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STRENGTH TRAINING;

MANAGEMENT AND PREVENTION OF OSTEOPENIA/OSTEOPOROSIS

Presented by:

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MY Background

- Graduated from MUN in 2004 (Kinesiology)
- Graduated from A.T. Still University 2016 (MS Kinesiology) with a concentration in corrective exercise and orthopedic rehabilitation
- Pursuing graduate work through the University of Bridgeport (MS Human Nutrition) with a concentration in clinical nutrition
- Certified Strength and Conditioning Specialist
- Precision Nutrition Certified Level 1
- Functional Movement Screen Certified Level 1 and 2
- In Health and Fitness industry for over 10 years
- Director of McIsaac Health Systems Inc. and ExerciseProgressions.com
- Lover of Brazilian Jiu Jitsu (not entirely sure why; I am usually the one being turned into a human pretzel)

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What We Offer

Our Services:

Post-Rehabilitation

Nutritional Coaching

Personal Training

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What the Heck is Kinesiology?

- Is the science of human movement, applying the latest evidenced-based research to improve function, health, and wellness of people in all settings and populations
- University-trained health professionals
- Apply the principles of biomechanics, anatomy, physiology, and psychomotor behaviour to improve health, function, and performance
- Enhance quality of life through the promotion of physical activity and workplace health and safety, the prevention and management of injury, chronic disease, and disability, and the overall improvement of health and performance

Now that you know about me, let's talk about you ☺

Osteopenia (what is it anyways?)

- Is a bone density that is lower than normal peak density but not low enough to be classified as osteoporosis (Tufts, 2011).
- i.e., knocking on the door of osteoporosis

Osteoporosis (what is it anyways?)

- Defined as decreased bone mass and a shift in the structure of bone, resulting in a reduced quality of bone (Tufts, 2011)
- Osteoporosis is a systemic skeletal disorder characterized by low-bone mass, deterioration of bone tissue, increased bone fragility, and its susceptibly to recurrent fractures (Shanb & Youssef, 2014)

Determinants of Bone Strength

- Mass, size, structure, material properties, and remodeling are other relevant elements when determining bone strength (Srivastava et al., 2005).
- Bone is in a perpetual loop of buildup (remodeling) and breakdown (turnover).
- Such an orchestrated event is led by osteoblastic (buildup) and osteoclastic (breakdown) activity.
- If osteoclastic activity predominates, large portions of cancellous (inner bone) bone will become excessively broken down and digested.
- Over time, and in the absence of adequate osteoblastic activity, bone will become exceedingly porous and weak creating deep cavities known as stress concentrators (Srivastava et al., 2005).

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What Influences These Determinants?

Our Philosophy

Movement
Nutrition
Recovery...

...as Medicine

…In fact, health and disease are both influenced by these, depending on how you use them

If Ignored…

Osteopenia can progress into osteoporosis…

- Increasing the risks of fracture
- Compromising activities of daily living
- Hindering overall quality of life

But… there is hope!!!

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How Can Kinesiologists Help?

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We put a suit of amour on our clients ☺

That's lovely. But *How?*

- Need *weight-bearing* and *compressive* exercises
- Shanb and Youssef (2014) compared non weight-bearing and weight bearing/compressive exercises over two groups (60-67 years old) for a period of 6 months
- Both improved bone mineral density (BMD), but, weight bearing group showed a greatest improvement of BMD, especially in load-bearing bones (lower spine, legs)
- Improving strength correlates well with improved BMD
- Strength training serves as an osteogenic stimulus (stimulates bone formation)

That's Glorious, But More Detail Please!

Frequency: 2-3 days per week
Intensity: 60% - 90% of one repetition maximum (more about this later)
Time: 30-60 minutes
Type: free weights, plyometrics, calisthenics…and machines if you must

Now, what else might we consider in the program design?

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Our General Training Approach

1. Client History/Movement Screen

+

2. Self-Massage

+

3. Corrective Exercise

+

4. Strength Training

+

5. Nutrition

=*The* combination for success

Why Screen Movement?

- **Can a person perform daily tasks who is “broken”? Maybe**
- **Can a person perform this task long term (i.e., months or years)? Maybe not**
- **Can a car be driven (i.e., a task) on flat tires? Maybe**
- **Can the car do this indefinitely? Maybe not**
- **The challenge is most testing is performance based, and tests for durability / longevity are rarely undertaken**
- **Movement screening helps determine the durability of a person’s muscles, joints and movements before they return to work, daily living, or strength training**
- **In conclusion, don’t confuse performance (i.e., completing the task) with durability (i.e., how long a person can do it for before tissue fails)**

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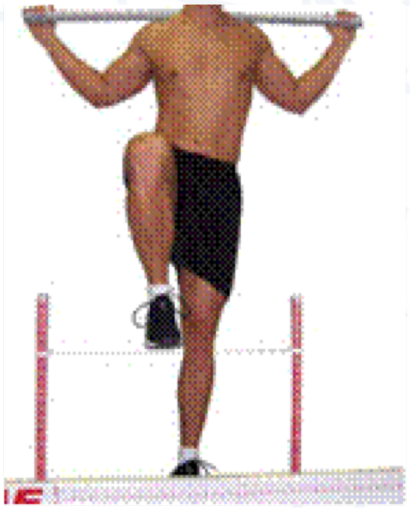
Basic Movement Patterns In a Screen

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Corrective Exercise

- **The body does not operate muscles individually; rather it organizes muscles and joints into complex movements**
- **We must strengthen the symptomatic/dysfunctional area and re-integrate that region with the entire human movement system (post-rehab)**
- **These qualities are lost when a person "blows out a tire" It's not enough to change the tire, because the car went out of alignment along the way as well. Now there are two problems that feed into each other (aka chronic musculoskeletal pain cycle)**
- **Corrective exercise fixes the "misalignment", making the parts work together, like an orchestra**
- **It is the gray area; It's not rehab and it's not strength training. We are "fixing the flat tire, and getting the alignment back"**
- **This is often missed during the medical-to-exercise field transition**

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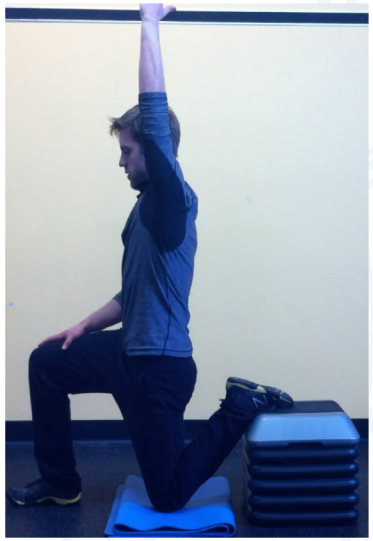
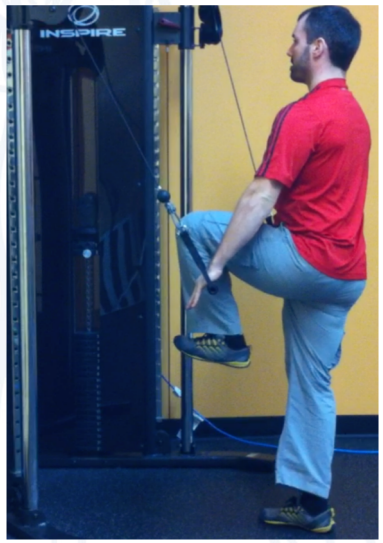
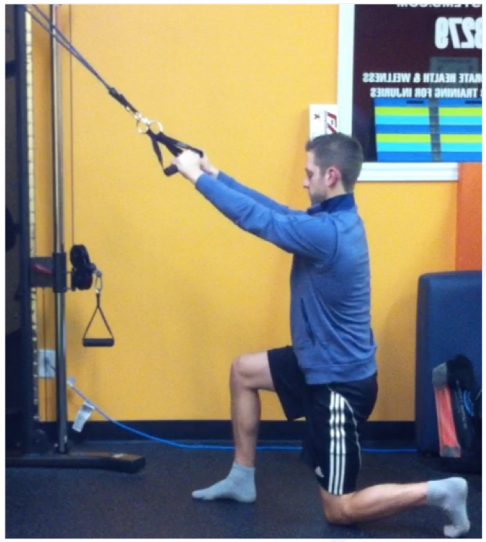
Corrective Exercise







Self-Massage

- Is Buckley's Mixture for clients; It's awful but it works!
- Foam rolling (self-massage) helps loosen up muscles and get the blood flowing
- Helps down regulate trigger points
- Helps control pain
- Is part of a complete exercise breakfast
- How do you get knots out of a rubber band?
- What happens if you just stretch the band?
- Rolling empowers clients to manage tightness and soreness on their own

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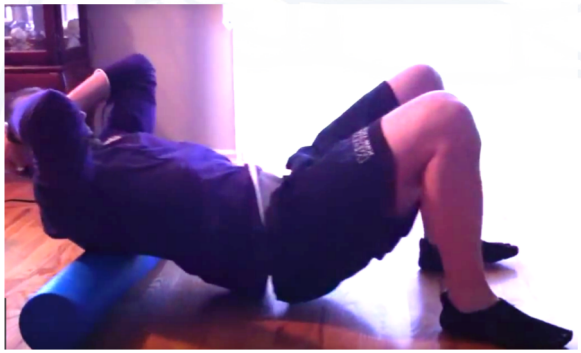
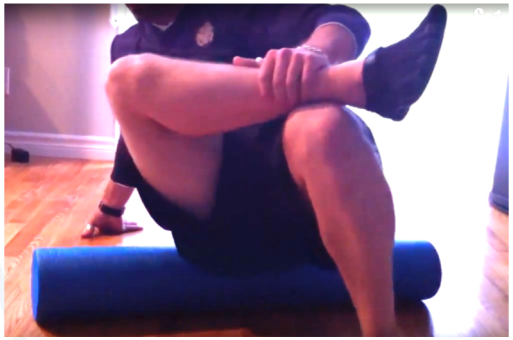
Foam Rolling





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Are All Strength Training Techniques Equal?

- Strength training exercises should be large, robust movements that incorporate many muscles, synergists, stabilizers, and joints at once (including any weak/dysfunctional patterns that are present)
- This allows better transfer of skills to everyday life and work-related activity, while improving BMD

Functional Strength Training

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Simple Tools for Strength

It doesn't have to be fancy; it just has to be effective…Crazy shag carpet though, huh?

In Conclusion

- The body is a complex set of systems working together
- Improving BMD requires the appropriate stimulus (FITT) - MOVEMENT
- Requires appropriate foods (micronutrients and macronutrients), hydration, and supplementation where indicated – NUTRITION
- Requires time and rest to adapt and overcome the osteogenic stimulus - RECOVERY

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Shanb, A. A., & Youssef, E. F. (2014). The impact of adding weight-bearing exercise versus non-weight bearing programs to the medical treatment of elderly patients with osteoporosis. *Journal of Family and Community Medicine, 21*(3), 176-181.

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Please use the blog sections of these sites for complimentary info (almost 300 posts) on everything regarding movement, nutrition, and recovery ☺