

12-Laboratory Ergonomics

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ANNUAL REVIEW:

REVIEWED <u>Sanford N. Bailey, M.D.</u>	<u>July-16-2025</u>
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SUPERSEDES: Procedure titled _____

Purpose:

This SOP provides guidance to laboratory employees about controlling laboratory ergonomics risk factors, improving level of comfort while performing jobs, and reducing the risk of acquiring Musculoskeletal Disorders (MSDs) and Repetitive Strain Injuries (RSIs)

Scope:

This SOP applies to all staff and students involved in sustained and / or repetitive tasks in the lab

Abbreviations

SOP- Standard Operating Procedure

MSDs-Musculoskeletal disorders

RSIs-Repetitive Strain Injuries (RSIs)

BSC: Biological Safety Cabinet

Definitions

Ergonomics: Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance. (International Ergonomics Association)

Musculoskeletal disorders (MSDs): MSDs are illnesses and injuries that affect one or more parts of the musculoskeletal system and can include:

- Sprains
- Strains
- Tears
- Degeneration

Policy:

In order to reduce risk of MSDs and RSIs, proper lab ergonomics will be implemented.

Procedure:

When used inappropriately, laboratory workbenches can expose employee to a variety of hazardous conditions or ergonomic risk factors depending on the laboratory procedure being used.

1. Always assume proper sitting or standing neutral posture.
2. When sitting, use only adjustable chair with built-in foot rest to insure lower back, thigh, and feet support.
3. Remove drawers, supplies and other materials underneath workbenches to provide leg room.
4. Take frequent small breaks to alter repetition, body awkward posture, and muscle static work.

PIPETTING

Pipetting involves several ergonomic risk factors, including thumb force, repetitive motions and awkward postures, especially of the wrists, arms and shoulders.

1. Use pipettes that fit comfortably in the user's hand.
2. Avoid elevating arms and elbows above shoulder for lengthy periods to prevent static work of arm, and shoulder strain
3. Use multi-channel pipettes for microtiter plate applications.
4. Use electronic pipettes for highly repetitive pipetting tasks to reduce/eliminate contact pressure on the thumb.
5. Use shorter pipettes. It decreases hand elevation and consequent awkward postures. Take short breaks every 20-30 minutes of pipetting. Mild hand exercise and stretches are beneficial.
6. Clean pipettes regularly as it reduces the "sticking" effect.
7. Work with the arms close to the body. Keep samples and instruments within easy reach.
8. Use thin-walled tips when possible to reduce the force needed to eject tips.

USE OF BIOLOGICAL SAFETY CABINETS (BSC)

Workers normally stand at fume hoods and sit at biosafety cabinets. Posture is important when working on these devices.

1. Prevent extended reaching, place materials as close as possible
2. Perform your work at least 10-15cm inside the hood or BSC to ensure proper containment.
3. Always assume a proper posture. Use only an adjustable chair or stool with built-in foot and arm rest.
4. Take frequent short breaks to perform stretching exercises.
5. Keeping supplies nearby to prevent overreaching
6. Make sure hood/BSC lighting is working properly, good and proper lighting helps reduce eye strain.

WORKING AT A COMPUTER

Lab work can require several hours of data entry.

1. Use an adjustable chair, comfort is important.
2. Keyboard should be 6 - 7 cm from the edge of desk and lie flat or negatively inclined. The monitor should be located at a comfortable viewing distance - approximately an arm's length away.
3. Top of monitor should be at about eye level, or slightly lower to avoid neck extension/flexion.
4. Computer mouse should be at same level as keyboard and close enough to prevent over extended reaches
5. Provide foot rests, where possible, in order for employees to change leg positions throughout the day.
6. Reduce prolonged computer time whenever possible.

Reference

<https://www.cdc.gov/niosh/topics/ergonomics/default.html>