THE AGING WORKFORCE: Impact on Workers’ Compensation
CLM021

Speakers:

Dr. Thomas B. Gilliam, President, IPCS

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Learning Objectives

At the end of this session, you will:

• Understand the physical changes that occur in aging process
  – As well as the challenges that this presents to the insurance industry
• Examine muscle strength testing as a potential solution
  – See how the program was implemented at the Cleveland Clinic and the results achieved
  – Understand how this program links multiple disciplines such as occupational health, risk management, human resources, wellness, and safety
• With the increasing number of aging workers, consider implementing other best practices
  – Injury management, injury prevention and other strategies that drive successful outcomes
Is Muscle A Risk Factor?

Dr. Thomas B. Gilliam, President, IPCS

Sarcopenia, Dynapenia and Sarcobesity:
How Do These Conditions Impact An Aging Workforce?
Four Key Factors that Increase the Costs of All Insurance

• Aging workforce
• Loss of muscle mass
  – Sarcopenia
• Loss of muscle strength
  – Dynapenia
• Obesity

*If you can positively affect these factors, you can control medical, disability and injury costs!*
Impact of Muscle Mass, Strength and Fat Weight on Body Weight

Weight Remains the Same

% Change From Baseline

Age 30 40 50 60

Body Weight  Muscle Mass  Strength

Fat Weight
In this example, body weight does not change with age. Height does not change.

Thus, BMI does not change.

But when factoring in loss of muscle and gain in fat weight, BMI in fact will change.
BMI does not change with age because weight and height does not change.

But when factoring in loss of muscle and gain in fat weight because of increase in sedentary activities, BMI in fact does change.

### Impact of Sarcobesity on BMI with Age

![Comparing BMI Changes With Age Due to Sarcobesity]

<table>
<thead>
<tr>
<th>Age</th>
<th>BMI</th>
<th>BMI-Sarcobesity</th>
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<tbody>
<tr>
<td>25</td>
<td>32</td>
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<tr>
<td>65</td>
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</table>
When a Worker has Healthy Level of Strength:

- Increased worker efficiency, safety and performance
- Reduced medical, workers’ comp, pharmacy and disability claims
- Decreased lost-time
- Increased savings for the company
  - Human Capital
  - Dollars

Decreased Injury, Disability, Disease, Mortality

Increased Strength

Increased Physical Functionality and Performance
Low Strength Associated with Disease

Low Strength \(=\) Increased Risk For:

- Metabolic Syndrome
- Type II Diabetes
- Cardiovascular Disease
- Mortality
The Aging Workforce

• Today, more workers 55 years and older are in the workplace

• Older workers have lower incidence rate of injury
  – But recover more slowly from injuries and illnesses resulting in delays in returning to work
  – *Thus more costly claims*

• Longer rehab time
Muscle Mass / Strength
A Serious Risk Factor: New for the 21st Century

• Increased risk for injury
  – Work related
  – Non-work related

• Loss of muscle functionality
  – Difficulty climbing stairs
  – Doing household chores
  – Getting out of a chair
  – Working 8-hours a day

• Increased risk for disease
Loss of Muscle - Sarcopenia

- Loss of strength due to loss of 30% of muscle mass from age 30 to 65
- Contributes to loss of functionality
- Aging workforce
- Can be reversed with physical activity/strength training
Is the Loss of Muscle Mass Being Accelerated?

- Loss of Muscle
  - 100%
  - 70%

- Normal Aging
  - Accelerated with weight gain and lack of physical activity

Age
- 30
- 55
- 65
Changes in Shoulder and Knee Strength with Age:

Decrease in shoulder and knee strength about 23% and for both genders from ages 30-39 to >59.

Based on 253,210 males and 46,237 females from the IPCS™ database, 2015
Percent Change in Obesity

Percent Severe to Extreme Morbid Obesity Between 2010 and 2014

2010

16.8%

5.5%

10.8%

2014

17.7%

5.8%

11.2%

Extreme Morbid (>49.9)
Morbid (40-49.9)
Severe (35-39.9)
Cleveland Clinic
Dr. Thomas B. Gilliam, President, IPCS

PROGRAM RESULTS
Process Validity for Physical Capability Testing

• Testing must be valid and current

• Testing must demonstrate job relatedness

• Testing must demonstrate business necessity

• Testing must work off job task analysis to determine target score to test against
Isokinetic Evaluation
The Analysis – Proprietary Mathematical Model

• Force Curve Analysis

• Muscle Symmetry Analysis

• Strength to Body Weight Analysis
Annualized For 2 Years (2011-2012) For the Cleveland Clinic

Resulting In:

• $2,692,152 in health plan savings
• $504,653 in pharmacy savings
• $1,474,562 in workers’ comp savings
• An ROI of $11.37 for every $1 spent
The Impact on Medical Costs

Comparing Paid Medical Costs According to Strength to Body Weight Ratio (SBW™)

- Very Poor: $2,806
- Poor: $2,329
- Average: $2,064
- Above Average: $2,086
- Excellent: $1,574
Downward Trend

- Leads to additional costs in all areas
- More severe and more frequent injuries
- Longer rehab times

But this can be reversed!
Worker Wellness

Monitor progress along the PSRA™ Continuum.
All outcomes should move from left to right which reflects improvement in risk for disease and injury resulting in fewer claims.

High Risk for Injury/Disease

Moderate Risk for Injury/Disease

Low Risk for Injury/Disease

PSRA 1
12/6/10

PSRA 2
12/10/11

PSRA 3
12/09/12
Tracking Costs Associated With PSRA™ Risk Level

(Based on data from the Cleveland Clinic)

High Risk for Injury/Disease

Average Claim Cost: $750.61

Per Member Per Month (PMM): $86.37

Moderate Risk for Injury/Disease

Average Claim Cost: $630.21

Per Member Per Month (PMM): $68.15

Low Risk for Injury/Disease

Average Claim Cost: $539.60

Per Member Per Month (PMM): $57.47
Takeaways

• Physical Capability Evaluation (PCE™) can be used legally as a tool to significantly reduce workforce healthcare costs.

• Strength is a valid measure of workforce health, productivity and a reduction in costs and therefore a new vital sign!
Caring for the Aging Injured Worker

Michelle Despres, PT, CEAS II, Executive Director, Align Networks

INJURY MANAGEMENT
Aging: Impact on Work

- Higher fall risk
- Painful, slower movement
- Lower productivity
- Poor postures
- Higher risk for CTDs,
- Slower tissue recovery rates
- De-conditioned, poor activity tolerance, fatigue
Age Drives Utilization

Ref: Align Networks Data, Prospective Referrals with Applicable Guidelines ("Unknown" & "Other" injuries excluded), client mix, 2013 Data

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<th>Patient Age</th>
<th>Avg Rx Visits Ordered</th>
<th>Avg Visits Attended</th>
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<td>9.2</td>
<td>14.6</td>
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</table>
Treatment of Aging Workers is Unique

• Understand effects vision, hearing, and cognitive loss:
  – More auditory, visual prompts, cues

• Exercise prescription
  – Address bone, joint degenerative changes, loss of muscle strength, balance, slower tissue recovery times, metabolic and cardiovascular changes

• Many older individuals may be exercise intolerant due to co-morbidities, side effects from meds

• Sarcopenia can largely be prevented with a structured strengthening exercise program
  – Research indicates PT exercise programs with eccentric training and high velocity concentric training more effective than traditional exercise regimens (provided next section)
Exercise Rx: Strength Exercises

- Sarcopenia (age-related muscle loss) and Dynapenia (age-related loss of muscle strength) can largely be prevented
  - With structured strengthening exercise program
- Eccentric training & high velocity concentric training is more effective than traditional exercise regimens
- Strength training:
  - Improves balance
  - Reduces fall risk
  - Builds bone mass and reduces osteoporosis
- Reduction in falls = reduction work-related injuries, fractures
Eccentric vs. Concentric

Concentric: shortening of muscle, resist load, produce work

Eccentric: lengthening of muscle, control load, absorb energy
Exercise Rx: Rapid Concentrics

- Peak muscle power (production of force AND velocity) declines with age (65+)
  - Earlier and faster than muscle strength
- Decreased muscle power production attributed to documented changes in muscle fiber quality and quantity (sarcopenia)

Preservation of **muscle strength** = dependence on the maintenance of muscle mass
Impairments in **muscle power** = more reflective of functional limitations

**High Velocity vs Low Velocity Resistance Training**
- 84% more muscle power after 12 weeks (65-80 y/o)
- 28% gain (80-84 y/o)

**Concentric Exercises**
- Shortens muscles
- Free weights
- Body weight
- Traditional strengthening

**Improved Muscle Power**
- Multiple studies
- Consistently greater improvements
- High velocity vs lower speed exercises

Ref: Skeletal Muscle Power: A Critical Determinant of Physical Functioning in Older Adults, College of Sports Med. 2011
Exercise RX: Eccentrics

- **Referred to as “negative work”**
  - Because muscle is absorbing the energy in a loaded position, slows contraction to control it

  Measurable force production = highest
  Strength production = highest
  Muscle size = greatest gains

- **Body Builders use 1:4 count to load muscle and grow size fast**

- **Benefits to Aging Population:**
  - Offer greater benefit to counter ing age related sarcopenia and dynapenia due to greater overloads through lower impact exercises
  - Require less energy, more easily tolerated by older population

Ref: The Power of Eccentrics for the Aging, APTA, 2013
Caring for the Aging Injured Worker

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INJURY PREVENTION
Injury Prevention

- PTs can be a resource in injury prevention for all workforce groups
- Injury prevention is a lifestyle choice
- Educate & encourage overall healthy lifestyle, general wellness:
  - Regular check-ups: dental, eye exam, physician exam
  - Proper diet and hydration
  - Regular exercise program
- Community safety: reduce risk for falls
  - Choose well lit walk-ways, slip resistant floor surfaces, remove trip hazards
Clinical Implications: Ergonomics

**Industrial Setting - Related to Material Handling:**
- Forceful exertion
- High repetition
- Awkward postures / working outside of “optimal” or neutral joint postures
- Sustained postures
- Contact stress
- PPE / gloves: increase grip needed by 10%
- Shift work / schedules / OT
- Continuous work / work cycles
- Extreme temperature
- Vibration / whole body and segmental vibration

**Office Setting:**
- High repetition
- Awkward postures / working outside of “optimal” or neutral joint postures
- Sustained postures
- Contact stress
Clinical Implications Ergonomics

Grip Strength Diminishes with Age:

- 40% loss through age ranges
- Use of gloves increases strength required to perform same task without gloves (10%)

**Ex: Bifocals Ergo Accommodation:**
Lower Computer monitor for bifocal user to reduce neck muscle/ligament strain

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Male (avg. Lbs)</th>
<th>Female (avg. Lbs.)</th>
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<tbody>
<tr>
<td>30-40</td>
<td>120</td>
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<td>52</td>
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<tr>
<td>70+</td>
<td>70</td>
<td>45</td>
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Teach ergonomic solutions (IW takes ownership):

- Ergonomic Analysis / Accommodations: Adjust work area in body: modify grip / handles, adjust for vision changes, shelf height
- Posture, body mechanics, joint protection, work cycles
- Address M.O.I. - Overexertion, postures to avoid end range, adequate work cycles, longer recovery times, etc.
Solutions: Injury Prevention Programs

- Reduce risk for falls
- On-site wellness
- Pre-work screening program / fit-for-duty programs: match demands of body to work
- Considers physical abilities / limitation, work demands, work goals
- Proven success for proper hiring practices, reduced medical and workers’ compensation claims / costs
Caring for the Aging Injured Worker

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DRIVING SUCCESSFUL OUTCOMES
Solutions: Improving Outcomes

How industry stakeholders can facilitate best outcomes:

• Steer injured workers to best providers
  – Compliance
  – RTW outcomes

• Early identification and severity classification

• Analyzing outcomes data:
  – Understand nuances in state mix
  – Surgical vs. non surgical
  – Benchmarks
Collaborate: Focus on safety, preventing re-injury with *Stay at Work, Return to Work* focus
THE AGING WORKFORCE: Questions & Answers

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