session.

4. Break until the next session starts.
Musculoskeletal Disorders

Characteristics

Injuries that result from wear and tear over time and affect:
- Muscles
- Tendons
- Joints
- Nerves
- Spinal Discs

Basic Anatomy:
- Tendon - Connects muscle to bone
- Ligament - Connects bone to bone
- Nerve - Communication pathway between the brain and the body
- Vertebrae - Bones that make up the spine
- Disc - Shock absorber between the spinal vertebrae
Musculoskeletal Disorders

Basic Anatomy

These are examples of lumbar (low back) and cervical (neck) vertebrae and discs.

Musculoskeletal Disorders

Common MSDs:

- Tendinitis: Painful inflammation of the tendon sheath.

- Tendinitis can affect the wrists, elbows, and shoulders.
Musculoskeletal Disorders

Carpal Tunnel Syndrome: a common workplace injury that is a result of compression of the median nerve within the carpal tunnel.

Musculoskeletal Disorders

Common symptoms of Carpal Tunnel Syndrome include:
- Pain and/or numbness in the thumb, index, and middle finger and half of the ring finger.

Musculoskeletal Disorders

Common Conservative (non-surgical) Treatment Options Related to MSDs:

Physical-Occupational Therapy:
- Increase strength, mobility and endurance
- Splinting
- Instruction in independent homework exercise programs
- Address adaptive equipment as needed (extended reachers, wide-grip pens)
Musculoskeletal Disorders

Common Conservative Treatment Options Related to MSDs:
- Physical/Occupational Therapy Continued...
- Instruction in energy conservation and body mechanics
- Functional Capacity Evaluation to establish physical abilities

Musculoskeletal Disorders

Review:
What are three characteristics of a musculoskeletal disorder?
Musculoskeletal Disorders

Review:

What is tendinitis?

Musculoskeletal Disorders

Review:

What portion of the hand is affected by carpal tunnel syndrome?

Musculoskeletal Disorders

Review:

What are two conservative treatment options for MSDs?
SECTION 3

Musculoskeletal Disorders Risk Factors
Introduction

This section will address tasks, activities and postures within the office environment that can increase the risk of developing MSDs. Participants will be able to utilize this information to identify potentially hazardous tasks, equipment or postures that may trigger the need for further assessment and intervention in order to reduce the likelihood of developing MSDs.

Section Goal(s)

1. Identify at least four risk factors in the corresponding diagram.
2. Will be able to utilize this information to identify potentially hazardous tasks or equipment that may trigger the need for further assessment and intervention in order to reduce the likelihood of developing MSDs.

Time

This section should take approximately one hour to complete.

Teaching Strategies

Step I: Power Point Slides: 27-39

Step II: Review, Summary and Conclusion

1. Answer questions as needed.
2. As a group the participants will review the photo of an individual at an office workstation and identify at least four MSD risk factors.
3. Ten minute break. Provide the start time for the next session.
Instructor's PowerPoint Notes: SECTION III

Office Ergonomics Instructor Notes

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**MSD Risk Factors**

Factors associated with MSDs include:
- Inadequate rest breaks
- Poor repetition
- High force
- Inadequate postures

---

**MSD Risk Factors**

- Prolonged activity with the wrists flexed or extended.
- Prolonged activity with the wrist bent towards the thumb or little finger.
- Repetitive firm grasping.

---
MSD Risk Factors

Awkward Postures
These diagrams offer examples of extreme wrist extension (top) and awkward forearm extension when performing keyboard tasks.

MSD Risk Factors

Elbows
- Resting elbows on the work surface or armrests of the chair.
- The elbows are positioned out to the sides or in front of the body.

MSD Risk Factors

This diagram demonstrates the correct setting for armrests to avoid excessive pressure on the elbows from armrests that are set too high or too wide.
MSD Risk Factors

Shoulders:
- Repetitive overhead reaching
- Repetitive long reaching
- Repetitive activities with the elbows away from the body

Neck:
- Computer monitors that are too far away encourage a neck forward posture
- Computer monitors that are too high or too low can produce excessive flexion or extension of the neck
- Inadequate lighting can result in flexing the neck forward when reading
- Importing information from a written document can result in excessive twisting of the neck

These pictures are examples of neck postures that can place excessive stress on the neck.
MSD Risk Factors

Low Back
- Prolonged sitting or standing
- Repetitive reaching for items below knee level
- Twisting with the back
- Poorly adjusted lumbar support of the office chair

MSD Risk Factors

Equipment
- Equipment that requires awkward postures to operate
- Poorly maintained equipment
- Requires high levels of force to operate

MSD Risk Factors

Job Tasks
- Jobs that do not allow a change to a variety of tasks in order to avoid prolonged activity
- Time sensitive jobs can result in prolonged tasks in order to meet deadlines
MSD Risk Factors
SECTION 4

Prevention
Introduction

The focus of this section is to outline the use of ergonomic principles to address MSD risk factors regarding the worker, environment and task. This includes review of body mechanics, energy conservation, equipment utilization, work station set up and job demands along with using the modified Workstation Evaluation Form developed by OSHA. As the participants educate their co-workers, they will use the Workstation Evaluation Form to assess workstations.

Section Goal(s)

1. Correctly adjust their chair to the “90-90-90” position with no more than one verbal cue.

2. Correctly demonstrate the correct elbow posture for typing with no more than one verbal cue.

3. Two at a time, the participants will utilize the modified OSHA Workstation Checklist to perform an ergonomic evaluation at the workstation identified by the OTR at the pre-training visit.

Time

This section should take approximately two hours to complete, including lecture and work station evaluation

Teaching Strategies

Step I: Review Power Point: Slides 40-48
1. During the lecture and Power Point review, the participants will be asked to duplicate the postures associated with prevention. For example, during review of the correct elbow position the instructor will have the participants position their elbows at the 90-100 degree angle recommended when typing, or adjust their chairs to the '90-90-90' position.

2. The OSHA Workstation Evaluation Form will also be reviewed at this time. Again, the participants will be instructed to emulate the posture/body mechanics for each area outlined on this form.

3. Emulating correct postures associated with MSD prevention in the learning environment will provide them with a better understanding of this information, which will allow them to more easily integrate the ergonomic concepts into their work environments and to pass the information on to their co-workers. Emulating correct ergonomic postures will also improve the participants' observation skills when they need to assess an employee's work postures/habits.

**Step III:** The participants will utilize the modified OSHA Workstation Checklist to perform an ergonomic evaluation on the OTR at the pre-determined workstation.

**Step IV: Review, Summary and Conclusion**

1. Answer questions as needed.
2. Thank the audience for their participation and hand out/collect the program evaluation form.

3. Dismiss the participants.
**Prevention of Musculoskeletal Disorders through the use of ergonomic principles**

**Prevention**
Ergonomics are affected by:
1. The Environment
2. The Person
3. The Task

**Prevention**
- Correct posture/body mechanics
- Correct equipment utilization
- Task modification
Prevention
Ergonomics in the Office Environment

Chairs:
- “Rule of 90” The hips, knees and ankles should be maintained at 90 degree angles.
- The backrest should provide support at the lumbar spine (near belt level).
- The armrests should be at a height that allows the elbows to remain at a 90-degree angle.

Prevention
Ergonomics in the Office Environment

Keyboards:
- When striking the keyboard, the elbows should be maintained at a 90-100 degree angle (trunk set, or slightly above the elbows).
- The keyboard keys should be arranged to keep the typing fingers in line as possible in order to avoid excessive wrist extension, when typing.
- Allow the hands to glide across the keyboard. Avoid placing and pressing on the wrists.

Prevention
Ergonomics in the Office Environment

Mouse/Input Devices:
- Movement of the mouse should come from the elbow and the shoulder. Avoid side-to-side movement of the wrist.
Prevention
Ergonomics in the Office Environment

Monitors:
- The monitor distance should be approximately an arm's length away.
- The monitor should be centered behind the keyboard.
- The monitor height should be set so the employee's line of site falls on the top inch of the screen.

Prevention
Ergonomics in the Office Environment

■ Jobs/Tasks:
- Alternate between computer and non-computer tasks every 20-30 minutes if possible.
- If able, stand or walk every 20 minutes.

Thank You
References


APPENDIX
Modified OSHA Checklist
**Modified OSHA Workstation Checklist**

<table>
<thead>
<tr>
<th></th>
<th><strong>1. Head</strong> and <strong>neck</strong> to be upright, or in-line with the torso (not bent down/back).</th>
<th>Y N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>2. Head, neck, and trunk</strong> to face forward (not twisted). If &quot;no&quot; refer to Monitors or Chairs.</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>3. Trunk</strong> to be perpendicular to floor (may lean back into backrest but not forward).</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>4. Shoulders</strong> and <strong>upper arms</strong> to be in-line with the torso, generally about perpendicular to the floor and relaxed (not elevated or stretched forward).</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>5. Upper arms and elbows</strong> to be close to the body (not extended outward).</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>6. Forearms, wrists, and hands</strong> to be straight and in-line (forearm at about 90 degrees to the upper arm).</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>7. Wrist</strong>s and hands** to be straight (not bent up/down or sideways toward the little finger).</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>8. Thighs</strong> to be parallel to the floor and the <strong>lower legs</strong> to be perpendicular to floor (thighs may be slightly elevated above knees).</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>9. Feet</strong> rest flat on the floor or are supported by a stable footrest.</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>10. Backrest</strong> provides support for your lower back (lumbar area).</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>11. Seat width and depth</strong> accommodate the specific user (seat pan not too big/small).</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>12. Seat front</strong> does not press against the back of your knees and lower legs (seat pan not too long).</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>13. Seat</strong> has cushioning and is rounded with a &quot;waterfall&quot; front (no sharp edge).</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>14. Armrests</strong>, if used, support both forearms while you perform computer tasks and they do not interfere with movement.</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td>&quot;No&quot; answers to any of these questions should prompt a review of Chairs.</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>15. Keyboard/input device platform(s)</strong> is stable and large enough to hold a keyboard and an input device.</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>16. Input device</strong> (mouse or trackball) is located right next to your keyboard so it can be operated without reaching.</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>17. Input device</strong> is easy to activate and the shape/size fits your hand (not too big/small).</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td><strong>18. Wrist</strong>s and hands** do not rest on sharp or hard edges.</td>
<td>Y N</td>
</tr>
<tr>
<td></td>
<td>&quot;No&quot; answers to any of these questions should prompt a review of Keyboards, Pointers, or Wrist Rests.</td>
<td>Y N</td>
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<tr>
<td><strong>19. Top</strong> of the screen is at or below eye level so you can read it without bending your head or neck down/back.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>20. User with bifocals/trifocals</strong> can read the screen without bending the head or neck backward.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>21. Monitor distance</strong> allows you to read the screen without leaning your head, neck or trunk forward/backward.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>22. Monitor position</strong> is directly in front of you so you don't have to twist your head or neck.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>23. Glare</strong> (for example, from windows, lights) is not reflected on your screen which can cause you to assume an awkward posture to clearly see information on your screen.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;No&quot; answers to any of these questions should prompt a review of Monitors or Lighting/Glare.</td>
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<tr>
<td><strong>24. Thighs</strong> have sufficient clearance space between the top of the thighs and your computer table/keyboard platform (thighs are not trapped).</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>25. Legs and feet</strong> have sufficient clearance space under the work surface so you are able to get close enough to the keyboard/input device.</td>
<td></td>
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<tr>
<td><strong>26. Document holder</strong>, if provided, is stable and large enough to hold documents.</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td><strong>27. Document holder</strong>, if provided, is placed at about the same height and distance as the monitor screen so there is little head movement, or need to re-focus, when you look from the document to the screen.</td>
<td></td>
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APPENDIX

Program Evaluation
Office Ergonomics Training Program Evaluation of Instruction

1. How did the method of instruction help you understand the material that was presented?

2. What could be improved regarding the method of instruction?

3. Do you feel the material provided was adequate to help you implement ergonomic principles in your work environment?

4. Do you feel you are prepared to teach this information to the people you supervise?
APPENDIX
Pre-Training Evaluation
Train-the-Trainer Ergo Office Program  
Pre-Training Evaluation

This form is to be completed by the human resources/risk management and/or work supervisors attending the Train-the-Trainer Ergo Office Program.

1. Have you received any previous training regarding ergonomic principles? If yes, please indicate the topics that were covered in your training.

2. Briefly describe your working environment and tasks performed on a daily basis. For example, is it primarily a computer environment? Are data entry/10-key tasks performed regularly? Can work tasks be broken up throughout the work day or are there time demands that require prolonged period of activity to meet deadlines?

3. Have you seen a trend with specific types of injuries in your work environment?

4. What are your goals for attending this training?
CHAPTER V
SUMMARY

The purpose of this scholarly project was to design an ergonomic training program that met the unique needs of the office environment. The *Train-the-Trainer Program* was developed based on the professional literature. The literature review identified; 1) the negative impacts of office related MSDs for both employers and employees, 2) risk factors that tend to produce or prolong MSDs, and 3) best practices for injury prevention in the office environment.

The *Train-the-Trainer Program* is designed utilizing occupational therapy design and concepts. The theoretical model of Occupational Adaptation (OA) is utilized in this program. The OA model focuses on the person, environment and task. This model views the employees as agents of change, which promotes self-efficacy and increases the chances that employees will utilize ergonomic intervention on a consistent basis. The training provides the participants with the opportunity to adapt within their work environment in order to decrease the negative effects of MSDs.

The OT provides introductory information and training to human resource personnel, risk management personnel and work/shift supervisors on office ergonomics. Following completion of the training, the supervisors are expected to then train their employees regarding ergonomic principles in the work environment as a preventative measure against MSDs. This program will be marketed to employers as an injury prevention tool that will
decrease workers compensation expenses and maintain or improve productivity through a healthy workforce. However, this program could also be utilized to improve the speed and effectiveness of a return to work following a work injury.

**Limitations of the Project**

The *Train-the-Trainer Program* is designed for a general office environment. Further on-site evaluation and training may need to be completed by the occupational therapist for office environments that utilize unique equipment beyond the typical computer work station on a consistent basis.

- Supervisors are key components to implementing ergonomic principles for the employer. The commitment supervisors make towards using their training from the occupational therapist to train their employees will impact the effectiveness of this program. In order to improve the employees' participation in the initial training and subsequent follow through with utilizing ergonomic principles, the supervisors will need to maintain a work environment that promotes self efficacy.

- If the employer fails to follow through with recommendations from the *Train-the-Trainer Program* or promote self efficacy among its employees, the likelihood of cost containment through decreased workers compensation expenses and maintaining or increasing productivity will decrease.

- The employees themselves are also responsible for utilizing the ergonomic principles they have been trained in. If the employees fail to buy into ergonomic intervention, the success of the Train the Trainer program will be decreased.
Recommendations

1. It is recommended this program be facilitated by an occupational therapist. As previously noted, the occupational therapists’ training regarding injury prevention and treatment and psychosocial issues related to work injuries will improve the effectiveness of any injury prevention program.

2. This program is an introduction to office ergonomics as a prevention method. If there are significant health issues related to ergonomics in an organization, it is recommended that a profession, such as an OT be directly contacted. Significant issues would be beyond the training of the individuals identified prior as the primary audience.

3. The *Train-the-Trainer Program* should be presented to employers as an injury prevention tool that will decrease workers compensation expenses and improve productivity. Presenting the program as a cost containment measure will improve the support of management for implementing the program. The employer’s commitment to injury prevention and promoting self efficacy among its employees is vital to injury prevention. This includes follow through from managers and supervisors in regards to completing ergonomic training for their employees by the deadline established at the initial meeting with the occupational therapist.

4. If the employer identifies a job or jobs that exceed the physical demands of office work, it is recommended that OT services be contracted for a job analysis to tailor the ergonomic training outside the office environment.
Conclusions

The goal of this scholarly project is to prevent office work injuries from occurring through the implementation of a preventative ergonomics program. The benefits of an ergonomics program include: 1) decreased workers compensation expenses, and/or 2) maintained or improved productivity through a healthier work force.

A key aspect of the Train-the-Trainer Program is the importance of the supervisors as trainers and observers. This also includes promoting self efficacy among employees to improve the likelihood that the use of ergonomic principles will be maintained within the office environment.
## Modified OSHA Workstation Checklist

<table>
<thead>
<tr>
<th>Question</th>
<th>Y</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Head</strong> and <strong>neck</strong> to be upright, or in-line with the torso (not bent down/back).</td>
<td></td>
<td></td>
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<tr>
<td>2. <strong>Head</strong>, <strong>neck</strong>, and <strong>trunk</strong> to face forward (not twisted). If &quot;no&quot; refer to <strong>Monitors</strong> or <strong>Chairs</strong>.</td>
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<tr>
<td>3. <strong>Trunk</strong> to be perpendicular to floor (may lean back into backrest but not forward).</td>
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<tr>
<td>4. <strong>Shoulders</strong> and <strong>upper arms</strong> to be in-line with the torso, generally about perpendicular to the floor and relaxed (not elevated or stretched forward).</td>
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<tr>
<td>5. <strong>Upper arms</strong> and <strong>elbows</strong> to be close to the body (not extended outward).</td>
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<tr>
<td>6. <strong>Forearms</strong>, <strong>wrists</strong>, and <strong>hands</strong> to be straight and in-line (forearm at about 90 degrees to the upper arm).</td>
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<tr>
<td>7. <strong>Wrists</strong> and <strong>hands</strong> to be straight (not bent up/down or sideways toward the little finger).</td>
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<tr>
<td>8. <strong>Thighs</strong> to be parallel to the floor and the <strong>lower legs</strong> to be perpendicular to floor (thighs may be slightly elevated above knees).</td>
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<tr>
<td>9. <strong>Feet</strong> rest flat on the floor or are supported by a stable footrest.</td>
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<tr>
<td>10. <strong>Backrest</strong> provides support for your lower back (lumbar area).</td>
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<tr>
<td>11. <strong>Seat width</strong> and <strong>depth</strong> accommodate the specific user (seat pan not too big/small).</td>
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<tr>
<td>12. <strong>Seat front</strong> does not press against the back of your knees and lower legs (seat pan not too long).</td>
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<tr>
<td>13. <strong>Seat</strong> has cushioning and is rounded with a &quot;waterfall&quot; front (no sharp edge).</td>
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<tr>
<td>14. <strong>Armrests</strong>, if used, support both forearms while you perform computer tasks and they do not interfere with movement.</td>
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<td>&quot;No&quot; answers to any of these questions should prompt a review of <strong>Chairs</strong>.</td>
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<tr>
<td>15. <strong>Keyboard/input device platform(s)</strong> is stable and large enough to hold a keyboard and an input device.</td>
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<tr>
<td>16. <strong>Input device</strong> (mouse or trackball) is located right next to your keyboard so it can be operated without reaching.</td>
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<tr>
<td>17. <strong>Input device</strong> is easy to activate and the shape/size fits your hand (not too big/small).</td>
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<tr>
<td>18. <strong>Wrists</strong> and <strong>hands</strong> do not rest on sharp or hard edges.</td>
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<td>&quot;No&quot; answers to any of these questions should prompt a review of <strong>Keyboards</strong>, <strong>Pointers</strong>, or <strong>Wrist Rests</strong>.</td>
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<tr>
<td><strong>19. Top</strong> of the screen is at or below eye level so you can read it without bending your head or neck down/back.</td>
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<tr>
<td><strong>20. User with bifocals/trifocals</strong> can read the screen without bending the head or neck backward.</td>
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<td><strong>21. Monitor distance</strong> allows you to read the screen without leaning your head, neck or trunk forward/backward.</td>
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<td><strong>22. Monitor position</strong> is directly in front of you so you don't have to twist your head or neck.</td>
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<td><strong>23. Glare</strong> (for example, from windows, lights) is not reflected on your screen which can cause you to assume an awkward posture to clearly see information on your screen.</td>
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<td><strong>24. Thighs</strong> have sufficient clearance space between the top of the thighs and your computer table/keyboard platform (thighs are not trapped).</td>
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<td><strong>25. Legs</strong> and <strong>feet</strong> have sufficient clearance space under the work surface so you are able to get close enough to the keyboard/input device.</td>
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