1.0 Purpose

- The Washington University Ergonomics Guideline has been implemented to reduce the number and severity of Musculoskeletal Disorders (MSDs) caused by exposure to hazards in the workplace. The Ergonomics Program addresses problems and implements controls that will reduce those problems. The Ergonomic Guideline also looks to provide ergonomic information and training resources for University employees while assisting with the identification and correction of problems to ensure ergonomics is not seen as a one-time effort, but a continuous on-going approach. It is the goal of the University is to provide an environment free from recognized ergonomic problems that could cause injury or illness.

2.0 Scope & Application

- The Ergonomic Guideline applies to:
  - Jobs, processes, or operations which involve computer use for more than four hours of the day.
  - Other jobs, processes, or operations where high ergonomic risks have been identified. Common activities involving potential ergonomic risk include, but
are not limited to repetitive lifting, manual handling, repetitive laboratory or clinical tasks, or tasks that involve repetitive motion, frequency, force, compression or vibration.
  o Minimizing ergonomic related injuries through leadership, employee participation, job hazard analysis, training and workplace evaluation.

3.0 Definitions

- **Ergonomics**
  Ergonomics (or human factors) is fitting the workplace to the worker and examining the interaction between the worker and his/her environment.

- **Musculoskeletal Disorder**
  A Musculoskeletal Disorders (MSDs) is an injury or disorder of the nervous system or soft tissue muscles, tendons, ligament or joints in your hands, wrists, elbows, shoulders, neck or back.

4.0 Responsibilities

- All managers, supervisors and employees have a responsibility to contribute to a safe and healthy work place. Employees are encouraged to review information and to participate in education and training opportunities that can enable them to contribute to a healthy work environment. Since non-work activities can also cause or contribute to Musculoskeletal Disorders, employees are urged to apply ergonomic principles outside the workplace as well.

- Environmental Health & Safety, (EH&S) is responsible for the development, implementation, coordination, training, evaluation and administration of the Ergonomic Program. They are also responsible to provide guidance, reference materials and technical support to management, supervisors and individual employees.

5.0 Training

- EH&S makes ergonomic awareness training available for University managers, supervisors and individual employees. This includes, but is not limited to Computer Workstations, Safe Lifting and Laboratory and Clinical ergonomics. Training can be either on-line or classroom as noted in the training section of this webpage.
6.0 Employee Ergonomic Self-Evaluations

- The first step in addressing an ergonomic issue is to perform an ergonomic workstation self-evaluation to lessen or prevent Musculoskeletal Disorders. Workstation self-assessment forms can be found on-line at [www.ehs.wustl.edu](http://www.ehs.wustl.edu), go to Training, Specialized Training, Ergonomic Self-Evaluation.

7.0 Environmental Health & Safety (EH&S) Ergonomic Evaluations

- EH&S workstation evaluation service is available to all Washington University employees by completing the following steps. If an employee needs their computer workstation set-up to accommodate correct ergonomics they should first go to our webpage and complete a Self-Evaluation. Go to [www.ehs.wustl.edu](http://www.ehs.wustl.edu) to Training, to Specialized Training, to the Ergonomic Self-Evaluation. Complete the evaluation and make recommended adjustments/changes and try them for one/two weeks. If problems persist contact EH&S following option one or two below as applicable.

  1. If the employee is experiencing pain related to a non-work related preexisting medical condition, injury, or other Musculoskeletal Disorder, they should contact EH&S to schedule an evaluation.
  2. If the employee experiencing pain where the prevailing factor is related to workstation keying, mousing or sitting while performing other duties, they can be evaluated by EH&S after completing and submitting a Washington University “First Report of Injury” to the Worker’s Compensation office. After receiving the report these offices will jointly determine if EH&S will conduct the evaluation, or if it will be handled by Worker’s Compensation.
  3. For non-computer related evaluations employees working in the medical, clinical, laboratory, research or maintenance fields, they should submit an email request to [www.ehs.wustl.edu](http://www.ehs.wustl.edu), or call 362-6816 to request an evaluation. Steps one and two above will be followed.

NOTE: Evaluation priority will be given to employees with a diagnosed or reported work-related Musculoskeletal Disorder symptoms, or employees who are being treated medically for a pre-existing medical condition aggravated by their workstation.

If EH&S completes the evaluation they will provide recommendations to the employee, supervisor and manager to improve ergonomics at the workstation. EH&S will also include furniture and equipment recommendations as a result of an evaluation. Recommendations should be completed by the department to lessen present Musculoskeletal Disorders and to minimize the potential for further injury or illness relating to an evaluated workstation.
8.0 Ergonomic Guideline Elements

- **Back & Lifting Safety**
  - Back pain is one of the leading reason people will see a doctor. Approximately 70-80% of people in America will experience back pain at sometime in their life. Injuries to the back occur more frequently so it’s very important that you learn to perform tasks in ways that reduce the risk of back injury. It is also important to understand the cumulative nature of back injuries, meaning that back disorders usually develop or increase gradually over time.

- **Safe Lifting Techniques**
  - Size Up the Load--Test the weight by lifting at one of the corners. If the load is too heavy or awkward to lift, the best thing to do is get help from a co-worker, or break the load down if possible to make it more manageable. If the load cannot be broken down use a roller, dolly or cart to move the item. Also look to see if there are wires, bands, nails or other items that would require the wear of gloves.
  - Clear the Path--Make sure your path is free of debris and slipping hazards, and that there are no obstacles in your way before attempting to move the load. “Good Housekeeping” ensures that you won’t trip, stumble or fall over something.
  - Keep your feet apart about shoulder width for stability. Place your feet close to the object you will lift and center yourself over the load.
  - Get a good grip on the load and keep it close to the body.
  - DO NOT bend at the waist, instead bend your knees. By bending at your knees, your legs are required to do the lifting which takes the load off your back. Also, the closer the load is to your center of gravity, the lighter the load is on the back.
  - DO NOT twist or turn. If you need to turn do so with the entire body.
  - DO NOT lift items over shoulder height. Use a step stool or ladder.
  - DO NOT attempt to catch a falling load. Let it drop.
  - Set the load down the same way you lifted it. Lower yourself and the object slowly bending at the knees and let your leg muscles do the work. Keep the load close to your center of gravity. Only let go of the load once it is secure on the floor.

- **Other Lifting Techniques**
  - Use accessories for lifting such as dollies, four wheel carts, mail bins etc.
  - Break the load down.
  - Push carts and dollies, do not pull them.
  - Squat on one knee for balance while lifting or setting a load down.

- **Team Lifting**
If the weight, shape, or size of an object makes the job too much for one person, ask for help.

Ideally, workers should be of approximately the same size and height for team lifting.

One individual needs to be responsible for control of the action to ensure proper coordination during the lift. If one worker lifts too soon, shifts the load, or lowers it improperly, either they or the person working with them may be injured.

- **Safe Lifting**
  - Remember, safe lifting requires training and practice. The secret lies in taking the proper steps before and during the lift to make it successful.

- **Laboratory Ergonomics**
  - Activities in research laboratories can increase the risk for a repetitive strain or other musculoskeletal injury. Simple adjustment to posture, work practices and equipment can decrease that risk while still maintaining productivity. The following provides laboratory workstation ergonomic guides to help prevent injury.

- **Laboratory Workstation Guidelines**
  - To promote your health and ensure your laboratory productivity, simple postural and equipment adjustments can be made. The following tips can help decrease your exposure to risk factors as you work in a lab. There is an Ergonomic Training power point presentation on our webpage at [www.ehs.wustl.edu](http://www.ehs.wustl.edu). Go to Training, Specialized Training, Laboratory Ergonomic Training.

- **Posture**
  - Minimize maintaining the same body position, seated or standing, for an extended amount of time. Take micro breaks every 30 minutes. This is easily done by shifting your weight around, and alternating tasks.
  - Minimize awkward body postures whenever possible.
  - Avoid resting arms on sharp workstation or lab bench edges. Pad the edges with a foam edge pad, elbow or forearm pad.

- **Seating**
  - Adjust the chair properly before you start work.
  - Your feet should rest comfortably on the floor or footrest.
  - The chair should provide adequate back support. Sit all of the way back to provide lumbar support.
  - The front edge of the chair should not press against the back of the knees.
  - Armrests, if used should not hinder your work activities.
  - Remove items from under the workstation to provide leg and feet room.
- **Standing**
  - For prolonged standing, rest one foot on a step/stool. Alternate the feet.
  - Wear low-heeled shoes with good cushioning. Anti-fatigue floor mats can also provide comfort.

- **Shoulders**
  - Relax your shoulders and keep your elbows by your sides. Place frequently used items close to your body to avoid excessive reaching.
  - Avoid raising your elbows above your shoulders. Use ladders and stools to reach for items on high shelves.

- **Pipetting**
  - See posture, seating, and standing tips above.
  - Take frequent micro breaks of 1-2 minutes at least every 30 minutes. Alternate activities to minimize continuous pipetting for long periods.
  - Maintain straight wrists. Keep the elbows close to the body.
  - Share the workload between the right and left hands. Rotate pipetting tasks with other qualified lab colleagues.
  - Keep waste bins, beakers, and other frequently used items as close as possible.
  - Relax your grip on the pipette.
  - Use shorter pipettes and pipette tips.
  - Choose pipettes that require minimal hand and finger effort.
  - Utilize automated processes or multi-channel pipettes for highly repetitive jobs.
  - To watch a Pipette Safety and Ergonomics video provided by UCLA please go to our webpage at [www.ehs.wustl.edu](http://www.ehs.wustl.edu). Go to Training, Specialized Training, and Pipette Safety & Ergonomics video.

- **Test tube handling**
  - See posture, seating, and standing tips above.
  - Take frequent micro breaks of 1-2 minutes at least every 30 minutes.
  - Maintain straight wrists. Keep the elbows close to the body.
  - Share the workload between the right and left hands.
  - Arrange the tubes to minimize reaching and twisting.
  - Use both hands to open test tubes.
  - Use upside-down containers to raise test tube racks when needed.
  - Use a vortexer mixer rack instead of holding tubes by hand.
  - Use cap removers to minimize pinch gripping.

- **Microscope use**
  - See posture, seating, and standing tips above.
  - Take frequent micro breaks to rest your eyes. Momentarily close the eyes or focus on far away objects to vary focal length. Use the 20-20-20 rule. Every 20 minutes look 20 feet away for 20 seconds.
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- Don't use a microscope for more than 5-hours per day. Spread microscope work throughout the day and avoid long uninterrupted periods of microscope work. When possible rotate the work among several colleagues.
- Maintain straight wrists. Keep the elbows close to the body.
- Avoid tilted head/neck postures. Raise and stand the microscope to allow a more upright, "neutral" posture. Move the microscope to the edge of the counter to avoid a tilted neck.
- Provide arm rests to support the operator's forearms while using adjustment knobs.
- If possible elevate the microscope or place it at an angle so you can look directly into the eyepiece to place you in a more upright posture.
- Keep scopes clean and in good condition.

- Laboratory hoods/safety cabinets
  - See posture, seating, and standing tips above
  - Position materials/equipment in the hood/cabinet as close to the body as possible, but at least 6 inches into the hood for safety.
  - Avoid resting arms on the sharp edges of lab hoods. Use edge padding when possible and take frequent micro breaks.

- Other laboratory tasks
  - Take frequent micro breaks of 1-2 minutes at least every 30 minutes.
  - Avoid pinch gripping when possible. Learn to pinch between the index and middle finger.
  - Share the workload between right and left hands.
  - Choose the right equipment for the job. Learn how to properly use the equipment.
  - Ensure tools are in proper working order.
  - Increase the size of tool handles where possible to minimize the gripping effort.
  - Use automated processes to reduce high repetition/force tasks.

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