



NATIONAL WORKERS
COMPENSATION
AND DISABILITY
CONFERENCE

Are We Driving the Model of Employee Health Without a Locomotor?

It's Time to Take Musculoskeletal Health Mainstream

**Presented by:
Concentra and Dominion Energy**

Today's Speakers



Chris Studebaker
DPT, OCS, PT
National Director of Onsite
Therapy and Athletic
Trainers
Concentra



Shelby Mendez
DPT, PT, FAAOMPT, CSCS
Director of Therapy
Operations, East Florida
Concentra

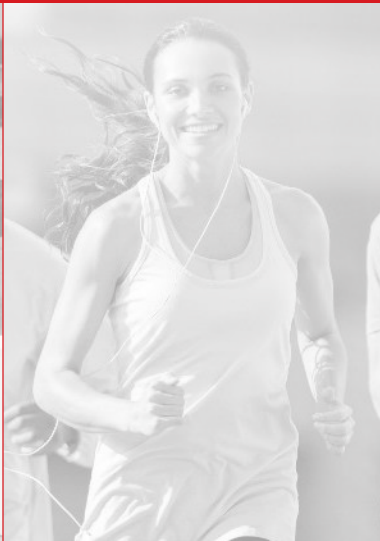


Jason Gambill
Manager of Electric Safety
and Training
Dominion Energy

Agenda



**Musculoskeletal
injuries:
Common and
costly**



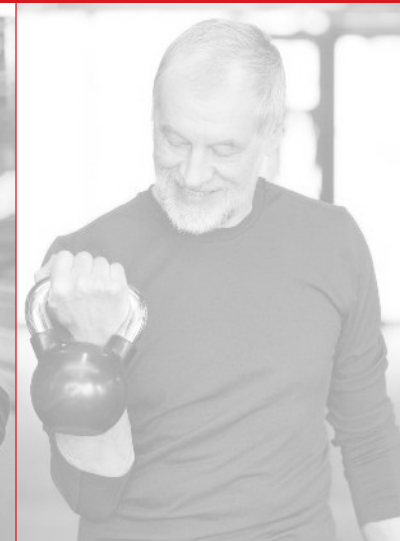
**Link between
employee health
and work injury**



**The work
injury cycle**



**Employer-based
strategies**



**A new model of
musculoskeletal
health**

Musculoskeletal injuries: Common and costly

- Overview
- Injury occurrence, rate, and severity
- High cost of musculoskeletal injuries
- Musculoskeletal disorders – workplace contributors

Overview

In May 2020, the Bureau of Labor Statistics reported that in 2018:

Musculoskeletal injuries accounted for 30 percent of total days away from work (DAFW) – 272,780 out of 900,380.



Industries most affected were **retail trade, manufacturing, and health care and social assistance**, which represented **50 percent of all musculoskeletal injury cases.**

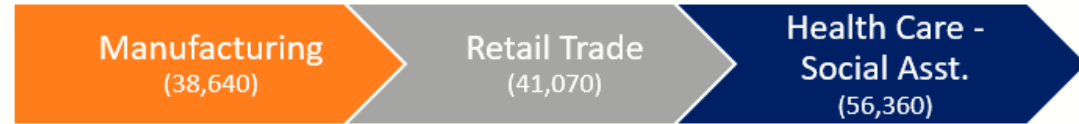
Injury occurrence, rate, and severity

Most common:

- Sprains, strains, and tears
- Back injuries
- Lifting injuries
- Cumulative trauma disorders

At right, leading industries for number of injuries, rate, and severity.

Number of MSD injuries



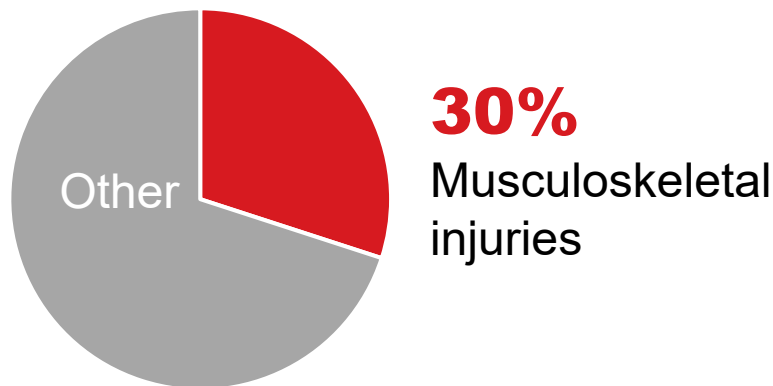
Incidence rates



Median DAFW



High cost of musculoskeletal injuries



Musculoskeletal injuries are the single largest category of injuries and are responsible for about **30 percent of total workers' compensation costs.**

\$50B
Direct costs

\$250B
Indirect costs

Direct MSD costs are estimated at **\$50 billion with indirect costs five times higher.**

Musculoskeletal disorders – workplace contributors

Extended Sitting

- Weaken back muscles
- Induces poor posture and muscle imbalance

Extended Standing

- Requires 20 percent more energy
- Strains legs, feet and the circulatory system
- Use breaks and anti-fatigue mats/footwear

Effects of Vibration⁴

- Associated with MSDs
(whole-body and hand-arm vibration)
- Awkward postures also contribute

Chemical and Heat Effects⁵

- Neuromuscular and musculoskeletal function affected. May reduce physical performance.

Poor Lighting¹

- Visual discomfort
- Lethargy
- Back, neck and shoulder pain
- Decreased alertness
- Decline in work performance

Link between employee health and work injury

- Overview
- Research: fitness and proper conditioning
- Smoking: risk of injury and severity
- Diabetes and musculoskeletal disorders
- Obesity and musculoskeletal injury, costs
- Medications and adverse reactions

Overview

Most injuries:

Laborers, material movers, nurse assistants

Highest median DAFW:

Truck drivers

Almost same injury rates:

Ages 45-to-54 and 55-to-64

Injury area:

Low back. High absenteeism, medical and economic costs, disability, and lost productivity²

COVID-19 lockdowns:

Significantly increased low back pain, especially among the 35-to-49 age group³

Research: fitness and proper conditioning

**A five-year study¹
found that low-fit
firefighters were:**

- Twice as likely to be injured
- Had more sprains, strains, and other musculoskeletal injuries
- Were injured two years sooner than fitter firefighters
- Were more susceptible to microtraumas
- Were likely to recover slower than their fitter counterparts

Research: fitness and proper conditioning

Cumulative microtraumatic tissue damage leads to an **85 percent higher** incidence of limited duty than acute traumatic injuries.²

Proper conditioning and injury prevention are closely linked. Strength training **reduces** sports injuries to **less than one third** and repetitive injuries **by almost half**.³

Smoking: risk of injury and severity

People who smoke are likely to experience:

- Rotator cuff tears twice as large as non-smokers
- Overuse injuries 1.5 times more often
- More sprains, fractures, and other traumatic injuries
- Higher risk of low back pain and rheumatoid arthritis
- Longer musculoskeletal injury healing time
- Post-surgery complications

- American Academy of Orthopedic Surgeons

Diabetes and musculoskeletal disorders

Research has established a diabetes-MSD link.¹

14-month study: With diabetes, **34 percent more** musculoskeletal disorders – higher with T2DM.

Other studies: More chronic lower back pain and upper extremity MSDs compared to nondiabetic adults.

American Diabetes Association recommends

150 minutes weekly

aerobic exercise,
resistance training

Obesity and musculoskeletal injury, costs

Obesity – greater likelihood of developing musculoskeletal conditions, particularly in the lower extremities and among employees with low physical workload.¹

Rate of injury for overweight employees (vs. normal-weight counterparts)²:

1.42 times higher – back injuries

1.53 times higher – non-back musculoskeletal injuries

Obesity and musculoskeletal injury, costs

A study of probation officers concluded obesity is associated with a higher likelihood of repeat work-related musculoskeletal injury and lower levels of physical activity³

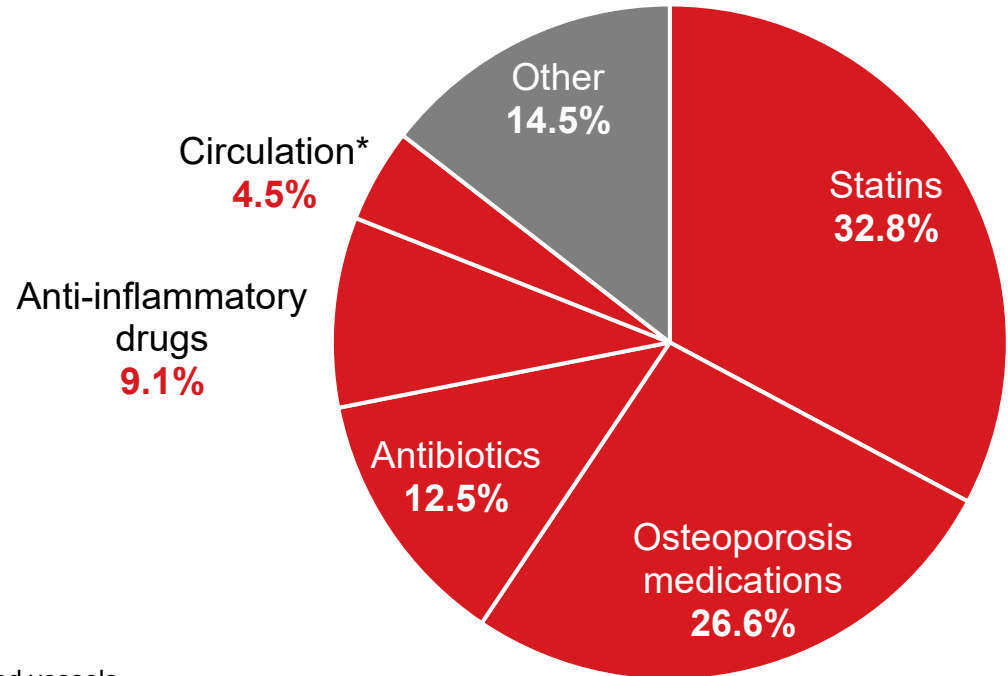
In 2010, the annual cost of obesity among fulltime employees was **\$73.1 billion**.⁴

Most obese individuals (>35 BMI) represented **37 percent** of the obese population but **61 percent** of excess costs.⁴

Medications and adverse reactions

Musculoskeletal adverse drug reactions can range from temporary (cramps) to serious and life threatening (rhabdomyolysis).¹

Ten drugs in these categories represent 85.5 percent of musculoskeletal adverse drug reactions (ADRs):¹



* Angiotensin II receptor blockers to counteract narrowing of blood vessels

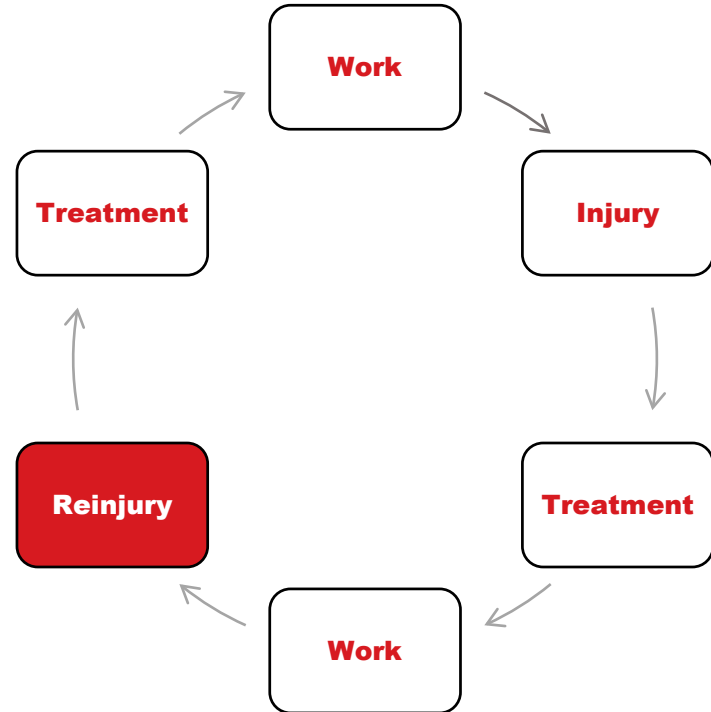
The work injury cycle



The cycle that needs to change

- Reaction mode may work for an isolated injury but fails to...
- Address underlying causes, prevent reinjury.

Physical therapists and athletic trainers are a prevention strategy to end the work injury cycle.



Employer-based strategies

- **Prevention**
 - Pre-employment functional testing
 - Musculoskeletal screening
 - Early reporting programs
 - Pre- or intra-shift exercise programs
- **Worksite health promotion**

Pre-employment functional testing

Quantifying employee capabilities to handle physical work tasks requires a well-designed assessment format

Human Performance Evaluation:

- Designed for a specified job based on objective measures of specified job tasks
- Used for post-offer, pre-placement assessment
- May also be used for acute post-injury, return to work assessment

Musculoskeletal screening

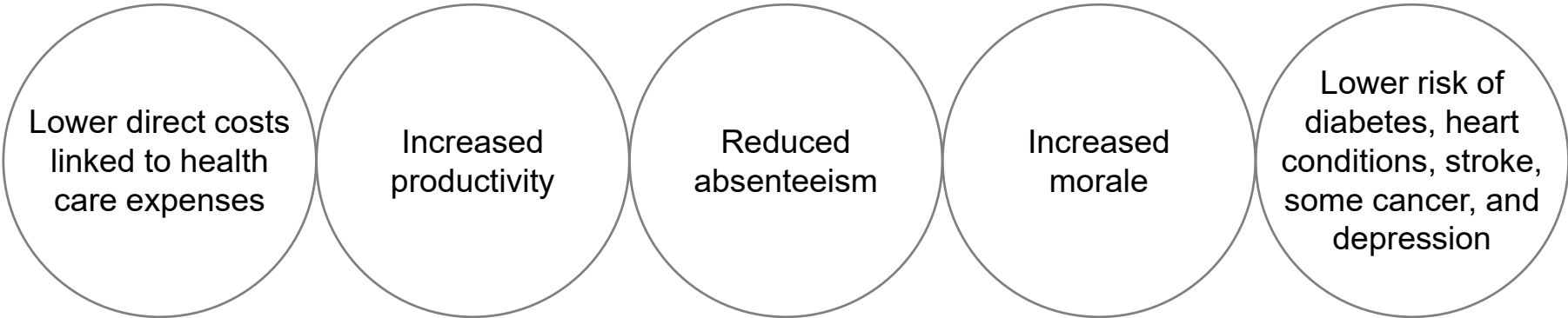
- For musculoskeletal injury prevention programs
- For new hires, annually, or episodically
- Based on either a musculoskeletal scoring system (police, fire, military, and athletes) or simple movements tests (sit-and-reach, shoulder scratch test, etc.)
- May include numerical rating of strength, flexibility, and balance followed by customized consultations to enhance deficits in these areas
- Proactive – rather than reactive – approach

Early reporting programs

- Earlier identification potentially reduces cost and duration of recordable musculoskeletal injuries
- Includes direct symptom evaluation, first aid-level interventions, medical assessment
- May include incident investigation, work task and medical history review, work rotation planning, and education

Pre- or intra-shift exercise programs

Worksite exercise programs, regardless of size, resources, setting, and type, provide benefits, the [CDC](#) says, including:



Lower direct costs
linked to health
care expenses

Increased
productivity

Reduced
absenteeism

Increased
morale

Lower risk of
diabetes, heart
conditions, stroke,
some cancer, and
depression

Worksite health promotion

- Gym memberships | on-site gyms
- Musculoskeletal screens and interventions
- Wearable devices, activity challenges
- Massage events
- Healthy meal options and subsidies



A new model of musculoskeletal health

- Physical activity guidelines
- Parts of the body to focus on
- Alternative interventions
- Self-directed musculoskeletal health compliance
- Answer: On-site physical therapist/athletic trainer

Physical activity guidelines



Each week
150minutes

of moderate-intensity
aerobic activity



2X or more
days weekly

muscle-strengthening activities
that work all major muscle groups

Parts of the body to focus on

Major muscle groups

- Chest
- Shoulders
- Back
- Legs
- Arms
- Calves

Body regions

- Back
- Abdomen
- Shoulder
- Multiple Parts
- Leg
- All Other
- Arm

Alternative interventions

Acupuncture^{1,2,3}

- Strong safety profile
- Lack of adverse effects
- Improves pain and function better than sham/no treatment

Herbals/Botanicals¹

- Anti-inflammatory/anti-arthritis (i.e., *Boswellia serrata*, ginger)

Sauna Bathing

- Reduces joint tension
- Reduces muscle soreness
- Improves chronic musculoskeletal pain⁴

Cryotherapy

- Increases brown fat to increase energy use (in animal studies)
- Improves glucose metabolism independent of weight loss⁵

Self-directed musculoskeletal health compliance

“There is poor evidence to suggest that self-management programs are effective at decreasing pain and managing/preventing work-related musculoskeletal disorders” **without the presence of an on-site physical therapy or multidisciplinary team.**

[Journal of Exercise Rehabilitation](#), April 2019

Answer:

On-site physical therapist or athletic trainer



Physical therapist or athletic trainer easily visits site to understand of job requirements and provide appropriate ergonomic modifications.



Accessible for an employee's targeted intervention (manual intervention + therapeutic exercise).



Fewer treatments needed to achieve optimal outcomes.



No time lost to travel to off-site appointments. Employee and employer save time and productivity.

Client experience:

Dominion Energy

The problem – Re-think safety

- Hiring as if for a desk job
- Soft tissue injuries
- Physical rigors of the job

The professional sports athlete is active an average of **28 minutes** per game.

The work “athlete” is active an average of **418 minutes** per work-day.

That's almost seven hours per day.

An innovative solution

- 1** Screen employees based on well-validated tools
- 2** Mobile
- 3** Pre-employment testing:
 - Derived from the objective measurements of the job
 - Malleable
 - Mobile to different hiring locations
- 4** Changing the emphasis from reactive workers' compensation to preventive interventions
- 5** After identifying employees who are at risk, enhance their musculoskeletal health before injuries