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## ERGONOMIC MEDICAL CAUSATION ANALYSIS

Ergonomic medical causation analysis is a **medical and legal process** in which a set of job conditions or tasks are examined in order to determine whether those factors produced a **musculoskeletal injury or illness**.

Risk factors in the job – “**Job Hazards**” include:

1. Excessive **force**.
2. High **repetition**.
3. Non-neutral **posture**.
4. Excessive segmental (tool) or whole body **vibration**.
5. Excessive **cold temperature**.

Ergonomic medical causation analysis is performed by a medical professional (usually a physical therapist or occupational therapist) with formal training and work experience in **ergonomic principles, biomechanics, anatomy, physiology, and musculoskeletal disorders**.

Common musculoskeletal disorders often claimed to be work-related include:

- Low back strain/sprain.
- Neck strain/sprain.
- Carpal tunnel syndrome.
- Shoulder strain/rotator cuff syndrome.
- DeQuervain’s disease.
- Trigger finger.
- Tennis elbow.
- Tendinitis.

How the ergonomic medical causation analysis process works:

1. PT/OT (Ergonomic Analyst) performs **onsite visit** to:
  - a. Interview employer. (**job demands**, skills/training required, work shift).
  - b. Interview employee. (hand dominance, job demands, work history, **aggravating work tasks/factors**, work shift).

- c. **Observe** “injured worker” or similar employee perform their job in their normal fashion (typically 4-8 hours but can take 2 or more days depending on the job, video, and photos are obtained).
  - d. **Measure** force requirements, repetition, activity duration, range of motion requirements, and grip/pinch force and patterns.
2. The Ergonomic Analyst reviews all of the data gathered to generate a report with the primary objective of determining whether or not **risk factors** were present at a level sufficient to cause the claimed condition.
3. The ergonomic analysis report is reviewed by the treating physician and/or the company physician for a **medical opinion** regarding causation based on the ergonomic evidence.
  - a. The physician should balance any **job risk factors with disease processes and/or lifestyle habits/hobbies** that exist in the worker.

Risk factors in the worker – “**Co-morbidities**” include:

1. Obesity.
2. Arthritis.
3. Diabetes.
4. Aging.
5. Other conditions: hypothyroidism, renal disease, menopause, pregnancy.
6. Behavioral issues: poor fitness, smoking, secondary employment, risky hobbies, alcohol and drug abuse.

The ergonomic analyst utilizes **peer-reviewed and published ergonomic assessment guidelines** based on the body part, characteristics of the job, and the risk factors to be assessed. At least one qualitative and at least one quantitative ergonomic assessment guideline is used for co-validation of the results of the analysis.

Ergonomic assessment guidelines supported by peer-reviewed literature include:

1. Revised NIOSH Lifting Equation.
2. Rapid Entire Body Assessment.
3. Washington State Ergonomics Guidelines.
4. Rapid Upper Limb Assessment.
5. Rodgers Muscle Fatigue Assessment.
6. Threshold Limit Values for Hand Activity Level.
7. Data Entry Assessment Guidelines.