



Ergonomics: An Army Industrial Hygienist's Corporate Perspective

**Applied Ergonomics Conference and Expo 2009
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Objectives

- Describe the Army industrial hygienist's (IH) role with integrating ergonomics in an industrial hygiene program
- Summarize the challenges and successes from the Army's IH corporate perspective
- List actions we are taking to improve ergonomic assessments
- Discuss the return on investment to implementing the listed actions
- Dramatize the strategic importance of becoming a "Trim Tab" in guiding the successful integration of ergonomics in an industrial hygiene program



Army IH's Role with Integrating Ergonomics in an Industrial Hygiene Program





Army IH's Role with Integrating Ergonomics in an Industrial Hygiene Program

- Hazard anticipation, recognition, evaluation, and control





Army IH's Role with Integrating Ergonomics in an Industrial Hygiene Program

- Hazard anticipation, recognition, evaluation, and control
- Identifies chemical, physical, biological, and ergonomic hazards inherent to each activity
- Identifies Risk Assessment Codes (RACs) for ergonomic hazards
- DOEHRS-IH (Ergonomics)





DOEHRS-IH Ergonomics

Potential ergonomic hazards are identified at the process hazard level

- 5-point screening questions
- Based on Washington State Checklist
- Identifies activities of long duration (> 2 hours)
- If “yes” to potential hazard questions, then specific ergonomic hazards are identified



Ergonomics Hazards Listed in DOEHRS-IH





Ergonomics Hazards Listed in DOEHRS-IH

- Cold Surfaces
- Contact Stress
- Dynamic Posture
- Energy Expenditure
- Forceful Exertion
- Glare
- Impact/Jolt





Ergonomics Hazards Listed in DOEHRS-IH



- Lighting Level
- Psychosocial
- Segmental/Hand - Arm Vibration
- Static Posture
- Visual Demand
- Whole Body Vibration
- Work Rate/Repetition



Ergonomics Hazards Listed in DOEHRS-IH

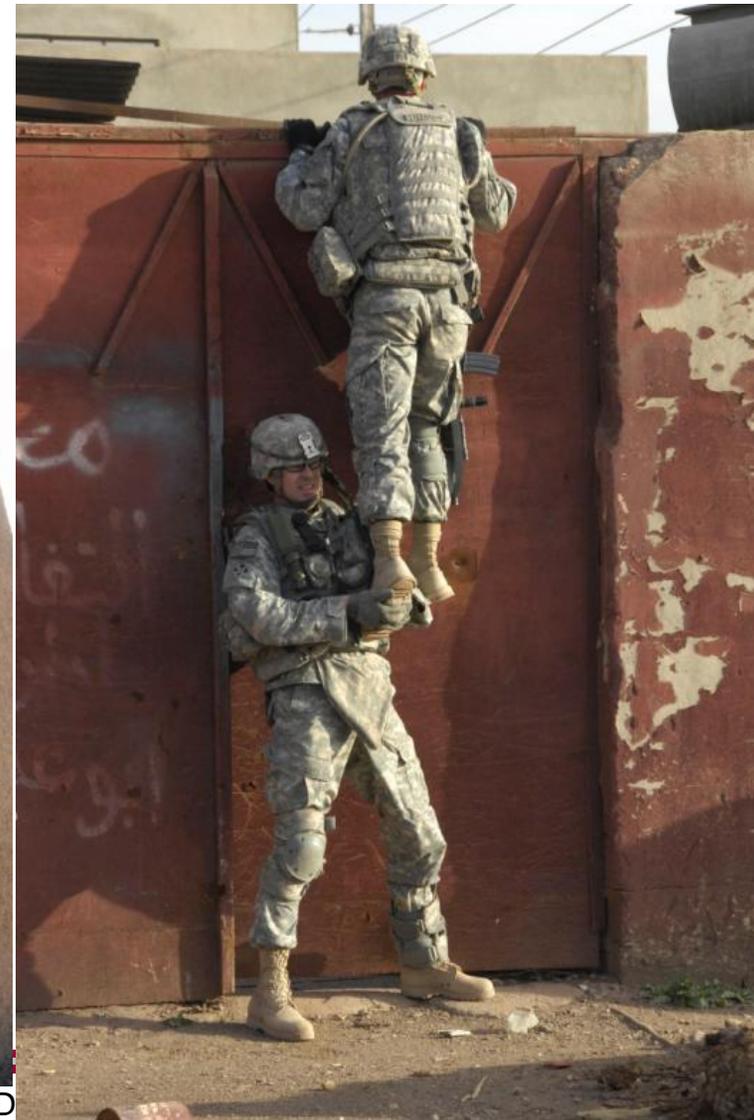
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DOEHRS-IH Detailed Ergonomics Evaluations

Conducted at the SEG level

- Industrial Hygiene Survey
- Administrative Survey





Challenges





Challenges

- Environment Constantly Changing
- Training & Experience
 - Design of Musculoskeletal System, Mechanobiology, Physiology of Healing, Strength Characteristics of Biological Materials, Biomechanics, Anthropometrics
 - IH Training - Basic
- The Ergonomic Assessment
 - Complex
 - Many Tools - Few Validated
- Lack of Funding



SUCCESSSES

- The Best 40 Hour Training in the World
- Army Materiel Command Installations
 - Red River Army Depot
 - Lean Operation, Contracted Ergonomist
 - Specialized Tools, Assist Devices
 - Anniston Army Depot
 - Lean Operation, High Physical Demand
 - Customized Training Content
 - Workers, Supervisors
 - Occupational Health Professionals
- Commander's Are More Active in Reducing Injuries



Initiatives To Improve Ergo Assessments

- DOEHRS-IH (Ergonomics)
 - Base Line Data
 - Improve Assessment tools
 - Evaluation of Data
- Lean Six Sigma – Ergonomics (McAllester, OK)
 - Evaluated all Industrial Lines
 - Heavy Manual lifting 50 Pounds
 - Automate Tasks
 - TNT < 10 Years





Potential Return On Investment

- Reduced Musculoskeletal Injuries
- Increase in Productivity
- Decreased Lost Workdays
- Increased Safety Awareness
- Lesser Job Related Injuries
- Increased Satisfaction and Commitment
- Decreased Maintenance Costs
- Increased Trust and Loyalty



MAKING A DIFFERENCE

A photograph of three US Navy ships at sea. The ship in the foreground is a modern destroyer, likely an Arleigh Burke-class, viewed from a front-quarter perspective. It has a complex superstructure with multiple radar masts and sensor domes. Two other ships are visible in the background, one further to the left and one in the center, both also viewed from a front-quarter perspective. The ships are moving through blue water, leaving white wakes. The sky is clear and blue.

BECOME A TRIM TAB



“What is a Trim Tab”

- What is a Trim Tab?
- Wikipedia – “**Trim tabs** are small surfaces connected to the trailing edge of a larger control surface on a boat or aircraft. The angle of the tab relative to the larger surface can be adjusted to null out hydro- or aero-dynamic forces and stabilise the boat or aircraft in a particular desired attitude without the need for the pilot to constantly apply a control force.”
- Buckminster Fuller -
- Dr. Stephen Covey -



“Richard Buckminster Fuller”



“Carbon molecules known as fullerenes or buckyballs were named for their resemblance to geodesic spheres”

Something hit me very hard once, thinking about what one little man could do. Think of the Queen Mary -- the whole ship goes by and then comes the rudder. And there's a tiny thing at the edge of the rudder called a trim tab.

It's a miniature rudder. Just moving the little trim tab builds a low pressure that pulls the rudder around. Takes almost no effort at all. So I said that the little individual can be a trim tab. Society thinks it's going right by you, that it's left you altogether. But if you're doing dynamic things mentally, the fact is that you can just put your foot out like that and the whole big ship of state is going to go.

So I said, call me Trim Tab.



Dr. Stephen R. Covey

Author of 7 Habits of Highly Effective People

“My one point is, make your mind up now, that you will make a difference.

No matter where you are, and what situation you are in, make your mind up now, you will make a difference. I use a metaphor in my teaching of a trim tab. It's a small rudder that turns a big rudder of an entire ship.

You can become a trim tab leader.

Leadership has nothing to do with position.”



Be the Trim Tab

- Be a 360 Degree Leader – “Dr. Maxwell”
- Contribute in everything that you do – “Dr. Covey”
- Just Do It – “Nike”



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