

THE RISK OBSERVER

ERGONOMIC RISK REDUCTION THROUGH TASK DESIGN

Manual work tasks can pose ergonomic stressors that ultimately result in musculoskeletal disorders (MSDs) and workers' compensation claims. Work areas and tasks can be laid out to reduce the ergonomic risk factors. When designing a work area, there is a variety of design considerations associated with efficiently performing the manual work tasks. Whether you are designing or reconfiguring a task the following guidelines can be used to help in identifying the Do's and Don'ts with the ultimate goal of reducing the potential for a work related injury.

MANUAL LIFTING

- Limit the weight of loads to be manually lifted to under 51 lbs. (23 kg)
- Configure the load to allow it to be brought close to the employee
- Avoid starting the lift with the object resting on the floor
- Avoid lifting near the floor or above the shoulders
- Minimize the vertical distance between the origin and destination of the lift
- Avoid the need to twist at the waist while lifting
- Keep lifting frequency and duration to a minimum (1 lift every 5 minutes or less is optimal)
- Maximize the recovery periods between lifts
- Provide loads with handholds to improve the hand-to-object grasp

UPPER ARMS

- Avoid tasks requiring the shoulders to be raised
- Avoid tasks requiring the arms to be away from the sides
- Avoid tasks requiring the arms to deviate more than 20° from their resting position (against the side of the body)
- Provide opportunities for the worker to lean or support the weight of their arms whenever possible

LOWER ARMS

- Avoid tasks requiring the forearm to deviate beyond 60-100° from vertical
- Avoid tasks requiring the arms to cross over the midline of the body
- Avoid tasks requiring the arms to reach out to the sides

WRIST

- Avoid tasks requiring the wrist to raise or lower (deviate) beyond +/- 15° from neutral (resting)
- Avoid tasks requiring the wrist to be bent away from its midline (side-to-side)
- Avoid tasks requiring the hand to twist at the wrist



NEW YORK STATE SAFETY GROUP 491

THE RISK OBSERVER

NECK

- Avoid tasks requiring the head to twist at the neck
- Avoid tasks requiring the head to bend toward either shoulder
- Avoid tasks requiring the head to bend forward more than 10°
- Avoid tasks requiring the head to bend backwards to any degree

TRUNK

- Avoid tasks requiring the upper body to twist at the waist
- Avoid tasks requiring the upper body to bend to the side
- Avoid tasks requiring the trunk to continuously bend forward or backwards to any degree

LEGS

- Avoid tasks which do not allow the legs and feet to be well supported and evenly balanced

MUSCLE USE

- Avoid tasks requiring static posture for more than one minute
- Avoid tasks that must be repeated more than four times/minute

HAND FORCE/LOAD

- Avoid tasks requiring more than 4.4 lbs. (2 kg) intermittent load or force

The information contained in this guide has been abstracted from:

1. Revised NIOSH Lifting Equation
2. RULA: A survey method for the investigation of work-related upper limb disorders; Applied Ergonomics, Volume 24 No 2 April 1993, Lynn McAtamney and E. Nigel Corlett.



NEW YORK STATE SAFETY GROUP 491