



ERGONOMICS

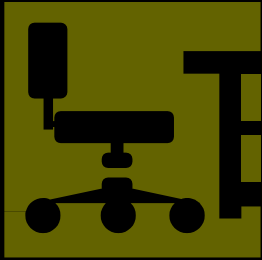
St. Lucie

PUBLIC SCHOOLS



Risk Management

ERGONOMICS-What is it?



- Derived from two Greek words:
“Nomoi” meaning natural laws
“Ergon” meaning work
- Hence, ergonomists study human capabilities in relationship to work demands



History

- As early as 18th century, doctors noted that workers who required to maintain body positions for long periods of time developed musculoskeletal problems.
- Within last 20 years, research has clearly established connections between certain job tasks and Repetitive Strain Injury (RSI) or Musculoskeletal Disorder (MSD).



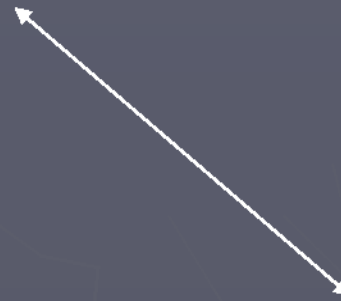
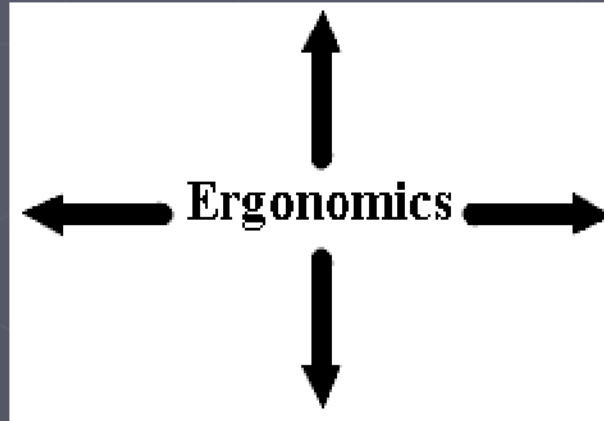
•People
physical size
work habits
physical condition
individual attributes

•Psychosocial
administration philosophy
employee responsibility
job satisfaction
stress
incentive pay
quotas

•Furniture
•chairs
work surfaces
technology/equipment
adjustability

•Environment
lighting
air quality
temperature
space
noise

•Tasks
tools and equipment
work pace
job requirements



Components of a Work Station

- Chair
- Work surface
- Keyboard/Mouse
- Monitor
- Telephone
- Environment
- Accessories



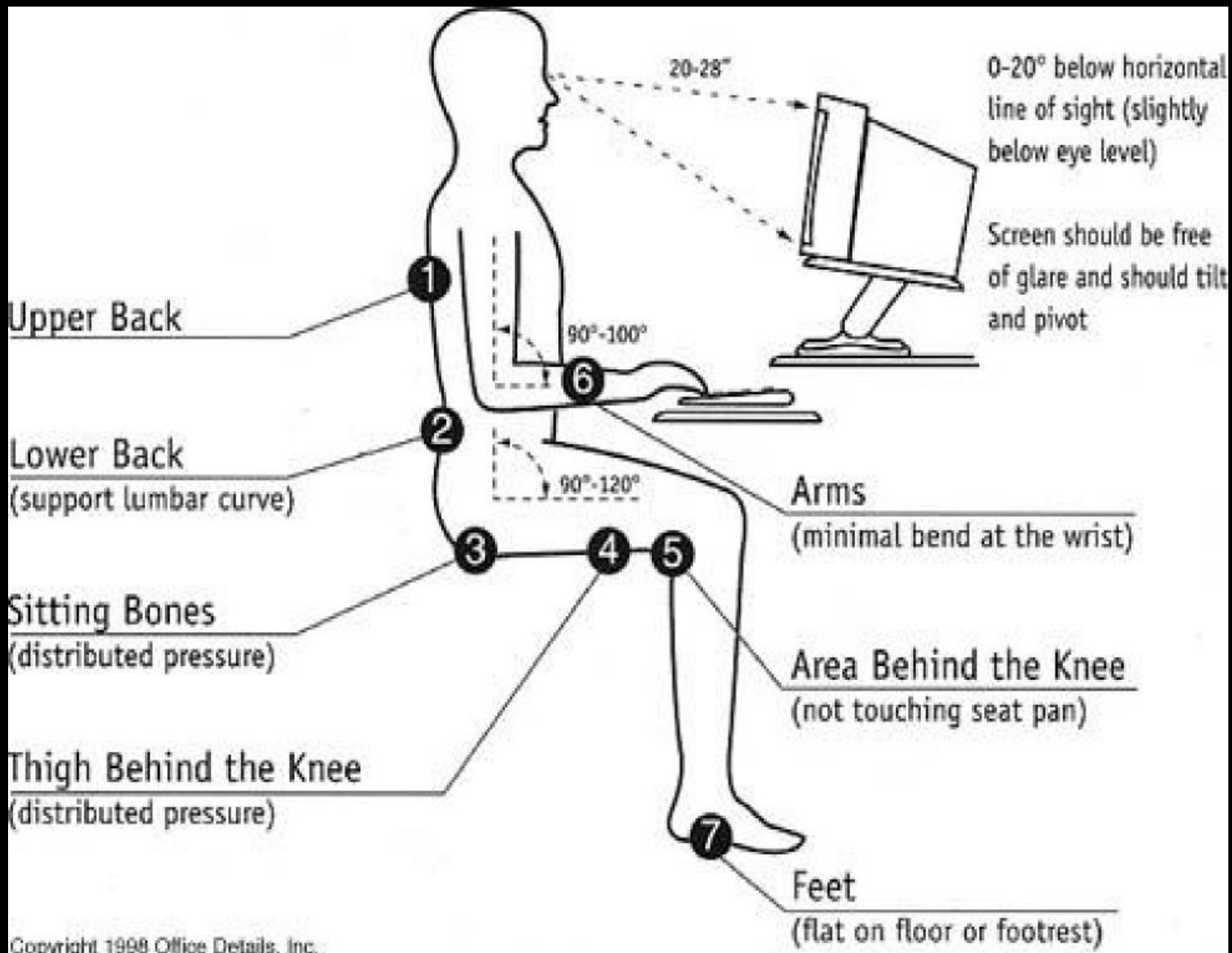
Chair Adjustments

- **Seat Height** - Able to reach the floor comfortable with both feet flat on the floor
- **Seat Angle** - Slightly forward tilt
- **Seat Depth** - Allow a width of three fingers between calf and seat pan

Chair Adjustments cont.

- **Backrest Height** - Back support hits the lumbar region
- **Backrest Angle** - Allows for 90° - 120° hip flexion
- **Armrests** - Must be adjustable and used correctly





Work Surface

What can be adjusted?

1. Height

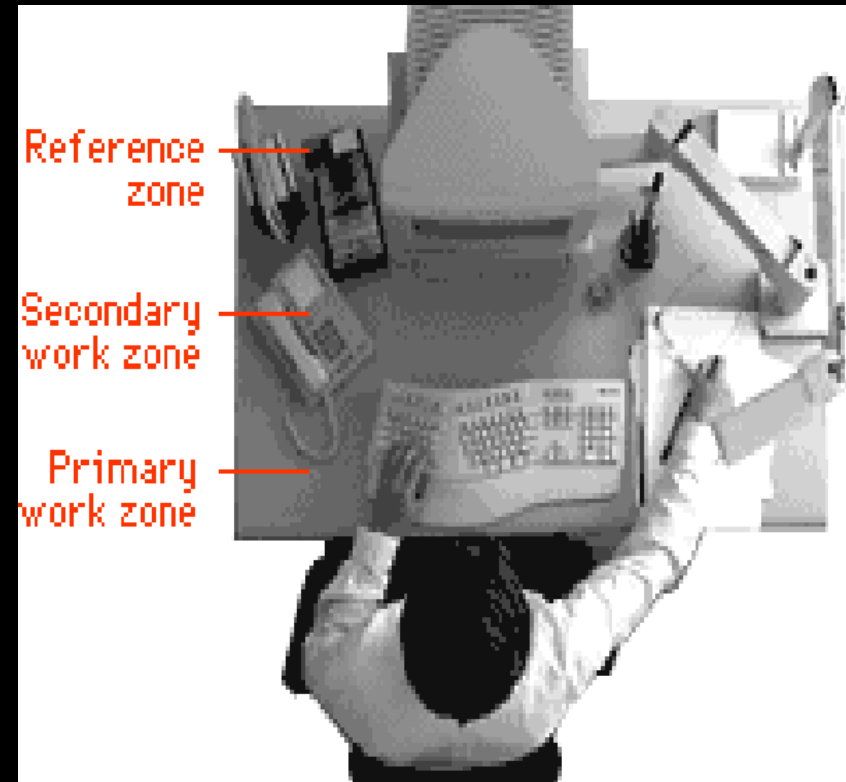
- Should be adjusted to the proper chair position.
- Allows for ergonomic positioning.

2. Arrangement

- Primary, secondary, reference zone

Workstation Set-up

- **Primary Work Zone** - the distance from elbow to hand
- **Secondary Work Zone** - within arm's reach
- **Reference Zone** - greater than an arm's reach



Keyboard/Mouse

- For most employees, these should be situated in the primary work space
- Arrange directly in front of monitor
- How to correctly use the mouse and keyboard



Monitor



- **Distance** - General rule of thumb is approx. arms length away. (18-30 in.)
- **Height** - Eye level should be at the top 1/3 of monitor.
- **Bifocals** - need to have monitor as low as you can.

Monitor

- **Location** - Directly in front of the keyboard
- **Angle** - Approx. 10° - 20°
- **Font Size**
- **Clarity/Resolution**
- **Color Schemes** - light colored font on dark background

Telephone

- Depending on employee, the phone will normally be placed either in the primary or secondary work space.
- Headsets: General Rule - More than 1.5 hours of use per day = mandatory
- Built-up hand set attachments do not do enough.

Environment Every Day Nuisances

- Lighting
- Air Quality
- Temperature
- Space
- Noise - Neighbors, Fax, Copier, Telephone, etc.



Accessories

- Document Holders
- Footrests
- Keyboard Trays
- Glare Screens

Common Risk Factors

- Awkward Positioning
- Force
- Repetition/Frequency
- Temperature
- Vibration

Wrist Positioning



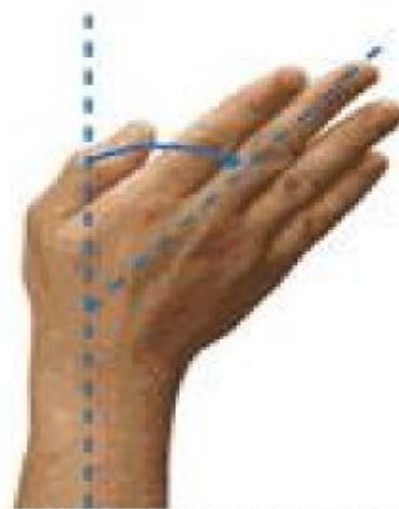
Flexion



Extension



Radial Deviation



Ulnar Deviation



Pronation



Supination

4 Common Nerve Injuries

- I. Thoracic Outlet Syndrome: muscle compression due to muscle tightness side of neck from poor head position or slumped posture.

Ex: numbness/tingling in hand, made worse with overhead activities or cradling phone between ear and shoulder



4 Common Nerve Injuries

- II. Radial tunnel syndrome: compressed nerve outside of elbow due to repetitive wrist, finger, or forearm motion.

Ex: Sensations from elbow to base of thumb with wrist weakness is a common symptom.



4 Common Nerve Injuries

III. Cubital tunnel syndrome: ulnar nerve compression inside of the elbow due to repetitive bending of elbow or *resting your elbow* on a hard surface

EX: numbness or tingling up and down the inside of the arm with tingling to ring & little fingers



4 Common Nerve Injuries

IV. Carpal tunnel syndrome: compression of nerve at level of carpal tunnel

Ex: numbness or tingling in thumb, index, middle finger & ring finger.

Side effects may include often awakened at night by hand “falling asleep”

Symptoms are increased by driving or attempting to hold objects; dropping objects is a common complaint



Other Common Injuries

- “Tennis elbow” affects area outside of elbow
- “Golfer’s elbow” affects area inside of elbow

Trouble Shooting: *Why do we hurt???*

- Poor posture
- Lack of movement

Frequent “micro” breaks

Prolonged poor posture can decrease productivity by as much as 50%

Stand to sit ratio of 70:30

60 second break every hour

Mothers Know Best

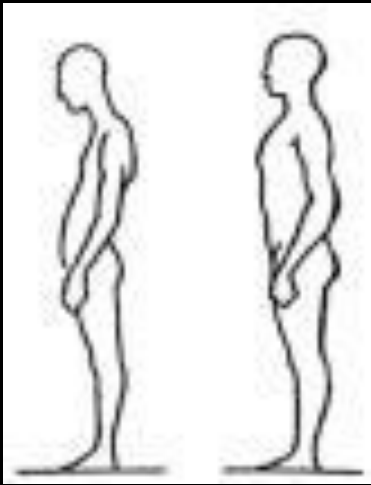
Sit up straight!!!

- Decreases the load on your spine
- Helps the organs of your body function more efficiently
- Promotes movement efficiency and endurance
- Contributes to an overall feeling of well-being

What Do We Do??

PREVENT, PREVENT, PREVENT!!!

- Warm up and stretch before activities that are repetitive, static or prolonged
- Take *frequent breaks* from ANY sustained posture every 20-30 minutes
- Respect pain- adjust / reduce or stop positions which could prove to be painful activity.
- Recognize early signs of inflammatory process, and take action to modify your actions and posture.



Maintain Neutral Posture

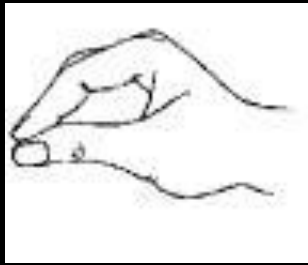


- Maintain erect position of back & neck w/ shoulders relaxed
- Position equipment & work directly in front of and close to your major tasks
- Keep upper arms close to the body, elbows 90-100 degrees
- Keep feet flat on floor, upper body weight resting on “sits bones”
- Wrists as neutral as possible; safe zone for wrist movement is 15 degrees in all directions

Maintain Neutral Posture

- Avoid bending neck forward for prolonged periods of time (remember *quadruple* the force)
- Avoid static positions for prolonged time; muscles fatigue---MOVE to increase circulation!



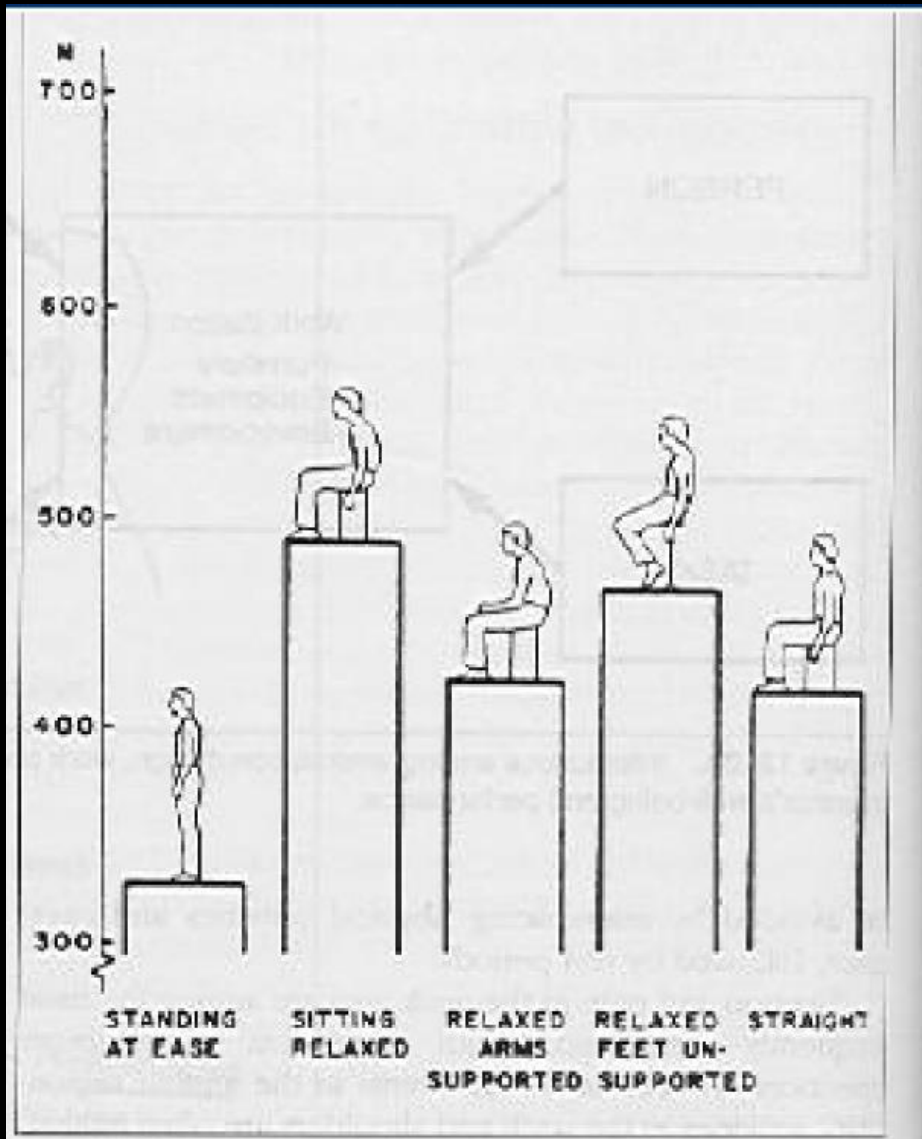


Modify Tasks



- Alternate activities frequently; rotate heavy and/or repetitive tasks with lighter less repetitive ones.
- If symptoms become worse, *RE-ASSESS* task setup and look for alternative methods
- Avoid repetitive or prolonged grip activities
- Avoid pinching with wrist in flexion or wrist deviation (bending to side)
- Take *frequent breaks* to stretch & rest hands

Effects of Sitting

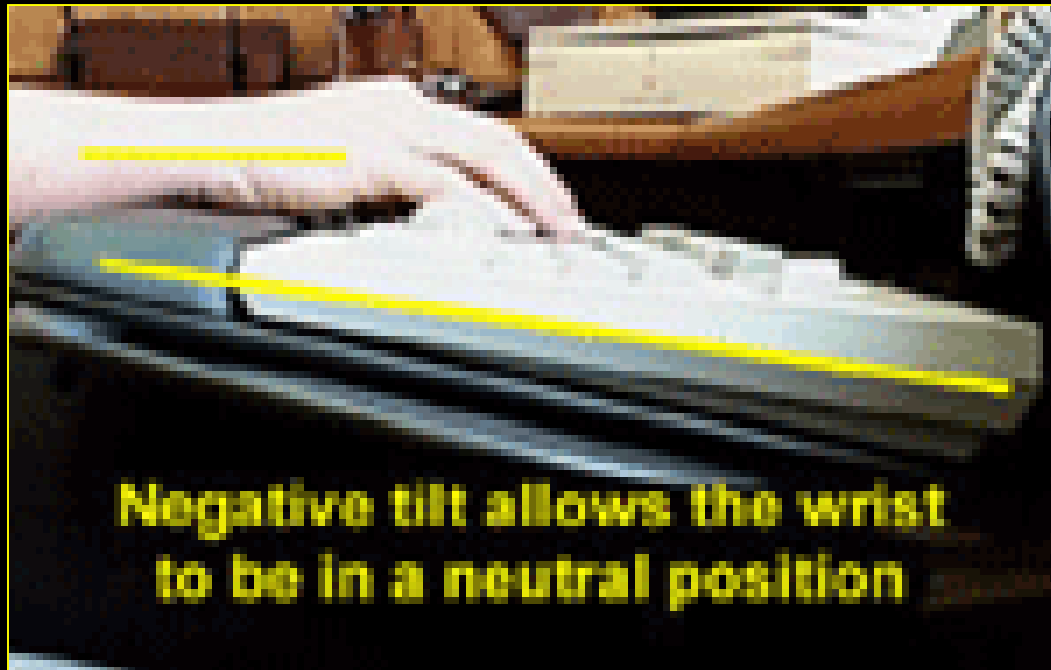


- Sitting can double the load on your lower back

- Becomes increasingly worse with poor posture, prolonged sitting, overweight, etc..

•Modified from Chaffin & Anderson

Good and Bad of “TILT”



Negative tilt allows the wrist to be in a neutral position

ERGO REMINDERS

from Stretchbreak.com

Ergo Reminder™

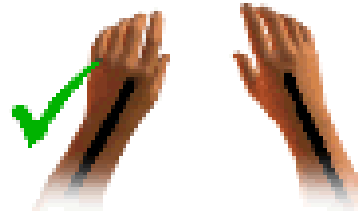
Keep your
elbows close
by your side.



© Copyright 2000 Para Technologies
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Graphics by RSIPProgram.com

Ergo Reminder™

Keep your wrists
comfortably straight.



© Copyright 2000 Para Technologies
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Ergo Reminder™

Avoid reaching out
for the mouse or
keyboard.



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“Ergonomic” Equipment: Gadgets, Gizmos, and Other Stuff

1. Wrist Rests

Pros

- Maintain neutral wrist positioning
- Reduce weight throughout shoulders
- Softens the surface under the wrists

Cons

- Promotes anchoring at the wrist
- Contact point on the wrist

“Ergonomic” Equipment: Gadgets, Gizmos, and Other Stuff

2. Keyboard Trays

Pros

- May adjust the keyboard height and angle to custom fit the users needs
- Allows for more posture changes

Cons

- May decrease knee clearance
- May force longer reaches for other things

“Ergo” Equipment

3. Alternative Mice/Keyboards

Pros

- Allows you to use different muscle groups
- Reduce/Eliminate awkward postures of the arms or wrists
- Reduce/Eliminate movement at the wrist
- No evidence that trackballs help/hinder

Cons

- Difficulty adapting, leading to reduced production
- Its always a trade-off
- May be using more/different/smaller muscle groups

Practice Wellness at Work and Home!



Body



Mind



Spirit

B
R
E
A
T
H
E

MOVE

Ergo Reminder™

Take a walk to deliver a message in person.



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STRETCH

Stress Tips from the Field...

Don't Forget to Breathe



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Ergo Reminder™

Strengthen your fingers with a rubber band.



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An ounce of Prevention is worth a pound of cure and a better healthy life !



Ohhhhhhh.....I
shouldn't have
eaten that mouse





