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BRIDGING THE GAP

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The Squat and its Application to Everything

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Director of Ludus Magnus Performance center in Columbus OH
Co founder of Athlete Warrior for tactical divisions
Lifting Background

• 611 raw bench @293 2016
• 2665 WR total @308 2008
• Raw 865  WR (belt only) @308 2014
• Equipped 1197 WR (multiply) @308 2011
Educational/Professional Background

- B.S. Exercise Science 1999-2003
- M.S. Sports Biomechanics 2004-2005
- Contractor for U.S. Army, Border Patrol, multiple fire departments
Opening Statements

• *No other lower body exercise in existence delivers more bang for the buck than a basic barbell squat*  
  Sean Nalewanyj

• *Deep squats improve jumping and sprinting performance, and help create more stabilization in the knee and lower extremities*  
  Charles Poliquin
If we know squats are good for almost everything athletic, and otherwise.. Why don’t we use them more????

• Lack of experience for many coaches and trainers

• Various form and coaching confictions on proper form, validity and volume

• Spinal compression concerns
We know we should do squats, how many sessions per week?

- The body cannot withstand more squatting than every 72 hours. This mostly has to do with the CNS, but most of the best lifters in the world follow this, maybe you should too.
It is also important to be strong for influence of RPE.
The thought process for Squats

• Increases in Maximal strength \( F = m \cdot a \)

• Increases in Dynamic Strength \( F = m \cdot a \)

• Increase flexibility, bone density and lower injury (for both young and old)

This is angle for all coaches regardless of clients or athletes
Squatting for Maximal Strength $F = ma$

- Maximal strength is the component on which all other muscle contractions are based

- Maximal strength when using back squat involve almost every muscle group

- Performance of every sport is increased with stronger back squats
Maximal Strength example
700lb plus 200lb of chain
Maximal Strength 2-RM example
Squatting to Increase dynamic strength $F = ma$

• This is an ability to move a submaximal weight with maximum velocity

• This is the real key in order for maximal strength to become useful for a large range of environment’s (power-speed transfer)

• Higher the maximal strength, the heavier resistances can be used for dynamic development (30% of 500 vs 350)
Dynamic squat example concentric style w 250lb
We must get stronger in order to get faster and vice versa

- Nothing retains type 2 fibers like max effort and dynamic effort training (there is no replacement for straining or explosiveness)

Training based solely on reps or endurance causes not only type 2 degradation but actually increases long term body fat storages
Another advantage to strength

• When strength training (especially squats) we as coaches and trainers can lower RPE (rate of perceived exertion) and allow our populations to increase anaerobic conditioning.

GPP is key to being able to do difficult things for extended periods
Increases in muscle, bone density and injury reduction

Bone density 3.5 x normal, leg size 33in squats do body good!!
There is no athlete or citizen that cannot use more muscle and bone density

Never be only strong enough to just lift yourself!! A good rule of thumb is be at least 2x as strong as your body

For Normal people and 2.5 for most athletes.
We will lose muscle mass and bone density as we age

• But it's dependent on how much we start with before the process of deterioration begins

Which one is 80 years old?
Hip Mobility and Squats
We Know that hip mobility is a key indicator for lower back and knee health

- Keeping the hips mobile will reduce lower back pain and issues, regardless of goals
- Stronger squats will strengthen all the knee muscles and ligaments (ACL etc)
The Squat

- Primary example of how not to squat

This is more common than you may think!!!
How to perform the Squat

• There are major form queues that help all populations learn to squat, with the proper muscles (I E posterior chain)

• Remember although the squat is a major quadriceps activator, the key is to use as much glute and hamstring as possible
Step one

• Treat the squat as a hip exercise not a knee extension/flexion movement
Step two (teach the person to sit back versus down)
Step three “Push out”

- Pushing out enforces the hip muscles will stay activated and help through the motion, this also helps keep the spine at an optimal angle
Step four have the chest and head up with butt tilted out.
Now we know all the queues.... Can we do it

• Hands on Portion
• 10:30 AM
Contact Info

• Realmattwenning (instagram)

• Matt Wenning athlete page Facebook

• www.wenningstrength.com
Interesting reads and references

1. Int J Sports Phys Ther. 2015 Feb;10(1):13-20. **Passive hip range of motion is reduced in active subjects with chronic low back pain compared to controls.**
2. Roach SM1, San Juan JG2, Suprak DN3, Lyda M1, Bies AJ4, Boydston CR.
3. Eur J Appl Physiol. 2016 Feb 11 **Age and muscle strength mediate the age-related biomechanical plasticity of gait.**
4. Hortobágyi T1,2, Rider P3, Gruber AH4, DeVita P5.
6. Almetedt HC, Canepa JA, Rameire DA, Shoepe TC
7. Sports biomechanics march 2015. Quadriceps effort during squat exercise depends on hip extensor muscle strategy
8. Bryanton MA, Carey JP, Kennedy MD, Chiu LZ
9. Jay Hoffman *Resistance training and injury prevention* American college of sports medicine ASCM.