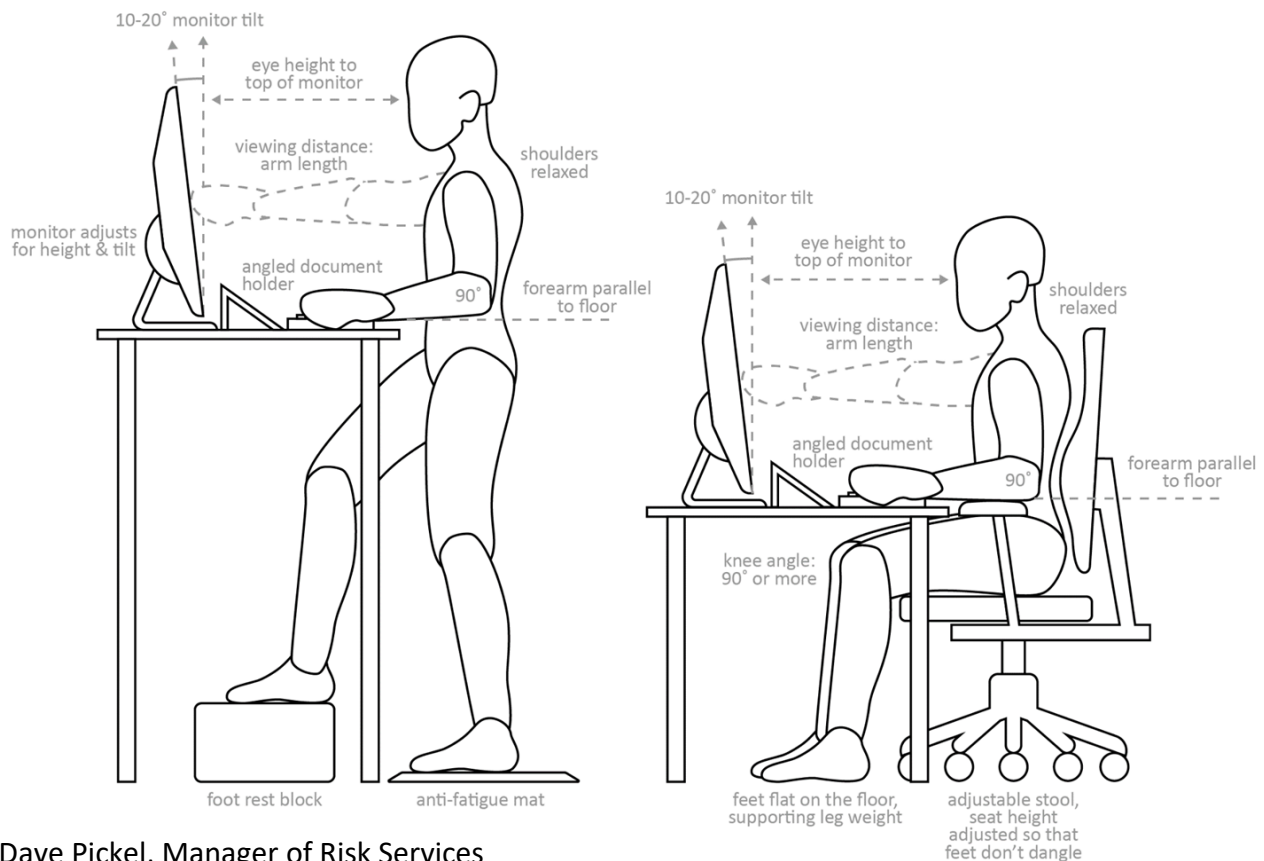


Ergonomics Training Handouts

- Ten Principles of Ergonomics (p. 2-4)
- Guidelines on Setting up Your Workstation (p. 5-6)
- Choosing an Ergonomic Chair (p. 7-8)
- VEHI Wellness Program (p. 9)
- Ergonomics on the *GO!* (p. 10)
- Workplace Exercises (p. 11-13)

Optimal Standing and Seated Positions

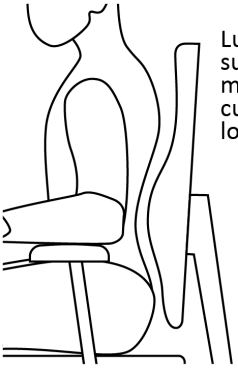
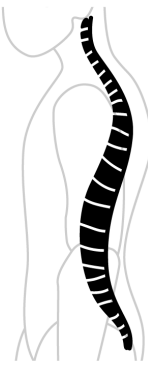
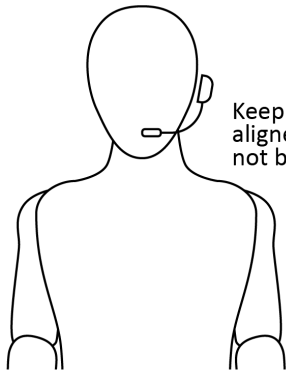
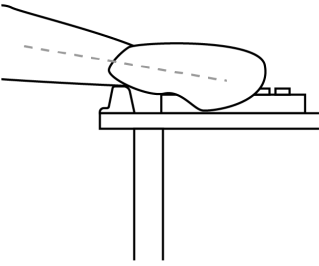
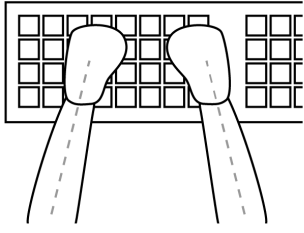
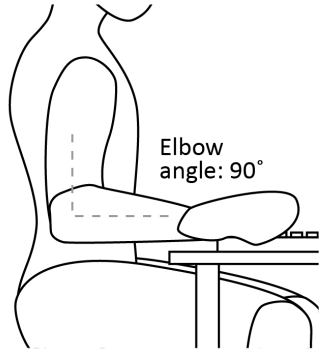
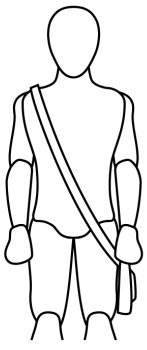
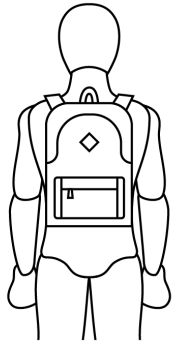
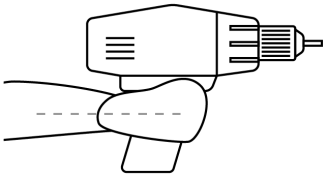
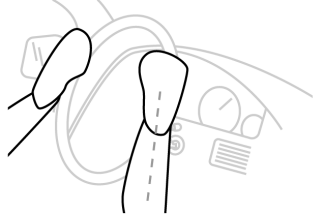

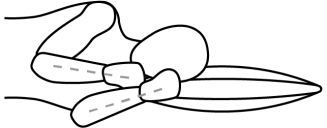


Dave Pickel, Manager of Risk Services
Ben Prevost, Risk Management Consultant
Heidi Joyce, Risk Management Consultant

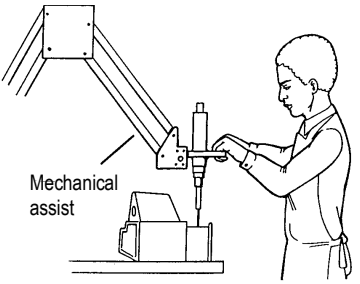
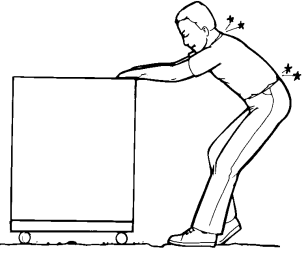
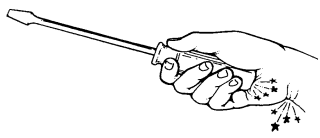
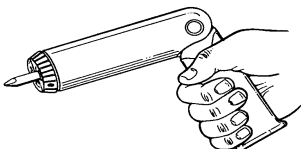
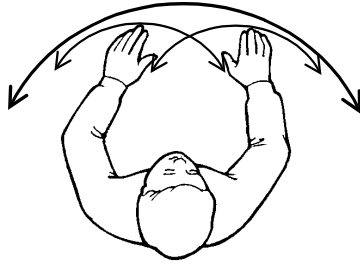
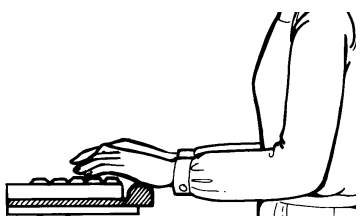
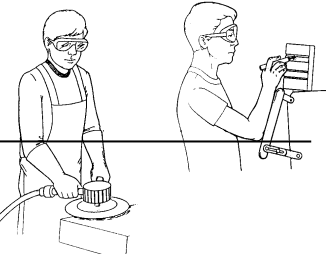
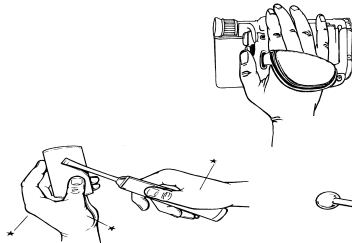
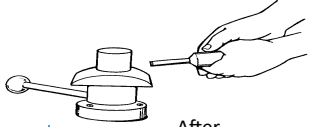
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<http://www.vsbite.org/multi-line-program-vsbit/>



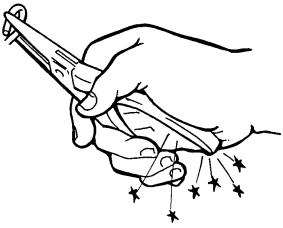
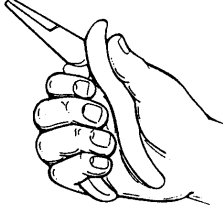


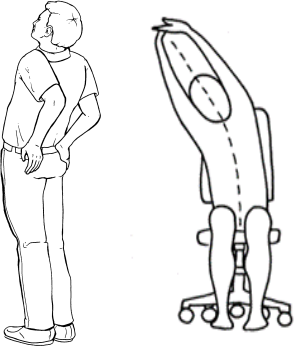
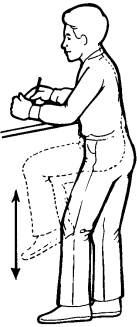
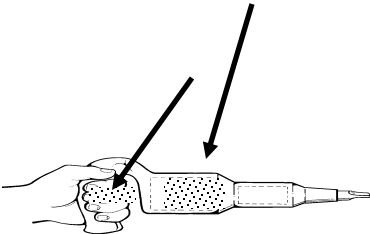
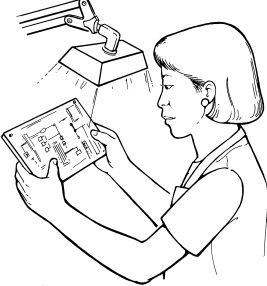
1. Work in Neutral Postures (at home and at work)

 <p>Lumbar support to maintain curve of lower back</p>	 <p>Maintain the "S"</p>	 <p>Keep neck aligned, not bent</p>
 <p>Keep wrists in the same plane as the forearms</p>		 <p>Elbow angle: 90°</p>
 <p>Wear handbag across body</p>	 <p>Wear backpack on both shoulders</p>	 <p>Tool holding position: keep wrist aligned with arm</p>
 <p>When driving, wrists should be angled slightly in and forward</p>	 <p>When biking, wrists should be aligned with arms</p>	 <p>Sleep position: wrists should be aligned with arms and neck should only have a max. of an 8° tilt</p>

Ten Principles of Ergonomics (cont.)

<p>2. Reduce Excessive Forces</p> <p>Identify activities where you can reduce hand grasping forces, loads on arms, shoulders, and lower back. Use leverage, good angle of attack, power tools, good grip size, slides and rollers, mechanical assists and fixtures.</p>		 <p>For heavy carts, use large wheels, good grips, and smooth floor. PUSH DON'T PULL</p>
<p>3. Reduce Excessive Motions</p> <p>Minimize the number of motions required to do a task. Let tools do the work, design for motion efficiency, remove height inconsistencies or other barriers, use the best method, watch for double-handling.</p>		
<p>4. Keep Things in Easy Reach</p> <p>Continuously used items should be within easy reach.</p>		
<p>5. Work at Proper Heights</p> <p>Work at elbow height. Exceptions include: keep the work lower for heavier work and higher for precision work.</p>		
<p>6. Minimize Fatigue & Static Load</p> <p>Holding the same position for a period of time, known as static load, can cause pain and fatigue. Don't use your hand as a fixture. Use fixtures and add straps or handholds. Use arm rests and other supports.</p>	 <p>Before</p>	<p>Strap eliminates static load on hand.</p>  <p>After</p>

Ten Principles of Ergonomics (cont.)

<p>7. Minimize Pressure Points</p> <p>Contact stress commonly affects the palm of the hands, forearms, and thighs.</p>		
<p>8. Provide Clearance</p> <p>Clearance is needed for your head, arms, torso, knees, feet, and vision</p>		
<p>9. Move, Exercise, Stretch</p> <p>Take energy breaks. Change posture periodically. Warm up before strenuous activity. Stay in good shape (participate in VEHI PATH).</p> 		
<p>10. Maintain a Comfortable Environment</p> <p>Provide appropriate lighting. Avoid glare, shadows, too bright or too dark. Dampen vibration and shock.</p>	<p>Vibration dampening material</p> 	<p>Task light</p> 

Guidelines on Setting Up Your Office Workstation

By Ana Ellington, Legal Editor, June 09, 2017 (edited by Heidi Joyce, February 2019)

Many of us spend hours at our workstations every day. Bad habits and incorrect posture can lead to neck and back pain or sore wrists and fingers. Proper ergonomics can help you stay comfortable at work.

Ergonomics is a scientific discipline which is concerned with improving the productivity, health, safety, and comfort of people. It's basically fitting the job to the person rather than fitting the person to the job. For example, some people would be more comfortable with slight adjustments, such as tilting the keyboard a bit or adjusting the chair or monitor.

It is important that you adjust your workstation furniture and equipment to suit your individual needs. Here are some tips on how to set up your workstation.

Work space – your primary workspace (> 4 hrs.) should be no more than 10" forward from midline and 45 degrees to each side; your secondary workspace (< 4 hrs.) can be arm's length; tertiary workspace (items you need infrequently) outside arm's length

Chair

A good chair provides necessary support to the back, legs, buttocks, and arms, while reducing exposures to awkward postures, contact stress, and forceful exertions. Your chair should have multiple adjustments (seat height, seat pan depth, back support, arm rests).

- Push your hips as far back as they can go in the chair.
- Adjust the seat height so your feet are flat on the floor and your knees are equal to or slightly lower than your hips. Use a footrest if necessary.
- Adjust the back of the chair. Make sure your upper and lower back are supported. Use inflatable cushions or small pillows if necessary. If you have an active back mechanism on your chair, use it to make frequent position changes.

Adjust the armrests so that your shoulders are relaxed. If your armrests are in the way, remove them. Rest your arms in your lap when not using them (proofing material, etc.)

Monitor

Choosing a suitable monitor and placing it in an appropriate position helps reduce exposure to forceful exertions, awkward postures, and overhead glare. This helps prevent possible health effects such as excessive fatigue, eyestrain, and neck and back pain.

- Center the monitor above your keyboard, directly in front of you. If you have two monitors, place the split at the center-line of your body or place the monitor you use the most, directly in front of you.
- Position the top of the visual portion of the monitor at eye level. If you wear bifocals, lower the monitor to a comfortable reading level, so your head is in a neutral position.
- Sit at least an arm's length away from the screen, and then adjust the distance for your vision.

Reduce glare by careful positioning of the screen, typically 90 degrees to a window.

- Enlarge the size of the font, if needed, to prevent eye strain.

Keyboard and mouse

Proper selection and arrangement of the computer keyboard and mouse help reduce exposure to awkward postures, repetition, and contact stress.

- Put the keyboard directly in front of you and close to the edge of the desk.
- Keep your shoulders relaxed and your elbows close to your body at a 90 degree angle.
- Maintain your wrists straight and in-line with your forearms (neutral; not bent upwards, downwards or side-to-side).
- Keep the mouse close to the keyboard and the front edge of the desk.
- Alternate hands with which you operate the mouse.
- Use keyboard shortcuts to reduce extended use.
- Do not use excessive force on the keyboard.
- When not keying, relax your arms in your lap.

Telephone

Telephones add to the convenience of a workstation; however, telephones have cords that can get tangled up and can cause the user to assume awkward postures. Placing the telephone too far away can cause you to repeatedly reach, resulting in strain on the shoulder, arm, and neck. Prolonged conversations with the phone pinched between your shoulder and head may cause stress and neck pain.

- Place your telephone within easy reach. Telephone stands can help.
- Use a headset or speakerphone for long conversations to eliminate cradling the handset.

Take a break

Once you have correctly set up your workstation, use good work habits. No matter how perfect the environment, prolonged, static postures will inhibit blood circulation and take a toll on your body.

- Take short stretch breaks every 20 to 30 minutes. After each hour of work, take a break or change tasks for at least 5 to 10 minutes. Try to get away from your computer during lunch breaks.
- Avoid eye fatigue by resting and refocusing your eyes periodically. Look away from the monitor, and focus on something in the distance.
- Rest your eyes by covering them with your palms for 10 to 15 seconds.
- Use correct posture when working.
- Move frequently - alternate standing and seated work (when possible); participate in VEHI PATH

Additional Recommendations

Keep space neat - Keep the work surface and under the desk areas neat. Unnecessary clutter makes it difficult to move around the work area easily and may cause you to perform awkward reaching and stretching.

24-7 - Hobbies, sports and other home activities can present the same ergonomics concerns as work. Keep these same principles in mind at home as well as at work.

Standing Desk Converter (such as Varidesk) – standing desk converters allow for good positioning in the standing position but often sit too high on the desk for optimal typing in the seated position. If this is the case, you still need an under-the-desk keyboard/mouse tray for the seated position.

Sleep – get 8+/- hours every night providing rest and recovery for every system in your body

Eat Healthily – consume water, fruits, vegetables, low-fat meats and dairy, and whole grains while limiting white flour products, sugar, alcohol, and tobacco

Stress – breathe before you react; think before you react; use your EAP services to help with any form of stress you may be experiencing

Lifting

- **Think first**- use your brain when lifting; get help if you need it (cart, dolly, another person, etc.)
- **Butt back** – with feet hip width apart; maintain neutral back posture; keep knees behind toes;
- **Use a staggered stance** when lifting so arms become an extension of your legs
- **Keep load close** – elbows in; avoid lifting objects greater than 25" from the centerline of the body
- **Keep it in neutral** – keep your body positions in neutral (neck, wrists, back)
- **Avoid twisting** – move with your feet;
- **Acceptable weight** – if the weight is greater than 50 lbs., use a tool to lift it; NIOSH states most people can lift 51 lbs. in the ideal position; see [NLE Calc](#); lifting should not exceed 60% of your body weight
- **Two person lift** – can be dangerous if one drops it prematurely; if you lift with someone else, make one person in charge of the count, ex., 1, 2, 3, lift; lift (or lower) on lift; clear the distance traveled



Choosing an Ergonomic Chair (from Cornell University Ergo Lab)

To help you to choose an ergonomic chair, check whether the chair will meet at least the following criteria:

Does the seat pan feel comfortable and fit your shape?

When you sit in the chair the seat pan should be at least one inch wider than your hips and thighs on either side. The seat pan should not be too long for your legs otherwise it will either catch you behind the knees or it will prevent you from leaning fully back against the lumbar support. Most ergonomic chairs have a seat pan with a waterfall front that prevents the seat from catching you behind the knees. The seat pan should also be contoured to allow even weight distribution and it should be comfortable to sit on.

Is the seat chair height adjustable?

For preference the chair should be pneumatically adjustable so that you can adjust seat pan height while you are sitting on the chair. Some chairs have a mechanical height adjustment (spinning) mechanism that is also acceptable.

Is the range of height adjustment of the chair sufficient to meet the needs of all users?

You should be able to adjust the height of the seat pan so that the front of your knees is level or slightly below level and your feet are firmly on the ground. In most cases there should be no need for you to use a footrest. The mechanism to adjust seat height should be easy to reach and operate when you are seated.

Does the chair have a comfortable lumbar (lower back) back rest?

Many chairs have cushioned lumbar supports that can be adjusted up and down and forwards and backwards to best fit your shape. If the chair will be used by multiple users then this level of adjustment may be required. If the chair has a fixed height lumbar support, and it feels comfortable when you sit back against this, and you will be the primary user of the chair, then a fixed lumbar support may be acceptable.

Is the chair back rest large enough to provide good back support?

Many chairs have back supports that are large enough to provide mid-back and upper-back support, in addition to good lumbar support.

When you sit back against the lumbar support is there ample space for hip room?

Insufficient hip room can make you sit too far forwards on the seat pan so that you will not have enough thigh support.

Does the seat pan still feel comfortable after you've been sitting in it for 60 - 120 minutes?

If the seat pan is made from low-density foam then continuous use can cause it to become permanently deformed and then it will not provide adequate cushioned support. Insufficient cushioning and inappropriate contouring can cause discomfort, imbalance and hip and back fatigue.

Does the chair backrest recline and support your back in different positions?

Movement of the back while you are sitting helps to maintain a healthy spine. Look for chairs that allow you to easily recline, that provide you with good back support in different reclining postures, and that have a back that tracks where your back is. Locking the chair backrest in one position generally isn't recommended or beneficial to users.



Does the chair have a 5 pedestal base?

If chair mobility is important to help you to do your work then the chair should have at least a 5 pedestal base with casters that glide freely over the floor surface. You may also want to choose a chair that swivels easily. A chair mat over the carpet may be needed to glide easily.

Do you need armrests on your chair?

If so, are the armrests broad, contoured, cushioned and comfortable? While sitting can you easily adjust the height of the armrests and can you move the armrests closer together or further apart? Can you easily move the arms out of the way if you need to do this?

Other considerations:**Do you need a footrest?**

In the vast majority of situations you should not need a foot support to be able to sit comfortably on your chair? However, if you do need a foot support then choose a free-standing floor-mounted support that allows you to rest your feet out in front of you in a comfortable manner.

What chair covering is best?

Chairs can be covered in a variety of upholstery materials, each of which has benefits and concerns. Vinyl and vinyl-like coverings are easy to clean and spill resistant, but they don't breathe and if the chair begins to heat up under the thighs uncomfortable amounts of moisture can accumulate. Cloth upholstery is the most common covering, but this is less resistant to spills and more difficult to clean. A cloth covered seat pan can also become warm and moisture laden, and cloth covered foam seat pans can be a significant source of dust mite allergen. When selecting your chair covering think about cleaning and maintenance issues and plan appropriately.

Do you need an adjustable tilt seat pan?

In most situations this is not an essential feature. In some situations it can be helpful to change the tilt of the seat pan to help to maintain a balanced seated posture.

Check out the VSBIT Wellness Program

What is VEHI PATH?

VEHI PATH (Planned Action Toward Health) offers our member school employees and Vermont teacher retirees a plethora of cost-effective, best practice elements to help them live their best lives at home, at work and in your local community. Are you a member employee? If so, click [here](#) to learn more about all of our outstanding options to help you remain healthy or become a little healthier.

Our VEHI PATH team works hand-in-hand with schools and school districts/supervisory unions to create and sustain safe and healthy work environments.

Are you interested in learning more about how we do this? If so, click [here](#).

<https://vehi.org/wellness-program/>



Ergonomics on the *GO!*

The traditional office or a dedicated classroom for educators is becoming a thing of the past. Today you could find yourself working anywhere, any time or any place. Over time, these work situations can take their toll on the body. Although laptops and tablets allow for greater mobility and compactness, they lack the adjustability of traditional desktop workstations. With the on-the-go “flexible” workforce here to stay, it is important to avoid the discomfort, strains and sprains that can accompany poor ergonomics. Following are some tips to help educators improve their comfort, wherever their travels may take them.

Trading Adjustability for Mobility

The standard desktop computer consists of three basic and traditionally separate elements: the monitor, the keyboard and a pointing device, such as a mouse. These three are integrated into the laptop in a design that typically trades adjustability for compactness. According to ergonomic professionals, adjustability is a major factor in user comfort. That lack of adjustability in a laptop may either mean that having the laptop keyboard in an optimal position results in a difficult-to-read screen, or that positioning the laptop screen for better eye comfort places the laptop keyboard in an uncomfortable position. Fortunately, there are ways to compensate for this lack of adjustability.

Pointing Device (aka Mouse) Tips

- Consider using an external mouse (either a full size or travel size) or pointing device, which you can connect to your laptop.
- To help maximize comfort for your arm, hand and fingers, use your whole hand and arm when moving the pointing device.
- Do not tensely hold your fingers and thumb or squeeze them together when keying or using the pointing device.

Keyboard Tips

- Continue to float your hands and lightly touch the keys while typing.
- Check for any special key commands (e.g., isolated cursor control, function keys and hot keys) that can provide shortcuts and reduce the use of your pointing device.

- Take short breaks to relax your wrists, hands, fingers and arms.
- Wherever your main workstation is located, such as an office or home setting, use an external keyboard that you can connect to your laptop. Ideally, the keys should be at elbow height.

Laptop Monitor Tips



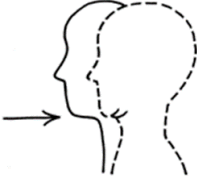

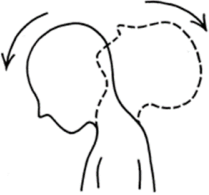

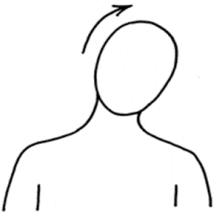
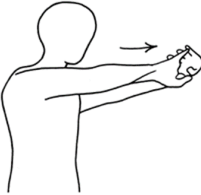
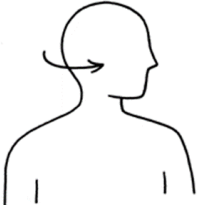

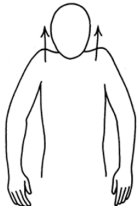

- Angle the laptop screen so that you can see the font with the least amount of neck deviation.
- Work to position the top of the screen at or slightly below eye level. You may need to elevate the laptop using books or a monitor riser, and then have a separate attachment for the keyboard and mouse.
- In the office or at home, attach a full-sized monitor to your laptop.
- For easier connection for your laptop, a docking station quickly connects a full-sized monitor and keyboard. This allows the user the ability to adjust for comfort.

Tablet Monitor Tips

- Connect an external keyboard if you have to frequently type into a tablet. This is typically available via Bluetooth.
- When typing directly onto a touch screen, vary your postures by frequently alternating your typing styles, such as typing with the tablet on a table or holding it in a vertical orientation and typing with your thumbs. This can help reduce neck discomfort caused by constantly looking down while typing on the screen when the tablet is on the table.
- Limit your typing directly on the touch screen to the least amount necessary.
- When reading only, prop the tablet at a comfortable position with the least amount of neck deviation.



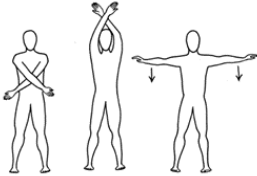


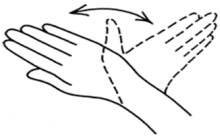
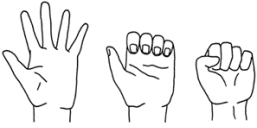





Workplace Exercises

(repeat each exercise 3-5 times regularly throughout your day)

	<p>Raise your eyebrows and open your eyes as wide as possible. At the same time, open your mouth and stick your tongue out.</p> <p><i>Caution: If you have clicking or popping noises when opening your mouth, check with your dentist before doing this exercise.</i></p>		<p>Slowly roll your shoulders forward five times in a circular motion. Slowly roll your shoulders backward five times in a circular motion.</p>
	<p>Sit or stand upright. Slide your head straight back until it feels like you have a double chin. Hold for 5-10 seconds.</p>		<p>Interlace fingers. Turn palm upwards above your head as you straighten your arms. Stretch and hold for 5-10 seconds.</p>
	<p>Sit or stand upright. Slowly drop your head forward, letting the weight of your head gently stretch your neck. Hold for 5-10 seconds. Return to neutral posture and relax. Slowly let your head fall backward. Slowly open and close your mouth.</p>		<p>With fingers interlaced behind your back, slowly straightening your arms. Hold for 5-10 seconds.</p>
	<p>Sit or stand upright. Slowly tilt your head to the left, towards your left shoulder. Hold for 5-10 seconds. <u>Do not</u> elevate your shoulder to your ear - keep your shoulder in a relaxed position. Repeat on the right side.</p>		<p>Interlace fingers. With palms facing out, straighten your arms out in front of you. Hold for 5-10 seconds.</p>
	<p>Sit or stand upright. Slowly turn your head to the left until you feel a stretch. Hold for 5-10 seconds. Repeat on the right side.</p>		<p>Interlace fingers behind your head. Keep elbow straight out to side. Move your shoulder blades toward each other. Hold for 5-10 seconds.</p>
	<p>Raise your shoulders towards your ears until you feel a slight tension in your neck and shoulders. Hold for 5-10 seconds. Slowly release your shoulders downward to their normal position.</p>		<p>Hold left elbow with right hand. Gently pull elbow behind your head until you feel a stretch. Hold for 5-10 seconds. Repeat with other arm.</p>


Workplace Exercises (cont.)

(repeat each exercise 3-5 times regularly throughout your day)

	<p>Gently pull your left elbow across your chest towards your right shoulder until you feel a stretch. Hold for 5-10 seconds. Repeat with other arm.</p>		<p>Grasp the left hand. Keeping the left elbow straight, slowly bend the left wrist upward until you feel a stretch. Hold for 5-10 seconds. Repeat with other hand.</p>
	<p>Cross your arms in front of you. Taking a slow, deep breathe in, raise your hands over your head and stretch backwards. Lower your arms as you slowly breathe out. Gradually enlarge the circles as you repeat.</p>		<p>With arms in the handshaking position, slowly rotate palms down until you feel a stretch. Hold for 5-10 seconds. Rotate palms up until you feel a stretch.</p>
	<p>With your fist in the thumbs up position, make five large circles with your thumb, in both directions. Repeat with other thumb (or move both thumbs together).</p>		<p>Slowly bend your wrists from side to side as far as possible. Hold for 5-10 seconds.</p>
	<ol style="list-style-type: none"> 1. Separate and straighten your fingers; 2. Bend your fingers at the knuckles; hold 3. Make a fist; hold 		<p>Stand with knees slightly bent, place palms on lower back, fingers pointing downward. Gently push your palms forward and bend your back backwards. Hold for 5-10 seconds.</p>
	<p>Place your palms together, so that your elbows are bent and your wrists are at right angles. Keeping palms together push your left palm and fingers firmly against the right palm and fingers. Hold for 10-15 seconds, then release.</p>		<p>Sit or stand upright. Slowly reach your arms overhead. Reach outward and upward until you feel a stretch. Hold for 5-10 seconds.</p>
	<p>Grasp the left hand. Keeping the left elbow straight, slowly bend the left wrist downward until you feel a stretch. Hold for 5-10 seconds. Repeat with right hand.</p>		<p>Stand upright with right hand supported on a wall or the back of a stationary chair. Grab your left ankle (or pant cuff) with your left hand. Keep left knee pointed towards the ground. Slowly pull the left leg towards the buttock until you feel a stretch in the front of the thigh. Hold for 5 - 10 seconds. Repeat with the other leg.</p>

Workplace Exercises (cont.)

(repeat each exercise 3-5 times regularly throughout your day)

	<p>Stand upright. Holding onto a stable prop, place left leg on an elevated stationary surface that is at a comfortable height (knee height or lower is recommended). Keep head up and lower back arched. Slowly leaned forward until you feel a stretch in the back of the thigh. Hold for 5 - 10 seconds. Repeat with the other leg.</p>		<p>Sit upright. Hold left foot off the floor with left leg straight. Point toes up and downward. Repeat with other side.</p>
	<p>Stand arm's length from a wall or other support, feet facing forward. Place right foot forward and keep the left leg straight and the heel on the ground. Lean your body towards the wall until you feel a stretch in the left calf. Hold for 5 - 10 seconds. Repeat with the other side.</p>		<p>Sit upright. Grasp the left knee. Lift left leg off the floor. Bend forward (curling the back), bringing the nose toward the knee. Repeat with right leg.</p>
	<p>Sit with left leg across right leg. Rest elbow or forearm of right arm on the outside of the left upper thigh. Gently apply pressure with right elbow or forearm towards the right. As you apply pressure, look over your left shoulder. Hold for 5 - 10 seconds. Repeat with the other side.</p>		<p>Sit or stand upright. Slowly reach your arms overhead. Reach outward and upward until you feel a stretch. Hold for 5-10 seconds.</p>
	<p>Sit slightly forward on the chair so your back is not touching the chair's back. Maintain your balance by holding onto the seat pan. Place feet flat on the floor. With leg straight, lift left foot 5 - 10 in. off the floor. Hold for 5 - 10 seconds and return it to the floor. Repeat with other side.</p>	<p><i>Drink water throughout the day!</i></p> <p><i>Vary your positions every 30 minutes.</i></p>	
<p><i>Posture perfect!</i></p>	<p><i>Take a breath break!</i></p>		
	<p><i>Stretch like your pets.</i></p>		 

Optimal Standing and Seated Positions

