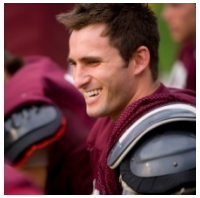
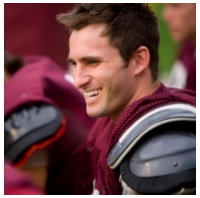


Ergonomics

Best Practices

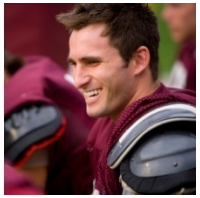
Lifting Tips and Techniques

Environmental and Occupational Health Support Services (EOHSS)



Ergonomics: Agenda

- Ergonomics Definition and Application
- Legislation
- RMM# 405: Ergonomics Safety Program
- Musculoskeletal Disorders (MSDs)
- Symptoms and Risk Factors
- Injury Statistics
- Ergonomic Awareness and Controls
- Tips for Working on the Computer or Laptop
- Back Pain: Safe Lifting Best Practices
- Stretches
- Resources: How to Request an Ergonomic Assessment



What is Ergonomics?

The applied science and art that seeks to fit the job to the worker through the evaluation and design of work environment in relation to human characteristics and interactions in the workplace.

“ Adjusting the workspace to best fit the employee”

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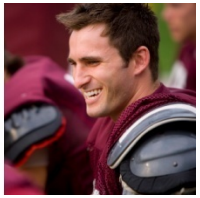

Ergonomics Applies to…

- **Workstation Design**—(desks, chairs, space, layout)
- **Work Postures** (sitting, standing, reaching, lifting)
- **Work Organization** (Pace, Breaks, Variety)
- **Tools, Equipment, and Furniture Design---**(body size, height, gender, promoting neutral postures, reduced vibration, exposure to acceptable lighting, noise, temperature)
- **Manual Materials Handling**—(lifting, lowering, pulling, pushing, carrying and holding materials)
- **Work Environment**—(ventilation, noise, temperature & humidity, lighting and vision)

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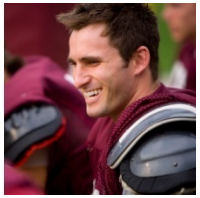

The Legislation

- **Currently no Ontario Ergonomic Regulations**

- **Occupational Health and Safety Act, (OHSA)**
  Section 25 ‘take every precaution reasonable in the circumstances for the protection of the worker’

- **McMaster University’s:**
  - **Ergonomic Safety Program # 405**
  - **Accommodation Policy**

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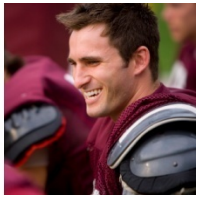

RMM# 405: Ergonomics Safety Program

- To provide direction for safe and efficient ergonomic design with the goal of eliminating all work related musculoskeletal disorders (MSDs)
- Applies to all work areas and work stations utilized by faculty, staff and students
- Supervisors shall ensure ergonomics are considered in the design of present and new work tasks and work locations
- Workers shall participate in ergonomic education programs and report ergonomic concerns to supervisor
- JHSC shall receive copies of incident reports including ergonomic concerns/injuries and report all concerns noted during routine workplace inspections

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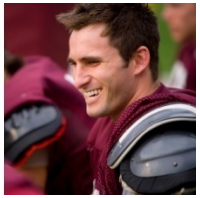
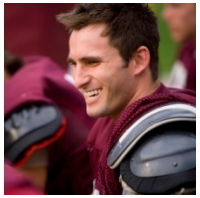


Signs and Symptoms of MSDs

- Muscle fatigue, aches which subside during rest
- Tight band of pain across shoulders or back
- Pain or stiffness when changing positions or rising from bed in the morning
- Difficulty in finger, thumb or hand movement
- Difficulty gripping things
- Loss of sensitivity to touch or to temperature extremes
- Numbness, tingling, burning, weakness and pain



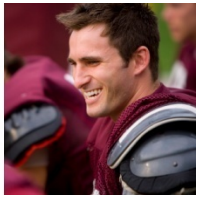
MSDs

- **Joints** (connect bone to bone)--repetitive forceful movements can result in softened cartilage which can lead to growths, degenerative disc disease, osteoarthritis

- **Muscles** (provide the force to perform a task—squeeze and relax)-if contraction is prolonged, blood flow is reduced and waste is not removed fast enough or if not enough rest---muscle irritation, injury and pain

- **Tendons** (fiber muscles attaching muscles to bones)—(hand, wrist, forearm, elbow, shoulder i.e. tendonitis, ganglion cyst, bursitis)

- **Nerves** (surrounded by muscles, tendons, ligaments and blood vessels and carry signals from brain to control muscle activity, temperature, pain,)---tissues surrounding nerves swell and squeeze or compress nerves; e.g. thoracic outlet syndrome and carpal tunnel



Primary Risk Factors

Repetitive Movements

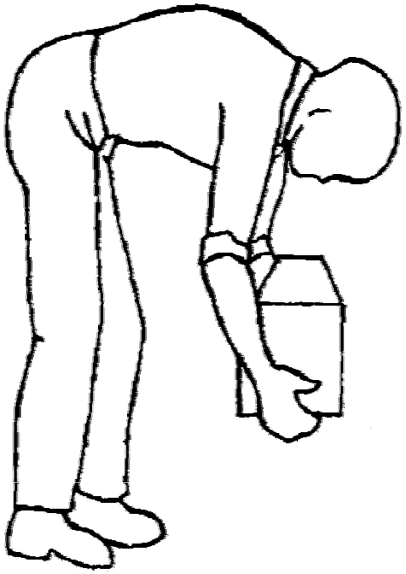
- Leading cause of MSDs
- Same joints /muscle groups (keyboarding, mousing)

Forceful Movements

- Excessive movements for long periods of time (e.g. extended reach)

Fixed or Awkward Postures

- Cause fatigue (sitting rigidly for long periods; reaching above shoulder)



Bending, Twisting and Heavy Lifting

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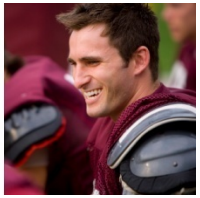
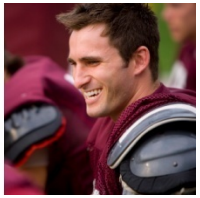


Secondary Risk Factors

- Contact Pressure (holding tools, stapling, resting wrists while typing)
- Cold Exposure (working outside)
- Infrequent, heavy lifting (picking up a water jug; box of paper for photocopier)

- *Remember Frequency and Duration are key*



Ergonomic Awareness

Starts with you and your supervisor:

- Learn to recognize potential work -specific ergonomic hazards through additional training and/or workplace inspections. If you are a computer user, ask yourself the following:

- Are office chairs height adjustable? Do the chair's armrests interfere with the keyboard tray? Is the seat pan long enough to fully support the legs, but not dig into the back of the knees?
- Is the computer mouse resting on the keyboard tray? Are telephone headsets available for frequent telephone users?
- Are laptops fully retrofitted?

- Remember to report signs or symptoms of MSDs by completing an injury/incident report and sending to EOHSS (fax to 905 540-9085) and/or FHSc Safety Office (fax to 905-528-8539)

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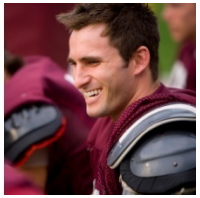

Tips for Working on the Computer

- **Head:** held straight & squarely over shoulders
- **Eyes:** top of computer screen should be at or slightly below eye level
- **Shoulders:** relaxed, not raised or hunched
- **Arms:** supported comfortably & close to the body
- **Wrists:** naturally straight and flat
- **Elbows:** bent approximately 90 degrees and positioned close to the body
- **Back:** sufficiently supported to maintain its natural curve
- **Hips:** bent approximately 90 degrees
- **Knees:** bent approximately 90 degrees. There should be two to three finger space between edge of seat and back of knees
- **Feet:** placed flat on the floor or supported by a footrest

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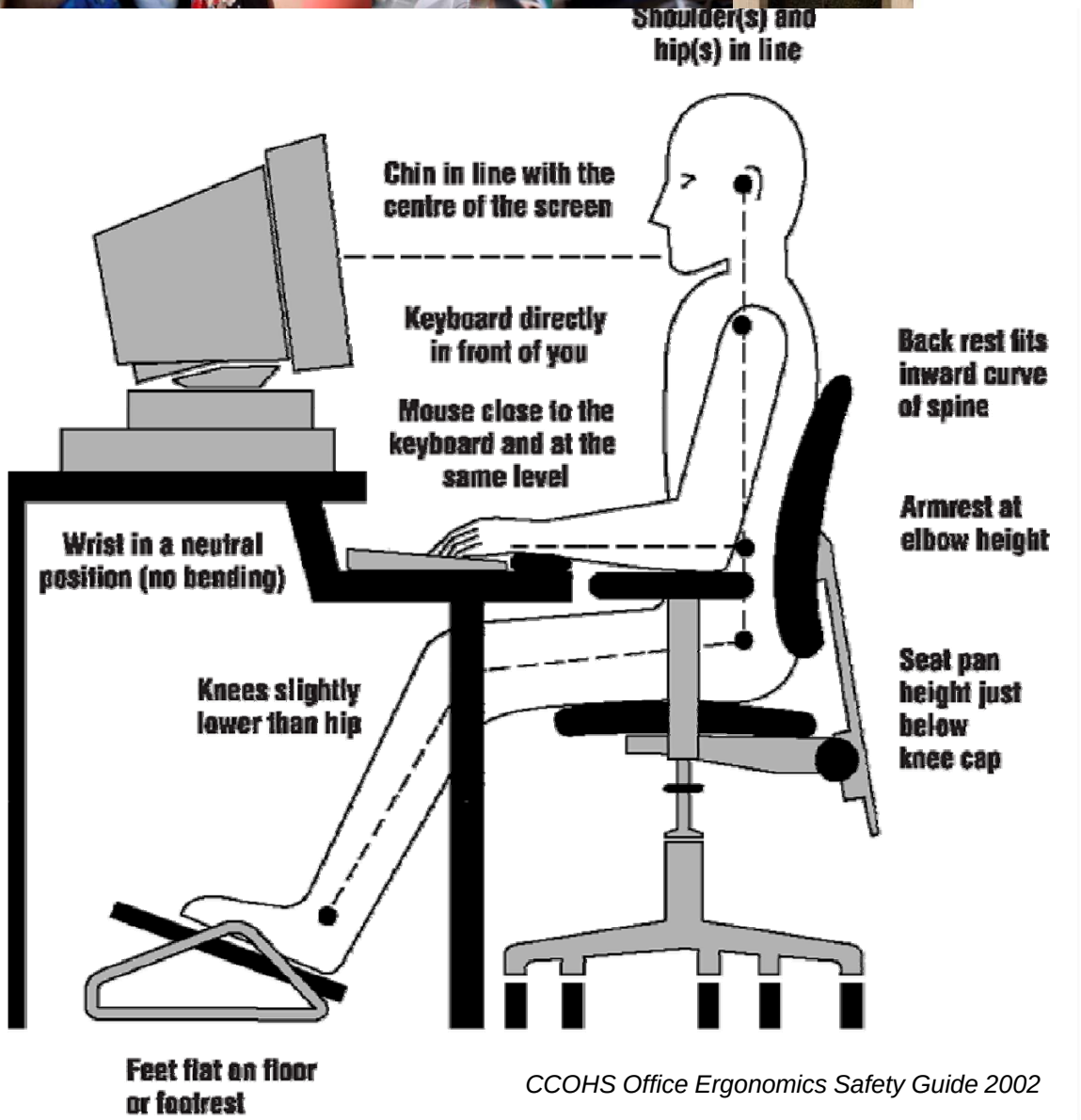
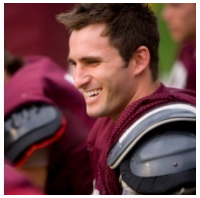
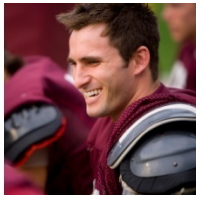


CCOHS Office Ergonomics Safety Guide 2002



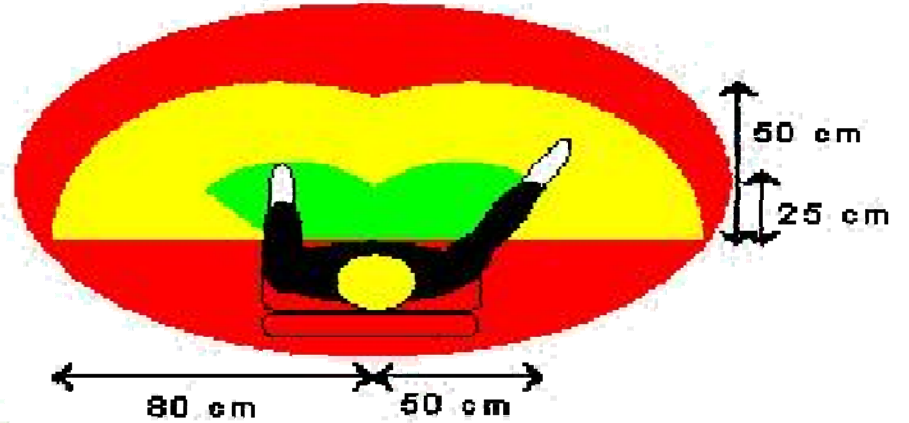
Laptops: The New Hazard?

- Laptops should only be used for short periods of time if not ergonomically retrofitted
- Retrofitting means adding a full size keyboard, external mouse and raising the laptop to eye level to promote neutral body postures
- Consider transporting your laptop in a roller cart, or ergonomically designed bag



Guidelines for Reaches

Reach Requirements

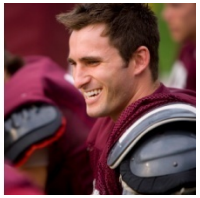


USUAL WORK : Forearm Length

OCCASIONAL WORK : Full Arm Length

NON-WORK AREA : Beyond Arm Length

adapted from : CCOHS Ergonomic Infogram E-A01



Back Pain

- **Acute (immediate) versus Chronic (over time)**
- **Causes:**
  - Poor body posture (working in a stooped position, prolonged sitting in fixed position, etc.)
  - Lifting and handling heavy loads
  - Forceful pushing or pulling
  - Bending or twisting
  - Psychological stress
  - Inadequate rest periods
  - Poor fitness level
- **Prevention:**
  - Neutral postures
  - Using appropriate lifting techniques
  - Alternating work activities
  - Adequate rest periods

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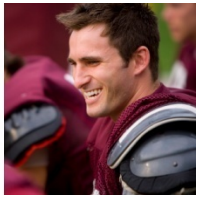

Safe Lifting

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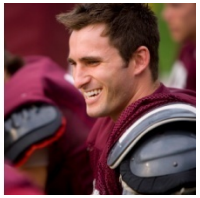


Office Exercises/Stretches

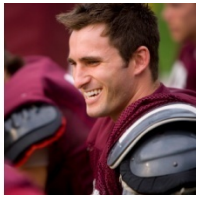
1. Perform all exercises in your comfort zone, if discomfort persists STOP immediately.

2. Stretch regularly throughout your day.

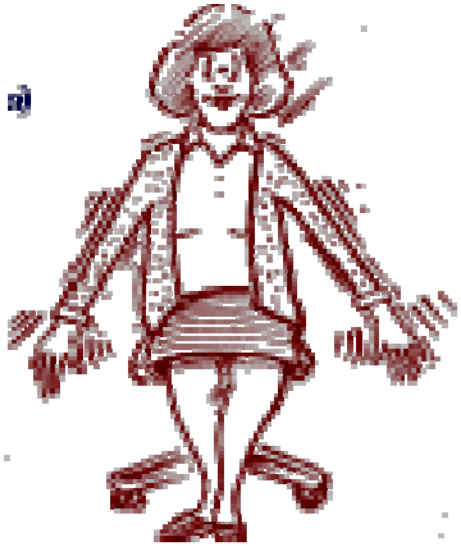
3. Stretches should be done slowly and smoothly.

4. Change your activity. Where possible, every hour, take a few minutes to alternate your work activities. This will help to relieve muscle aches, eyestrain and stress.

5. If you are under treatment, or have any concerns regarding the exercises, please contact your physician before doing any of the following suggested exercises.



Wrist and Forearm Stretches



a) Shake your arms

- **Drop your arms and hands to your side**
- **Shake them gently for a few seconds**

b) Wrist stretches

- **Keep your elbows straight, grasp hand and slowly bend wrist until you feel a stretch**
- **Hold stretch for 6-10 seconds.**

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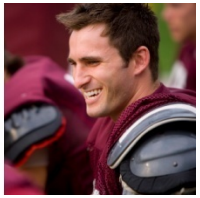

Shoulder and Arm Stretches

- Reach with your arm across the chest
- Grasp opposite shoulder with opposite hand
- Gently pull the elbow across your chest towards the body
- When the stretch is felt in the shoulder
- hold this position for 6-10 seconds.

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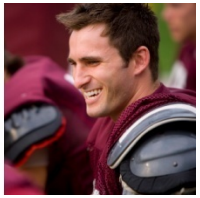
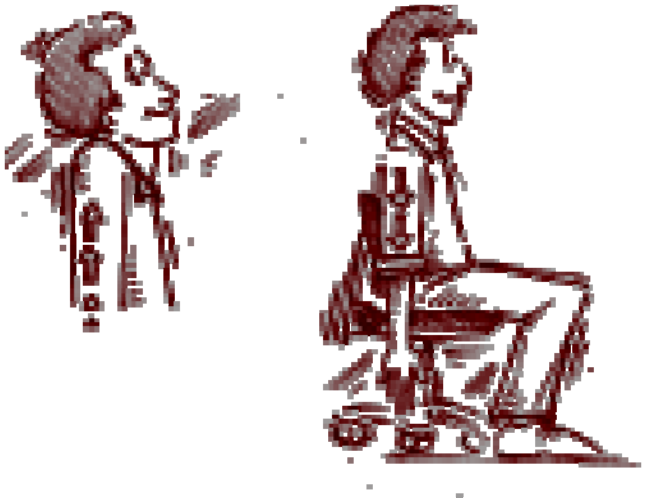
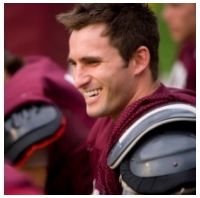


Shoulder Shrug

- Sit in the chair with your back straight against the backrest.
- Let your head relax.
- Squeeze your shoulders up to your ears.
- Follow by stretching shoulders down with fingers pointing to the floor, draw chin in gently.
- Slowly change from one position to another.





Executive Stretch

- Lock your hands behind your head.
- Stretch slowly backwards in your chair.
- Arch your back slightly and gently.
- Hold stretch for 6-10 seconds.
- Repeat 5 times with 5-10 second rest period between stretches.

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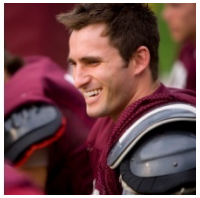

Upper Back Stretch

- Extend your arms out in front of chest, keeping them at shoulder height.
- Interlock fingers with palms facing away from your body.
- Keep elbows straight, do not over-extend.
- Reach forward while maintaining an upright posture.
- Hold stomach muscles tight to avoid arching your lower back.
- Hold this stretch position for 6-10 seconds.
- Raise your arms over your head and hold this position for 10 seconds.
- Repeat 5 times.

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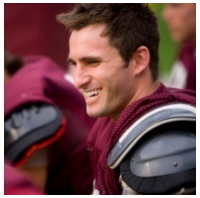

Neck Stretches

- Sit in your chair with back straight
- Draw chin in gently and bend head to the right so that your right ear moves towards your right shoulder.
- Hold the stretch for 5 seconds.
- Repeat to the other side.

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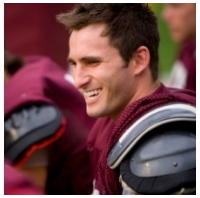

Additional Resources

For additional tips and information visit:

Environmental and Occupational Health Support Services at:

http://www.workingatmcmaster.ca/eohss/prevention/ergonomics/

Faculty of Health Science Safety Office at:

http://fhs.mcmaster.ca/safetyoffice/ergonomics.html

Need an Ergonomic Assessment?

Complete the Ergonomic Assessment Form available on the EOHSS website and submit to:

Environmental Occupational Health Support Services (EOHSS): ext. 24352

Faculty of Health Sciences Safety Office (FHSc): ext. 24956