

## **How to perform an Ergonomic Workplace Analysis and select the best tools?**

Pre-conference Workshop

September 21, 2023

Faculty:

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Ergonomic workplace analysis (EWA) is a process where the ergonomic risk factors are evaluated using various validated tools. A systematic process of conducting ergonomic risk assessment starts with developing a prioritized job and department list to be evaluated. The second step would be conducting MSD risk assessments for physical risks related to workstation design and work practice. It could be done by using various ergonomic assessment tools. An important part of the ergonomic process is a periodic review of the facility, specific workstation designs and work practices, and the overall production process from an ergonomics perspective. Applying a scientific, evidence-based approach to the ergonomics process is important. The goal is to identify ergonomic risk factors, quantify them, and then make measurable improvements to the workplace, ensuring that jobs and tasks are within workers' capabilities and limitations. The best approach is to make ergonomics an ongoing risk identification and reduction process based on objective, scientific EWA.

The WHO recommends “a set of practical risk assessment procedures and related management guidance documents, including advice on simple risk control options” (WHO, 2010). The EWA toolkit should provide a comprehensive model for identifying, assessing and monitoring work-related hazards. It should be simple and practical and be used by unskilled people in small and medium-sized enterprises and developing countries. ISO has published a special application document (ISO TR 12295) to clarify the procedures and methods described in the ISO standards (ISO, 2014).

This workshop will give an overview of the EWA process and various tools and recommend the best tool to assess a specific task identified to be risky.

On completion of the workshop, delegates will be able to:

- Understand how to assess an office and industrial workplace
- Understand and use ergonomic methods and techniques for risk assessment and identification of workplace risk factors

## Who should attend?

- Occupational Health Care providers, including occupational physicians and nurses
- Ergonomists
- Safety and Health Personnel
- Industrial Hygienists
- Physical and Occupational Therapists working with Industry
- Industrial, Manufacturing and Workplace Design Engineers
- Engineers and researchers who are working in the field of risk identification.

## Topics covered:

1. Introduction to EWA and Steps Involved in ergonomic assessment
2. Subjective analysis tools
3. Psychophysiological assessment tools
4. Ergonomics Methods to assess demands and effects on people: Physical workload, Mental workload, Physiological methods, 'Fatigue' measurement, Environmental response measures, Stress assessment, Job and work attitude measurement
5. Postural assessment tools: Video analysis, Fishbone diagram, Goniometer, Motion capture systems, Accelerometry, Inertial measurement units, Computerised tools: Task recording and analysis on computer (TRAC), Portable ergonomic observation (PEO), Hands relative to the body (HARBO); Observational tools: Rapid upper-limb assessment (RULA), Rapid entire body assessment (REBA), Ovako working posture assessment system (OWAS), Arbeitswissenschaftliches erhebungsverfahren zur tätigkeitsanalyse (AET), Plan för identifiering av belastningsfaktor (PLIBEL), Quick exposure check (QEC), Posture targeting, Posture, activity, tools and handling (PATH), Washington State ergonomic checklist, Video- och datorbaserad arbetsanalys (VIDAR), Loading on the upper-body assessment (LUBA), Chung's postural workload evaluation, OREGÉ (Outil de Repérage et d'Evaluation des Gestes), SUVA (National Institute of the Swiss Accident Insurance), Concise Upper Body Screening Instrument (CUBSI), Novel Ergonomic Postural Assessment Method (NERPA), Rapid Office Strain Assessment (ROSA), Time-based Assessment Computerised Strategy (TACOs)
6. Tools to Assess the Risk of Biomechanical Overload of upper extremities- Assessment of repetitive Action (ART), Rapid Upper Limb Assessment (RULA), Stetson Checklist, Keyserling CTD Checklist, Ketola Expert's Tool, Strain Index, ACGIH-Hand activity level (HAL), OCRA
7. Methods assessing Manual Materials Handling: Revised NIOSH Lifting Equation, Manual Task Risk Assessment Tool (ManTRA), Manual Handling Assessment Charts (MAC), ACGIH Lifting TLV, Risk Assessment for Pushing and Pulling (RAPP) tool,

- SNOOK Tables, Key Indicator method, Risk Assessment and Management tool for manual handling Proactively (RAMP), Ergonomic Assessment Worksheet (EAWS)
8. Systems thinking-based risk assessment methods to assess hazardous manual tasks: the Event Analysis of Systemic Teamwork Broken Links (EAST-BL) method, Networked Hazard Analysis and Risk Management System (Net-HARMS) method, Functional Resonance Accident Method (FRAM), Systems-Theoretic Process Analysis (STPA) method
  9. Standards such as ISO TR 12295 Ergonomics: Application document for ISO standards on manual handling (ISO 11228 1, ISO 11228 2 and ISO 11228 3) and working postures (ISO 11226).
  10. SHARAN'S Model for Ergonomic Workplace Analysis (EWA) - Safety and Health Assessment and Risk Analysis for a Neutralised work Situation
  11. ERGOCHECK Premapping of work-related hazards
  12. Surveillance of WRMSD: Latin Questionnaire
  13. Recommendations regarding the selection of appropriate tools for different tasks.

### **About Our Speakers:**

Deepak Sharan

Dr. Deepak Sharan is a highly accomplished consultant specializing in orthopedic surgery, rehabilitation, ergonomics, occupational health, and functional and lifestyle medicine. Based in Bengaluru, India, he is associated with RECOUP Health and holds prominent positions in various prestigious organizations. Dr. Sharan serves as the Chairperson of the Scientific Committee on Musculoskeletal Disorders at the International Commission on Occupational Health and as the President of the International Myopain Society. He is also the Founder Director of the EPM International Ergonomics School in Italy and the Founder President of both the Indian Ergonomics School and the Indian Myopain Society. With an impressive portfolio of over 600 international scientific publications and conference presentations, Dr. Sharan has conducted extensive research on office and industrial ergonomics, healthcare ergonomics, cognitive ergonomics, and work-related musculoskeletal disorders (WRMSD). Notably, he co-developed the Time-based Assessment Computerized Strategy (TACOs) for assessing the risk of WRMSD among physiotherapists. Dr. Sharan has received numerous awards and research grants, including the National Disability Award from the Government of India and prestigious international research awards in the field of orthopedics and pediatric orthopedics. As an internationally recognized expert in WRMSD, he has developed his own validated assessment and treatment approach known as the SHARAN's Protocol, which has successfully treated over a million patients from 45 different countries. Dr. Sharan also works as an ergonomics and occupational health consultant for several Fortune 500 companies and is an authorized trainer for various

methodologies and tools related to ergonomics and occupational health, including the Revised NIOSH Lifting Equation, ERGOcheck Risk Mapping, TACOs Tool, OCRA methods, and Push-Pull-Carry techniques.