

**OSC 12**  
Ohio Safety Congress & Expo

**WELL AT HOME. SAFE AT WORK.**

**391 Injury Prevention: Upper Extremity Below the Shoulder**

Pat Carey, PT

Wednesday, March 28, 8:30 to 9:30 a.m.

**Ohio** Bureau of Workers' Compensation

**Continuing Nursing Education Disclosures**

- o **Goal:** To educate conference attendees on specific aspects of accident prevention and Ohio's workers' compensation system
- o **Learning objectives for session # 391 Injury Prevention: Upper Extremity Below the Shoulder:**
  - Recognize ergonomic factors which contribute to injury
  - Identify risk factors that contribute to upper extremity injury
  - List methods to reduce upper extremity injury
  - Discuss the stretching exercise program for upper extremity
- o **Criteria for Successful Completion:** Attend the entire event and complete a session evaluation.
- o **Conflict of Interest:** The planners and faculty have **no** conflict of interest.
- o **Commercial Support:** There is no commercial support for this event.
- o **Continuing Education:** Awarded 0.1 IACET general CEUs and 1.0 RN\* contact hour.

\*The Ohio BWC (OH-18801-01-2013) is an approved provider of continuing nursing education by the Ohio Nurses Association (ONA-001-91), an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.

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**INJURY PREVENTION:  
UPPER EXTREMITY  
BELOW THE SHOULDER**

MERCY INDUSTRIAL REHABILITATION  
LORAIN, OHIO

OSC12 Pat Carey P.T. Session 391

**OBJECTIVES**

- 1. Recognize ergonomic factors which contribute to injury
- 2. Identify risk factors that contribute to upper extremity injury
- 3. List the methods to reduce upper extremity injury
- 4. Discuss and demonstrate stretching exercise program for upper extremity

JOHN RUSKIN QUOTE:  
(1819-1900)

- In order that people may be happy in their work, these three things are needed:
  - 1. They must be fit for it.
  - 2. They must not do too much of it.
  - 3. And they must have a sense of success in it.

**ONE MORE QUOTE:**

- Insanity: doing the same thing over and over again and expecting different results
- Albert Einstein

**SOME CAUSES OF MSDS**

- 1. Poor work area design
- 2. Inadequate tools
- 3. Poor postural control
- 4. High force (> 4 kg) + high reps (> 900x per work day) with same movements
- 5. Few fatigue breaks
- 6. Poor job match to the worker
- 7. Worker's general health and level of fitness
- 8. Age and strength
- 9. Women versus Men

**COMMON MSDS**

- 1. Non specific elbow/hand /wrist pain
- 2. Tendonitis (higher among worker with < 3 years employment)
- 3. Tenosynovitis
- 4. Ganglion cysts
- 5. Trigger fingers/thumb
- 6. Carpal tunnel (average age is 55 years old)

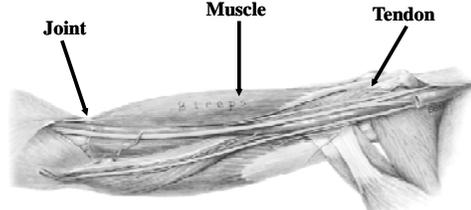
• Average cost of all MSDS is \$45-\$54 billion

**Thoracic Outlet**

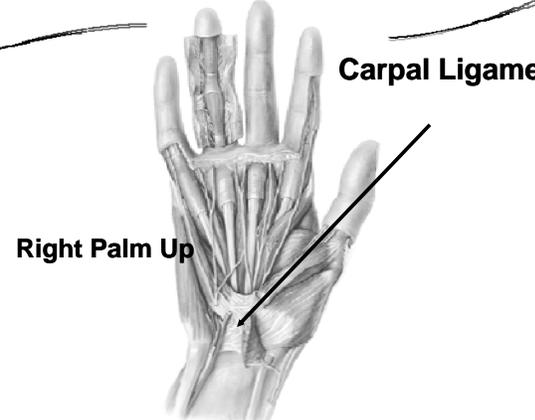


**Nerves and Blood Vessels Pass Through Neck Structures**

**Muscle Contraction**



**Reduces Blood Supply To Tissues**



**Right Palm Up**

**Carpal Ligament**

**WHERE TO START??      WHAT INJURIES??**

- 1. Look at your injury records, OSHA logs, safety meetings
- 2. Find out where/when/what type of injuries
- 3. Are there patterns?
- 4. Do the injuries involve equipment/processes
- 5. Get input from the employees
  - They often have good suggestions

## EQUIPMENT

- 1. Preventative Maintenance Records
- 2. If using “guns” or drills have they been calibrated lately?
- 2. Are the employees using the correct tool for the job?
- 3. Just because it is “ergo” equipment does not mean injury free
- 4. Input from employees

## JOB DESCRIPTIONS

1. Generic descriptions
2. Detailed descriptions
  - a. Forces used
  - b. Work heights
  - c. Lifting requirements from where to where
  - d. Postures: sit/stand etc.
  - e. Repetitions
  - f. Pictures/video
3. Identified high risk work vs low risk work

## WHAT JOB DESCRIPTIONS CAN DO FOR YOU

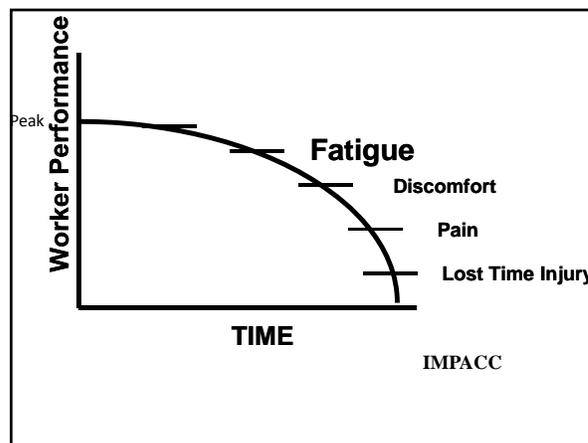
1. CLEARLY DETAIL THE JOB AND IDENTIFY RISK FACTORS
2. CLEARLY IDENTIFY PROCEDURES AND MAKE THEM UNIFORM
3. CAN IDENTIFY JOB ROTATION SITUATIONS
4. GIVE IMPORTANT INFORMATION TO MEDICAL STAFF
5. ASSIST WITH TRANSITIONAL WORK
6. USE FOR DEVELOPMENT OF POST OFFER SCREENS OR RETURN TO WORK SCREENS.

## EDUCATION

- 1. Highly recommend a quality U/E injury prevention education program for employees as well as management
- 2. Management must be committed to the program
  - a. Listen to complaints, really listen
  - b. Provide support
- 3. P.T./O.T./Nursing can also help

## IMPACC UPPER EXTREMITY SCHOOL

1. Management school
  - a. Discusses more in depth about specific MSDS
  - b. Goes through the empowerment process
  - c. May see an increase in soft tissue complaints from employees at first (don't panic)
2. Employee school
  - a. Industrial athletes
  - b. Responsibilities to self and family
  - c. Need to do fatigue reducing exercise THROUGH OUT THE DAY



- 3. Reinforcement

1. Can be provided by P.T./O.T./Nurse/Safety
2. Expectation is that the information that was taught will be demonstrated i.e. exercises
4. Beckett example
  1. Weekly P.T. visits with write up
  2. Incident reports sent via E-mail
  3. More serious, a phone call
  4. Obviously very serious, ER/Doctor visit

### SOME OTHER CONSIDERATIONS

- 1. Cross Train for different jobs
  - i.e. shop versus assembly
- 2. Job Rotation
  1. Limit time on forceful or difficult jobs to ones that are less taxing
  2. When to rotate?
- 3. Avoid incentives for no reported injuries (recordables)
  - Instead reward the employees as a whole for their commitment to the program

- 4. Promote wellness as a whole
- 5. Set up some lighter duty jobs
- 6. Transition new employees
- 7. Employees who have been absent for an extended time offer transitional work program (work and non-work related)
- 8. Hydration is a must during summer
- 9. Older work force considerations

### SPLINTS AND SUPPORTS

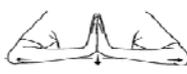
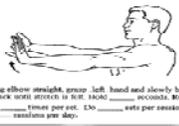
- 1. Should be given after evaluation and careful consideration
- 2. Should not be restrictive
- 3. Must not take the place of stretching
- 4. Use when having discomfort
- 5. Counter force brace for the elbow
- 6. Anti vibration gloves
- 7. Proflex wrist support
- 8. Coolmax thumb wraps
- 9. Rigid splints at night for sleeping

### ON THE JOB STRETCHING

- 1. Should be done every 1-2 hours
- 2. Repeat each stretch 3-5 times
- 3. Should feel stretch, NOT pain
- 4. Hold for count of 10
- 5. Remember these are anti-fatigue exercises, designed to increase the blood flow to the area





<p><b>HAND - 14 Wrist Flexion Stretch</b></p>  <p>Keeping elbow straight, grasp left hand and slowly bend wrist toward until neutral is felt. Hold _____ seconds. Relax.</p> <p>Repeat _____ times per set. Do _____ sets per session. Do _____ sessions per day.</p>	<p><b>HAND - 14 Wrist Flexion Stretch</b></p>  <p>Sitting with elbows on table and palms together, slowly lower wrists so table will stretch in fish. Keep palms together throughout the stretch. Hold _____ seconds. Relax.</p> <p>Repeat _____ times per set. Do _____ sets per session. Do _____ sessions per day.</p>
<p><b>HAND - 12 Wrist Flexion Stretch</b></p>  <p>With palms facing, unambiguously on table, slowly lower body over hands until gentle stretch is felt in forearm. Hold _____ seconds. Relax.</p> <p>Repeat _____ times per set. Do _____ sets per session. Do _____ sessions per day.</p>	<p><b>HAND - 12 Wrist Flexion Stretch</b></p>  <p>Keeping elbow straight, grasp left hand and slowly bend wrist back until stretch is felt. Hold _____ seconds. Relax.</p> <p>Repeat _____ times per set. Do _____ sets per session. Do _____ sessions per day.</p>
<p><b>CERVICAL SPINE - 23 Flexibility: Upper Trapezius Stretch</b></p>  <p>Gently grasp right side of head while reaching behind back with other hand. Tilt head away until a gentle stretch is felt. Hold _____ seconds.</p> <p>Repeat _____ times per set. Do _____ sets per session. Do _____ sessions per day.</p>	<p><b>FINGER - 34 Flexor Tendon Gliding (Active Hook Fist)</b></p>  <p>With fingers and knuckles straight, bend middle and tip joints. Do not bend base knuckles.</p> <p>Repeat _____ times. Do _____ sessions per day.</p>

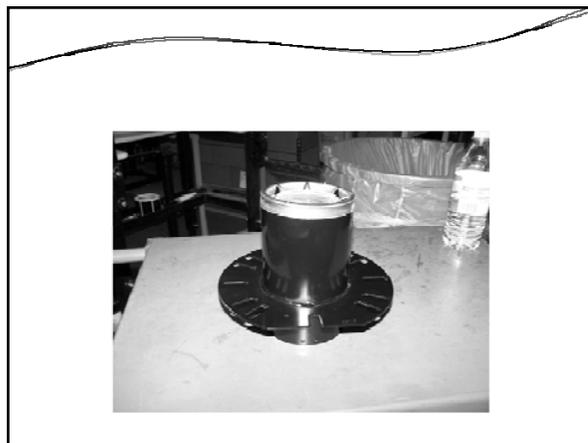
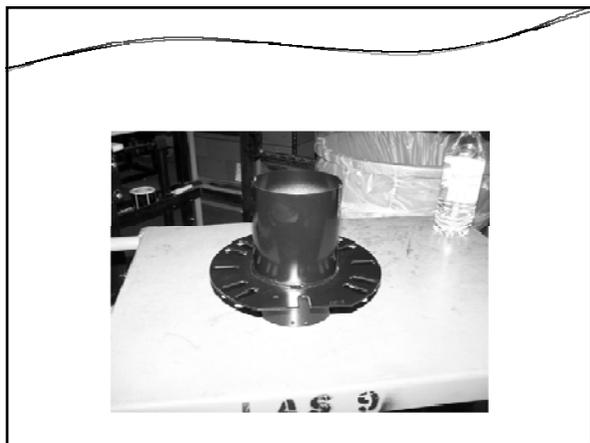
<p><b>FINGER - 35 Flexor Tendon Gliding (Active Straight Fist)</b></p>  <p>Start with fingers straight. Bend knuckles and middle joints. Keep fingertip joints straight to touch base of palm.</p> <p>Repeat _____ times. Do _____ sessions per day.</p>	<p><b>FINGER - 34 Flexor Tendon Gliding (Active Full Fist)</b></p>  <p>Straighten all fingers, then make a fist, bending all joints.</p> <p>Repeat _____ times. Do _____ sessions per day.</p>
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**FIRST AID**

- 1. Ice (packs, or ice cups)
- 2. Massage
- 3. Stretch
- 4. Alter activity
- 5. Anti-inflammatories

### CASE SENARIO

- Over the last two weeks there has been an increase of complaints of pain of the upper shoulder and elbows.
- Several employees are reporting the same complaints
- When asked, the employees report that they are having to use a rubber mallet to “bang on” the heads onto the air tubes.
- The holes between the head and tube are not lining up
- This is not a normal occurrence.
- The employees have reported this their supervisors, however the problem is still there.
- WHAT DO YOU DO?

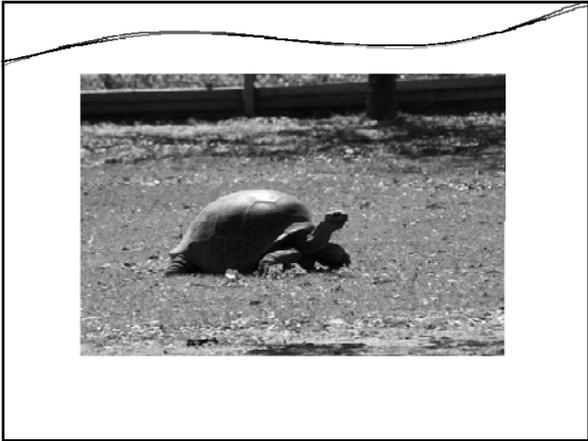


### SPECIAL THANKS

- To RW Beckett Corporation of North Ridgeville, Ohio for allowing the pictures and the use of their case scenario for the purpose of this lecture.

### REFERENCES

- IMACC USA Upper Extremity School
- Musculoskeletal Disorders in the Workplace
- Principles and Practice, 2<sup>nd</sup> Edition 2007
- Nordin, Andersson, Pope
- The Aging Workforce



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