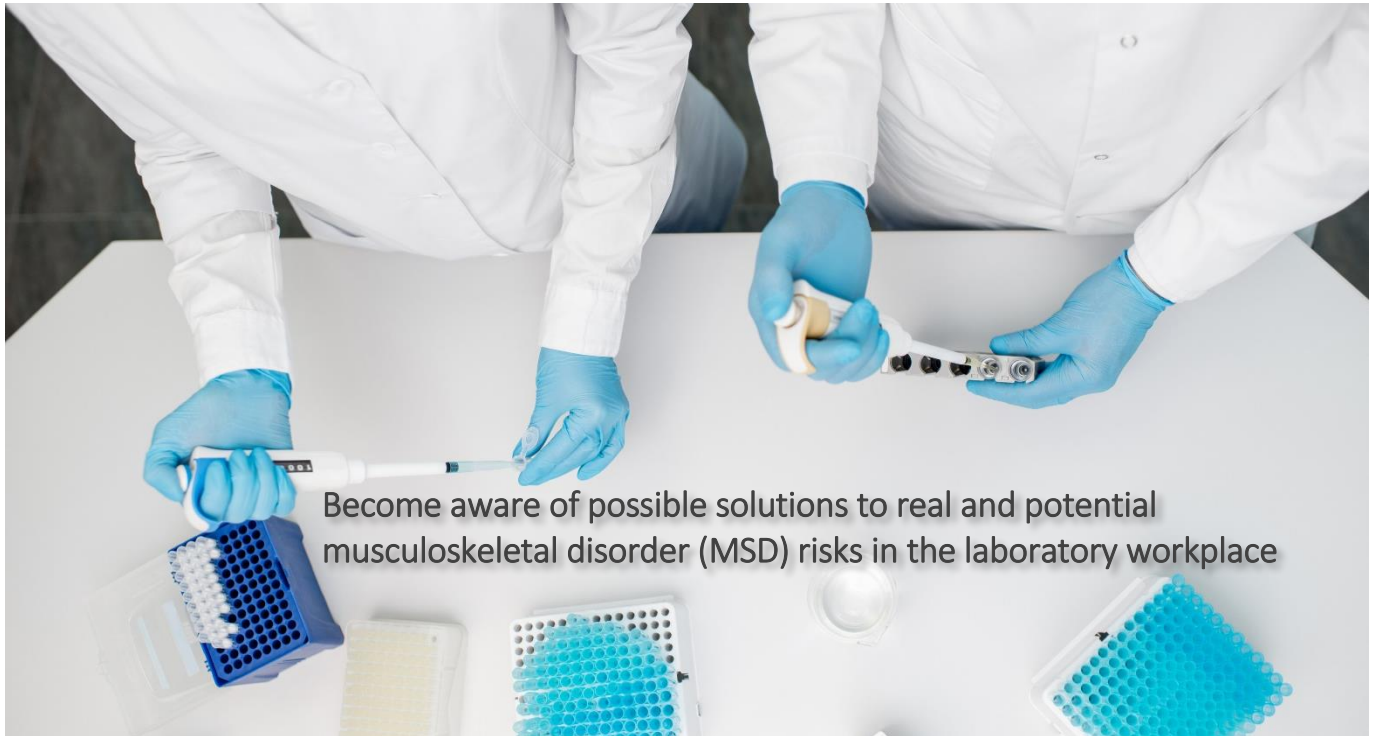




PREVENTING MUSCULOSKELETAL DISORDERS IN THE LABORATORY ENVIRONMENT



Become aware of possible solutions to real and potential musculoskeletal disorder (MSD) risks in the laboratory workplace

There are a number of tasks performed by laboratory workers every day that increase the risk of developing an MSD, due to the force, posture and repetition required by the task.

Below, possible **controls** are outlined to address many of these potential risks.

HAND TOOLS

Pipettes:

- Provide wrist rests for workers performing repetitive fine motor work that requires the constant use of smaller muscle groups in the hands and fingers.
- Use armrests to relieve the load placed on unsupported arms and wrists.
- Avoid prolonged elevation of the arms and provide support for them.
- Use well-balanced pipettes that reduce the need for workers to adopt awkward postures. Pipettes shaped like handguns are safer to use because they allow the wrists to be maintained in the neutral position.
- Use shorter pipettes
- Use automated pipettes for highly repetitive tasks and to reduce force required to operate.
- Use multi-tip pipettes if possible.
- Limit periods of continuous pipetting through work - rest periods, staff rotation, etc.



- Use pipette tips that are easy to eject.

Forceps/Tweezers:

- Vary position in which they are held to avoid straining one set of muscles.
- Use forceps at room temperature – cold equipment presents a secondary MSD risk factor.

Cryostat:

- Alternate hand rotation if possible.
- Apply padding to the edge of the cryostat to reduce contact stress.
- Use footrest when available.
- Rotate workers (task rotation).

MICROSCOPE USE

- Raise, incline or reposition microscopes as close to the head as possible to allow the head to be held in an upright position. Avoid bending at the neck.
- Use longer ocular tubes (eye pieces) to avoid neck strain.
- Where appropriate, use video display screens to eliminate the use of a binocular system.
- Use adjustable microscopes or adapt existing microscopes with longer ocular tubes, platform adapters, etc.
- Use an edge protector when using a cell counter to reduce contact stress on the wrist and forearm.
- Rotate microscope tasks between workers.

To avoid overexertion of the eye muscles:

- Keep all optical components scratch-free and clean.
- Align the illumination correctly and use the correct light density.
- Exercise the eyes – change focus by momentarily looking at something farther away and periodically shut and open eyes.

TEST TUBE, VIAL, SPECIMEN CONTAINER USE

- Use plastic vials with fewer threads to minimize twisting of the wrist and hand.
- Arrange test tube and specimen racks to avoid having to twist and turn.
- Tilt test tube racks slightly to allow wrists to be kept in a neutral position.
- Use cap removers with a full-hand grip.
- Automate processes where possible.
- Use a rack to support tubes on the vortex.
- Only use a pinch grip (thumb and index finger) when minimal force is required.
- Use two hands to open tubes.

MATERIAL HANDLING/LIFTING

- Use mechanical lifting devices and carts for heavier lifting and transporting.
- Use siphon systems and automatic tipping mechanisms instead of moving containers of liquid.
- Store frequently used products in smaller containers of manageable weight and size.
- Assess heavier material handling tasks that require additional staff.



- Provide appropriate ladders for overhead lifting.
- Avoid twisting/turning while lifting.
- Store materials used more frequently and heavier items in the mid-range of the worker's height.

WORKSTATION DESIGN

(FUME HOODS, BIOLOGICAL CABINETS, LABORATORY BENCHES, VIDEO DISPLAY TERMINAL (VDT) STATIONS)

- Use anti-fatigue mats or sit-stand stools for standing tasks that are performed for long periods.
- Provide a foot rest/rail to help workers adjust their body position.
- Use ergonomic chairs/stools and teach workers how to adjust them.
- Consider multi-user in design/redesign of work stations.
- Ensure windows on fume hoods/containment cabinets are not obscured with stickers, trim, etc.
- Pad edges or provide wrist rests where appropriate.
- When designing or redesigning, consider workstations that have more than one purpose such as microscope use and VDT work.