OFFICE ERGONOMICS FOR THE WORKPLACE AND REMOTE WORKERS

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Aspen Risk Management Group / ERGOhealthy, A TRISTAR Company

HEFFERNAN CONSULTING

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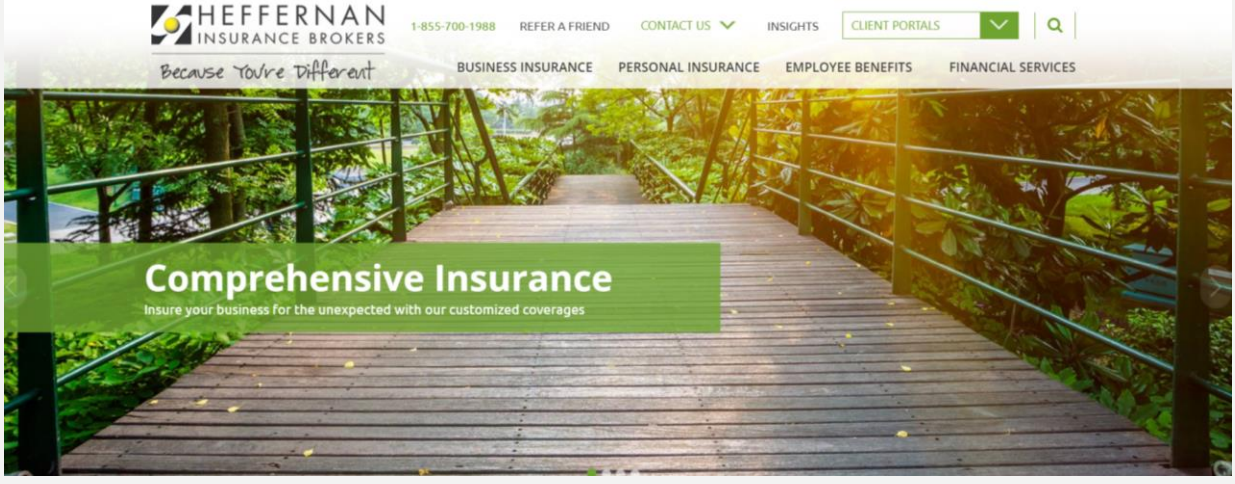

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TODAY'S AGENDA

ERGOhealthy
CREATING ERGONOMIC WELL-BEING

- Basic anatomy and physiology
- Types of musculoskeletal disorders
- Potential ergonomic stressors
- Work activities, including away-from-work, and discomfort data
- Conducting the workstation assessment
- Recommendations
  - Activity-based
  - Workstation-based
    - Adjusting existing equipment
    - Adding equipment or needed "tools"
- Coaching employees
  - Basics of ergonomics and workstation setup
  - Undoing "bad" ergonomic habits

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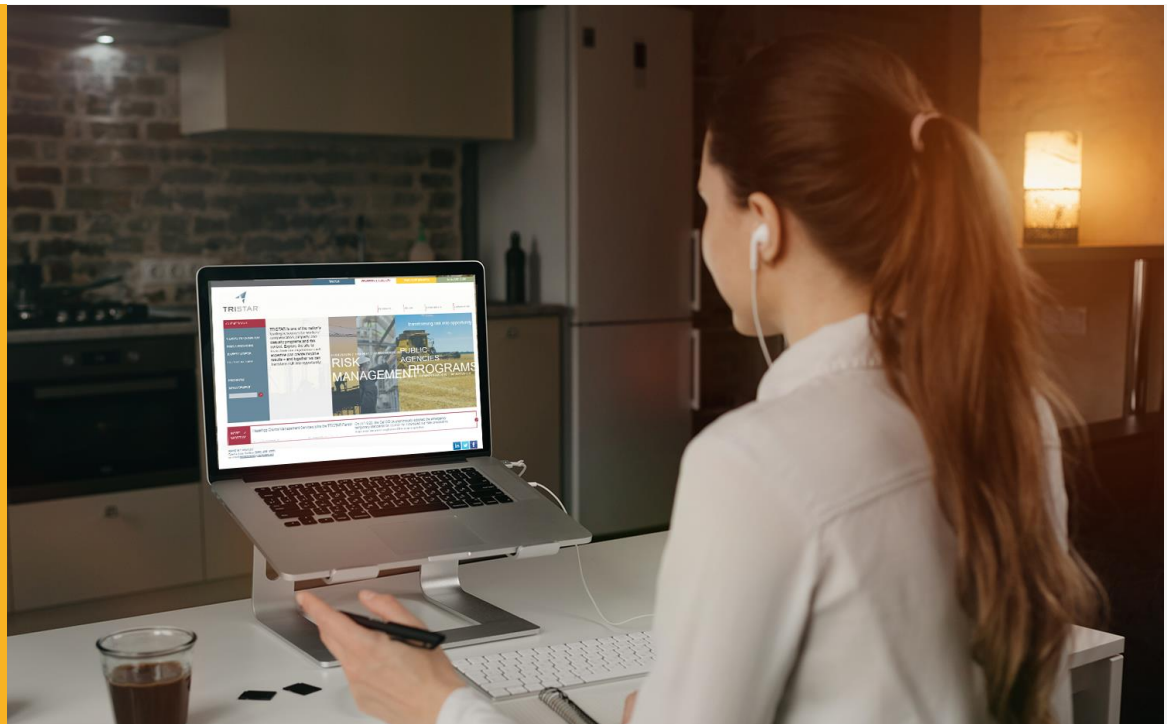
TRISTAR
RISK MANAGEMENT
PUBLIC AGENCIES PROGRAMS

5

Use relevant charts and graphs

6

"Clothesjama"

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EXPECTATIONS

- The goal of the ergonomic assessment is to make the work environment more "comfortable" for the individual
- No "magic wand"
- Neutral postures

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POLLING QUESTION

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POLLING QUESTION

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WHERE TO START

Ergonomics is not a perfect science – rules are flexible

Working remotely/virtually/traditional office – the basics

- Position of function – and comfort
- Everyone is unique - we're each made differently
- "Ergonomic" positions may not work for everyone
- Move , fidget, and re-adjust
- Posture, posture, posture
- Stay well-hydrated
- About every hour take a posture break and stand and move for a couple of minutes
- Alternate mouse

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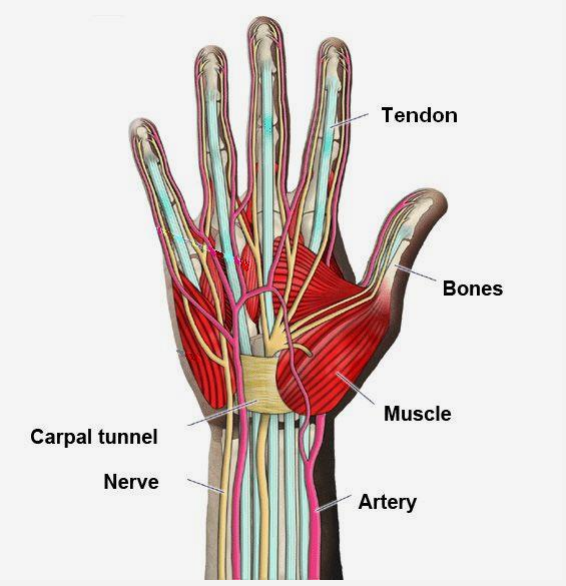
MUSCULOSKELETAL SYSTEM

- Tendons
- Muscles
- Bones
- Nerves
- Blood Supply



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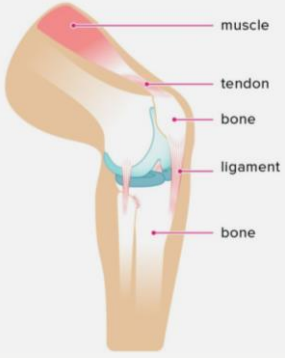
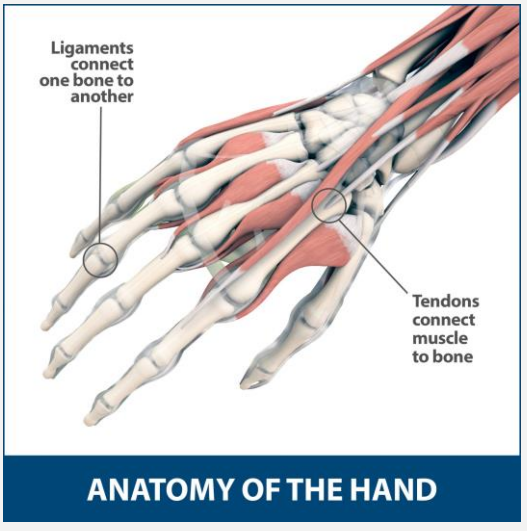
LIGAMENTS AND TENDONS

- Tendons
- Ligaments





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MUSCLES

- Provide strength to the body
- Protect organs and bones
- Protective layer
- Fibers run in the same direction
- Swell by crushing

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SPINE

- **Vertebrae** stabilize the spine and protect the spinal cord.
- **Vertebral disks** cushion the vertebrae and allow movement.
- **Filled** with jelly-like substance. Can bulge or rupture.

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MUSCULOSKELETAL DISORDER (MSD)
CUMULATIVE TRAUMA DISORDER
REPETITIVE STRESS DISORDER

INJURIES AND DISORDERS THAT AFFECT THE HUMAN BODY'S MOVEMENT OR MUSCULOSKELETAL SYSTEM (I.E. MUSCLES, TENDONS, LIGAMENT, NERVES, DISCS, BLOOD VESSELS, ETC.)

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COMMON CONDITIONS

CARPAL TUNNEL SYNDROME

TENDONITIS

MUSCLE / TENDON STRAIN

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CARPAL TUNNEL SYNDROME

- Compression of the median nerve, caused by swelling or tissue position change within the carpal tunnel, irritates the median nerve
- One of the easiest controlled office illnesses

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SYMPTOMS AND AFFECTS

Symptoms

- Pain
- Tingling
- Numbness
- Loss of Grip Strength

AFFECTS

- THUMB
- INDEX
- MIDDLE FINGER
- WRIST

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TENDONITIS

Inflammation of the tendon

- Repetition of a particular movement over time
- Stress on the tendons needed to perform the tasks
- Pulling, carrying, pushing, pulling, typing, gaming, texting, twisting, bending, stooping, writing, etc.

Repetitive or sustained application of force
☐ repetitive or sustained awkward posture
☐ repetitive or sustained movement

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TENDONITIS

Symptoms include:

- Difficulty moving a joint
- Joint swelling in the affected area
- Pain, tenderness, and/or burning sensation around a joint
  - especially the hand, wrist, foot, or ankle
- Pain when moving a joint
- Redness along the length of the tendon

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RISK FACTORS
FORCE, FREQUENCY, POSTURE

- Contact Stress
- Long Duration
- Awkward Postures
- Pressure/Force
- Physical Health
- Environmental Factors
- Repetition

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CONTACT STRESS

Results from occasional, repeated or continuous contact between sensitive body tissue and a hard or sharp object

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CONTACT STRESS

Affects

- Fingers
- Palms
- Forearms
- Thighs
- Shins
- Feet

Inhibits

- Blood flow
- Tendon and muscle movement
- Nerve function

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AWKWARD/STATIC POSTURES

Awkward posture refers to positions of the body that deviate significantly from the neutral **position** while performing work activities.

When in an **awkward posture**, muscles operate less efficiently and expend more force to complete the task

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AWKWARD/STATIC POSTURES

- Joint deviated from neutral/preferred position
- More awkward = greater risk
- Short duration typically not an issue
- Repeated, long duration leads to serious discomfort or injury

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PRESSURE/FORCE

- Sitting while exerting force

- Excessive pressure or force causes joints to give and tendons to tear
  - Stapling
  - Hole Punching
  - Stamping
  - Elbow on arm rest
  - Forearm on desk edge

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INDIVIDUAL HEALTH RISK AND INJURY FACTORS

- **Gender** - some studies have found a higher prevalence of some musculoskeletal disorders in women
- **Cigarette Smoking/Vaping** - some studies have found smoking or vaping related to pain in the extremities, including the neck and back
- **Strength** - the risk for musculoskeletal injuries (in some studies) was three times greater in weaker subjects
- **Anthropometry** - weight, height, body mass index, and obesity have all been identified as indicators for certain musculoskeletal disorders
- **Physical Activity** - a lack (or over exertion) of physical activity may increase susceptibility to injury (sedentary lifestyles?)

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ENVIRONMENTAL FACTORS

- Lighting
- Noise
- Vibration
- Heat
- Cold

Additional

- Old environment w/new equipment
- Old equipment in new environment
- Budget constraints
- Misinformation

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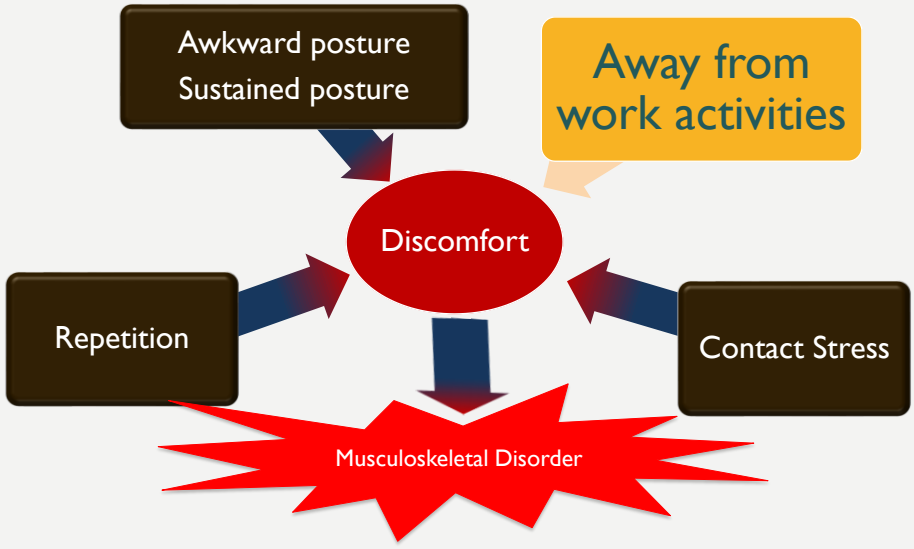
ERGONOMIC RISK FACTORS COMMON IN "THE OFFICE"



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INJURY TYPES – OFFICE/CLERICAL
(INCLUDING HOME OFFICE)

Cause of Loss	Severity Relativity	Share of Office and Clerical Claims
All	**1.0**	
Slip and Fall	1.1	
Strain	0.9	
Struck by/Caught in/Puncture	0.7	
Motor Vehicle	2.2	
Other	0.8	

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CONDUCTING THE WORKSTATION ASSESSMENT

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POLLING QUESTION

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POLLING QUESTION

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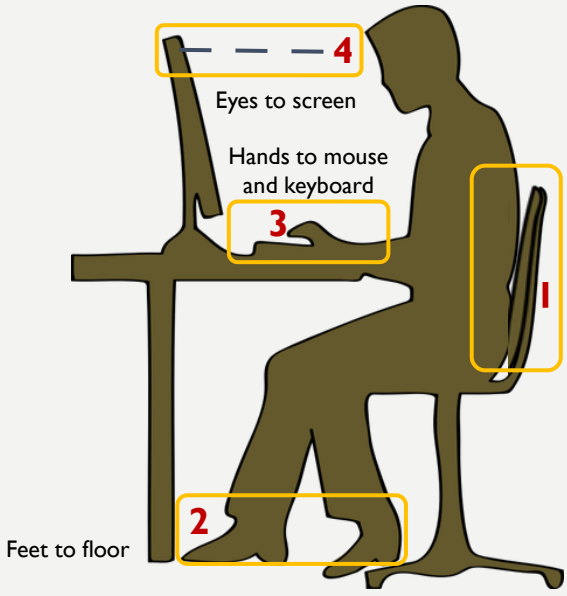
FOUR AREAS OF FOCUS



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Five steps – setting up workstation

5 STEPS

Plus a Pre-Step

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Start with seat (pre-step)

Best Practices

- Knee height
- Lumbar support
- Depth of seat

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Step 1

Adjust seat height to achieve

- Shoulders relaxed
- Elbows at about 90 degrees
- Forearms fairly level on horizontal plane
- Wrists fairly straight

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Step 2

Feet/legs supported

- Ensure hips and knees are at about 90 degrees
- Thighs somewhat parallel with floor
- Feet/legs well supported

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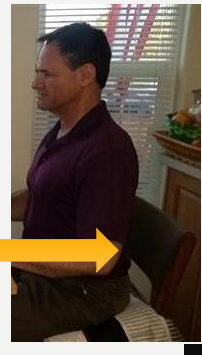
Step 3

Adjusting the seat back position

- In most cases the chair should support the spine in the upright position
- Adjust the lumbar support to fit into the small of your back
- *NOTE: Some people are comfortable sitting forward and not using the chair back for support. If posture and comfort are good, this is fine.*



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Step 4

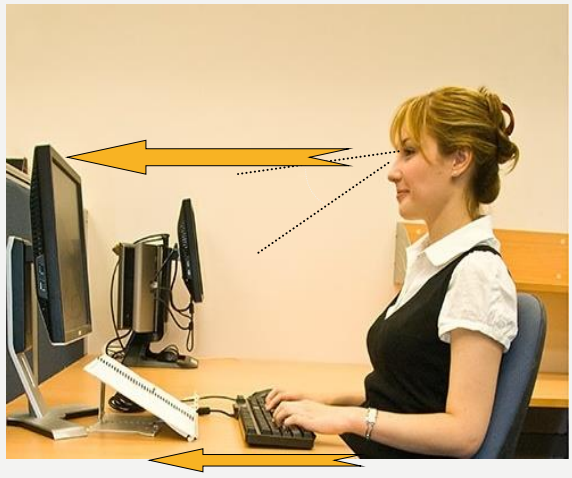
Monitor/screen position

- Eyes somewhat level with the TOP of the screen (depending on where work is performed)

  Note: If wearing multi-focal lenses, screen might need to be slightly lower

- Distance should be comfortable for reading when sitting upright and close the desk

- Keep monitor & keyboard on-center to self (dual monitors – either centered, or most used)



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MONITORS

Single PC monitor

Dual PC monitors

Single Mac monitor

Monitor and Laptop

Laptop only

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SINGLE MONITOR
POSITION

Directly front – center of monitor should be in line with your body

DUAL MONITORS
POSITION

Ideal position if monitors are used equally (about 50/50 or 60/40)

Ideal position if one monitor is primary and the other is secondary (about 70/30)

MONITOR AND LAPTOP
POSITION

The laptop (as a secondary monitor) should be raised to the approximate height of the freestanding monitor

Use an external keyboard and mouse

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LAPTOP ONLY
POSITION

Use external keyboard and mouse

To maintain eyes to monitor/screen
Raise laptop screen

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LAPTOP ONLY

Mid-long duration (2 to 4 hours)

- Neck posture good (check display angle)
- Shoulders back, elbows at 90-ish degrees
- Soft part of hands / palm on laptop edge
- Inexpensive laptop board / support
- Unplugged and no wifi

Best Practices

- Base under laptop for stability and separation
- Stretch break every hour
- If EMR / EMF concerns
  - Use unplugged and without WIFI & Bluetooth

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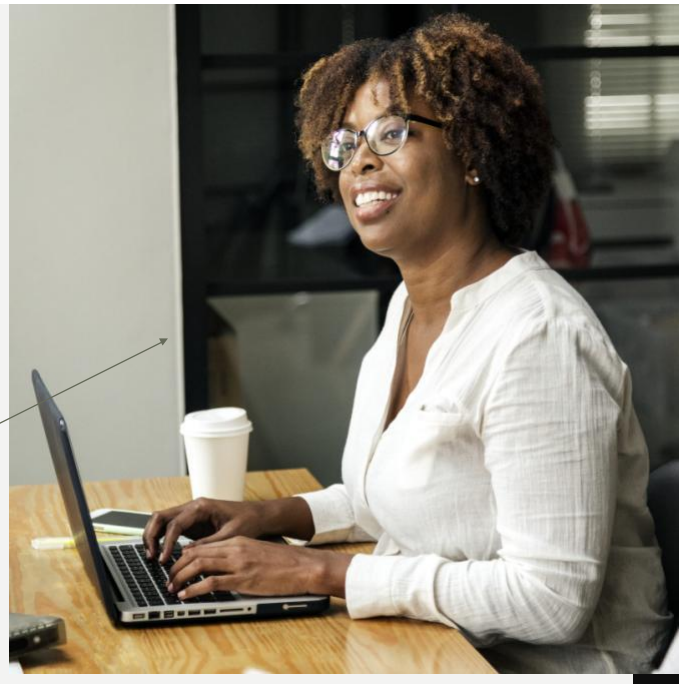
LAPTOP ONLY

Mid-long duration (2 to 4 hours)

- Shoulders back, elbows at 90-ish degrees
- Wrists straight / comfortable
- Minimal pressure on forearms

Best Practices

- Check angle of screen for neck posture
- Stretch break every hour
- Fidget, wriggle, and squirm



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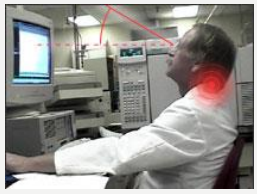
COMMON MONITOR POSITIONING MISTAKES

AVOID PLACING MONITORS IN FRONT OF WINDOWS

AVOID PLACING LAPTOP IN FRONT OF FREESTANDING MONITOR

BIFOCAL USER



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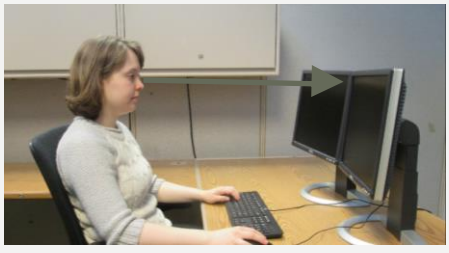
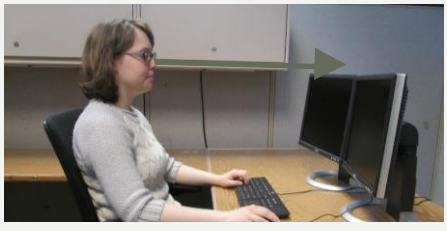
IDEAL MONITOR HEIGHT

NON BIFOCAL USER



BIFOCAL USER



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Step 5

Eliminate awkward neck posture

- A document holder may be used to refer to or type from printed material
- NEVER cradle the phone between neck and ear

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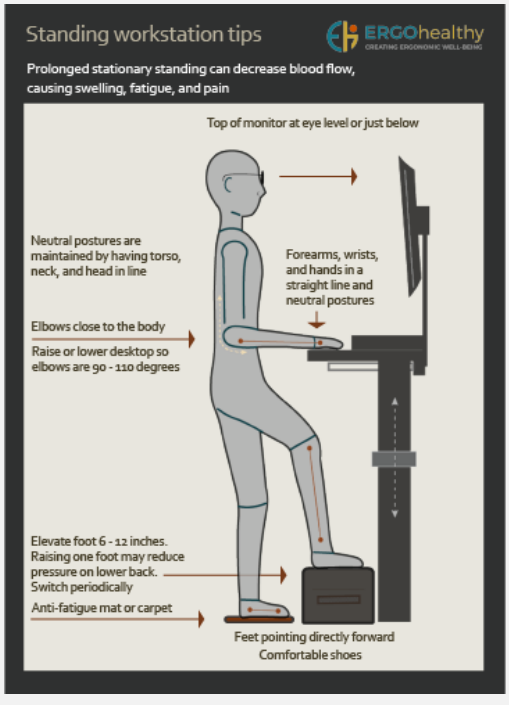

STANDING WORK / SIT-STAND

Used infrequently for work from home

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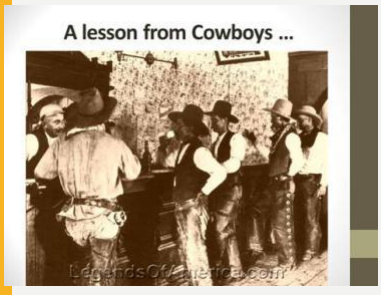

John Sloan, McSorley's Bar, 1912, oil on canvas.

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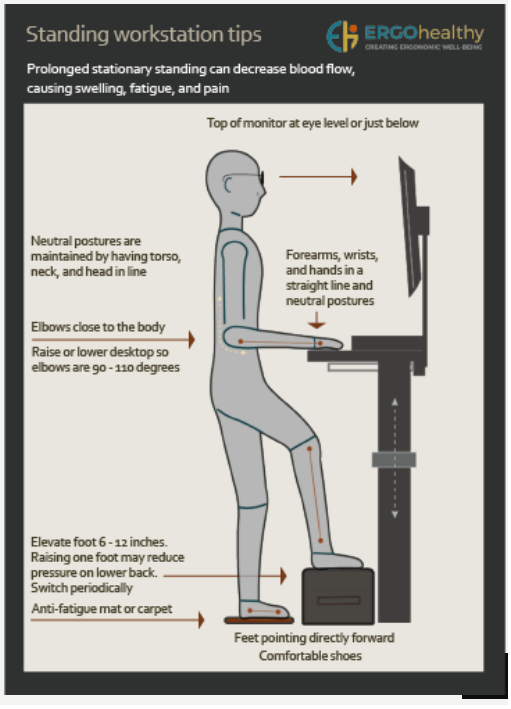
BEST PRACTICES – STANDING / SIT-STAND

- Change positions frequently when standing for prolonged periods
- Use a foot rest/stool/box (approximately six inches) to prop one foot up, and switch sides every so often.
- Vary tasks to avoid static postures
- Work on a carpet pad or mat. Wear shoes in most cases
- Alternate mouse between right and left
- Limit postures that cause you to lean or hunch forward

Additional

- Prolonged standing for some may have health risks
- Can be difficult for single laptop into ergonomic position



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SIT-STAND GUIDANCE (CORNELL UNIVERSITY)

30 minute period

- 20 minutes sitting (in a good posture)
- 8 minutes standing (for sit-stand workstations)
- 2 minutes of standing and moving

For a 7.5 hours workday (lunch is excluded) this means a daily regimen with a total of 5 hours of sitting, 16 sit-to-stand changes, 2 hours of standing and .5 hours of moving.

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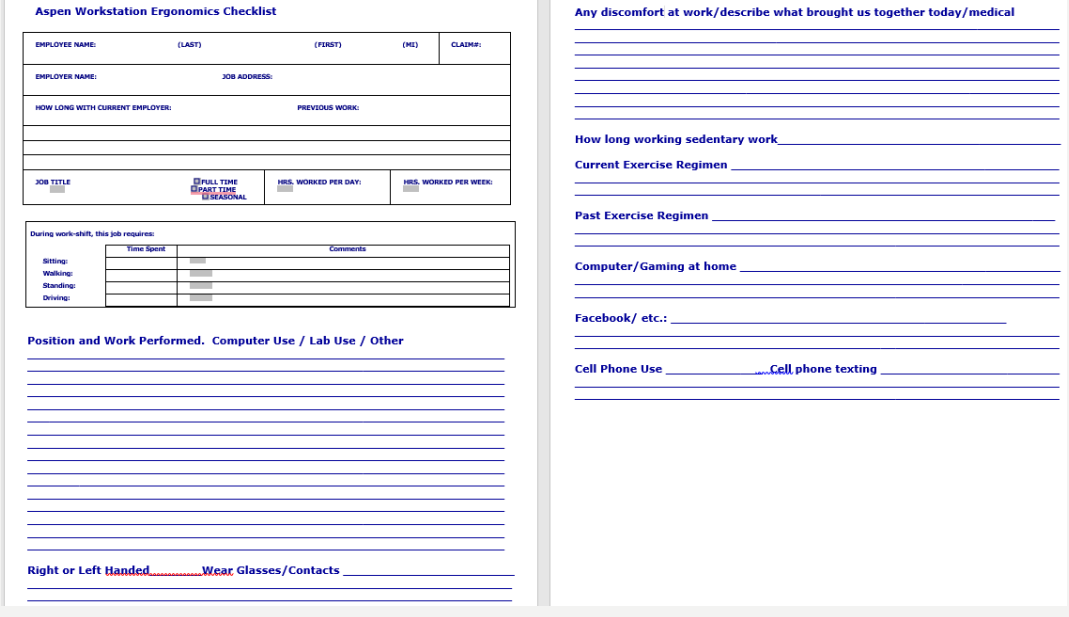
CHECKLIST/QUESTIONS



Aspen Workstation Ergonomics Checklist

EMPLOYEE NAME: (LAST) (FIRST) (MI)	CLAIM#:
EMPLOYER NAME: JOB ADDRESS:	
HOW LONG WITH CURRENT EMPLOYER: PREVIOUS WORK:	
JOB TITLE ☐FULL TIME ☐PART TIME ☐SEASONAL	HRS. WORKED PER DAY: HRS. WORKED PER WEEK:

During work-shift, this job requires:

	Time Spent	Comments
Sitting:		
Walking:		
Standing:		
Driving:		

Position and Work Performed. Computer Use / Lab Use / Other

Right or Left Handed Wear Glasses/Contacts

Any discomfort at work/describe what brought us together today/medical

How long working sedentary work

Current Exercise Regimen

Past Exercise Regimen

Computer/Gaming at home

Facebook/ etc.:

Cell Phone Use Cell phone texting

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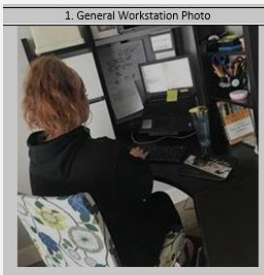
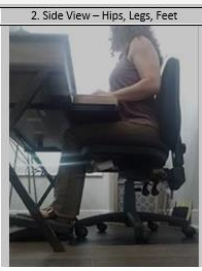
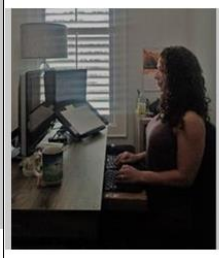
PHOTOS FOR ASSESSMENTS

1. General Workstation Photo	2. Side View – Hips, Legs, Feet	3. Side View – Neck, Shoulders, Wrists
		

4. Bird's-eye view of Workstation without you in photo	5. Under desk/table	6. View of Chair including levers for adjustment – without you in it

6. Example of non-traditional work area	7. Example of non-traditional work area	8. Example of non-traditional work area

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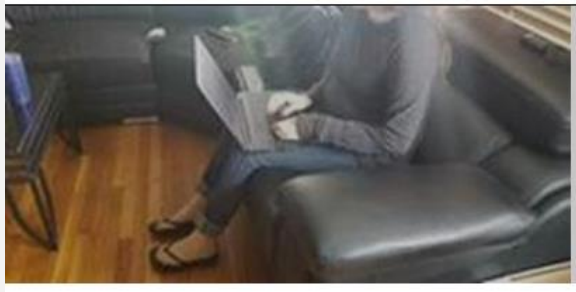
PHOTOS FOR ASSESSMENTS

6. Example of non-traditional work area	7. Example of non-traditional work area	8. Example of non-traditional work area
		

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Strains, sprains, and discomfort

- 40% of WC costs = musculoskeletal disorders
- Cisco and Accenture pilot studies (10,000 EEs)
  - Persistent discomfort - pulled off task 5 minutes out every 15 minutes
  - Lost time/day/employee: 2.6 hours
  - Lost time/week/employee: 13 hours
- 62% decrease in reported discomfort
- 39% decrease in claims for ergonomic injuries

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Ergonomics… the way it is

- Posture
- Interaction with electronic devices
- Sedentary lifestyle

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POLLING QUESTION

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Impact of sedentary events

- Sedentary workforce
- Office work is frequently ignored (versus “high hazard” work)
- “Remote work”
- “Explosion” of social networking/communication
- Gaming

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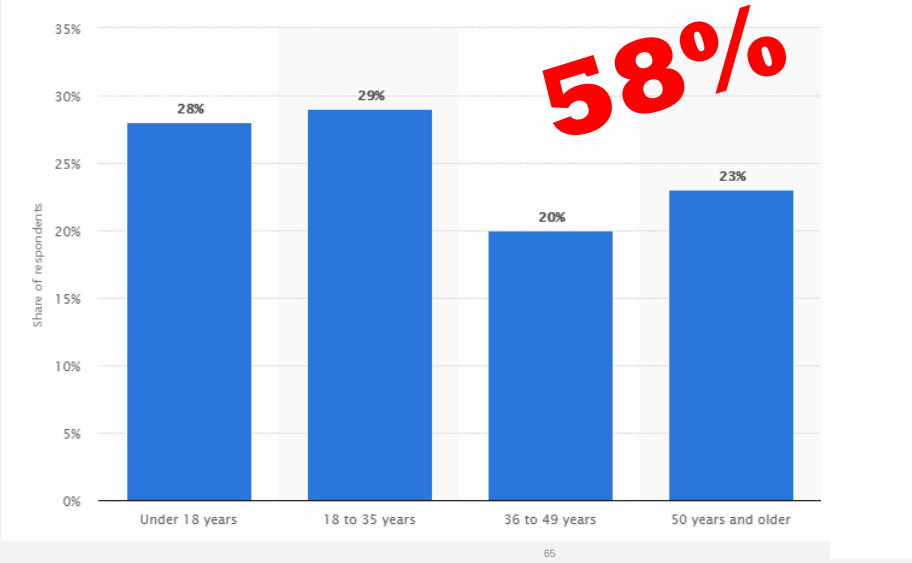
Age breakdown of video game players in the United States



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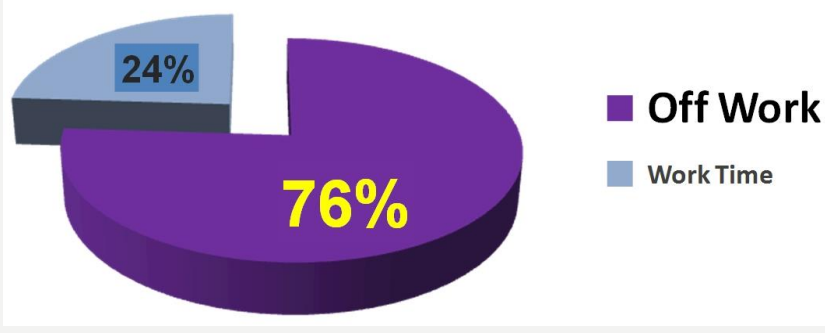
How much time do we really spend at work

24 hours/day X 7 days = 168 total hours

Average work hours = 40

40 work hours / 168 total hours = 24%



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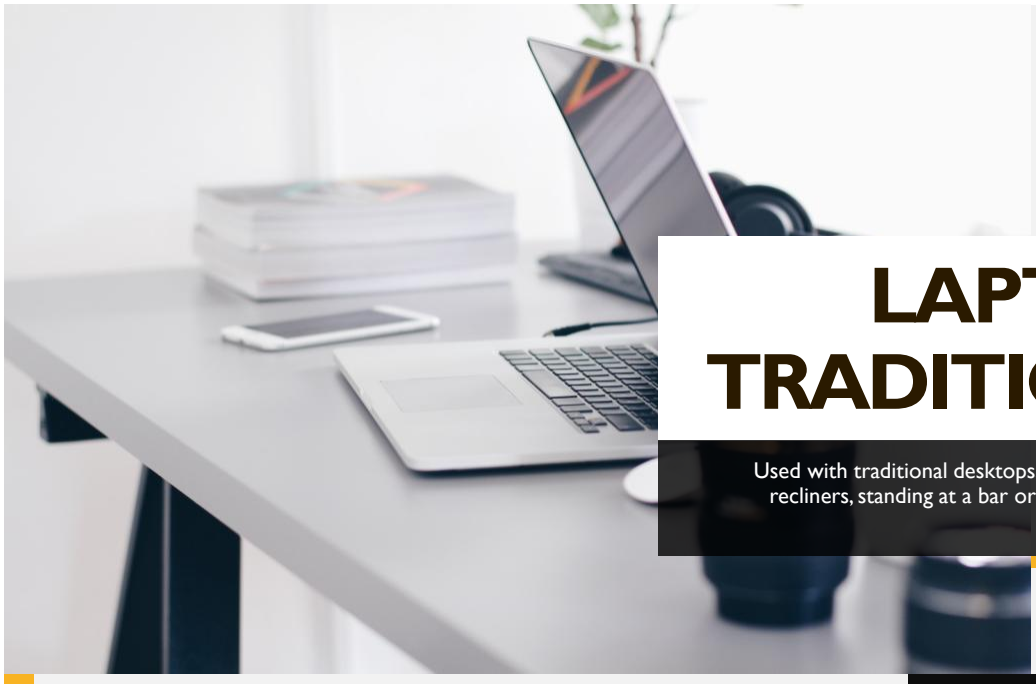

LAPTOP & TRADITIONAL PC

Used with traditional desktops, kitchen tables, couches, recliners, standing at a bar or airport table, and other locations ☺

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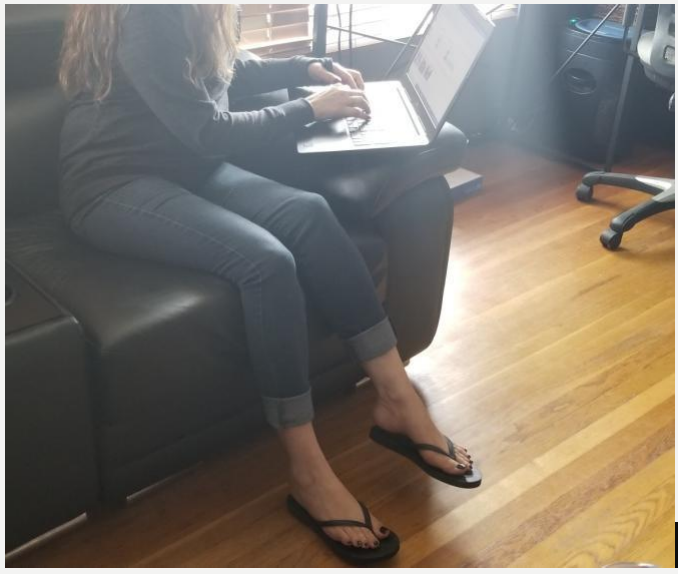
SOME THINGS NOT TO DO – BAD

… other than for a few seconds to read an email heading or look at an image

- Twisting of body
- Feet/legs not supported
- Awkward postures



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SOME THINGS NOT TO DO – BAD

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- Shoulder pulled forward / elbow positioning
- Hard / not-needed wrist support
- Alcohol may impair work product

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SOME THINGS NOT TO DO – BAD

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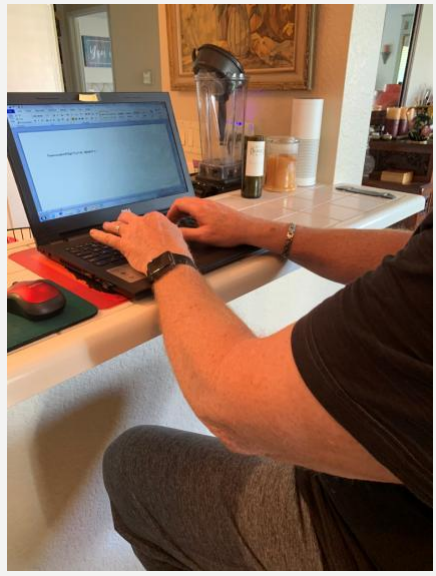
- Shoulders pulled forward / elbow positioning
- No room for legs/knees
- Pressure on forearms
- Watch and jewelry



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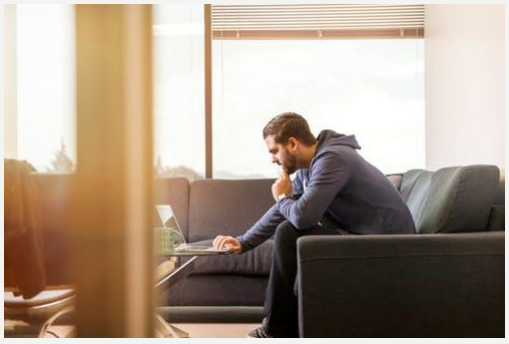
SOME THINGS NOT TO DO – BAD

… other than for a few seconds to read an email heading or look at an image

- Hunched over
- Outstretched arms
- Neck / back posture

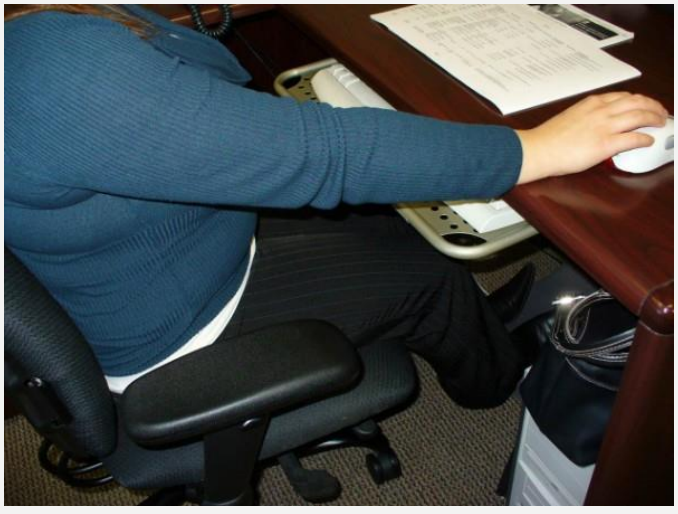


71

SOME THINGS NOT TO DO – BAD

… awkward body postures

- Right arm outstretched / shoulders forward
- Keyboard and mouse
- Armrests on chair (remove or lower)



72

SOME THINGS NOT TO DO – BAD

… awkward body postures

- Wrist pressure
- Large wrist watch on left wrist
- Possible awkward position of fingers

73

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SOME THINGS NOT TO DO – BAD

… awkward body postures

- Difficult to maintain abdominal posture
- Neck strain
- Wrist hyper flexion / pressure point
- Smoking / nicotine may increase pain

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SOME THINGS NOT TO DO – BAD

… awkward body postures

- Increased pressure on forearm / elbow
- Awkward body hip and shoulder postures
- Display panel angle

75

SLIGHTLY BETTER

Short-mid duration (1 to 2 hours)

- Shoulders back, elbows at 90-ish degrees
- Wrists straight / comfortable
- Minimal pressure on forearms

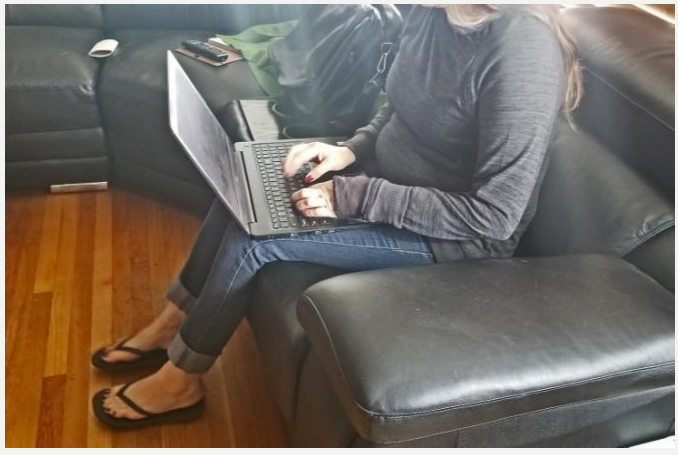
Best Practices

- Firmer tabletop if available
- Sit on pad or pillow for better wrist position
- Check angle of screen for neck posture
- Stretch break every hour
- Fidget

76

SLIGHTLY BETTER

Short-mid duration (1 to 2 hours)



- Neck posture good (check display angle)
- Shoulders back, elbows at 90-ish degrees
- Wrists straight / comfortable

Best Practices

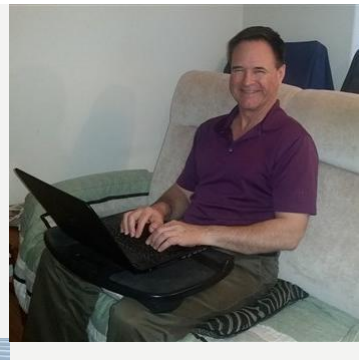
- Base under laptop for stability and separation
- Reduce laptop heat
- Stretch break every hour
- If EMR / EMF concerns
  - Use unplugged and without WIFI & Bluetooth

77

77

BETTER

Mid-long duration (2 to 4 hours)



- Neck posture good (check display angle)
- Shoulders back, elbows at 90-ish degrees
- Soft part of hands / palm on laptop edge
- Inexpensive laptop board / support
- Unplugged and no wifi

Best Practices

- Base under laptop for stability and separation
- Stretch break every hour
- If EMR / EMF concerns
  - Use unplugged and without WIFI & Bluetooth

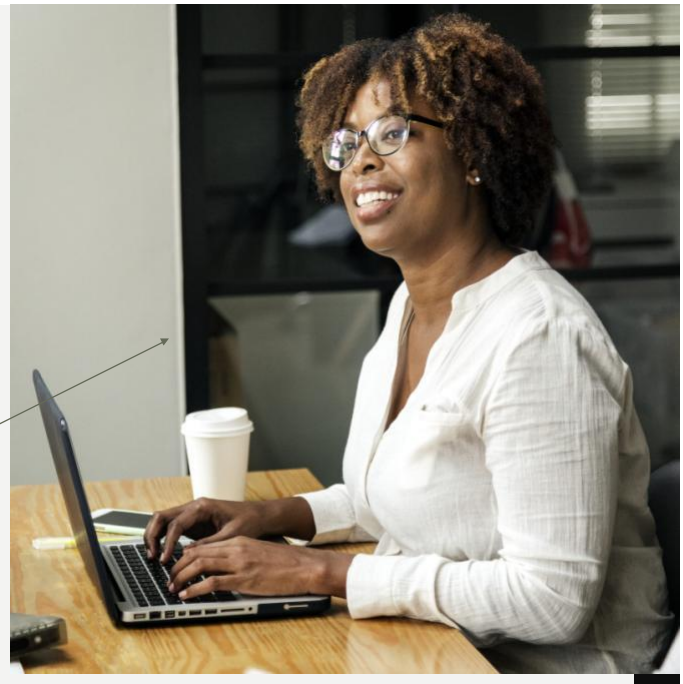
78

78

BETTER

Mid-long duration (2 to 4 hours)

- Shoulders back, elbows at 90-ish degrees
- Wrists straight / comfortable
- Minimal pressure on forearms



Best Practices

- Check angle of screen for neck posture
- Stretch break every hour
- Fidget, wriggle, and squirm

79

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BETTER

Mid-long duration (2 to 8 hours)

- Neck posture good (check display angle)
- Shoulders back, elbows at 90-ish degrees
- Wrists elevated – no point pressure
- Inexpensive laptop riser, keyboard, mouse

Best Practices

- Alternate mouse between right and left hand
- Stretch break every hour

80

80

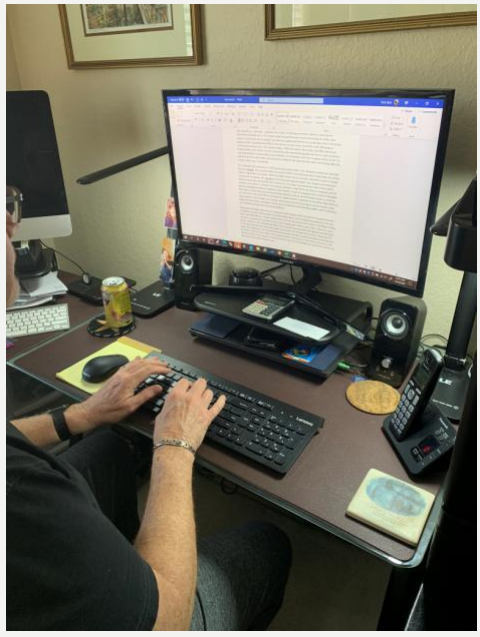
BETTER

Mid-long duration (2 to 8 hours)

- Wrist and elbow position
- Watch and jewelry – no pressure on desk
- Mouse use (left hand) . ☺
- Organized work space

Best Practices

- Stretch break every hour
- Fidget
- Alternate mouse between right and left hand



81

81

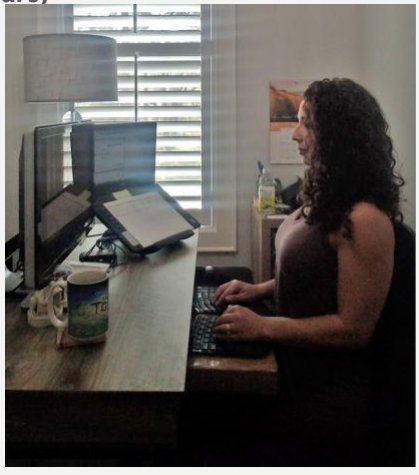
BETTER

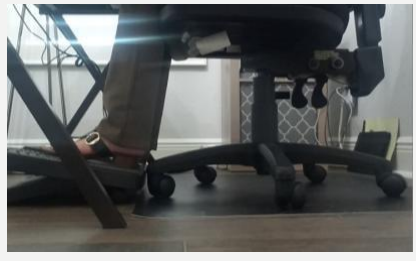
Mid-long duration (2 to 8 hours)

- Wrist and elbow position
- Shoulders back
- Central monitor in front
- Laptop riser
- Feet flat on floor

Best Practices

- Stretch break every hour
- Fidget
- Alternate mouse between right and left hand





82

82

CELL PHONE OR TABLET

Used everywhere!

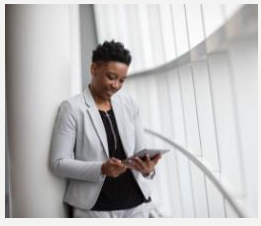
83

83

SOME THINGS NOT TO DO

… other than for a few seconds to scan an email heading or image

- Neck flexion / posture



84

84

BETTER

Short duration

- Improved neck position
- Elbows against body
- Minimal neck flexion

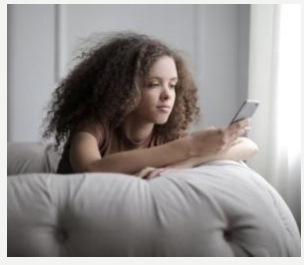
Best Practices

- Some shoulder stress – so temporary
- Position elbows closer to body
- Periodically outstretch arms
- "Pop socket"
- Headset
- Tabletop
- Stretch break every hour
- Fidget

85

BETTER++

Short duration



- Improved neck position
- Device supported

Best Practices

- Temporary positions
- Headset for calls
- Seated ☺

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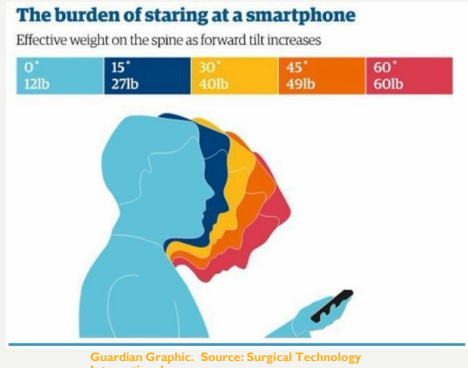
BEST PRACTICES SMART PHONE / TABLET

- When sitting, maintain comfortable and natural posture
- When holding the tablet, keep your elbows close to your body and vary the tablet position. Limit activities that may cause neck problems – when possible, bring your phone closer to eye level
- Switch hands to keep neck postures – healthy
- Limit postures that cause you to lean or hunch forward
- Take a short (1-2 minute break) for every 15-30 minutes
- Integrate stretching of your neck muscles regularly – take a short (1-2 minute break) for every 15-30 minutes. Take regular breaks from prolonged sitting
- Don't cradle phone
- Support arm



Guardian Graphic. Source: Surgical Technology International

25 pounds = an average 2 year old | 33 pounds = a cinder block

36 pounds = a mid-size microwave | 40 pounds = a 5-gallon bottle of water

50 pounds = a small bale of hay | 55 pounds = a 5000 BTU air conditioner

Additional

- Lightly tap the tablet (virtual) keyboard
- If EMR / EMF concerns
  - Use unplugged and without WIFI & Bluetooth

Texting

- Speakerphone or headset
- Voice-text function for occasional breaks
- NEVER text while driving

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COACHING

- Ergonomic change can be difficult
  - Pushback, denial, victim, other factors including employment (quiet- quitting)
- Provide education – is there the opportunity for an aha moment
- Importance of posture, movement, and away from work activities
- Stretching – how often and for how long
- No "magic wand." People should know that any discomfort can take a number of weeks to improve
- Don't forget about alternating between right and left hand
  - Frequently missed by doctors and healthcare providers
- **Positive attitude improves outcomes**
  - **Most people that undergo an assessment will improve, but there is some homework**

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POLLING QUESTION

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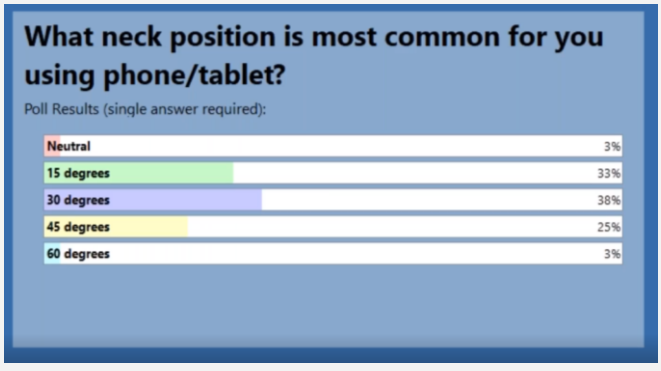
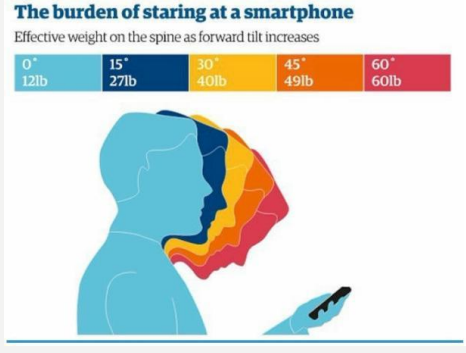
HOW DO YOU COMPARE (2 YEARS OF DATA)





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90

90

GENERAL BEST PRACTICES

Non-ergonomic safety and common sense tips

- Use electrical cords in good condition and away from heaters
- If necessary, use a surge protector with enough outlets
- Keep flammables like trash, paper, chemicals from surge protectors & cords
- Minimize trip hazards (cords, toys, tools, laundry, other hazards)
- Reasonably free of distractions
- Smoke detector / fire extinguisher available

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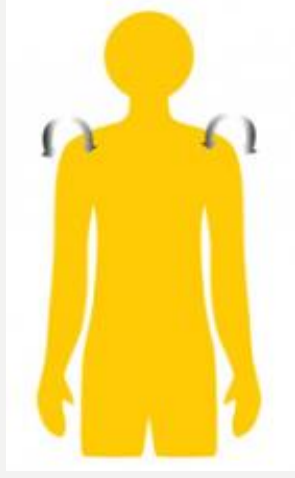
BEST PRACTICES – ERGO CHAMP ©

- **E**RGO BREAK. Take a short (3-5 minute break) for every hour of sitting
- **R**EMOVE or lower armrests from chair – especially if they block arm motions or prevent from being close enough to keyboard, pad, or mouse
- **G**O gentle on yourself – ergonomics is not a perfect science
- **O**UTSIDE the box thinking – it's ok use common sense. For example, rotate between your right and left hand for mouse use
- **C**OMFORT. Find your place of comfort. Is it sitting with back support; unsupported sitting more forward, or is it a combination of both
- **H**ANG the arms straight down at your side for 60 seconds every hour
- **A**CTIVITY. Use ergo techniques for away-from-work activities
- **M**IX it up. Your base position of comfort is your go-to place… but it's ok to occasionally hunch, or bend, or tilt throughout the day
- **P**OSTURE. Integrate GREAT POSTURE! Head sitting upright on your shoulders, and shoulders over your hips



Arms hanging straight at side

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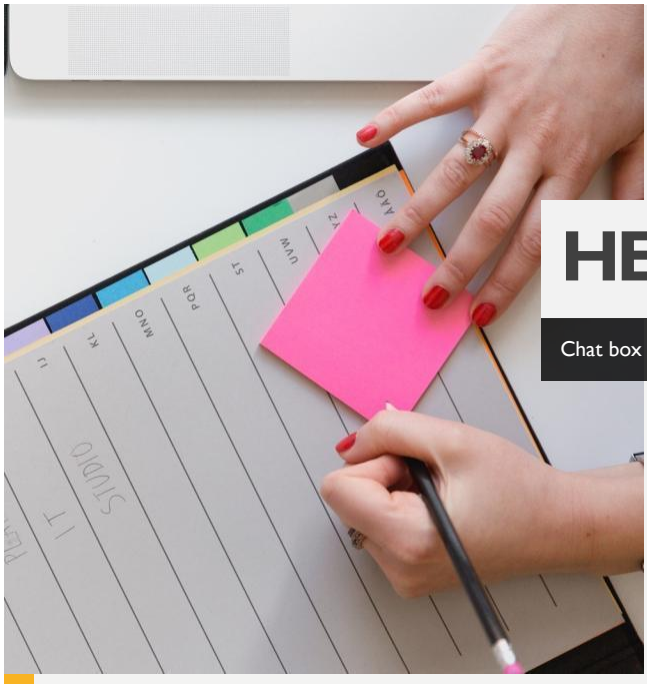

HELP US IMPROVE

Chat box or question

Tell us one thing you learned today

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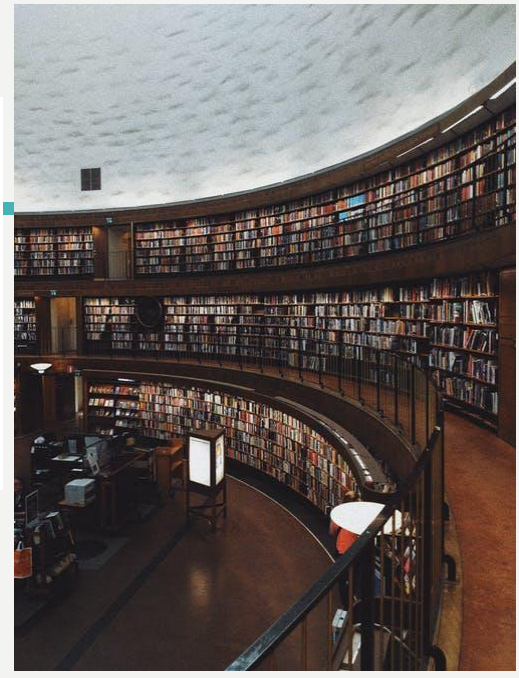
REFERENCES AND RESOURCES

- Self Assessment Form
- At-home safety checklist
- General Ergonomics Solutions - ERGOhealthy ©
  - Recommendations you can use in addition to today
- Stretch and Flex – Marines
- ERGOhealthy 12 Steps of Self Care by Kate Montgomery ©
- Copy of this presentation
- Break reminder apps
  - StandApp (iOS)
  - Stand Up! The Work Break Timer (iOS)
  - Move - Daily Activity to Stay Healthy (iOS)
  - Randomly RemindMe (Android)



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POLLING QUESTION

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OFFICE ERGONOMICS FOR THE WORKPLACE AND REMOTE WORKERS

Steve Thompson, ARM, COSS, CSHCO, CCSHCO

Dianne Probert, COEA

Aspen Risk Management Group / ERGOhealthy, A TRISTAR Company

HEFFERNAN CONSULTING

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