Welcome!

16th Annual Applied Ergonomics Conference

March 18 – 21, 2013

The Hilton Anatole Hotel, Dallas Texas

What's driving YOUR back pain?

Reducing Low Back Pain in High Mileage Drivers

Danielle Vernon, PT, CCI, CEAS III
WorkWise Ergonomic Consulting, LLC
Inventor of BackBone Cushion, Patented

Physical Therapist, business owner & inventor

Danielle Vernon, CEO WorkWise Ergonomics, LLC

Inventor

Physical therapist

- >12 yrs orthopedic spine & sport experience
- >10 years in physical therapy clinical leadership
- Work-site Injury prevention programs
- Published author on posture and back issues
- Avid athlete and user of The BackBone Cushion

Slumped. Hunched. Slouched…..Pain &#&@*

4 out of 5 Americans will suffer from back pain

- 2nd reason people see a doctor
- Leading cause of missed workdays
- 42 is the average age for back surgery
- Leading cause of disability under age 45
- 70% of sufferers experience recurrence.

Understanding your Back

Anatomy

Risk Factors

Myths

Supported Research

The Role of Ergonomics

Anatomy

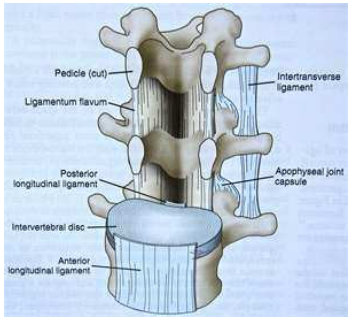
Bony lumbar spine

Discs between the vertebrae

Ligaments around the spine and discs

Spinal cord and nerves

Muscles



Common RSI's and MSD's

- Low Back Pain
- Shoulder Tendonitis
- Carpal Tunnel Syndrome
- Sciatica
- Upper back and neck syndromes
- Headaches
- Knee Pain
- Hip Pain

Drivers, in particular…

Primary areas of complaint

-BACK

-NECK

-SHOULDER

- More frequent absences from work
- longer duration
- report tension, mental overload
- retire earlier and at a younger age
- usually accompanied by disability.

Why are we seeing more MSDs?

Poor physical fitness levels
Older workforce
Increased work load
More physical and mental fatigue
Better educated about their bodies
Static work and home postures
One size fits all – job, home and recreational activities
AND…….

Postural neglect

-most common cause of low back pain.
-brought on by sitting for a long time in a poor position

-Easily eliminated merely by correcting one's posture

-Uncorrected, habitual poor posture causes
changes to the structure and shape of the joints;
excessive wear occurs,
loss of elasticity resulting in premature aging of the joints.
decreased lung expansion and circulation to hands and feet

The effects of poor posture in the long term, therefore, can be just as severe and harmful as the effects of injury

Bad Posture

Forward head
Rounded shoulders
Decreased lung expansion
Increased pressure on diaphragm
Decreased air exchange
Decreased oxygen to muscles
Increased fatigue
Inefficient muscle contraction
Higher risk for muscle strain
Decreased healing potential

General Risk Factors

(Based on OSHA Ergonomic Standards)

Posture/Position

Repetition

Force

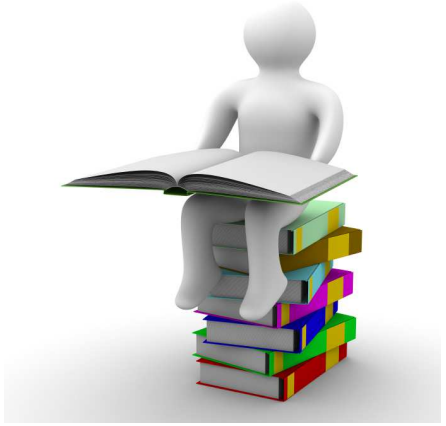
Contact stress

Vibration

"The frequency and duration of a task, make a risk factor more likely to occur."

Research

Professor Mark Porter, UK: 6 x higher absence from work d/t back pain when drivers are at the wheel for > 4 hrs/day



"Long periods at the wheel can seriously damage your health, particularly if seats do not allow optimum posture and drivers do not 'fit' their seats," he says.

March 2011, Spine: workstation design and work posture, sedentary work position, repetitive work and precision work elevated the risk of back and neck pain.

AMJ 2010: Work-related MSD, especially low back pain, cause substantial economic losses to individuals as well as to the community.

- 81% of American bus drivers have experienced LBP during their present job
- Most commonly identified physical factors are prolonged sitting, whole-body vibration, **ergonomic mismatch among drivers**, the type of vehicle seat, and driving mechanisms

Risk Factors for Back Pain

Oversized seat

Broken down seat, asymmetrical

Longer leg than arm length

Non-adjustable steering wheel

Repetition in one direction

Fatigue

Poor nutrition

Poor arm support

The Alternatives

The KEY….

PREVENTION

NOT

REACTION

What is an ergonomic injury?

- Pain and dysfunction as a result of static and/or awkward postures especially when there is force, repetition or contract stress involved
- The tissues most often involved are the nerves, tendons and or fascia
- “an Ergonomic injury is primarily a nutrient pathway disorder”

Highest Risk Factors noted in OSHA Ergonomics Program

(Repealed 2001)

Standard 2000 Title 29 of Code of Federal Regulations Part 1910-900 Provided

- Repetition – 2 to 4 hours
- Force – Specific weights or 2 hours exposure
- Awkward Postures – 2 hours of exposure
- Contact stress – 2 hours
- Vibration – 30 minutes or 2 hours of exposure

How to assess Injury Costs

- Ergonomics is cost effective.
- Ergonomics is not just "feels good PR", it really pays off.
- For example, if a self-insured company is operating at a 4% profit margin and incurs one carpal tunnel syndrome release surgery at a total cost of $10,000 (surgical costs, time off from work, training of replacements, etc), the sales force would have to generate an additional $250,000 in sales to offset the cost of the injury ($250,000 x 0.04 = $10,000).

Injury costs (Dollars)

			Company Profit Margin			
Injury Costs ($)	**2%**	***4%***	***6%***		***8%***	***10%***
$10,000	500,000	250,000	167,000	125,000	100,000	
$20,000	1,000,000	500,000	333,000	250,000	200,000	
$50,000	2,500,000	1,250,000	833,000	625,000	500,000	
$75,000	3,750,000	1,875,000	1,250,000	938,000	750,000	
$100,000	5,000,000	2,500,000	1,667,000	1,250,000	1,000,000	
$500,000	25,000,000	12,500,000	8,333,000	6,250,000	5,000,000	

Sales necessary to offset the cost of accidents and injuries at different profit margins

Estimating the impact of accidents

Lets try something more reasonable such as a minor back sprain that someone may go to one doctor's appointment, 8 physical therapy visits and 8 cumulative hours away from work…..

$2,000 **(Direct cost) x** 4.5 **(Cost Multiplier) =** $9,000 **(Indirect Cost)**

Total Cost = Direct Cost (9,000) + Indirect Cost (2,000) = Total $11,000

What if you had 25 claims like this one. $11,000 x 25 = $275,000

Calculate your Impact on Profitability

10,000 Total Profits = Profit Margin (.1 or 10%)

100,000 Total sales

- Total Cost of
- Injury/Illness $275,000 = **$2,750,000 (**Sales required to pay for injury or illness)
- Profit Margin 10% (0.1)

How Can We Decrease worker injury and improve job satisfaction?

- ***Assess*** – the problem
- ***Identify*** – *the key factors*
- ***Educate*** - *individual and mgmt*
- ***Recommend*** - plan of action
- ***Plan*** - *to implement changes*

THANK YOU!

www.BackBoneCushion.com
512-221-3448
danielle@backbonecushion.com

Danielle Vernon, PT, CCI, CEAS III
WorkWise Ergonomic Consulting, LLC
BackBoneCushion.com