

# BEND, FLEX, REPEAT

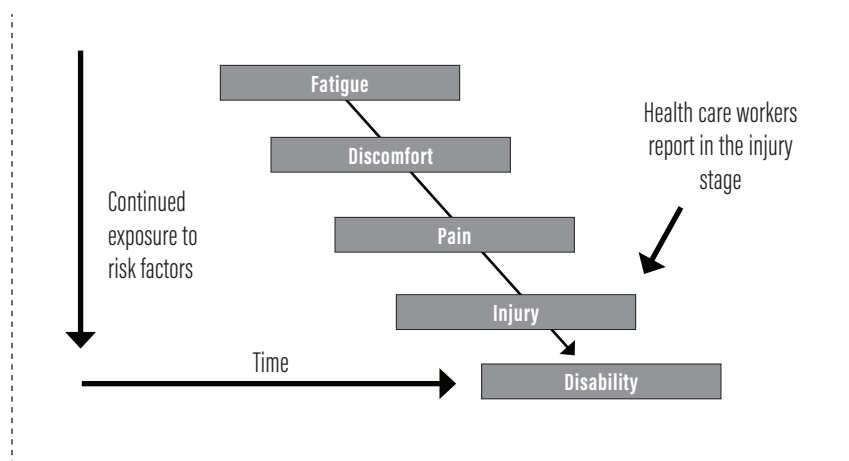
Ophthalmologists are at high risk for repetitive use and ergonomic injuries.

BY SANDRA M. WOOLLEY, PhD, CPE

Ophthalmologists are exposed to a number of common ergonomic risk factors in the office, the clinic, and operating environments. The primary risk factors that predispose ophthalmologists to work-related musculoskeletal disorders (MSDs) are excessive force or exertions, awkward or nonneutral postures, static or sustained postures, and repetitive movements. The effect of continued exposure to these risk factors increases over time (see *The Cumulative Effect*).

It is anticipated that the number of work-related MSDs among eye care providers will rise with increasing demand for ophthalmic services and the aging of practitioners. There are both professional and personal costs to these injuries, including lost work days, loss of income, and effects on outside-of-work activities. This article examines some of the ergonomic risk factors in clinical ophthalmologic practice by providing images of right and wrong positioning.

## THE CUMULATIVE EFFECT



### WHAT'S WRONG IN THIS PHOTO?

## SLIT LAMP



- ▶ The arms are unsupported and reaching away from the body, the shoulders are elevated, and there is a forward head position with neck extension.

#### ERGONOMIC RISK FACTORS

- Static or sustained postures
- Awkward postures

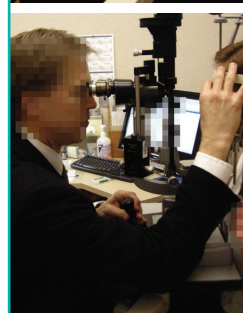
#### POTENTIAL SOLUTIONS

- Raise the stool so the eyes are positioned above the eyepieces.
- Provide support for the forearms and relax the shoulders.
- Maintain the natural curvatures of the spine by providing a backrest on the stool.

## THE RIGHT WAY



- ▶ The trunk is in a neutral position and the neck is not extended. The shoulders are in a neutral position with the upper arms close to the body.



The head is in a neutral position, the arm is reaching forward, but the forearm is resting on the slit-lamp table.

WHAT'S WRONG IN THIS PHOTO?

## COMPUTER USE

There are three important ergonomic considerations when setting up computers for electronic health records: the locations of the eyes, hands, and feet.

**Eyes.** The top of the monitor should be at or slightly below sitting eye height. If the physician is wearing bifocals, the monitor should be lowered more.

**Hands.** The hands should be at sitting elbow height or slightly lower.

**Feet.** Feet should be supported on the floor or on a footrest.



- ▶ The monitor is too low, which will result in neck flexion. The chair is also too low, and the user has his feet resting on the chair legs, which places strain on the muscles of the back and hips.

### POTENTIAL RISK FACTORS

- Awkward postures

### POTENTIAL SOLUTIONS

- Raise the monitor.
- Raise the stool.

WHAT'S WRONG IN THIS PHOTO?

## INDIRECT OPHTHALMOSCOPE



- ▶ There is neck flexion, trunk flexion, lateral trunk flexion, and twisting of the trunk. Additionally, the weight of the ophthalmoscope pulls the head and neck into flexion.

### ERGONOMIC RISK FACTORS

- Awkward postures
- Sustained postures
- Excessive force or exertion

### POTENTIAL SOLUTION

- Raise the bed to reduce trunk and neck flexion.
- Position yourself relative to the patient to maintain the most neutral posture possible.
- Use the lightest ophthalmoscope available.

WHAT'S WRONG IN THESE PHOTOS?

# DIRECT OPHTHALMOSCOPE



- ▶ There is neck flexion, trunk flexion, and trunk twisting. One shoulder is elevated relative to the other, increasing lateral trunk flexion.

### ERGONOMIC RISK FACTORS

- Awkward postures
- Sustained postures

### POTENTIAL SOLUTION

- Raise the chair.
- Position yourself relative to the patient to maintain the most neutral posture possible.



- ▶ Ergonomics applies scientific data and principles about people to the design of equipment, products, tasks, devices, facilities, environments, and systems to meet the needs for human productivity, comfort, safety, and health.

Work-related musculoskeletal disorders are defined as disorders of the muscles, nerves, tendons, ligaments, joints, cartilage, or spinal discs due to prolonged exposure to ergonomic risk factors.

Source: Board of Certified Professional Ergonomists

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