



Functional Training Perspectives Group

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STRENGTH – RESISTANCE TRAINING

MYTHS

1. SPOT REDUCTION

- The idea that local fat deposits are specifically targeted by exercising the underlying muscle.
- You are unable to spot reduce however you may notice more change in certain areas.

2. MUSCLE TONING

- The idea that muscle becomes firmer because it is exercised (it may grow but it does not get harder)
- If a body part becomes ‘firmer’ it is because of improvements in muscle definition
- Muscle definition is influenced by body fat levels and muscle size
- Muscle tone = muscle definition
- There is no rep range for improving muscle tone!!!

3. MUSCLE TURNS TO FAT

- Unused muscle transforms into fat this DOES NOT HAPPEN
- Unused muscle atrophies or SHRINKS
- “I’m going to be huge in three weeks”
- Muscle growth typically doesn’t commence to any significant degree in the first few weeks of resistance training

4. MUSCLE SHAPING

- The idea that some exercises do not cause hypertrophy but instead simply re-shape the exercised muscles
- In reality, muscle shape changes because of hypertrophy or atrophy
- Body shape changes because of...
- Muscle hypertrophy, and or
- Fat loss

5. ISOLATING PORTIONS OF MUSCLE

- It is wrong to suggest that any particular technique change results in the complete 'isolation' of portions of the involved muscles

6. EMPHASISING PORTIONS OF MUSCLES

- In muscles with multiple origins the tension generated by different muscle segments can often be influenced by changing the degree of stretch experienced by one of those muscles
 - Biceps brachii vs other elbow flexors
 - Gastrocnemius vs soleus
 - Rectus femoris vs other quads
 - Long head of triceps vs short heads
 - Clavicular vs sternal pecs
- **Task-specific motor units**
- In some multi-functional muscles (those with two or more actions) there are motor units (MUs) that preferentially act during just one of those actions
- Eg MUs in lateral and medial head of biceps brachii during supination and flexion
- MUs that act preferentially to supinate probably benefit more from exercise in which supination is performed
- **Working the lower quads / biceps / abs**
- **Working the outer / inner pecs...**
- Motor units in the upper or lower portions of some muscles *may* act preferentially during some lightly resisted tasks, however...
- When significant resistance is encountered muscles must generate tension along their entire length
- In serious strength training when one is lifting near max over 4-15 repetitions, it is unlikely that one can alter, to any significant degree, the end of the muscle that 'benefits' the most.

7. OTHER TECHNIQUE VARIATIONS

- Pointing toes / rotating hip joint during quadriceps exercises
- Some supportive evidence?

8. IMPACT OF RESISTANCE TRAINING ON SPEED

- Resistance training makes you slow
- Fibre conversions from faster to slower forms of myosin do occur but this probably only influences the maximum speed of unloaded muscle shortening
- May depend on the type of training
- High vs low volume, explosive vs slow...
- Neural adaptations enhance the rate of force development after RT programs in which the rate of force development is maximised

9. IMPACT OF RESISTANCE TRAINING ON FLEXIBILITY

- RT employing movements through a large range of motion (ROM) should **enhance flexibility**
- Some strength trained athletes exhibit significant hypertrophy and great flexibility
- (male gymnasts, javelin throwers)
- Extreme muscle development may inhibit flexibility at some joints (eg, the shoulder joint) depending on the architecture of the muscles involved
- This may be worse in pennate than fusiform muscles

10. IMPACT OF RESISTANCE TRAINING ON GROWTH

- "Weight training will stunt childhood or adolescent growth"
- **There is no evidence for this**
- The rationale for this argument is poor
- Many other sports involve higher risk
- When growth plates are damaged the impact is on individual bones not all bones



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STRENGTH – RESISTANCE TRAINING

TRENDS

1. INCREASE IN THE USE OF SWISS BALLS IN TRUNK EXERCISES.

INCREASE IN THE USE OF BALANCE-DEMANDING EXERCISES.

- Unilateral exercises (single leg – arm)

Decreased reliance on the heavy basics

- Low strength levels in supposedly elite athletes

2. IT IS THOUGHT BY SOME THAT STABILISING MUSCLES ARE ACTIVATED MORE POWERFULLY WHEN PERFORMED OVER AN UNSTABLE BASE OF SUPPORT.

- In particular the activation of the transverse abdominals (Tva) and multifidus (Mul) appears to increase during exercise of this sort.
- Unfortunately this is not the case, nor can you isolate these muscles. The best way to re-strengthen these muscles is to brace the abdominals as a whole, do not draw or suck your belly button in. If you are asked to do this by a health professional like physiotherapists or exercise physiologists please walk out and find someone else.
- You cannot possibly determine whether TVA is activating through placing or palpating with your hands over the abdominals.

3. PEOPLE WITH LOWER BACK PAIN (LBP) TEND TO EXHIBIT REDUCED ACTIVATION OF THE TVA AND MULTIFIDUS MUSCLES DURING MOVEMENT

- This suggests that their lower backs are less stable
- Rehab for these people involves relearning how to activate these muscles?
- According to some experts in this field the first step involves activating these muscles in isolation from other abdominal muscles? This simply does not happen and drawing or sucking your belly button in only decreases the support the abdominals provide.

4. IF IT IS GOOD FOR REHABILITATION IT MUST BE GOOD FOR INJURY PREVENTION.

- Why? There is no evidence for this.
- In uninjured people the Tva and Mul muscles become active during normal complex movement
- For uninjured people there is no valid rationale for special methods designed to activate these muscles

5. RATIONALE FOR ALTERNATIVE APPROACHES.

- ***In uninjured people Tva and Mul muscles are taxed heavily during almost any type of exercise***
- Front squats, over-head squats, clean & jerks and many other exercises will 'train' the Tva and Mul muscles
- Grappling exercises may be particularly effective in training the trunk muscles.

6. LIMITATIONS TO TRAINING ON UNSTABLE SURFACES

- ***Reduced muscle activation***
- The activation of the prime movers is reduced by training on an unstable base of support (Behm et al., 2002, Fittolani, 2005)
- Results in a less potent stimulus to these muscles
- Less significant adaptations...
- You can't effectively combine training for strength and power with training for 'core stability'.

Strength Training Myths & Trends.

- ***There is no proof that unstable training offers performance benefits that are evident on the sporting field***
- Unstable training is not specific to exercise on a stable surface
- Attempts to isolate target muscles are of little value in sporting movement which requires the coordinated use of many muscles