The New Science of Suspension Training

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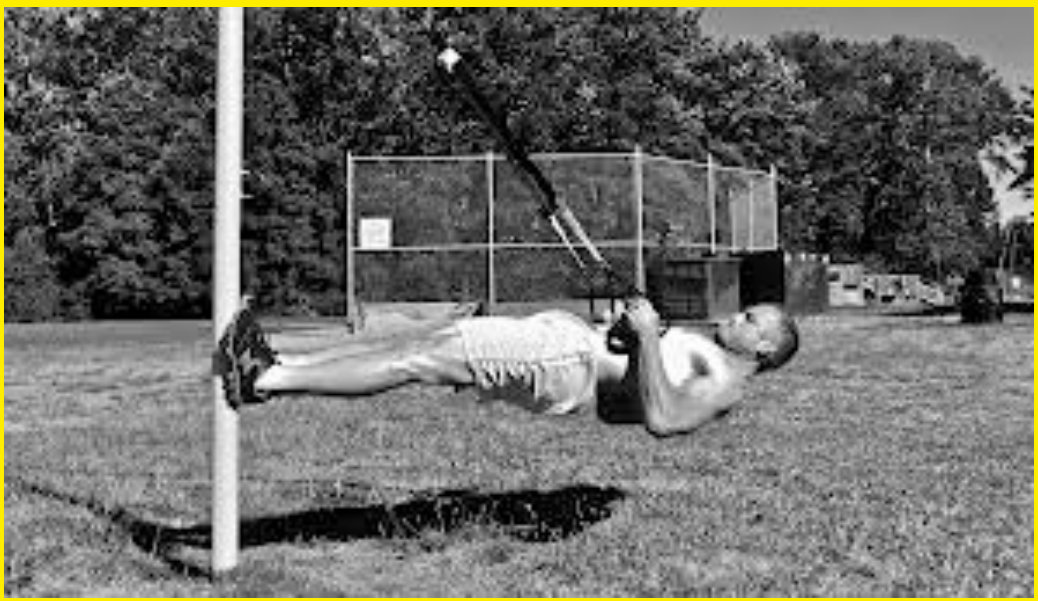
WHO…ARE YOU???

WHAT...IS YOUR CLIENTELE???

HOW...DO YOU CURRENTLY USE SUSPENSION TRAINING???



OBJECTIVES

- Describe the biomechanical principles that guide suspension training
- Summarize suspension training applications to athletics, older adults, and rehabilitation settings
- Develop a step-by-step strategy for designing suspension training exercise programs
- Contrast the application of suspension training for different people/ settings

Hello World!!!

BODYWEIGHT TRAINING
Top 3 Fitness Trends For 2013

Guiding Principle????

Barrier to Growth....

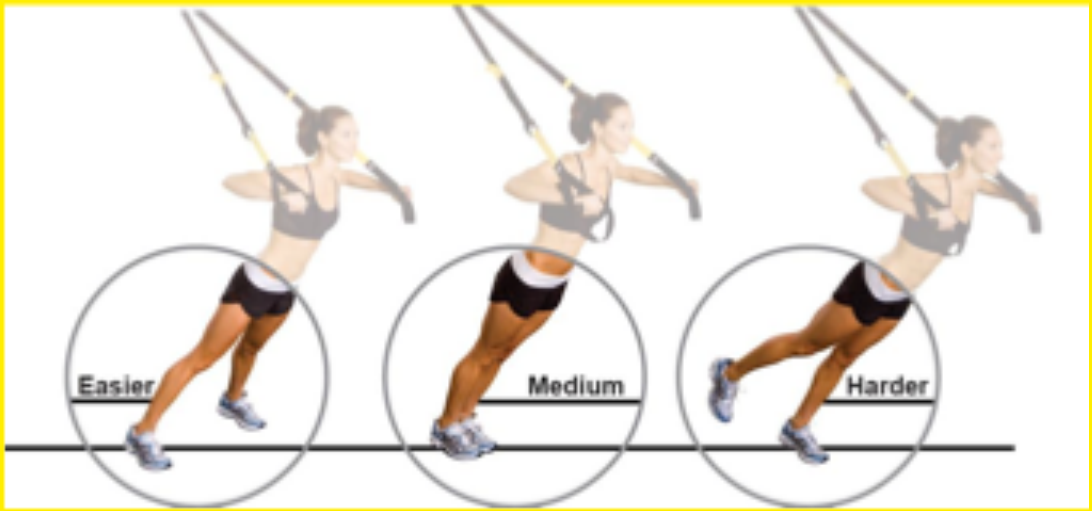
Introducing.....

Z BALL!!!!!

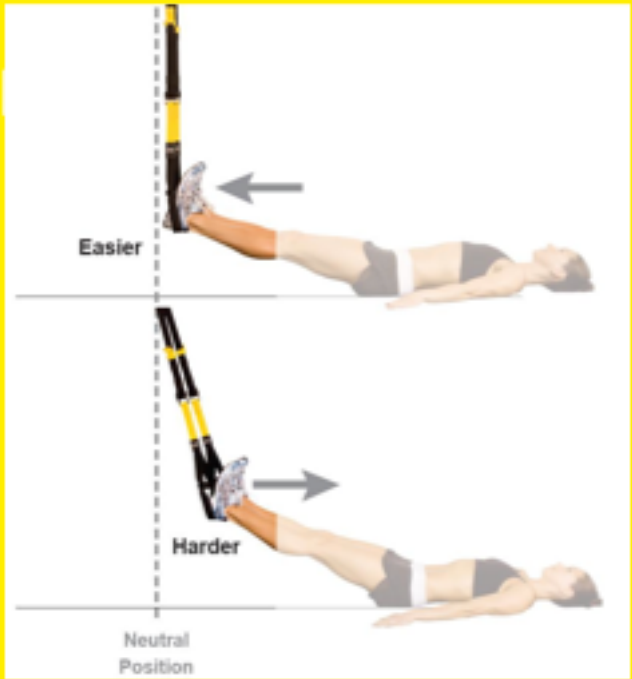
(patent pending)

Vector Principle

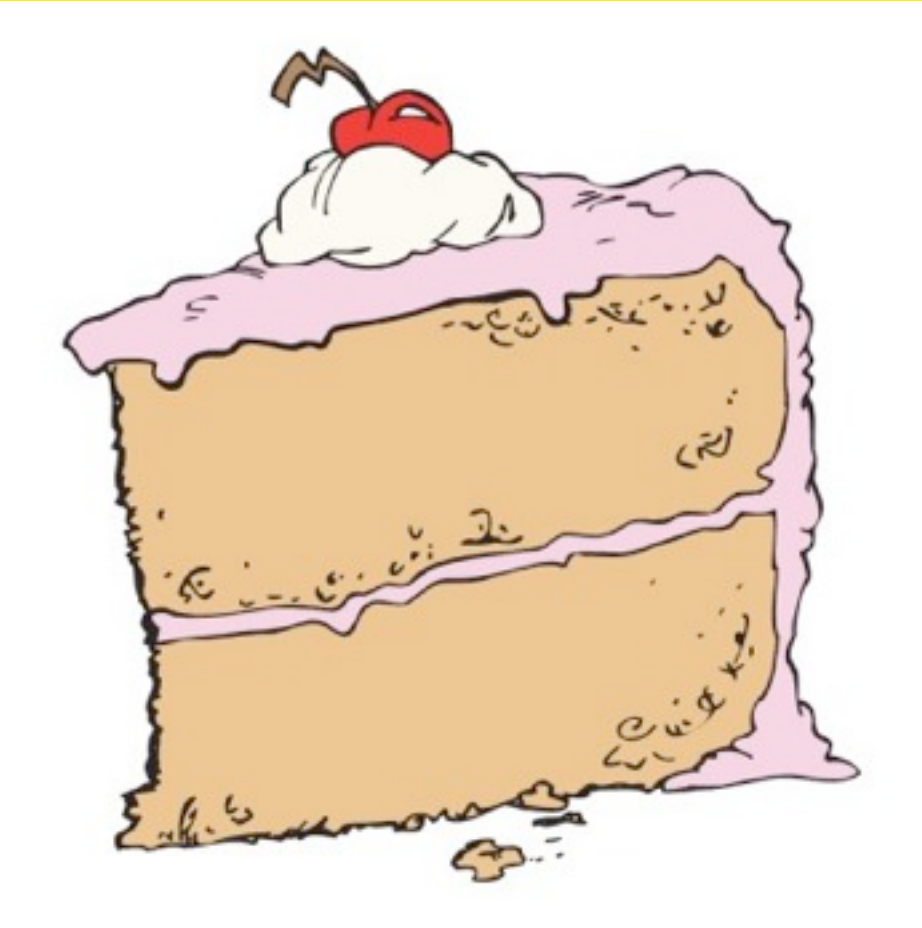
Stability Principle



Pendulum Principle



Suspension Training Makes Progression & Regression A Breeze!!!



Applications To Everyone!

Applications To Everyone!

Why???

But...Does It WORK?????

Research: Athletic Performance

- Requires outstanding neuromuscular control blended with sport-specific conditioning - PERIODIZATION IS KEY!
- ST exercise is as effective as Olympic lifting in muscle activation in young athletes (Carbonnier & Martinsson, 2012 *Thesis*)
- Baseball players improved throwing performance, core stability, and muscle strength w/ 6 week program (Lusk et al., 2009 *Jour Sport Rehab*)
- ST resistance training exercise elicits growth hormone release to similar extent as free weight training (Dudgeon, 2011 *Jour Sport & Cond Research)*

Research: Novice & Older Clients

Intervention Description

8-week Progressive Program

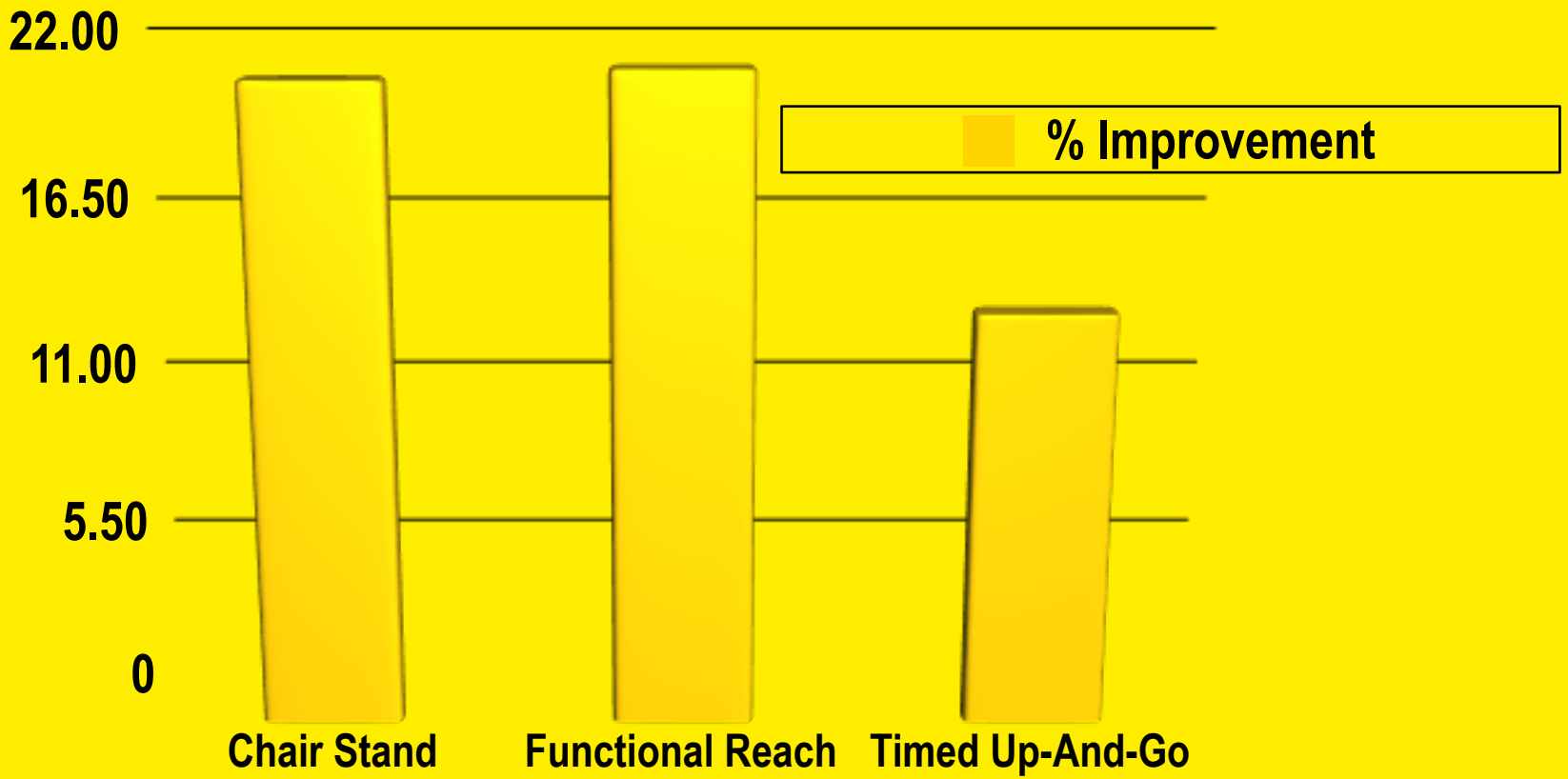
- Dynamic warm-up
- Sensory integration exercises
- Strength training
- Balance training
- Gait enhancement training
- Dynamic cool-down

60 Minutes, 2 days per week

ST Exercise Progression Examples

Exercise	Week 2	Week 5	Week 8
ST Hip Rotations	DH 30 sec each	SH 30 sec each	SH 30 sec each
ST Balance w/ Rotating Head (eyes fixed)	No March	March 15 sec	March 30 sec
ST Chair Squats	2x15 ST Row	3x15 ST Extend	3x25 ST SH Extend
Ta-Da's with ST	15 per side	15 per side	15 per side
ST Side Steps (Wide Steps to Feet Together)	2 steps Forward Reach 60 sec	2 steps Overhead Reach 90 sec	2 steps OR with Squat 120 sec

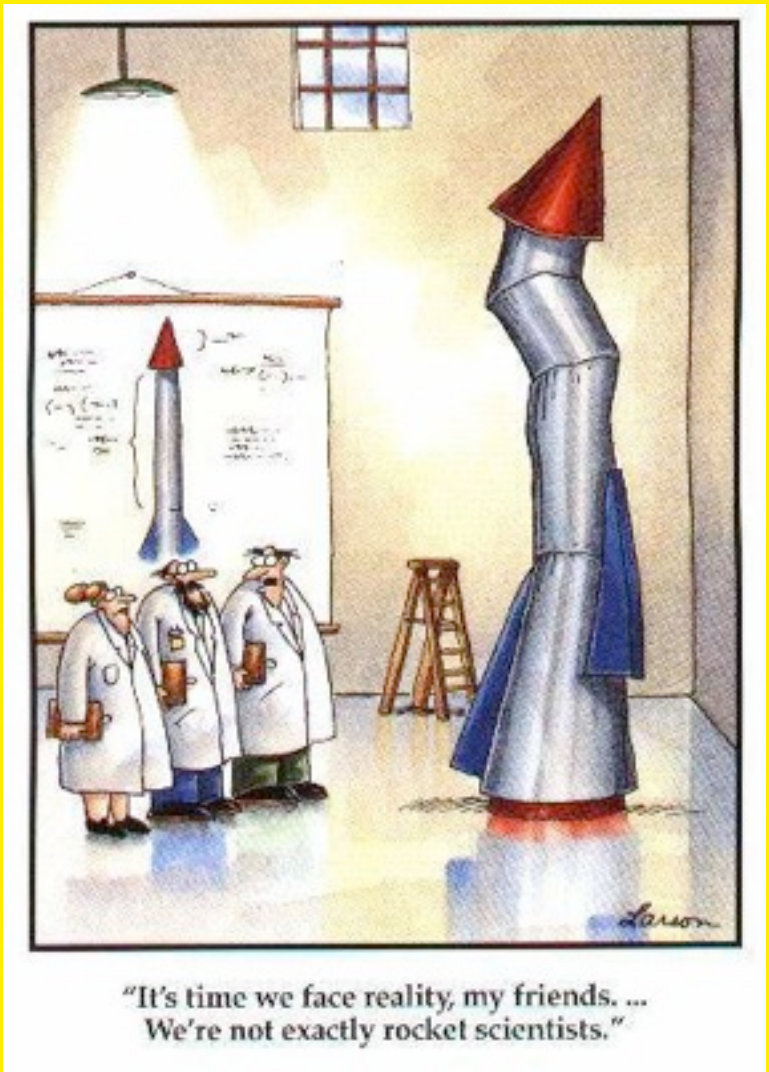
Published Results from USF Falls Prevention Program (ACSM Annual Meeting 2010)



Research: Injury Rehabilitation

- Over 20% of ER visits are for orthopedic sports injuries (CDC, 2013)
- Over 700K OSIs occur annually in K-12 settings (Owen et al., 2006)
- ACL repair and rehabilitation equates to $17,500 in medical expense (Owen et al., 2006)
- Football player following surgery for Femoral Acetabular Impingement (Cheetham & Kolber, 2012 *Int Jour Sports Phys Ther*)
- Boston Red Sox head trainer uses ST to enhance scapular stability
- ST devices activate core musculature to the same extent as floor-based core stability exercise (Schoffstall et al., 2010 *Jour Str & Cond Res)*

CONSTRUCTING ST PROGRAMS



A Ph.D. Researcher's Approach to ST Exercise Program Design

Create A List Of *Task Demands*

- Exercise Volume, Intensity, Frequency, Duration
- Energy Systems Used?
- Dominant Movement Patterns?
- Joint Mobility Issues?
- Sensory Requirements?
- Muscle Strength/Muscle Power/Muscle Endurance Demands?
- Agility/Dynamic Balance Demands?

$$\left(\nabla_p{}^2 + \frac{f_0^2}{\sigma}\frac{\partial^2}{\partial p^2}\right)\omega = -2\nabla_p \bullet \vec{Q} - \frac{R}{\sigma p}\beta\frac{\partial T}{\partial x}$$

EXAMPLE
MY GOLF GAME!!!

CASE STUDY #1
Elite Distance Runner

- Energy Systems Used?
- Dominant Movement Patterns?
- Joint Mobility Issues?
- Sensory Requirements?
- Muscle Strength/Muscle Power/Muscle Endurance Demands?
- Agility/Dynamic Balance Demands?

CASE STUDY #2

Elite (in his day...) Hockey Player

- Energy Systems Used?
- Dominant Movement Patterns?
- Joint Mobility Issues?
- Sensory Requirements?
- Muscle Strength/Muscle Power/Muscle Endurance Demands?
- Agility/Dynamic Balance Demands?

CASE STUDY #3
Older Adult

- Energy Systems Used?
- Dominant Movement Patterns?
- Joint Mobility Issues?
- Sensory Requirements?
- Muscle Strength/Muscle Power/Muscle Endurance Demands?
- Agility/Dynamic Balance Demands?

CASE STUDY #4

ACL Repair

- Energy Systems Used?
- Dominant Movement Patterns?
- Joint Mobility Issues?
- Sensory Requirements?
- Muscle Strength/Muscle Power/Muscle Endurance Demands?
- Agility/Dynamic Balance Demands?

ST's Next Challenge...

THANK YOU!

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