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Agenda
• Technology and telecommuting overview
• Injury data and statistics
• Ergonomic risks associated with working remotely
• Conducting remote evaluations
• Laptop Ergonomics & Solutions
• Ergonomics in the car
Smartphones

• 46% of American adults now have a smartphone of some kind
• For the first time, smartphone owners outnumber users of more basic phones

Source: pewinternet.org

Computer Sales Trends

Tablet sales will grow from 10.3 million in 2010 to 44 million in 2015, eclipsing laptop sales by roughly 5 million units.

Laptop sales will continue to grow from 26.4 million in 2010 to 38.9 million in 2015

Desktop PC sales will decline from 20.5 million in 2010 to 18.2 million in 2015.

Source: eMarketer study
Wi-Fi – Can We Live Without it?

- Wi-Fi has allowed us to interact with our devices in the car, at home, at work, etc.
- Wi-Fi availability & mobile Hotspots has allowed people to work virtually anywhere.

What is Telecommuting?

It is the act of moving work to the workers, rather than the workers to the work.

Laptops, tablets, cell/smart phones, advanced communications links and Wi-Fi access have removed the physical barriers that required workers to be in their offices at all times.

Teleworker Trendline – Telework 2011

Employees who teleworked (for an entire day at least once a month) was:
- 5 million in 1990
- Over 10 million in the mid-1990’s
- 23.5 million in 2003
- 33.7 million in 2008
- 26.2 million in 2010  - Why?
- 20% of the U.S. adult working population in 2010 is telecommuting
Where Are We Working?

- At home: A designated work space? Couch, kitchen table, den, office
- Satellite Office: A remote office location to reduce the time and expense of traveling to and from the main office
- Neighborhood Work Center: Provides work space for employees of different companies in one location.
- Virtual Mobile Worker: An airport, library, Starbucks/Panera, hotel, car...

Benefits of Telecommuting

- Conserving energy:
  - fuel and vehicle maintenance, emissions
  - highway-related materials and maintenance
  - office-related materials and resources
- Reduction of Office Space – lower rents
- Reduced Employee Stress
- Closer to family and their activities – “flex time”
- Improved productivity

Challenges for Employers

- Management resistance and skepticism
- Control issues – letting go
- Culture change
- Start-up and operating costs
- Security of data/information
- Safety and well-being of employees
Challenges for Employees

• Isolation and lack of interaction with team members
• Household distractions (e.g., chores, children, neighbors)
• Perceived hindrance of career advancement; less visibility
• Lack of support services such as secretarial and copying services
• Reduced living space
• Working too much … or … not enough

Tips for Telecommuters

• Learn to motivate yourself

• Set daily and weekly goals for getting work completed

• Minimize isolation
  – Maintain relationships with co-workers e-mail/phone

• Organize your work space

• Acclimatizing period of 30-90 minutes
  – Time to get organize and manage time/space
Is this an Organized Workplace?

Workplace Solutions

Home Worker - Any red flags?
Any red flags?

Who Provides the Equipment?

- Employer sometimes provides desk equipment
- Majority of workstation set-ups are performed by the worker
- Who provides the premium equipment?
  - hardware, software, printers, etc.
- Who provides IT support for the equipment?
- Is there a Formal Telecommuting Program?

Proactive Program Controls

- Online ergonomic evaluation process – initially and on-going
- Training and/or guidelines and tips on ergonomics
- Phone evaluations to support remote setup in the event of discomfort
- Ergonomics budget (range is $500-1,500 depending on the company) for preapproved equipment
  - chair, monitor, keyboard, mouse, keyboard tray, headset, gel wrist rests, etc.
Reality?

- Equipment provided only once a request or a complaint is made
- Equipment recommendations are the same as the company standard product recommendations
- Doctor’s note required for new equipment, chairs or sit-stand arrangements

A well designed workstation will minimize discomfort and injuries…

Injuries

Workers’ Compensation

There has been a surprising lack of case law based on claims by telecommuters

- Claims for clerical employees are generally fewer and less costly than other class codes
- Telecommuters are often longer-term, professional employees which are less likely to file claims
White Collar Workers

According to the Steelcase IPSOS Workplace Survey 2007 (European White collar workers):
• 59% suffered from visual fatigue (at least once/week)
• 46% suffered back pain
• 44% neck pain
• 25% wrist pain
• 33% suffered regular headaches.

Burns

• Laptop burns to thighs
  – Hot running microprocessor
  – Inadequate ventilation

Solutions:
• Improve Ventilation with Cooling
• Declutter the Work area
• Laptop Stand
  – Reduces Shoulder & Neck Strain

Repetitive Strain Injuries

• BlackBerry/Texting Thumb
• iPod/iPad “Swipe” Finger/Elbow
• Winjuries
• Nintendinitis
• Carpal Tunnel Syndrome
• De Quervain’s tenosynovitis
• Trigger Thumb

• Take technology holidays
• Use Autotext feature to write shorter messages
• Take rest breaks when pain is noticed
• Seek medical assistance
Musculoskeletal Complaints – Why?

Muscular fatigue or cumulative trauma disorders are usually the result of the following conditions:

- **Maintaining** an unnatural or unhealthy posture while using a mobile device
- **Inadequate** lower back support
- **Static** load placed on the body by sitting in the same position for an extended period of time (i.e., turning head to the side to view poorly placed document)
- **An** ergonomically poor workstation design

Neutral Positioning

Ergonomic Risk Factors

- Force
- Repetition
- Awkward Postures
- Static Postures
- Vibration
Mobile Device Neck

iPad/Tablet/Readers Ergonomics

- Not a true substitute for a laptop
- Uncomfortable typing on screen
- Uncomfortable to hold over time
- Hunched shoulders and bent neck to see at a proper angle
  - Small screen, small character size, feeling of being discreet
- Visual discomfort depending on where the tablet is positioned

iPad/Tablet/Readers Solutions

- Use a Stand
  - Addresses musculoskeletal and visual ergonomics
  - Can be paced on lap or flat surface
  - Non-skid bottom
  - Lightweight and portable
- Use an External Keyboard
  - Allows for ergonomic positioning
Laptop Ergonomics

- Awkward Body Positioning for prolonged periods
  - Head is tilted forward
  - Hunched back
  - Sitting on the front portion of the chair
- Keyboard and monitor are attached so difficult to position
- Screen is smaller than a desktop
- Can slip and move during use
- Generates heat
- Encourages poor working posture
- Glare issues
- Long Viewing distances

Identify the Hazards...

Identify the Hazards...
Laptop – Ergonomic Solutions

- Use neutral posture while working
- Use External Mouse
  - Distributes motion over a wider area
- Use a Laptop Stand
  - Addresses musculoskeletal and vision ergonomics
  - Can be placed on the slip or flat surface
  - Non-skid bottom
  - Lightweight and portable
- Use External Keyboard
  - Allows for ergonomic positioning

Dual Screens
Work Area Improvements

• Use a laptop stand to bring the screen to eye level
• Use an external keyboard
• Laptop keyboard when propped up can be used as a document holder.
• Chair Height Adjustment
• Lumbar support

Examples of Laptop Stands – Not necessarily ergonomically correct...

Laptop Stand for Use in Bed...
Portable Laptop Stand/Mobile Desk

- Mobile Desk
- Are there any issues?

Good Examples of Laptop Stands
Portable Stand with Keyboard

- Take It With You ....

DIY - Laptop Stands

- Wine Corks
DIY - Laptop Stands

- PVC Pipe
- Joint tie, wooden dowels and anti-skid pads

- Door stops and adhesive pads on top of a wire mesh document organizer to raise and tilt the laptop forward...plus, keep paperwork in order underneath.

- Paper Towel Holder Stand
DIY - Laptop Stands

• 3-Ring Binder and Felt

Laptops & Music Applications

What is the most adjustable surface in your home?
What is the most adjustable surface in your home?

Working in a Hotel/Home

Take Micro Breaks!

Traditional Office Environment:
- Walk to the printer
- Talking with co-workers
- Lunch or snack breaks
Helpful Hints

A conscious effort has to be made to take breaks within a Mobile work environment.

- **Assistance** from Apps/Software
- **Take** a 15-minute break for every two hours of continuous computer use
- **Alternate** work tasks
- **Use** a stretching routine to relax the body
- **Keep** the mouse at keyboard level
- **Hold** the mouse lightly
- **Click** gently

Ergonomics on the Road

Is there a perfect way to work in the car?
Steering Wheel Laptop Support

Steering Wheel Laptop Support

• DIY = PVC & Plywood
Who uses these regularly.....

Law Enforcement

- Back Strains – twisting, turning, stretching
- Wrist Strains – contact stress
- Eye Strain
  - Bright sunlight
  - Vibration – migraines
  - Night time use
Health Care - COWs & WOWs

- Height-adjustable work surface, footrest and large monitor.
- The small footprint facilitates bringing the workstation directly to the point of care
- Battery meter
- Modular design – swap parts
- Wireless

Problems: changing the units at the end of work shifts.

Other Workstation Options

Mobile Station  Multiple User Stand

Mobile Device use is here to stay. There are too many benefits for employers and employees to ignore it.

Be pro-active to address the exposure of potential injury by providing individuals a safe work environment.
Apple Apps - Safety Related

- OSHA Construction Audit for iPhone ($100)
- OSHA Audit for iPad ($100)
- OSHA Heat Safety Tool
- Pocket First Aid
- EM385-1-1
- Wiser
- Weather Alert USA
- Sound Meter
- Megaman Lux Meter
- SafetySnaps
- FallProof
- SafetyNet
- MSDS Mobile
- WorkSafeBC OHS Regulations
- Adobe Ideas
- Crane Operator Hand Signals
- NIOSH Lifting Calculator
- iUSA
- USW Safety
- iErgonomics
- Chemical Compatibility Database
- ChemAlert
- Chemical Safety Data Sheets
- MSDS Mobile
- NIOSH Pocket Guide To Chemical Hazards

Android Apps - Safety Related

- Sound Meter
decibel
- OSHA Heat Safety Tool
- Online MSDS
- Cargo Decoder
- Dangerous Goods Manual
- Safety Mobile
- Vbar Safety
- Event Safety & Security
- Safety Talks – Fire Safety
- Safety Talks – Health & Safety

Thank You

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