Identifying & Addressing Muscular Imbalances Of The Lower Body

Presented by Kevin Yates

About Kevin Yates

Certified Personal Trainer-10 years

Work-Physical Rehabilitation, Athletes, etc

Author-Core Stabilization Training For Muscular Imbalances e-book

Blog-http://functionaltrainingcoach.com

Teaching personal trainers how to identify & correct muscular imbalances that are keeping their clients from achieving their fitness goals

Objectives

- ***IDENTIFY*** common causes of muscular imbalances involving the lower body
- ***DEFINE*** the effects of lower body muscular imbalances
- ***EXPLORE*** training mistakes that contribute to muscular imbalances & overuse injuries
- ***ASSESS*** muscular imbalances of the lower body
- ***LEARN*** corrective strategies to help restore muscle balance

Surprising Statistics

- Degenerative conditions such as arthritis and osteoporosis are the result of a loss in muscle mass and strength due to disuse and not necessarily the result of age
- An estimated 80-100,000 ACL injuries occur annually in the U.S in the general population and approximately 70% are non-contact injuries
- It is suggested that enhancing the lack of NM stabilization (body control) may alleviate this high incidence of non-contact injuries
- The extent to which we condition our musculoskeletal system will directly influence our risk of injury

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The Downside Of Technology

Despite the advanced technology of today (exercise machines & workout equipment, better stretching & exercise techniques and injury prevention devices) we are seeing more cases of:

knee pain, shin splints, stress fractures, hamstring strains, pulled muscles, backache, Achilles tendon pain, plantar fasciitis, rotator cuff injuries, ankle sprains

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The Downside Of Technology

- Machine-Based Exercises: comfort at the expense of function
- Isolating Body Parts: muscles perform individually rather than as a unit
- Single Plane Dominant Training: does not prepare the body for multi-planar environment experienced outside of the gym

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What's The Problem?

When attempts at eliminating pain and injuries are unsuccessful many are under the false assumption that "old age", "a bad back", "bum knees", "weak ankles", arthritis, tendinitis or bursitis is something that is incurable and must be dealt with permanently

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What's The Problem?

Most people are advised to avoid certain movements (like squatting) or activities to avoid injury

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Effects Of Deconditioning

"…the musculoskeletal system is easily overtrained when it is deconditioned… Deconditioned refers to a state in which a person has muscle imbalances, decreased flexibility and/or a lack of core & joint stability. All of these conditions can greatly effect the ability of the human body to produce proper movement and can eventually lead to injury."-NASM

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Common Lower Body Injuries

Common injuries to the lower body are overuse-related involving:

- Hips
- Knees
- Ankles
- Feet

Most overuse injuries are the result of muscular imbalances

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Common Causes Of Lower Body Muscle Imbalances

Same Routine→Repetitive Movements→Pattern Overload→Altered Movement→Inefficient Muscular Recruitment→Muscle & Joint Stress→Pain/Injury

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Symptoms Vs Causes

- Many exercises address symptoms rather than causes
- Example: knee pain
- Symptom: knee pain
- Possible Causes: quadriceps dominance, tight psoas, hip weakness
- Exercises: address primary cause

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Just The Facts

- **Fact**: Think of the movements you are required to do on a daily basis: bending down, standing up, walking up/down stairs, getting in/out of the car, picking up a laundry basket, unloading groceries, holding children, sports activities, etc…

- **Fact:** Muscle imbalances are responsible for many non-traumatic pain and injuries and failure to address them often leads to an increasing list of injuries.

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The Big Picture

- Avoiding functional movements versus addressing them results in:
- Short-Term: decreased pain symptoms
- Long-Term: recurring episodes of painful symptoms once activity is resumed
- Avoiding functional movements does not correct muscular imbalances & contributes to recurring injuries to the same (or other) areas

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Causes Of Injuries Are Also The Cures?

- What causes an injury should also be involved in correcting it at some point in the rehabilitation process
- Ex: Client who enjoys playing tennis but suffered ankle sprain or golfer with lower back problems

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Effects Of Muscular Imbalances

↓Strength & stability
↓Balance & coordination
↓Flexibility & movement
↑Muscle & joint stress
↑Inactivity & weight gain
↑Potential for injuries!!!

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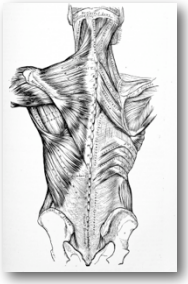
The Kinetic Chain Connection: 3 Areas Of Muscle Imbalances

- **Upper/Mid-Back Complex**: Poor scapular stabilization-strength-results in rounding of the upper back and moves the trunks COG forward increasing stress to the lower back, hips, knees and ankles



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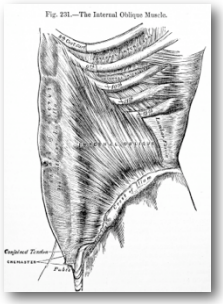
The Kinetic Chain Connection: 3 Areas Of Muscle Imbalances

- **Abdominal Complex:** Poor abdominal stabilization-strength-results in unstable trunk leading to inability to efficiently decelerate forces (trunk extension, rotation), produce force, decreased joint stability, muscle imbalances, compensatory strategies, etc



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The Kinetic Chain Connection: 3 Areas Of Muscle Imbalances

- **Hip Complex:** Poor hip stabilization-strength-results in excessive forces placed upon the muscles and joints of the lower extremities (hip, knee, ankle), poor alignment, altered movement patterns, etc.

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Training Mistakes Leading To Muscle Imbalances

Squat:

- Feet Wider Than Shoulders-

Increases stability in a primarily non-functional position—most movements are not performed from a wide base of support

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Training Mistakes Leading To Muscle Imbalances

Squat:

Toes Pointed Out-

(1)increases stability through leverage at the expense of decreased muscular stabilization due to decreased hip extensor activity

(2)increases activation of the quadriceps, gluteus medius and lumbar extensors (femoral abduction in transverse plane)

(3)results in increased stress to the knees, hips, lumbar spine & possibly sacroiliac joints

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Keep It Functional

Note: Most functional & athletic movements do not occur from this position.

Ex: Running with toes pointed out decreases force production during acceleration, negatively affects deceleration mechanics and develops poor alignment and joint stability

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Training Mistakes Leading To Muscle Imbalances

Smith Machine Squat:

- Knees & Hips Move Forward-
  Shifts COG forward increasing activation of quadriceps and increases knee stress—most common on smith machine where trunk can lean back
- = Tight or dominant hamstrings, poor control of the hip complex, glute weakness

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Training Mistakes Leading To Muscle Imbalances

Squats With Bands Around Knees:

- Most individuals are 'quad and abduction dominant' and cannot properly engage the hip extensors (glutes and proximal hamstrings). Bands used in this manner reinforce quad and abductor compensation and fail to properly condition the hip extensors
- *Note: excessive abduction can increase stress to the sacroiliac joints, lumbar spine, knees & ankles = LBP, knee & ankle pain*

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Training Mistakes Leading To Muscle Imbalances

Squats With Ball b/w Knees:

- Can increase adductor bias and medial knee collapse

What happens when ball is NOT there?

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Training Mistakes Leading To Muscle Imbalances

Lunge:

- Leaning On The Back Leg- Increases stress to the knee and decreases hip extensor activation of the lead leg
- Pushing From The Toes- increases activation of the quadriceps to decelerate knee flexion and decreases activation of the hip extensors which increases stress to the knees
- = Weak hip stabilizers, lower limb dominance

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Training Mistakes Leading To Muscle Imbalances

Lunge:

- Lead Leg Toes Pointed Out- Causes medial collapse of the knee and ankle
- Back Leg Toes Pointed Out- Rotates the hip creating poor alignment and stability of the hip, knee and ankle of the lead leg
- = Poor hip strength/stability, tight hamstrings, poor awareness

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Training Muscles Or Movements?

Most textbooks mention proper position and movement but seldom reinforce focus on how to achieve appropriate muscle contraction. It's not always enough to tell clients what muscles to use.

The question is can the client initiate proper muscular recruitment patterns?

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Every exercise is an assessment and every assessment is an exercise

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Specific Assessments

- **Bridge (60 Sec): Hip extension test for proper glute and hamstring activation and hip stabilization**
- Rate Hip Ext (1-5)
- Hip Deviation?
- Knees out/in?
- Area felt most?

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Specific Assessments

- **SL Bridge (30 Sec): Hip extension test for proper hip stabilization, glute and hamstring activation on single leg**
- Rate Hip Ext (1-5)
- Area felt most?
- Hip drop?
- Duration of hold?

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Specific Assessments

- **Overhead Squat: Mobility/Stability of the kinetic chain**
- Trunk Mobility/Stability
- Hip Mobility/Stability
- Knee/Ankle Stability
- Area felt most?
- Rate squat depth?

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Specific Assessments

- **SL Standing (30 Sec): Balance & single leg stabilization**
- Stable/Unstable/Falls
- Hip hike?
- Trunk/Hip rotation?

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Specific Assessments

- **SL Dynamic I/R: Balance & single leg stabilization during movement**
- R Stable/Unstable/Falls
- L Stable/Unstable/Falls

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