Practical Tools for Simple Ergonomic Evaluations

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Lake County Safety Council
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Overview

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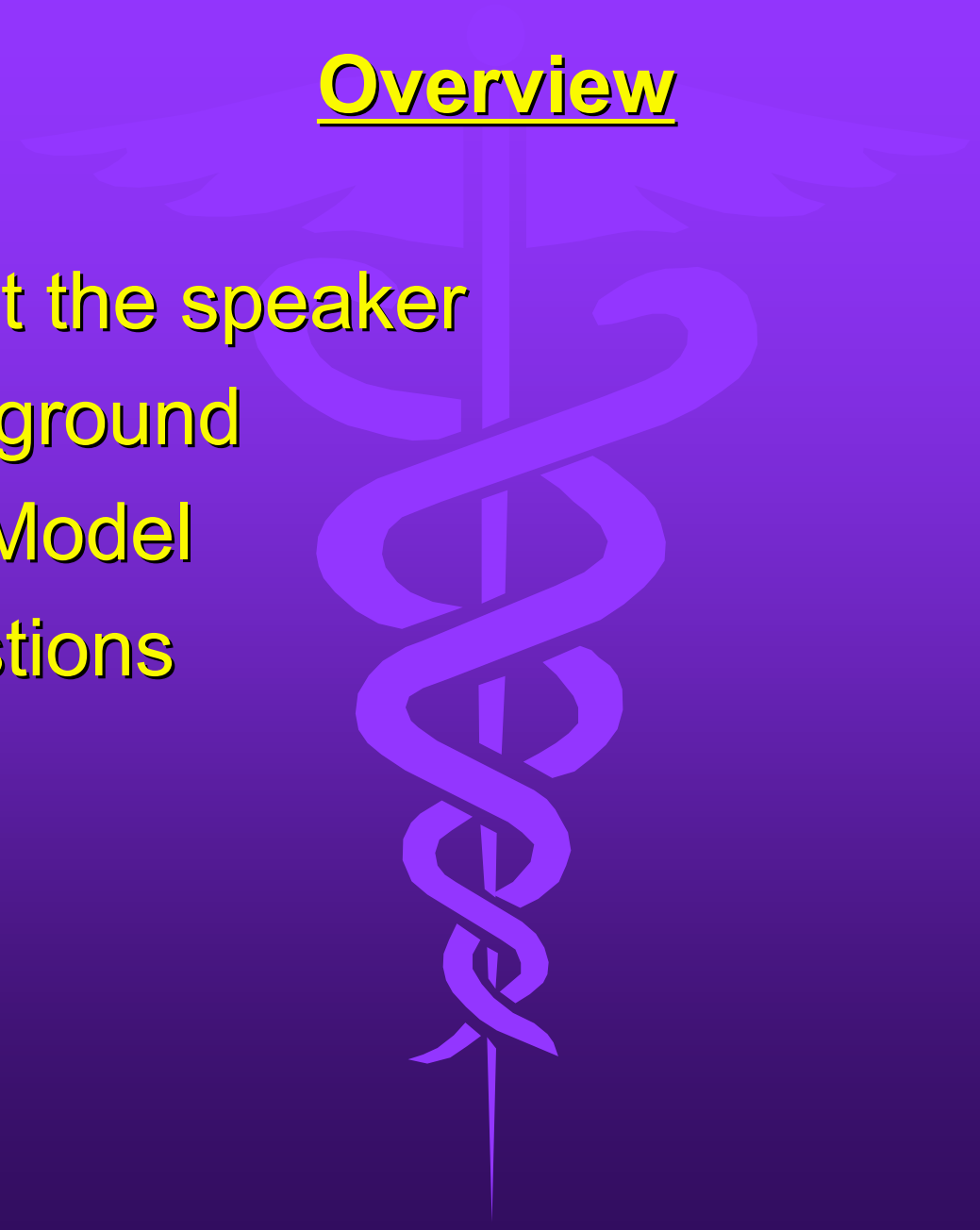
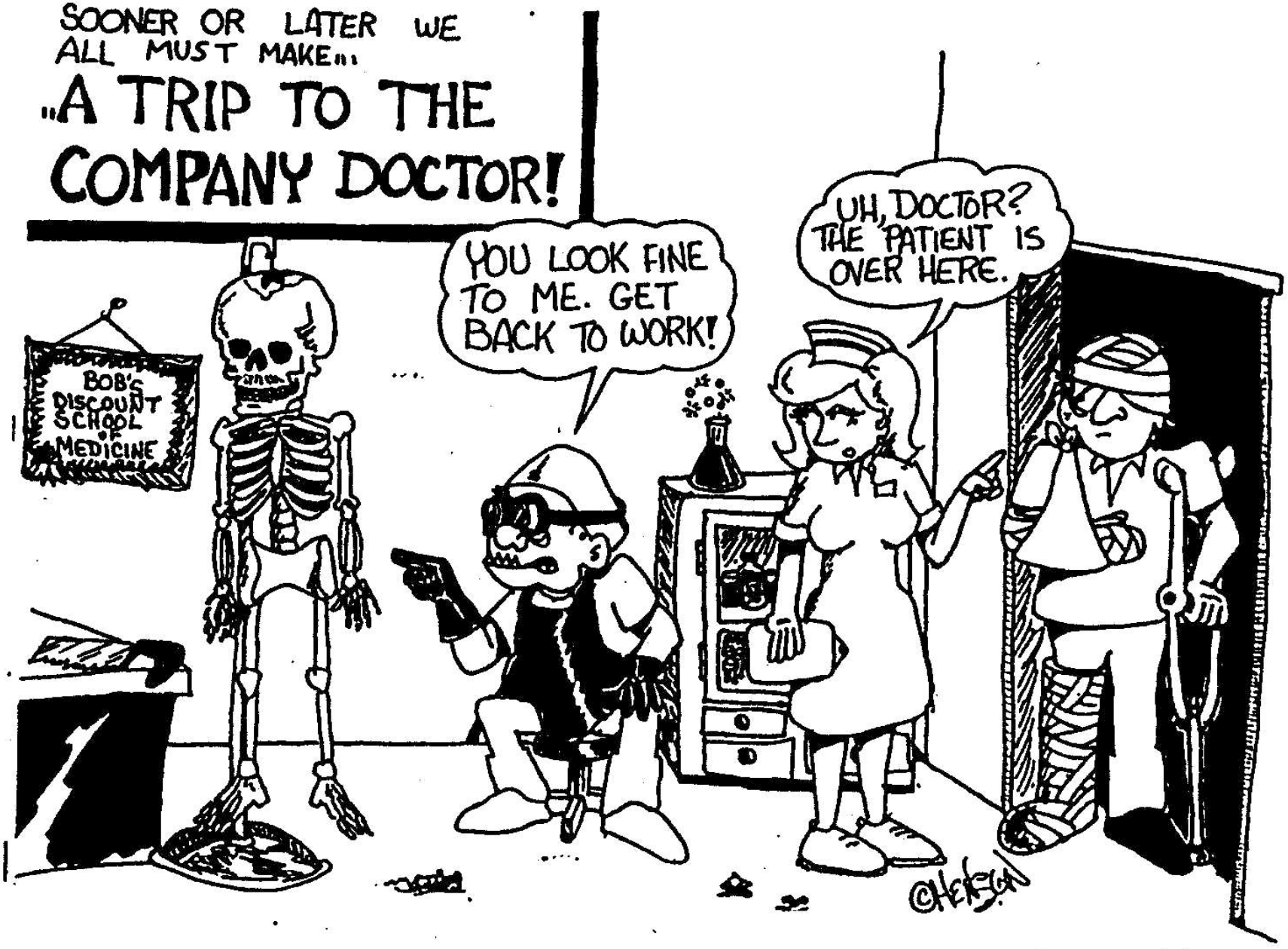
- Questions



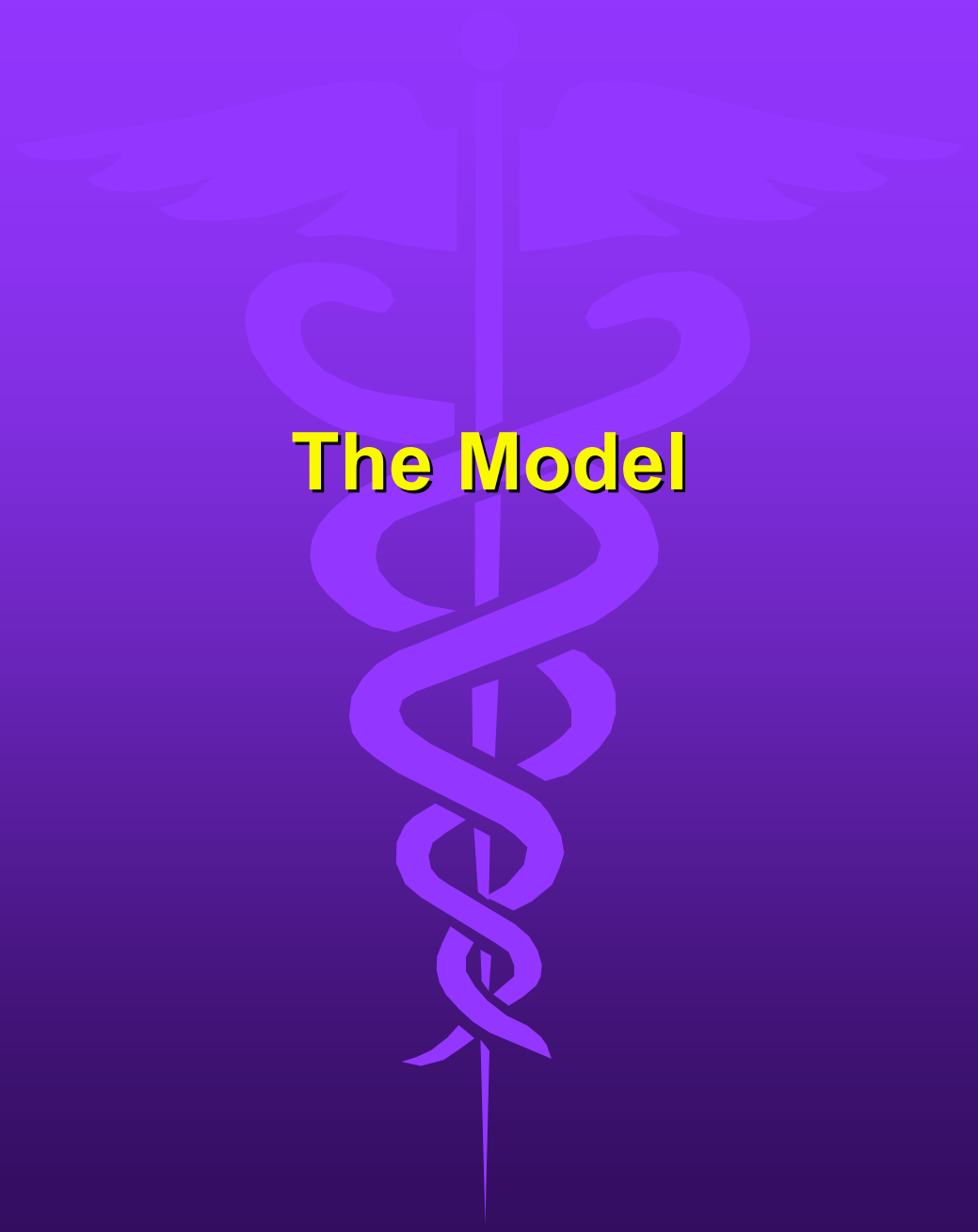
About the Speaker


SOONER OR LATER WE ALL MUST MAKE...
"A TRIP TO THE COMPANY DOCTOR!
BOB'S DISCOUNT SCHOOL OF MEDICINE
YOU LOOK FINE TO ME. GET BACK TO WORK!
UH, DOCTOR? THE PATIENT IS OVER HERE.
ALAN HENSON

Scott E. Singer, MD, MPH

- Specialty: Occupational Medicine
- MPH = Masters in Public Health
- MEDSource One
- Lincoln Electric Corporate Medical Director

The Model



The Model

Introduction

- Derived from more comprehensive model developed at University of Michigan.
- Simplified for use by “non-ergonomists”.
- Can be applied to any type of work environment.
- Designed to provide specific recommendations for ergonomic intervention.
- Does not allow for recognition of other safety or hazard issues.

The Model

General Principles

- Thorough knowledge of job purpose and responsibilities.
  - Review of written materials including: work standards, production data, job descriptions, etc.
  - Personnel interviews: management, supervisors, laborers.
- Direct Observation.
  - Real time analysis
  - Videotape review

The Model

Job Documentation

- Job name / title
- Work purpose / objectives
- Work schedule
- Job rotation plan
- Production information / quota
- Workstation / equipment
- Materials
- Tools
- PPE
- Environment

The Model

Observation Parameters

5 Basic Elements:

- Repetition / Repetitive Exertions
- Postural Stresses
- Forceful Exertions
- Localized Contact Stresses
- Miscellaneous

The Model

Repetitive Exertions

- Rated on a scale of 0-10.
  - 0: mostly idle; no regular exertions.
  - 2: short periods of activity separated by long pauses.
  - 4: slow, steady activity; frequent, brief pauses.
  - 6: moderate, steady activity; infrequent, brief pauses.
  - 8: rapid, steady activity; no regular pauses.
  - 10: rapid, steady activity; no pauses.
- Consider recovery time in and between cycles.

The Model

Postural Stresses

- Rated on a scale of 0-10.
  - 0: Only neutral posture observed.
  - 10: Extreme posture.
- Assess both "peak" and "average" ratings.
  - "Peak" = Worst posture observed during the cycle.
  - "Average" takes in to account severity and duration of postures.
- All potentially affected joints should be rated separately.

The Model

Forceful Exertions

- Rated on a scale of 0-10.
  - 0: Relaxed effort; fluid movements; no apparent resistance.
  - 10: Extreme effort.
- Assess both "peak" and "average" ratings.
  - "Peak" = Maximum observed exertion.
  - "Average" is dependent on length, frequency and magnitude of exertions. Should reflect force exerted over entire work cycle.

The Model

Localized Contact Stresses

- Mechanical stresses are produced by contact between body parts and work objects.
- Contact stress intensifies with increasing contact force and decreasing surface area.
- Rated on a scale of 0-10.
- Assess both "peak" and "average" ratings.
- "Average" is based on duration, frequency and intensity.
- Ratings reduced if gloves or other protective coverings used.

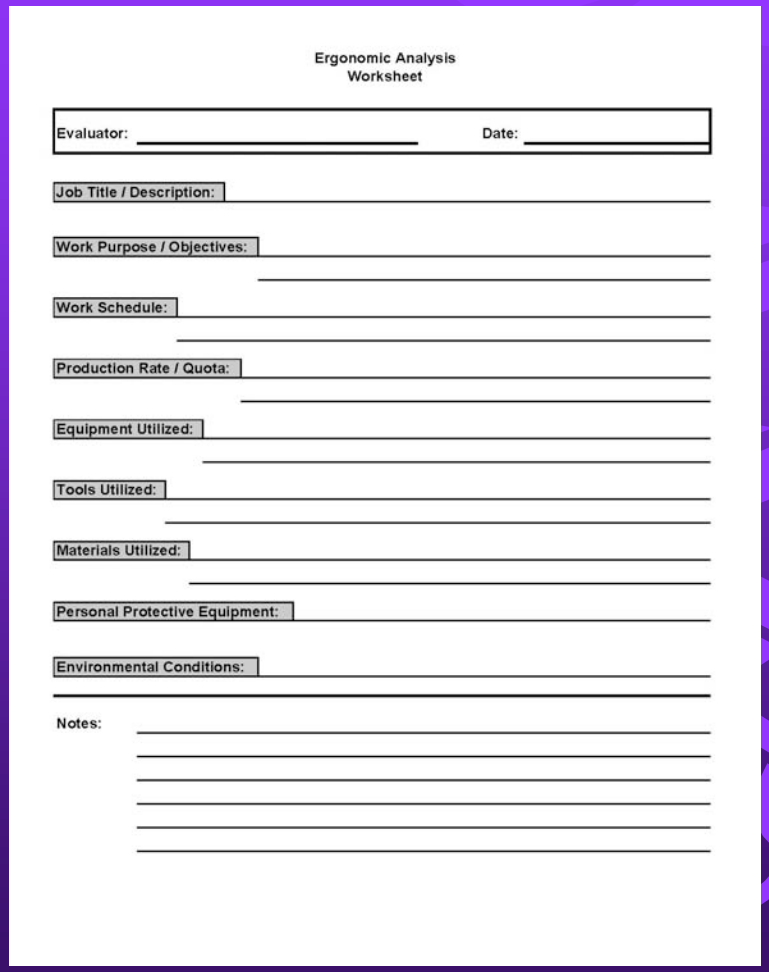
The Model

Miscellaneous

- Static Exertions (Rated 0-10)
- Vibration Exposure (Rated 0-10)
- Temperature Extremes

The Model

Worksheet



Ergonomic Analysis
Worksheet

Evaluator: _____ Date: _____

Job Title / Description: _____

Work Purpose / Objectives: _____

Work Schedule: _____

Production Rate / Quota: _____

Equipment Utilized: _____

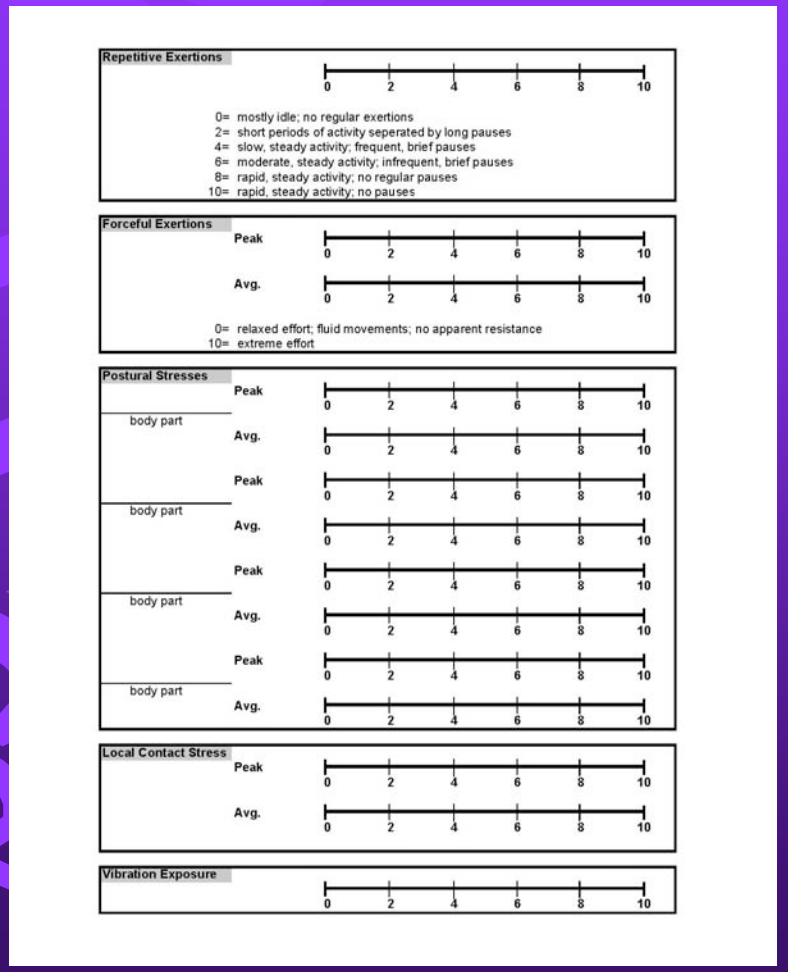
Tools Utilized: _____

Materials Utilized: _____

Personal Protective Equipment: _____

Environmental Conditions: _____

Notes: _____



Repetitive Exertions

0 2 4 6 8 10

0= mostly idle; no regular exertions
2= short periods of activity seperated by long pauses
4= slow, steady activity; frequent, brief pauses
6= moderate, steady activity; infrequent, brief pauses
8= rapid, steady activity; no regular pauses
10= rapid, steady activity; no pauses

Forceful Exertions

Peak 0 2 4 6 8 10

Avg. 0 2 4 6 8 10

0= relaxed effort; fluid movements; no apparent resistance
10= extreme effort

Postural Stresses

Peak 0 2 4 6 8 10

body part

Avg. 0 2 4 6 8 10

Peak 0 2 4 6 8 10

body part

Avg. 0 2 4 6 8 10

Peak 0 2 4 6 8 10

body part

Avg. 0 2 4 6 8 10

Peak 0 2 4 6 8 10

body part

Avg. 0 2 4 6 8 10

Local Contact Stress

Peak 0 2 4 6 8 10

Avg. 0 2 4 6 8 10

Vibration Exposure

0 2 4 6 8 10

Questions