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# AAOHN NATIONAL CONFERENCE



ORLANDO, FLORIDA

ROSEN SHINGLE CREEK

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# **An OHN's Guide to Strength and Mobility to Reduce Risk of Occupational Injury**

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# About Me



# Disclosure

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**The American Association of Occupational Health Nurses, Inc. (AAOHN) is accredited as a provider of nursing continuing professional development by the American Nurses Credentialing Center's Commission on Accreditation.**

# What's in this for Me?

My goal is to equip each of you with strength and mobility techniques you can teach your workforce to reduce risk of occupational injury.

# Session Objectives

- Define the physiological rationale behind incorporating strength and mobility exercises for reducing risk of injury
- Identify common musculoskeletal disorders prevalent in various workplace settings
- Demonstrate practical, adaptable strength and mobility exercises suitable for your workplace

# Session Objectives

- Have some fun



# “The Proactive Practitioner”

Can taking a proactive, non-traditional approach of incorporating strength and mobility training in the workplace help decrease risk of injury?

Can it go beyond that?

# Proactive Vs. Reactive

You don't need to be a certified fitness coach, you are trained to see the problems

- Poor posture
- Poor body mechanics
- Repetitive Motion
- Stress/Fatigue
- Sedentary Work

Me: why does my back hurt?

Also me:



# Objective 1

Define the physiological rationale behind incorporating strength and mobility exercises for reducing risk of injury



# The Cost of Motion

**When Does Injury Occur?**

**Injury occurs when applied load exceeds tissue capacity**



# The Cost of Motion

Musculoskeletal Disorders (MSDs) account for roughly 33% of all worker injury and illness cases

The Bureau of Labor Statistics (BLS) January 2026 Injury Report

- Overexertion, Repetitive Motion, Bodily Conditions
- Falls, Slips, Trips

([https://www.bls.gov/news.release/archives/osh\\_01222026.htm](https://www.bls.gov/news.release/archives/osh_01222026.htm))

# Modern Biomechanics-Cumulative Trauma Model

**Cumulative trauma** - injuries that result from repetitive stress or strain over time, rather than a single acute event. This repeated microtrauma accumulates in body tissues eventually causing pain, dysfunction, and/or injury.

The **cumulative trauma model** explains how repeated small stresses to the body's tissues—such as muscles, tendons, and nerves—can gradually lead to MSDs.

# Modern Biomechanics-Cumulative Trauma Model

## Mechanism:

- Repetitive movements, poor postures, or sustained force cause microscopic damage.
- Frequent or prolonged exposure overwhelms the body's repair ability.
- Leads to inflammation, pain, and chronic conditions (e.g., tendinitis, carpal tunnel, low back pain).

# Modern Biomechanics-Cumulative Trauma Model

## Examples in the Workplace:

- Prolonged typing: wrist/hand injuries (carpal tunnel)
- Repeated lifting/bending: back injuries
- Daily use of vibrating tools: hand/arm injuries

# Modern Biomechanics-Cumulative Trauma Model

**Cumulative trauma injuries** are also known as repetitive strain injuries (RSIs) or overuse injuries.

- Common in jobs requiring repetitive tasks, prolonged static postures, or frequent forceful movements.

[\(NIOSH: Musculoskeletal Health Program\)](#)

# Why the Cumulative Trauma Model Matters

- **Explains Risk:** Shows how repeated minor stresses or movements can lead to injury over time.
- **Identifies Patterns:** Helps recognize movement patterns that contribute to chronic pain or dysfunction.
- **Guides Prevention:** Shifts prevention from focusing on isolated events to understanding and mitigating the effects of repeated trauma
- **Promotes Health:** Supports long-term musculoskeletal health and reduces the risk of overuse injuries.

# The Joint-by-Joint Approach

- Developed by Mike Boyle (renowned strength/conditioning coach) and Gray Cook (physical therapist/conditioning specialist, FMS creator).
- Views the body as a series of joints, each with a primary need for **mobility** or **stability**.
- The body alternates between needs for stability and mobility
- These needs alternate as you move up the body.

# The Joint-by-Joint Approach-Mobility vs. Stability (Joint Sequence)

**Ankle:** Mobility

**Knee:** Stability

**Hip:** Mobility

**Lumbar Spine:** Stability

**Thoracic Spine:**

**Shoulder-Scapula:**

**Shoulder-Joint:**

**Elbow:**

**Wrist:**

- If a mobile joint loses mobility, a stable joint compensates—leading to pain or injury.

# The Joint-by-Joint Approach- Why It Matters

- Helps identify and address movement dysfunctions.
- Help us reduce risk of injury and aid rehabilitation.
- Supports better movement, performance, and long-term joint health

# Flexibility vs. Mobility

## Flexibility

Stretch tolerance of a muscle

## Mobility

Active control over a joint's range of motion (strength + flexibility)



## Objective 2- Identify common musculoskeletal disorders prevalent in various workplace settings

**Doctor: Are you feeling any pain?**  
**Me: Only the normal amount**  
**Doctor: The normal amount is zero**  
**Me:**



# Identify Common MSDs - The Big 3

**Posterior Chain/Lower Back(Lumbar Spine)**



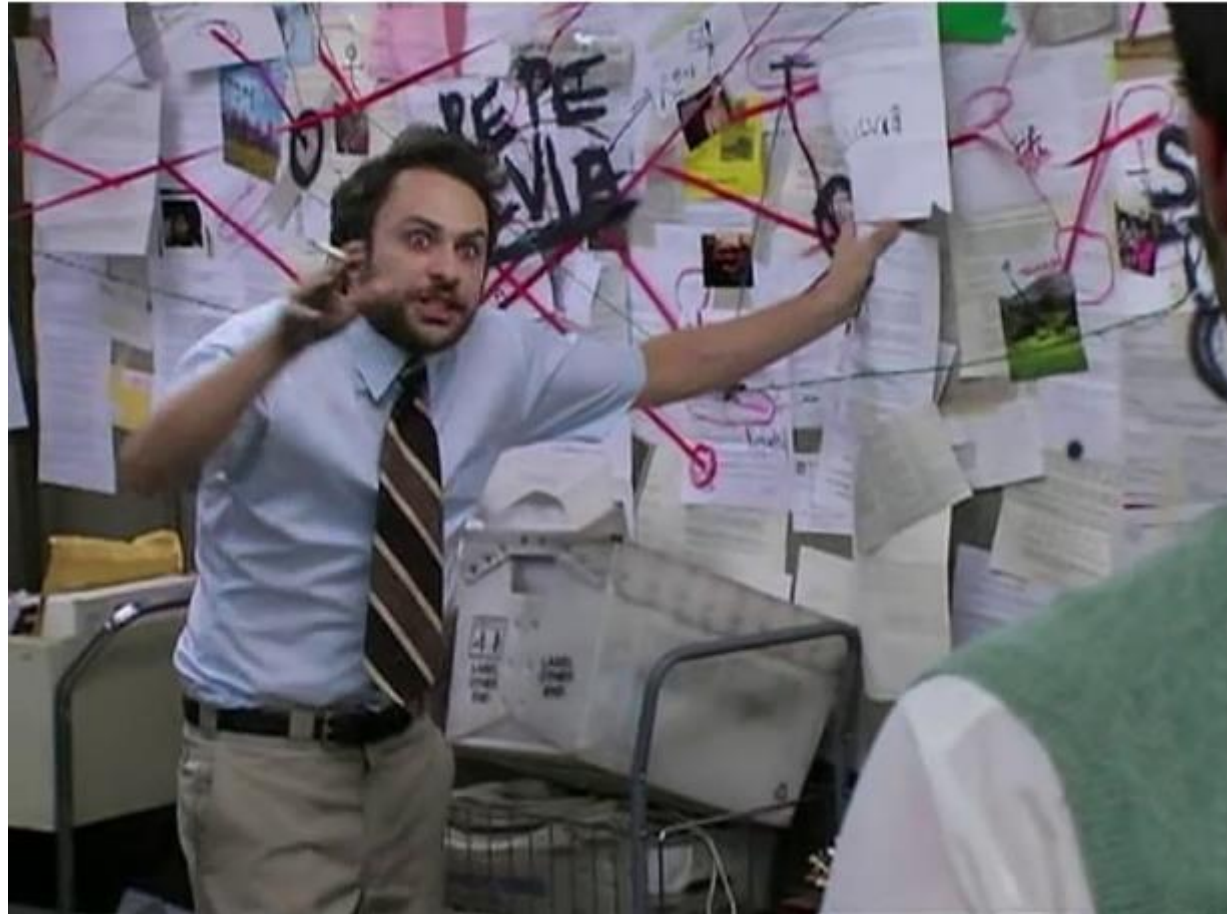
**Shoulders(Rotator Cuff/Impingement)**



**Wrists/Forearms(Carpal Tunnel/Tendonitis)**



# Now What?



# Assessment & Planning

## **Conduct Workplace Risk Assessments:**

Identify high-risk tasks, common MSDs, and ergonomic hazards.

## **Survey Workers:**

Gather feedback on current activity levels, pain points, and interest in exercise programs—know your workers and what they need—not just what you are interested in.

## **Leadership:**

Engage with early, frame as “**RISK** management” vs “wellness”.

## **Set Goals:**

Reduce MSD incidence, increased worker participation.



# Program Design

## 1. Choose appropriate mobility and strength exercises

- Tailor routines for common MSDs or worker interest

## 2. Structure your program--Virtual and In-Person

- Posters, handouts, TEAMS, emails detailing common MSDs and reduction of risk strategies
- Classes, workshops, training sessions, pre-shift sessions

## 3. Schedule your programs

## 4. Make it fun/competitive

# Micro Breaks/Movement Snacks

- **20/20/20 rule for physical movement**
- **Exercises/Mobility every hour**  
incorporate an hourly (top of the hour, quarter till) “workout” you can do at your duty station (squats, lunges, push-ups)
- **Use everyday opportunities**  
Take the stairs, calf raises while on the elevator, mobility while waiting for coffee to brew
- **Use reminders (alarms, software prompts, posters).**

# Implementation

## **Group Strength/Mobility Sessions:**

Lead daily or weekly group strength and mobility exercise sessions before shifts or during breaks.

## **Integrate Into the Shift/Meetings:**

Begin shifts/meetings with a brief strength or mobility exercise.

# Promote a Culture of Movement

**Leadership endorsement**

**Leading by example**

# Monitoring & Feedback

## **Track Participation:**

Use sign-in sheets or digital tracking for group sessions.

## **Monitor Injury Rates:**

Compare MSD incidence before and after program implementation.

## **Solicit Feedback:**

Regular surveys to refine program and address barriers.

# Sustainability & Improvement

## **Refresh Exercise Routines:**

Update exercises periodically to maintain engagement.

## **Recognize Participation:**

Offer incentives or recognition for regular involvement.

## **Continuous Education:**

Provide ongoing training and updates on best practices.

# Overcoming Barriers

- **Leadership “buy-in”**
- **Worker “buy-in”**
- **Time Constraints**
- **Budget (free resources!)**

# Overcoming Barriers-Legal Issues

- **Liability and Injury Risk**
- **ADA Compliance**
- **Discrimination**
- **Workers' Compensation**
- **Consent and Voluntariness**
- **Use of Facilities and Equipment**

## **Recommendation:**

Consult your agency's legal counsel or HR department before launching any workplace strength/mobility program to ensure compliance with all relevant laws and policies.

# Measuring Success

**Leading indicators-Proactive (participation rates)**

**VS**

**Lagging indicators-Reactive (reduced injury rates)**

# Train the Trainer - Objective 3

Demonstrate practical, adaptable strength and mobility exercises suitable for your workplace

One day you are young and wild and the next :



# Train the Trainer - Objective 3

## Strengthening the Posterior Chain/The Core as a Stabilizer

- “Glute Amnesia”
- Hip Flexors
- Weak Core
- Hamstrings
- Calves

# Posterior Chain Exercises

Bird-Dogs

Cat/Cow

Planks

Push-Ups

Hip Flexor Stretch

Glute-Bridges

Romanian Deadlift (RDL)

Lunges

Calf Raises

**Do 5-10 reps/1 set in a session**

\*single leg

# Train the Trainer - Objective 3

## Upper Body Resilience

- Weak Rotator Cuff/Scapular Stabilizers
- Tight Chest Muscles
- Imbalances between Internal and External Rotators
- Poor Upper Back Strength
- “Desktop Hunch”

# Upper Body Exercises

Swimmers

Thoracic Rotations

Pec Stretch

Wall Angels

Child's Pose

Page Openers

Down Dog

**Do 5-10 reps/1 set in a session**

# Train the Trainer - Objective 3

## Importance of Grip

- Weak Forearm Muscles
- Muscle Imbalances
- Tight Forearm Muscles
- Weak Grip Muscles
- Poor Mobility

# Carpal Tunnel/Tendonitis Exercises and Stretches



Wrist Flexion Stretch

Wrist Extension Stretch

**1x AM**

**1x PM**

Gentle Fist and Fan Stretch

**5-10 reps/2-3 sets**

Hand Squeeze Strengthening (grip strength)

## Mobility & Strength Stretches for the Shoulders, Knees & Ankles.

Keeping joints strong and mobile can help:

- Reduce Risk of Injury
- Improve Mobility/Daily Function/Quality of Life
- Alleviate Stiffness
- Improve Physical Performance

### 1. Wall Angel

**Why:** Improves shoulder mobility and range of motion

**How:** Stand with your back and head against the wall, knees slightly bent, feet 6-12" from wall. Form a "W" shape with your arms, and place your elbows, forearms, and backs of hands on the wall or as close to the wall as possible. Slowly slide your arms up the wall, keeping your head, back, and arms in contact with the wall or as close as possible. Slide your arms back down to the starting position. Stop stretch if you feel any pain. Repeat 5-8X

### 2. 90/90

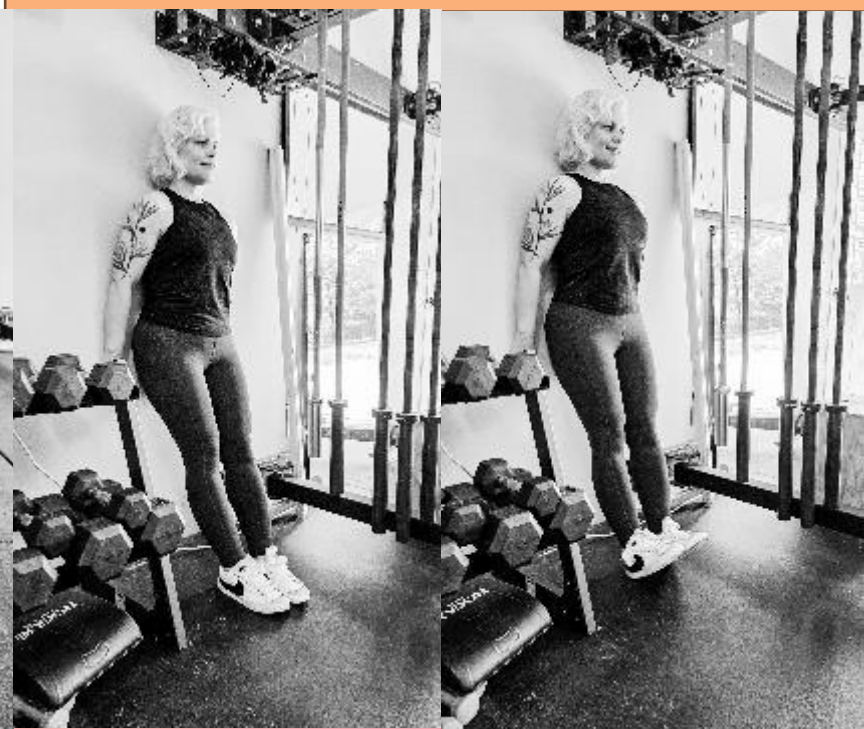
**Why:** Improves knee and hip flexibility

**How:** Sit with 1 leg bent in front of you at a 90-degree angle and the other leg bent behind you at a 90-degree angle. Lean forward if you want to deepen the stretch. Hold for 20 seconds, switch legs.

### 3. Tibialis Raise

**Why:** Strengthening this muscle can enhance ankle stability and mobility

**How:** Stand with your head and back flat against the wall, feet 6-12" from wall. Slowly with control, raise your toes and forefoot off the ground. Hold at the top for a few seconds and slowly, with control lower toes back down to floor. Repeat 10x



# Sample Class

Head/Shoulders/Knees/Toes Class

Neck Stretch (shoulder to ear)

Chin Tuck (chin to chest)

Upper trapezius stretch

Cross body shoulder stretch

Chest openers

Stir the pot

Eagle arms

Quad stretch

Squat sit

Calf raises 3 ways

Cat/cow

Down dog

Seated twist

Seated forward fold

Child's pose

Leg's up wall/waterfall

# Conclusion- Summary

1. Define the physiological rationale behind incorporating strength and mobility exercises for reducing risk of injury
2. Identify common musculoskeletal disorders prevalent in various workplace settings
3. Demonstrate practical, adaptable strength and mobility exercises suitable for your workplace

# Conclusion- Key Takeaways

## Other benefits:

- Boosts morale, energy and focus
- Supports metabolism and cardiorespiratory fitness
- Improves blood flow and circulation
- Reduces muscle stiffness

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# Resource Links

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# Conclusion

Q&A

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