SPORTS MEDICINE IN THE WORKPLACE:

Low Back Prevention Myths and Facts

A review of the literature

Introductions:
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- ***Education***
  - *Bachelors of Science in **Kinesiology – UW Madison***
    - Emphasis on Athletic Training
  - *Masters of Science – Athletic Training*
    - West Virginia University
- ***Athletic Training Job Experience***
  - ***Industrial Athletic Trainer*** *- 5 years experience*
  - ***Physician Extender*** *– Meriter Orthopedics*
  - ***Assistant Athletic Trainer –*** *Birmingham Southern College*
  - ***Graduate Assistant,*** *Club Sports– Healthworks Rehab*
- ***Current Position***
  - ***Industrial Athletic Trainer –*** *Quad, Sussex, WI*

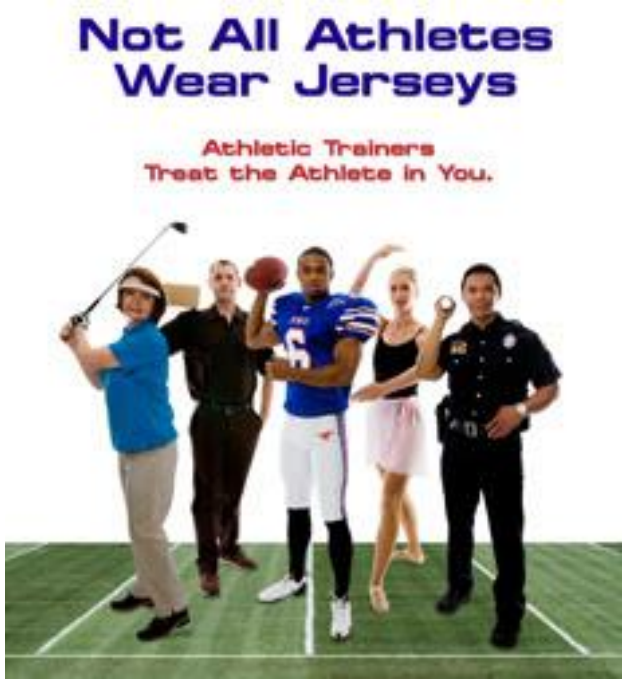
Introduction: Tyler Baran, M.Ed, LAT, ATC

- ***Education***
  - *Undergraduate Degree in **Athletic Training***
    - Carthage College, Kenosha, WI
  - *Masters degree in **Education** with emphasis in Curriculum and Instruction*
    - Franklin Pierce University, Rindge, NH
- ***Athletic Training Job Experience***
  - ***Athletic Training Graduate Assistant** - Franklin Pierce University Athletics*
  - ***Assistant Athletic Trainer** - Franklin Pierce University Athletics*
  - ***Per diem Athletic Trainer,** Youth Sports – Precision Athletic Training*
- ***Current Position***
  - ***Industrial Athletic Trainer** – Quad, Lomira, WI*

Sports in the Workplace

- Athletic Trainers
  - *Allied health care professional specializing in prevention, examination, treatment and rehabilitation of acute and chronic injuries*

- What we do onsite?
  - *Injury prevention*
  - *First Aid*
  - *Wound care*
  - *Easing Soreness*
  - *Physical Assessment of Acute and Chronic Discomforts*
  - *On site ergonomic evaluations*
  - *Job coaching*
  - *Wellness Education*

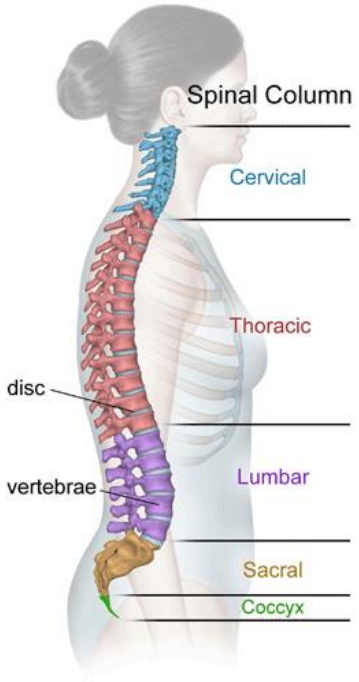


Review of the Literature – LBP and what has been found

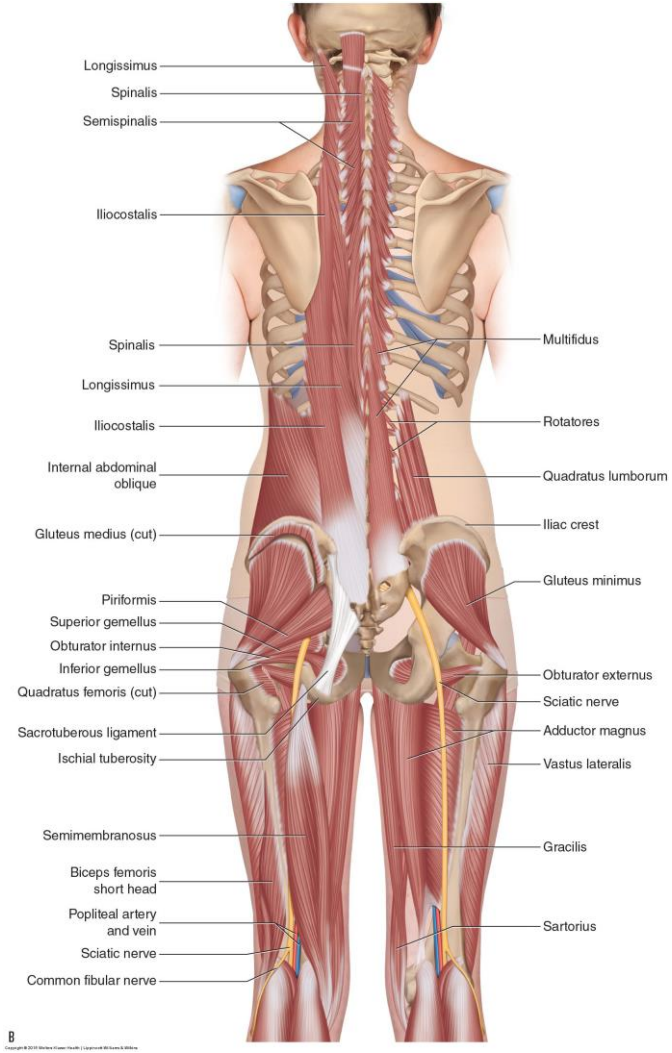
- The information shared in this presentation should not be considered a substitute for professional medical advice, diagnosis, or treatment for any discomfort or condition you may be experiencing. Please seek attention from a physician or other qualified health provider if you have personal medical questions or concerns. The content of this presentation is meant for informational purposes only. The views expressed are the presenters' own and do not necessarily reflect the views of Quad and its employees.

Anatomy Overview

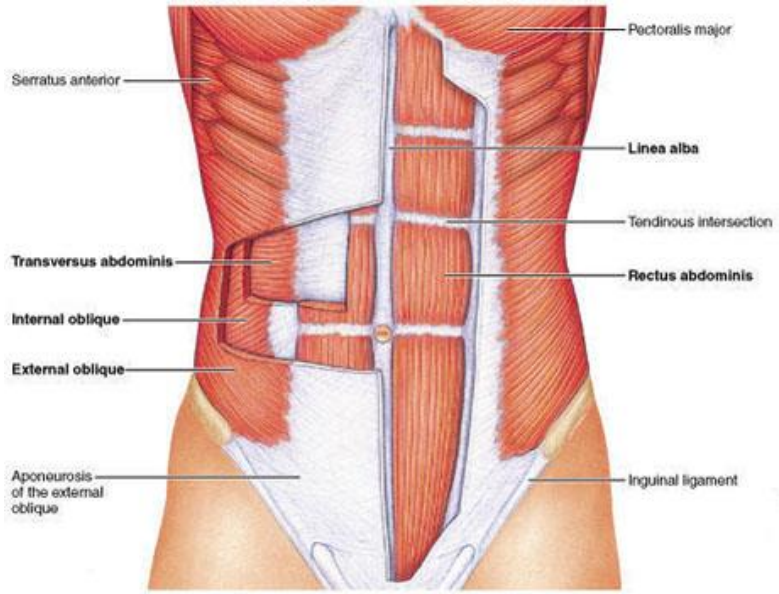
- ***Spine***
  - 7 Cervical
  - 12 Thoracic
  - 5 Lumbar
  - 5 Sacral (fused)
  - 1 Coccyx (Tailbone)



- ***Back Musculature***
  - Most commonly injured back muscles



- ***Core Musculature***
  - Act as the bodies natural “back belt”



Epidemiology of LBP

- Common health problem
  - *50-80% of adults experience at some point in their life*
- Predictors
  - *Psychological: distress – depression*
  - *Gender: prevalent among males vs. females*
- High variability in prevalence with LBP when associated with physical factors
  - *Encourage health care providers to examine data sources*

Lifting education as a Prevention Strategy

- “Keep your spine in line”
- Training points for proper technique:
  - *Use legs*
  - *Bending knees*
  - *Hips low*
  - *Avoid twisting*
- Verbal vs. Physical communication
  - *Execution of task*
  - *Floorwork*
  - *Muscle memory (exercise)*

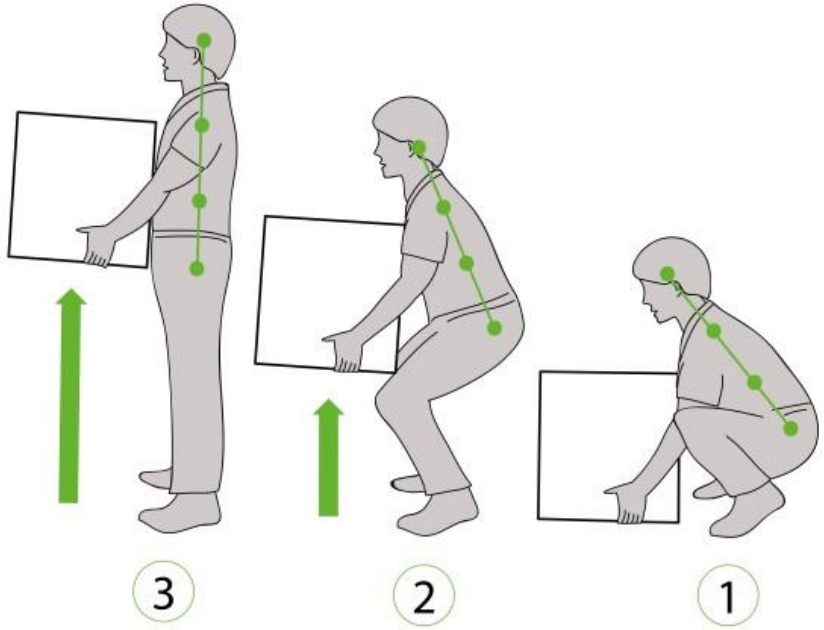


Image: neurospinewellnesscenter.com

Study of MHAs and PTs with Safe Lifting Postures (UK)

- Which is safer? A straight back or a rounded back?
  - *Assessing presence of negative and positive beliefs*
- Lit review: people with LBP move differently when bending/lifting
  - *Slower; bend back less; brace muscles → added protection*
  - *Protective motor responses → higher levels of fear movement*
  - *Pain provocative*
    - Associated with negative beliefs; emotional response to pain; reinforcing pain/disability
- CONCLUSION: Education campaigns to emphasize “trust your back” vs. “protect your back”

Reducing Low Back Pain (LBP) and Disability in Mining (Report by Sean Gallagher, Ph.D., CPE)

- What did Gallagher find?
  - *The answer to reducing LBP requires a comprehensive approach*
  - *Successful LBP prevention requires proactive programs*
  - *Design lifting tasks to minimize low back stress*
    - Tools / assists
    - Elevate material
  - *Communication and Accommodations*
- Improved job design based on ergonomic principles can prevent an estimated 20%–40%, of work-related back pain, and secondary (postinjury) interventions can reduce lost workdays and related costs by 40%–50% [Snook 2006].

- **Remain active.** While limited (<24 hr) bed rest may be indicated in some cases, extended bed rest seems to be harmful to recovery from LBP [Hagen et al. 2005]. Instead, patients are encouraged to maintain as active a lifestyle as possible. There is no indication that staying active is harmful, and staying active is believed to result in improved recovery, more rapid return to work, and less disability [Snook 2004a].

Examples of Mining Tool Modifications

Images gathered from,
Gallagher, S, (2008)

Back belts and the workplace

- What are belts for?
- See it EVERYWHERE in the gym
- What do they do?
  - *Reduce force on spine*
  - *Increase intra-abdominal pressure*
  - *Biomechanical feedback*
  - *Stiffen spine*
  - *Reduce bending*

Image: Amazon.com

NIOSH/CDC – Do back belts prevent injury?

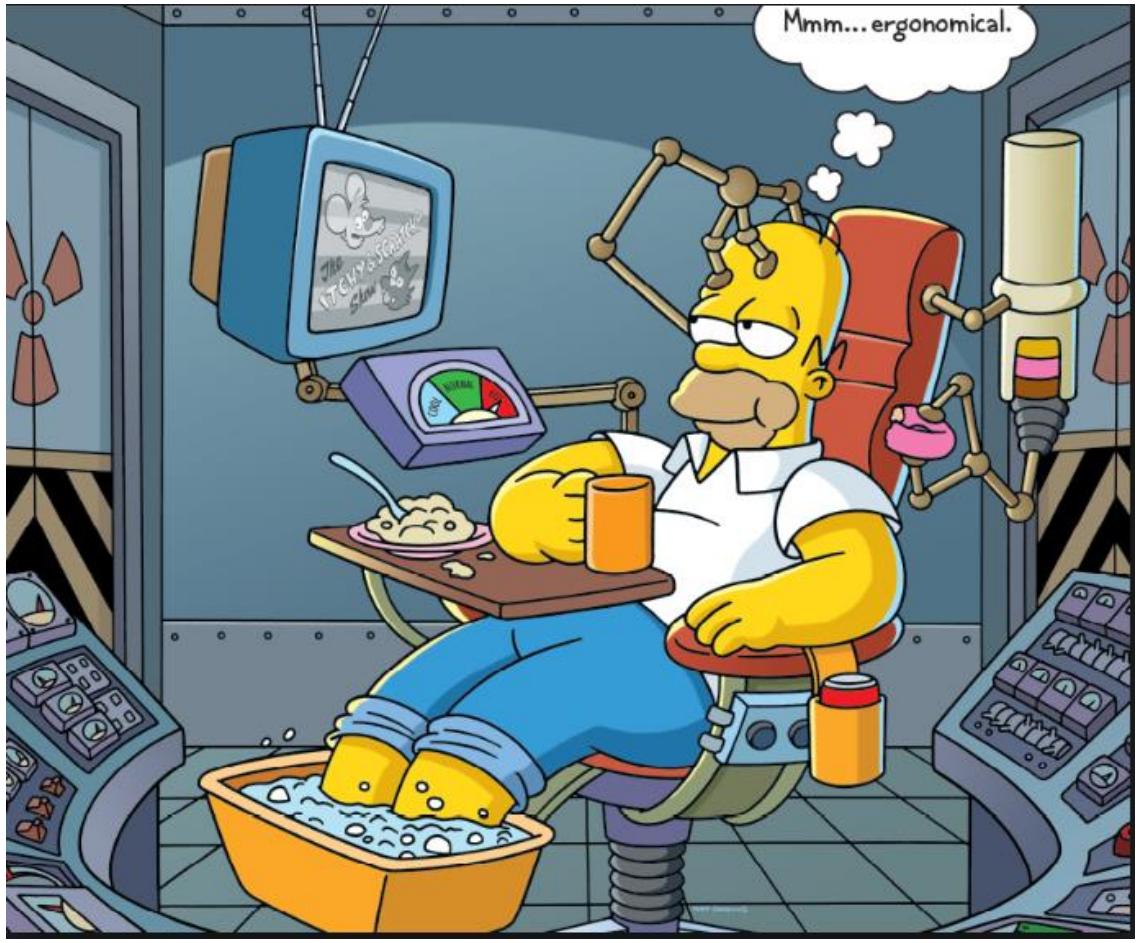
- Review of literature
  - *All known mechanisms of back belts were not supported*
- Never had a LB history – not recommended to rely on back belts
- Concern of false sense of security
  - *Its use should remain voluntary*
- Not to rely on an orthosis →rather ergonomic education further supported

Although some researchers believe back belts are not primary back injury prevention tools, belts may be useful in treating back injuries (Lund, 1994). When back belt

What does the CDC recommend?

- CONDITIONING (addressing the biomechanics)
  - *Training EE to identify lifting hazards*
  - *Using safe lifting techniques*
  - *Methods for success when lifting objects*

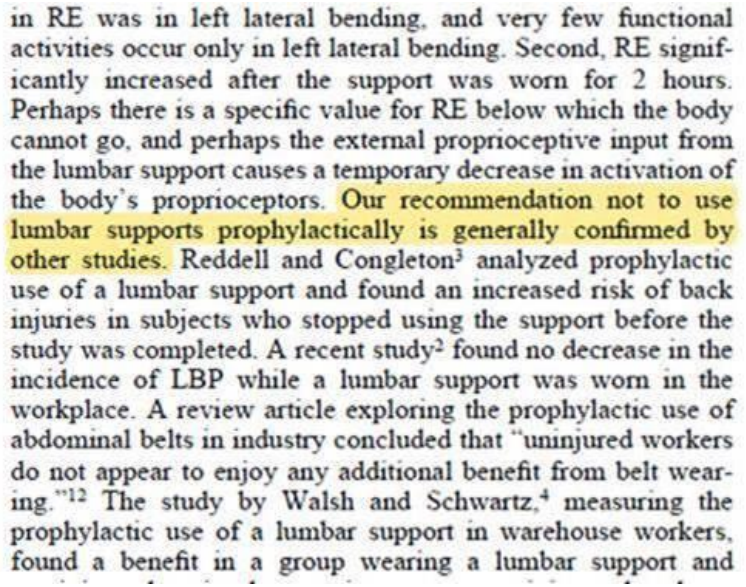
- Redesign the work environment (addressing the ergo)



Repositioning Error – back belt influence

- Proprioceptive impairment
  - *Effects spinal stability*
  - *Strong correlation to LBP*

- Significant increase in RE when support worn for 2 hours
  - *External influence may greatly effect our internal influencers*

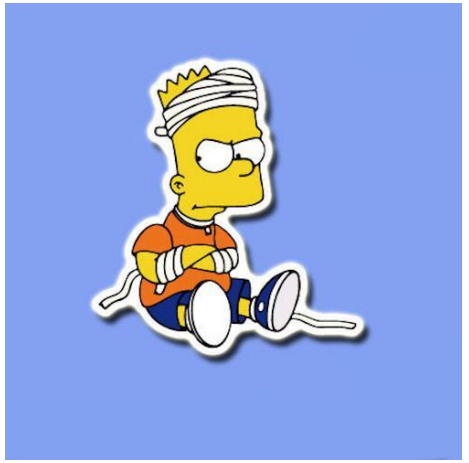


in RE was in left lateral bending, and very few functional activities occur only in left lateral bending. Second, RE significantly increased after the support was worn for 2 hours. Perhaps there is a specific value for RE below which the body cannot go, and perhaps the external proprioceptive input from the lumbar support causes a temporary decrease in activation of the body's proprioceptors. Our recommendation not to use lumbar supports prophylactically is generally confirmed by other studies. Reddell and Congleton[3] analyzed prophylactic use of a lumbar support and found an increased risk of back injuries in subjects who stopped using the support before the study was completed. A recent study[2] found no decrease in the incidence of LBP while a lumbar support was worn in the workplace. A review article exploring the prophylactic use of abdominal belts in industry concluded that "uninjured workers do not appear to enjoy any additional benefit from belt wearing."[12] The study by Walsh and Schwartz,[4] measuring the prophylactic use of a lumbar support in warehouse workers, found a benefit in a group wearing a lumbar support and

Wearable Technology – what do we know?

- Fairly new technology
  - *Studies have small sample sizes or are short term*
  - *Found to have many beneficial factors:*
    - Detecting biomechanical errors
    - Monitoring/tracking physical measurements (heart rate, bp, movement, etc)
    - Trying to connect the provider to an EE's daily life
- Things to consider:
  - *Challenges → employee compliance; will feedback be translated appropriately?*
  - *Reliability/validity needs to be confirmed for widespread use*
  - *Limited evidence to confirm long term efficacy*
  - *Not enough research to come to a conclusion on effectiveness in the working population*

Conclusion



- Current research has been able to discuss the pros and cons of various intervention strategies.
- With what we know now, more research needs to be performed to make definitive conclusions on proper intervention strategies
- What we do know: education and continued feedback/training on proper lifting techniques continues to be a significant influence on low back prevention - NIOSH

Resources

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Any questions we can TACKLE for you?