International Journal of Yoga, Physiotherapy and Physical Education
Online ISSN: 2456-5067; Impact Factor: RJIF 5.24
www.sportsjournal.in
Volume 2; Issue 1; January 2017; Page No. 47-48

Work-related musculoskeletal disorders: Its causes and preventions

Dr. Shyam Sundar Rath

[1] Associate Professor, Dept. of Physical Education, Don Bosco College, Panaji, Goa, India

Abstract
Work-Related Musculoskeletal Disorder WMSDs is an injury or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue including a sprain, strain and inflammation, that may be caused or aggravated by work. WMSDs are a potential problem for all workers who perform repetitive, unaccustomed or physically demanding tasks. Musculoskeletal disorders are associated with high costs to employers such as absenteeism, lost productivity, and increased health care, disabilities, and worker's compensation costs. Other common names for MSDs (Musculoskeletal Disorder) are repetitive motion injury, repetitive stress injury, overuse injury, cumulative trauma disorder, musculoskeletal strain injuries and musculoskeletal injury (MSI). The early signs and symptoms of MSI are critical so that corrective measures can be implemented to avoid further damage. The signs and symptoms of an injury can appear suddenly or gradually. The rehabilitative treatment can be provided immediately. The risk of work-related injuries can be reduced by education and by well-designed job tasks that minimise physical demands. The aim of this paper is to analyse work related musculoskeletal disorder and how it can be prevented properly.

Keywords: Musculoskeletal injury (MSI), muscles, tendons, ligaments, joints, nerves, blood vessels

1. Introduction
In our work place, all our work is done in many ways such as lifting, pushing, pulling, and sitting continuously for a prolonged period of time. This may strain our body and cause wear and tear on our muscles, tissues, ligaments, tendons and joints. Further it can injure the neck, shoulder, lower back, arms, wrists and leg. These injuries are called work related musculoskeletal Disorder or WMSDs. The Other common names for MSDs (Musculoskeletal Disorder) are repetitive motion injury, repetitive stress injury, overuse injury, cumulative trauma disorder, musculoskeletal strain injuries and musculoskeletal injury (MSI). Work-Related Musculoskeletal Disorder WMSDs is an injury or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue including a sprain, strain and inflammation, that may be caused or aggravated by work. The workers compensation Board (WCB) of British Columbia defines MSI as: "an injury or disorder of the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue including a sprain, strain and inflammation that may be caused or aggravated by work". The early signs and symptoms of MSI are critical hence it is possible that corrective measures can be implemented to avoid further damage. The signs and symptoms of an injury can appear suddenly or gradually. The rehabilitative treatment can be provided immediately. The risk of work-related injuries can be reduced by education and by well-designed job tasks that minimise physical demands. So, 'ergonomics' is the term which is now very popular and it is the study of the relationship between people and their working environment with a view to improving safety, ease of action and efficiency. Through ergonomics, the risk of injury posed by such hazards can be eliminated or reduced.

1.1 Causes of Musculoskeletal Injury (MSI)
When the physical demand is more at work place from routine activities and that is not suitable for the body, it can cause musculoskeletal injury. This means a mismatch between the physical capacity of the employer/workers and the demand of the job. The common factors like repetitive motions of body or joints of our body, intensity and duration of the work, improper recovery period of the muscles, performing their job in an awkward or unnatural posture for a prolonged period, applying high amount of force in job place without recovery break are associated with workplace musculoskeletal injury. This topic does not cover musculoskeletal injuries that results directly from motor vehicle accidents, falling down, being struck by an object, being caught, slipping, knocked against anything etc. The injuries that can cause MSIs are usually associated with the physical demands of work activities. Here are some examples, the employees injure themselves by lifting or pushing heavy loads, reaching or bending in awkward position for long period, maintaining the same body posture for long time, kneeling down position for long period, repeating the same movement over and over with little chance of rest. The risk of injury posed by such activity in relation to their work can be reduced or controlled.

1.2 Signs and symptoms of musculoskeletal Injury
The sign of MSIs can be observed when the injury part is affected such as redness, swelling or difficulty face to move a particular body parts. The symptoms may be felt but can not be observed such as pain, numbness, tingling sensation. It is very important to recognise the early signs and symptoms of MSIs. This will help for better treatment otherwise in the later stage the condition may worsen and become more complicated. The sign and symptoms appear suddenly or over a period of time.

1.3 Risk Factors

The major workplace MSDs risk factors are related with the following:-

High task repetition: Most of the work tasks are repetitive in nature. The high task repetition combined with other risk factors such as high force and awkward postures can contribute to formation of MSD. A job considered highly repetitive if the cycle time is 30 seconds or less.

Forceful exertions: Many work tasks require high force load to human body. Muscles efforts increases in response to high force requirements, increased associated with fatigue which can lead to MSD.

Repetitive sustained awkward posture: Awkward postures place excessive force on joints and overload the muscles tendons around the effected joint. Risk of MSD is increased when joints are worked outside of this mid-range repetitively or sustained periods of time without adequate recovery time. Joints of the body are most efficient when they operate closest to the mid-range of motion of the joint.

1.4 Workplace Guidelines for the Prevention of Musculoskeletal Injuries

Not everyone with WMSDs has ergonomic exposure at work, and not everyone exposed at work develops WMSDs. Contributing factors occur both at work and at home. The employer must identify factors in the workplace that may expose workers to a risk of musculoskeletal injury.

The following factors must be considered for prevention of MSI:-

a. The physical demands of work activities which includes force required, repetition, duration, work posture and local contract stress.
b. Conditions of the workplace or work stations which include floor surfaces, working heights, seating, working reaches.
c. Objects handled like machine, size and shape of the tools and container.
d. Environmental condition like hot and cold temperature.
e. Personal factors like Physical fitness which related with work rate and recovery period.

Here are some of the important questions, which have been designed for the employees and workers. If the answer to the following questions is in the negative then these workers are at a risk of WMSDs in the future or they may consult their higher authority for solving the problems.

1. Is your chair uncomfortable?
2. Do you twist or bend properly at your work place?
3. Is your lifting work done above your shoulder height?
4. Are your elbows raised frequently while you work?
5. Is your workplace (table, chair) adjustable?
6. Do sharp edges put pressure on the skin at your work place?
7. Do you feel pain or discomfort while doing your work?
8. Are the tools heavy?
9. Do your tools/equipments vibrate?
10. Are you using gloves to reduce vibration?
11. Do you maintain awkward postures when using tools or equipments?
12. Are you using more force to complete the work?
13. Do you have the same task again and again?
14. Do you have proper training periods that educate you about safe performance?
15. Does poor lighting lead to poor posture in your work place?
16. Is your work place too hot or cold?
17. Is the workplace too noisy?
18. Is your workplace area properly ventilated?

2. Conclusion

Work related musculoskeletal disorders can affect muscles, joints and tendons in all parts of the body. Most WMSDs develop overtime they can be episodic or chronic in duration. They can also progress from mild to severe disorders. The employs/workers are at risk of injury if they use repetitive, sustained, forceful or awkward exertion. The risk factors are also associated with environmental condition like hot and cold temperature. If two or more risk factors are together then there is a greater risk of injury. For example, performing a forceful lift once places a worker at less risk of injury than performing a forceful lift several times in temperature or humidity climate. The risk of WMSDs can be controlled by proper education, work station deign, equipment and tools, work environment etc. An ergonomics design can include such factors as adjustable seating, angled hand tools, or a work place that can change to suit the worker.

3. References

1. Canadian Centre for Occupational Health & Safety. Work-related Musculoskeletal Disorders (WMSDs)- Risk Factors. Retrieved from. 2017. http://www.ccohs.ca/oshanswers/ergonomics/risk.html
2. Edward J, Shahady MD, Michael J, Petrizzi MD. Sports Medicine for Coaches and Trainers. New Delhi: Friends Publications. 2008.
3. Personnel Today. Musculoskeletal disorders in the workplace: the role of HR and line manager. Retrieved. 2017. from http://www.personneltoday.com/hr/musculoskeletal-disorders-in the workplace-the-role-of-hr-and-line-manager
4. Robert DD, Amrosia MD, Devid Drez Jr MD. (editors) Prevention and Treatment of Running Injuries. New Jersey: Black incorporated 6900, Grove road. 1989.
5. Wellnomics. Prevention of Work Related Musculoskeletal Disorders (WMSD)- An Evidence Based Approach. Retrieved from. 2017. http://www.wellnomics.com/support/research/white-paper/prevention of-work-related-musculoskletal-disorders-wmsd-an-evidence-based-approach