How to Leverage Technology:
Effectively & Efficiently Support Working from Home

Presented by: Blake McGowan, CPE – Director of Ergonomics Research & Innovation
bmcgowan@ehs.com and 734.730.2036
VelocityEHS | Humantech
Blake McGowan, CPE

Blake McGowan, Director of Ergonomics Research for the Humantech brand of VelocityEHS, leads the Ergonomics Research group to incorporate the latest technical and scientific data into Humantech’s software solutions. He also consults with academia to transfer the latest research knowledge into the Humantech approach, systems, assessment methods, and guidelines.

- Achieved recognition as a Certified Professional Ergonomist (CPE).
- He is a member of the:
  - Advisory Panel for the IISE Transactions on Occupational Ergonomics and Human Factors journal,
  - National Occupational Research Agenda (NORA) Musculoskeletal Health Cross-sector Council,
  - American Conference of Governmental Industrial Hygienists (ACGIH),
  - American Industrial Hygiene Association (AIHA),
  - Human Factors and Ergonomics Society (HFES).
- Past Chair and Officer of the AIHA Ergonomics Committee.
Seek & Aggregate Research Information
Translate Information into Knowledge

The Case for Ergonomics

Communicating Value to Business Stakeholders

BY BLAKE MCGOWAN

Industrial Exoskeletons: What You're Not Hearing

Hold on a bit longer until the capabilities of these devices match our expectations to improve human performance and reduce MSDs.

By Blake McGowan  Oct 01, 2018
Translate Information into Knowledge

In today’s world, safety professionals are responsible for so many things. It’s hard to distinguish what is fad versus fact. In this series, we translate the latest research findings into simple, actionable messages that can easily be applied to the workplace.

BOTTOM LINE VIDEO SERIES

The Bottom Line: Stale Office Air Reduces Productivity

The Bottom Line: Workplace Ergonomics Is a "Double Win"

The Bottom Line: What’s the Recovery Cost of Forceful Exertions?

The Bottom Line: The Revised ACGIH® TLV® for Hand Activity

WATCH MORE VIDEOS
Transfer Value to our Software & Services

Motion Capture Technology

Advanced Tool
Unique Knowledges, Insights & Key Learning’s
Agenda

• What Has Changed since “Working from Home”? (redux)
• What Hasn’t Changed since “Working from Home”? (redux)
• What Has Changed since “Working from Home”? (redux)
• Recommendation from ILO & IEA
• Discussion
Presentation Etiquette & Questions

• All participants on mute.
• Please use chat function for questions.
• Presentation will be 30 minutes.
• Please send questions during presentation
• 30 minutes is allocated to address your questions.
• Yes. You will receive the slides in PDF.
• Yes. You will receive the recording.
• My contact information: bmcgowan@ehs.com & 734.730.2036.
Q. What Has Changed since “Working from Home”?
What has Changed?
Impact of Working from Home on MSDs

• The recent Institute for Employee Studies (IES) “Working from home wellbeing Survey" found:
  – There has been a significant increase in MSD complaints.
  – More than half of the survey respondents reported new aches and pains, especially in the neck (58%), shoulder (56%) and back (55%), compared to their normal physical condition.

https://www.employment-studies.co.uk/resource/ies-working-home-wellbeing-survey
Impact of Working from Home on MSDs

• Recent study of 700+ global employees found:
  – 2 out of every 5 employees (40%) have some serious working from home issues.
  – Top 3 body areas of concerns are:
    • Hands (40%),
    • Back (38%), and
    • Neck (34%).
  – Top 3 issues are:
    • Not using an external keyboard with a laptop (45%),
    • Sitting on a fixed height chair that does not align with the work surface (41%), and
    • Not having an external monitor when using a laptop (41%).
Impact of Working from Home on MSDs

• The study, published in the International Journal of Environmental Research and Public Health, surveyed 51 at-home workers in Italy. The results showed that:
  – 41.2% of at-home workers reported low back pain
  – 23.5% reported neck pain.
  – About half of the respondents said that their neck pain (50%) had gotten worse since they started working from home.

Impact of Working from Home on MSDs

Impact of COVID-19 on Mental Stress

• Negatively affected many people’s mental health and created new barriers for people already suffering from mental illness and substance use disorders.

• 53% of adults in the United States reported that their mental health has been negatively impacted.

• Many adults are also reporting specific negative impacts on their mental health and wellbeing, such as difficulty sleeping (36%) or eating (32%), increases in alcohol consumption or substance use (12%), and worsening chronic conditions (12%), due to worry and stress over the coronavirus.

Impact Mental Stress on Workplace MSDs

• Increased mental stress increases the risk of workplace injuries.

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Q. What Hasn’t Changed since “Working from Home”?
Fundamentals: Definition of Ergonomics
Fundamentals - Definition of Ergonomics

Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.

International Ergonomics Association (IEA) and Human Factors & Ergonomics Society (HFES).
Benefits & Impact of Ergonomics

Well-Being

Turnover

Absenteeism

MSDs & Costs

Opioid Abuse

Benefits & Impact of Ergonomics

Business Performance

Stock Market Value
Sustainability
Employee Engagement
Productivity
Quality

Four Points of Contact®

- Head to Source: Complete
- Hands to Devices: Complete
- Body to Chair: Complete
- Feet to Floor: Complete
On-Line Software

eOfficeErgo: Ergonomics e-learning for office workers

Published: January 2015

eOfficeErgo is an evidence-based and standard-compliant online training program on the proper way to set up and work at office workstations in order to prevent musculoskeletal disorders and other injuries. It is available in the following three versions:

- a free web-based version from IWH, available in both English and French (NOTE: this version works best with Mozilla Firefox);

Findings

• >250,000 office ergonomics risk assessments

• 3% of employees were considered higher risk
  – Unique problem
  – Needs professional support
  – Average solution cost - $1,000

• 17% of employees were considered moderate risk
  – Traditional problem
  – Needs basic support
  – Average solution cost - <$250

• 80% of employees were considered lower risk
  – Proper workstation setup
  – No additional support needed
Traditional Office Ergonomics Cost

• Workplace injury rates: 0.8 per 100FTE for office workers
• Roughly 30% are MSD or ergonomics related
• Typical MSD or muscle strain injuries cost roughly $30K in direct costs and roughly the same in indirect costs
## Traditional Cost of Doing Nothing

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<th>How Much More Expensive is it to Do Nothing related to a Formalized Program using Software over 3 year?</th>
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DHS-CISA Advisory – You are an Essential Worker

• The U.S. Department of Homeland Security (DHS) Cybersecurity & Infrastructure Security Agency (CISA) guidance is used in a number of settings across the nation including state, local, tribal and territorial officials to help protect public health and safety during the COVID-19 pandemic.

• This list is advisory in nature. It is not, nor should it be considered, a federal directive or standard.

• Version 3.0 of the guidance includes “workers who anticipate, recognize, evaluate, and control workplace conditions that may cause workers illness or injury” as essential critical infrastructure workers.

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Q. What Has Changed since “Working from Home”? (redux)
Ability to Conduct in Office, in-Person Assessments
IOSH & IEA Recommendations

• The Institute of Occupational Safety and Health (IOSH) recommends all employees working from home should conduct an office ergonomics self-assessment.
  – Due to COVID-19 it is not be practical for risk assessments to be carried out face-to-face.

https://iosh.com/coronavirus/outbreak/remote-workers/the-ergonomics-of-homeworking/?utm_source=ACGIH&utm_campaign=b7ff7d3a0b-EMAIL_CAMPAIGN_2020_02_25_05_03_COPY_01&utm_medium=email&utm_term=0_e0322abe6a-b7ff7d3a0b-407328273
Abstract

Computer use and its association with musculoskeletal and visual symptoms is an escalating concern. Organizations are shifting to a more proactive injury prevention perspective. Accordingly, a macroergonomics intervention consisting of flexible workplace design and office ergonomics training was designed to examine the effects on workers' computing behaviors, postures, and musculoskeletal discomfort, and their relationship to psychosocial factors. Participants were assigned to either group: 1) no-intervention control 2) flexible Workplace-only (WP-only), and 3) flexible Workplace + Training (WP+T). Observational findings indicate both intervention groups experienced positive, significant changes in improved workstation arrangements and computing postures, with the WP+T intervention group exhibiting a higher, significant change of behavioral translation. Also, significant, positive relationships between observed postures and musculoskeletal discomfort/pain were found. The intervention effect was stronger when management was responsive to workers' ergonomics needs. This study suggests that a macroergonomics intervention can produce beneficial effects for office and computer workers and organizations.

Q. What Hasn’t Changed since “Working from Home”? (redux)
Solution? Technology

New Version!

ergoTool™ Version 5
A Web-Based Management Tool for Office Ergonomics

Ergopoint® Office Suite
A Total Online Solution for a Healthy and Productive Office

Office Ergonomics Software
Remote Office Consults

- One-on-one phone call with a professional for office employees who need additional support working from home
  - Booking online
  - Detailed support, anywhere
  - Discuss workstation layout, discomfort
  - Summary report with recommendations
Online Booking

Choose Appointment

Remote Ergonomics Consult
30 minutes

**YOUR TIME ZONE**
(EST-4:00) Eastern Time

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Phone Consult

- Employee submits photos (optional) and other consult request information
- Professional calls the employee on the phone (video call not required or recommended)
- 30-minute call discussing workstation setup, discomfort, and recommendations
Summary Report

- Provide a summary report including:
  - Direct causes
  - Consult notes
  - Recommendations
  - Workstation setup guidelines

- Sent report only to the employee supervisor (not directly to employee)
Recommendation from ILO & IEA
ILO & IEA: Practical Recommendations

Teleworking during the COVID-19 pandemic and beyond
A Practical Guide

ILO & IEA: Practical HFE/E Recommendations

Employer Tips
Working from Home: Employer Tips

• Provide the necessary tools, training, and organizational direction to ensure worker productivity, effectiveness, and safety.

• Establish and communicate clear parameters for “working from home.”

• Support workers to adjust work times around their home responsibilities and family needs.

• Provide on-line ergonomics training and resources to help workers set up and evaluate their environment.

• Provide on-line workstation evaluations through video conferencing.
Working from Home: Employer Tips

• Educate employees how to establish work/life balance and set boundaries.

• Provide collaborative video conferencing tools to promote a sense of belong and to improve group cohesiveness.

• Encourage mindfulness and other stress management techniques.

• Provide clear direction for the maintenance of confidential company information and enable security measures, such as Virtual Private Networks (VPNs).

• Provide easy access to technical support.
Manager Tips
Working from Home: Manager Tips

• Offer flexibility for workers who have the additional family demands.
• Encourage workers to establish a routine of work and personal activities to help them balance their family and work time.
• Communicate regularly with workers.
• Recognize individual and group performance when it’s appropriate.
• Teach workers how to use virtual meeting tools.
• Provide online “netiquette” (etiquette) training.
• Communicate the processes for reporting accidents and job-related illnesses and injuries.
Worker Tips
Working from Home: Worker Tips

• Establish a routine for work and personal activities to better balance family and work time.

• Adopt healthy work-from-home habits like taking breaks each hour, moving often, and changing working posture regularly.

• Use wearable devices to schedule reminders to move, walk, and change work postures.

• Incorporate standing positions throughout the workday.

• Take an online ergonomics training course to learn how to properly set up and adjust your workstation.
Working from Home: Workstation Tips

Choose a dedicated, quiet, and secure space for your workstation.
Working from Home: Workstation Tips

Choose a dedicated, quiet, and secure space for your workstation.
Working from Home: Workstation Tips

Choose a dedicated, quiet, and secure space for your workstation.
Working from Home: Workstation Tips

Make sure the area is at least 6 feet by 6 feet (or two square meters) to accommodate most work activities, equipment, and furniture.
Working from Home: Workstation Tips

Make sure the work surface is about 26 inches (or 66 centimeters) high and at least 23 inches (or 60 centimeters) deep.
Reminder - ABC Process

Sit on a sturdy flat surface with legs dangling (e.g. tabletop), or sit on a chair raised to the highest height
Reminder – ABC Process

A - Measure from the bottom of the shoe to crease behind the knee
B - Measure from the tabletop to the tip of the employee’s elbow
C - Measure from the tabletop to the center of the eyes
Reminder – ABC Process

Chair height = A
Keyboard height = A + B
Monitor height = A + C
Working from Home: Workstation Tips

Use an ergonomically designed chair

• Adjustable Seat Pan: Height, Depth, Tilt
• Adjustable Backrest: Height, Tilt, Tension
• Adjustable Arm Rests: Height, Width, Swivel, Ample padding, Long enough to avoid contact stress
• Lower Back Support
• Rounded Front Seat Pan Edge
Working from Home: Workstation Tips

Use a full-size external monitor if using a laptop.

• Not too big though

• Proper monitor size equation:
  – Worksurface depth ≥ diagonal monitor dimension

• (For example, a diagonal monitor dimensions of 20" should never be closer than 20" to your eyes)
Working from Home: Workstation Tips

Use a full-size external monitor if using a laptop.

- Top of the screen at or slightly below eye level
- Located about an arm's reach away
- Centered in front of your body
- Free of glare
- Use corrective lenses (bifocal, trifocal, or progressive)
Working from Home: Workstation Tips

Use an external keyboard if using a laptop.

- Positioned directly in front of you
- Thin keyboard
- No numerical keypad
- Keyboard and mouse at same height
- Wrist rest not required
Working from Home: Workstation Tips

Use an external mouse if using a laptop.

• Positioned next to keyboard
• Vertical preferred to horizontal
• Sized for hand
• Right or left hand
• Keyboard and mouse at same height
Working from Home: Workstation Tips

Use a surge protector and a docking station

• Surge protector, not power strip
• More joules (>4,000 Joules)
• Warranty
• 6 or more outlets
• Enough spacing for large plugs
• USB connection with 2 amps
• Replace after serious electrical event
Working from Home: Workstation Tips

Keep cable and electrical cords and wires tucked away to prevent tripping and fall hazards.

- Cable organizers
- Secure cords table legs
- Disguise or hide cords
- Store cord in boxes
Working from Home: Workstation Tips

Keep cable and electrical cords and wires tucked away to prevent tripping and fall hazards.
Working from Home: Workstation Tips

Keep cable and electrical cords and wires tucked away to prevent tripping and fall hazards.
Working from Home: Workstation Tips

Make sure you have Wi-Fi speed and capability to match your work requirements.

• Internet speed:
  – Minimum: 25 Mbps
  – Good: 50 Mbps
  – Recommended: 100+ Mbps

• Restart router
• Upgrade router
• Reposition router
• Embrace ethernet
Working from Home: Workstation Tips

Have access to a mobile phone, headphones, and speakers.
Working from Home: Workstation Tips

Install proper overhead and task lighting

- **Lighting:**
  - Minimum: 200 lux
  - Recommended: 500 lux

- Task lighting positioned work, not keyboard

- Avoid reflective worksurfaces

- Avoid window glare
Working from Home: Workstation Tips

Use a headset or noise-cancelling headphones to control external noise

- Noise cancelling efficacy of >70%
- Sound quality
- Battery life > 10 hours (in wireless models)
- Comfort
Recommended Equipment
Recommended Equipment

Resources
Resources: Tips for Working from Home

Resources: 10 Things You Should Know

Resources: Working from Home Webinar

Resources: Ergonomics for the Home Office

Resources: “The Bottom Line” Video Series (Tips)

https://www.humantech.com/the-bottom-line-working-from-home-workstation-tips/
https://www.humantech.com/the-bottom-line-working-from-home-manager-tips/
https://www.humantech.com/the-bottom-line-working-from-home-employer-tips/
October is National Ergonomics Month!

Raise Awareness

This October is an important National Ergonomics Month. With many of us continuing to work from home, we have had to get creative with our home office setups.

We want to see the changes you have made to your home office to ergonomically increase productivity or comfort!

Enter our social media challenge during the entire month of October!
#HomeOfficeHacks Social Media Challenge

• To enter the challenge:
  – Take a photo of your home office hack and post to your LinkedIn, Twitter or Facebook
  – Include a short description, use the hashtag #HomeOfficeHacks and tag @Humantech
  – Make sure your posts are public!

• The best posts will be promoted on our LinkedIn, Twitter and Facebook pages

• The best home office hack will be selected by our team of board-certified ergonomists
  – Will be announced on November 12th

• The winner of the challenge will receive a FREE remote ergonomics consult with one of our experts
Humantech Acquired Michigan 3D SSPP

VelocityEHS Obtains Exclusive Rights to University of Michigan 3D Software to Optimize Its Humantech Ergonomics Solutions

CHICAGO, Oct. 07, 2020 (GLOBE NEWSWIRE) -- VelocityEHS, the global leader in cloud-based environment, health, safety (EHS) and sustainability solutions, today announced it has secured exclusive rights to sell and support the 3D Static Strength Prediction Program™ (3D SSPP™), an ergonomics job analysis and design tool developed by the University of Michigan Center for Ergonomics that quantifies biomechanical requirements during manual materials handling tasks. Based on over 50 years of research by the Center for Ergonomics, the software helps users analyze the biomechanical and static strength capabilities of employees in relation to the physical demands of the work environment to develop methods that prevent the risks that lead to musculoskeletal disorders (MSDs). Together with VelocityEHS’ Humantech Ergonomics Solutions, the software further enhances how organizations can use the science of ergonomics to lower risk of injuries and improve workplace performance.

According to the 2019 Liberty Mutual Workplace Safety Index, overexertion—which includes lifting, lowering, pushing, pulling, and carrying—is the top cause of non-fatal workplace injuries in the United States, accounting for 23 percent of all non-fatal workplace injuries and $13.11 billion in direct costs per year.
Discussion
Office Ergonomics Tips

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