



**2022 NSCA TACTICAL ANNUAL TRAINING** #NSCATactical22



# *Biomechanical Analysis of the Squat*



Donny Bigham, RSCC, CSCS, \*D, TSAC-F, \*D  
*Biomechanical Analysis of the Squat*

**2022 NSCA TACTICAL  
ANNUAL TRAINING**

# *CONFLICT OF INTEREST STATEMENT*

I have no actual or potential conflict of interest in relation to this presentation.

# *Strength is Mission Essential*

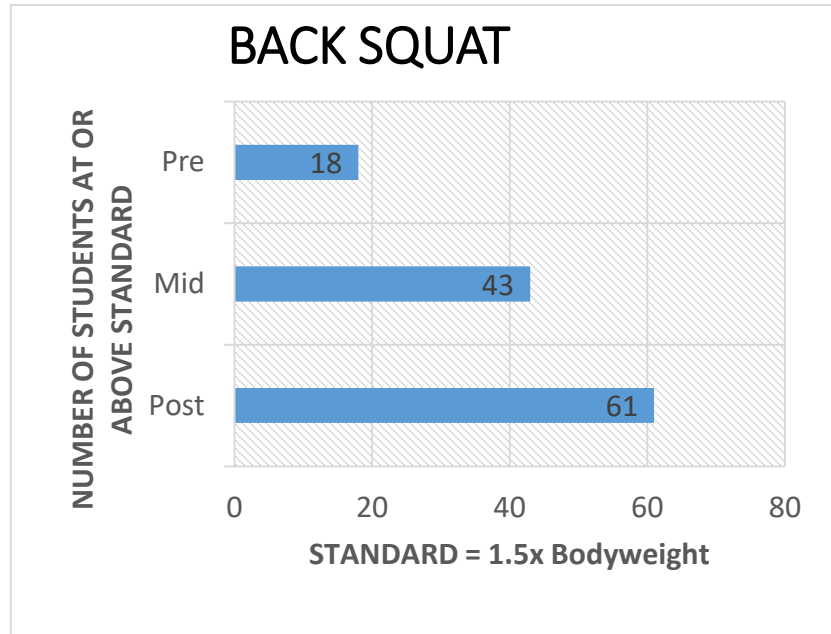
**British patrol in Normandy in 1944 (14-21 lbs)**



**Dismounted patrol in Afghanistan in 2016 (94 -109 lbs)**



# Strength Baseline for the Warrior



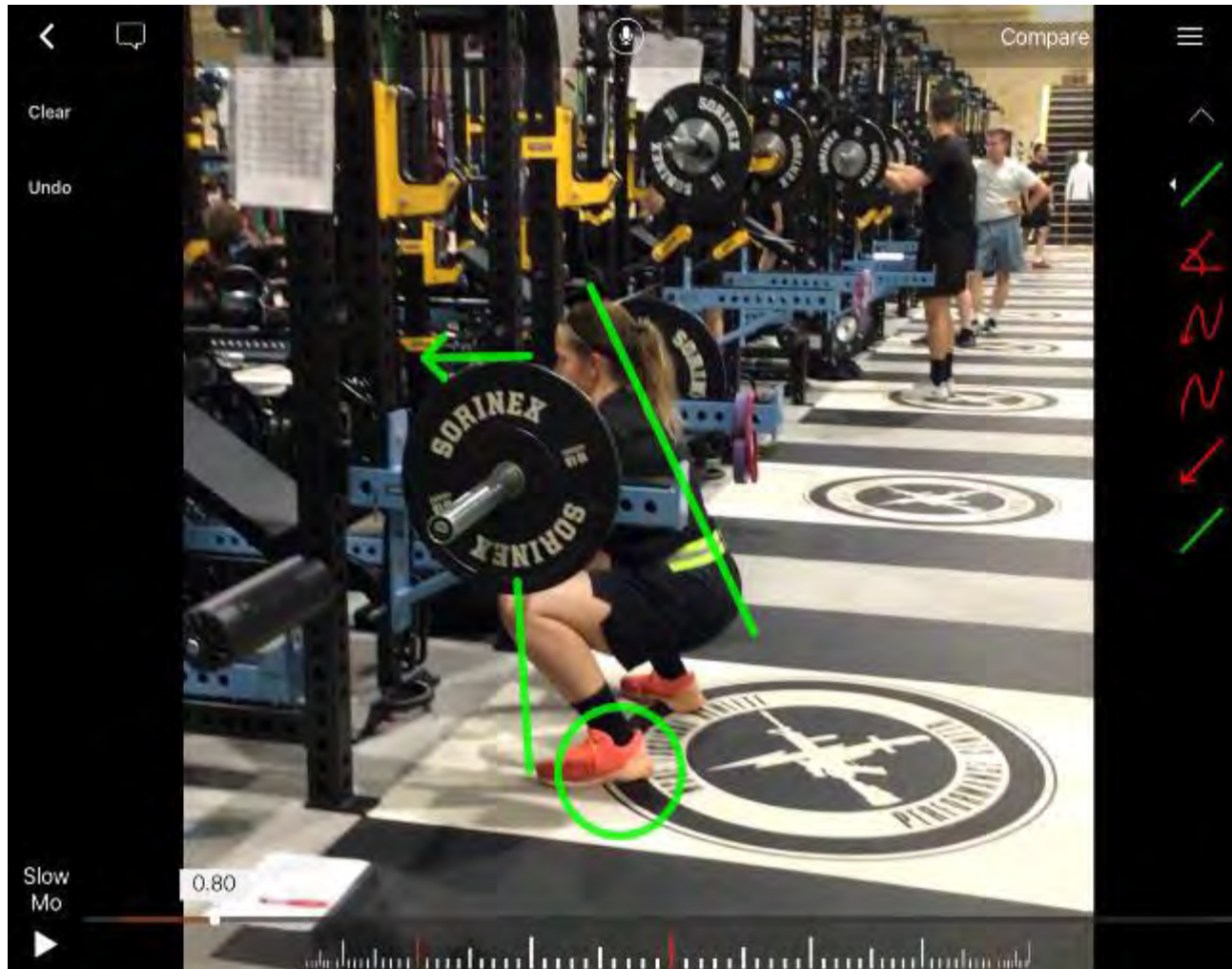
For Soldiers to move under loads > 30% of their BWT

- Requires 1.5x BWT in Squat & 2.0x BWT in Deadlift
- Requires BWT + 60lbs for Grip Strength
- Requires Standing Long Jump to equal height of Soldier

2019 TAP-C Pre/Post Strength Data, High Bar Squat

- **Pre** – 18 Soldiers met Baseline Strength (10 Reps at BWT)
- **Post** – 61 met the Goal

# *Non-Negotiables with MVMT*



1. Instill Purpose and Intent in **EVERYTHING**
2. Observe the MVMT from the proper **ANGLE**
3. Prioritize fixing the Problem in the MVMT
4. **ALWAYS** use the Tools in your Arsenal
5. Warriors **MUST** train their Weaknesses



# Brace Prep (select 3-4 exercises)

## The Breath Belt

Intrabdominal Pressure/Diaphragmatic Breathing (Worn during Warmup Sets)

- Improves Coaching vantage point
- Mobility/Myofascial Release of Psoas, QL, and SI Joint



Stiffness thru the Core (Ball/Roller/ETC) Hold 2x30s



Pull off Press Punch 2x15  
Standing/Kneeling/Lunge

# Brace Prep Continued

Unstable Surface SL Weight Transfer  
2x15



KB Pullover 2x15



SA Bottoms up 90 degrees 2x15yds

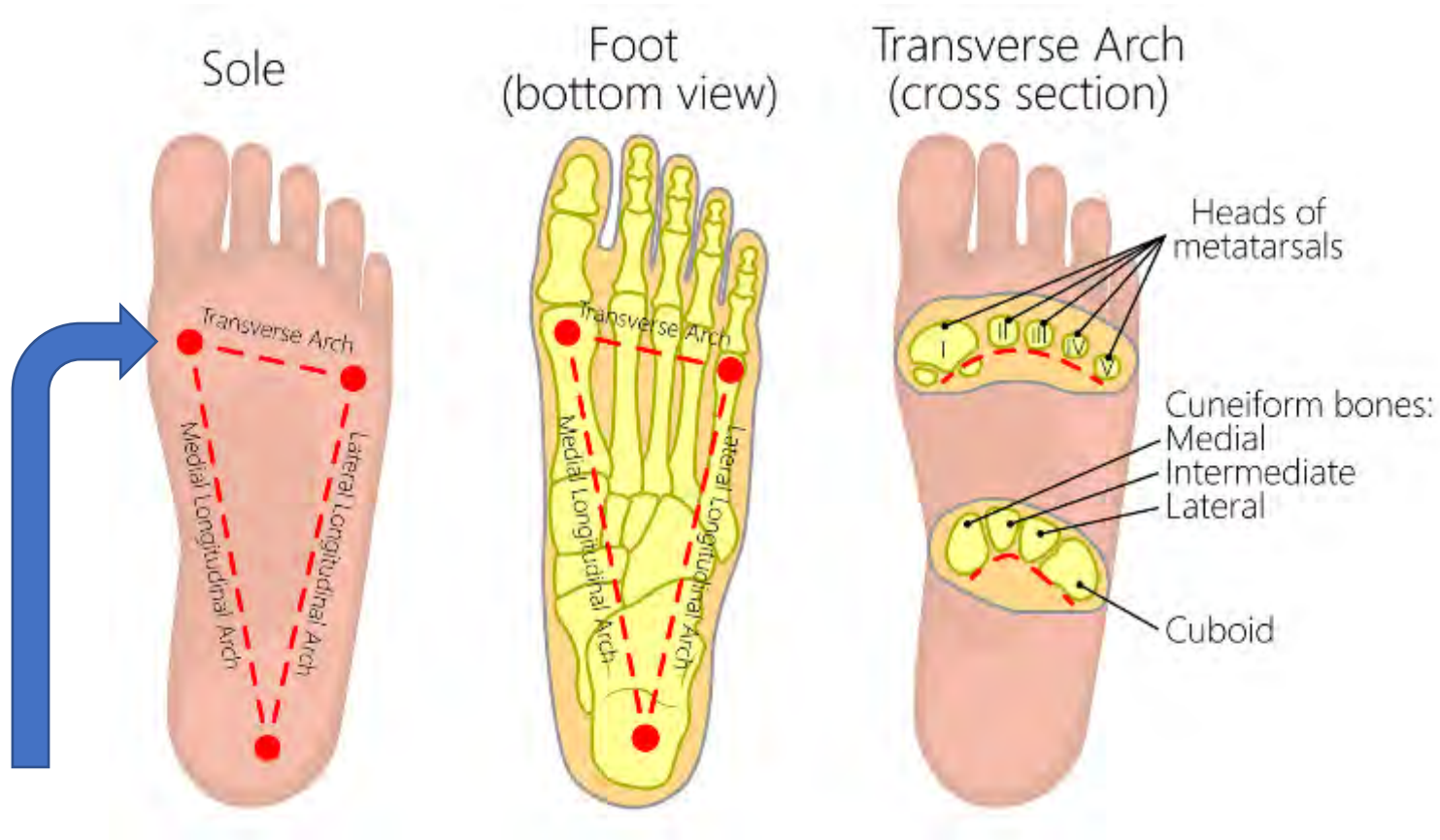


Glute Ham Roller or AB Roller 2x15



# Active Feet

Tripod (Big & Pinky Toe + Torque thru Heel)



Recommend Toe Spacers



**Shoes Off!!**  
Paper Test!!

# Active Feet

## Fallen or Low Arch

- Knee Injuries
- Patellar Tendinitis
- Valgus Collapse



Band X Drill 2x15

Recommend  Glute Training  
2x15

## High Arch

- Ankle Injuries
- IT Band Syndrome

### Iliotibial Band Syndrome



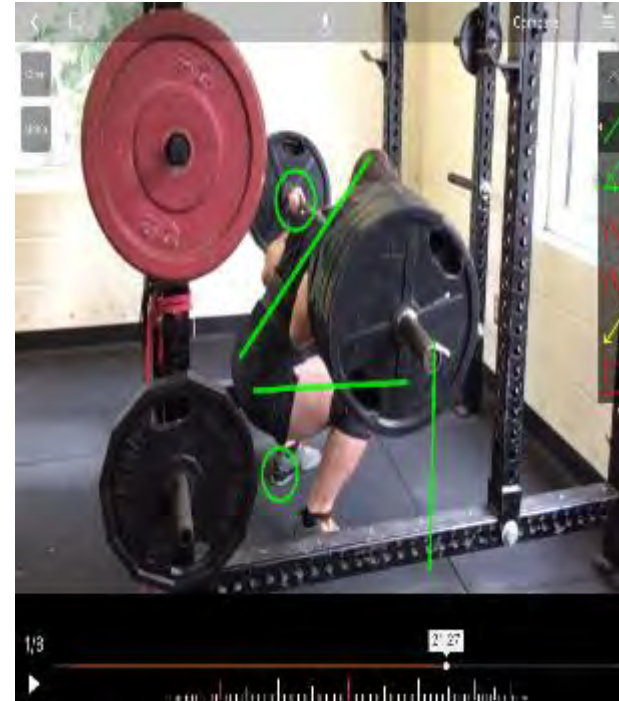
Banded Ankle & Knee Squats 2x15



# *Hip Leads the Way*

Beltless Low Bar Squat 405x9 @ RPE 8

Side angle is the BEST vantage point



# *Hip Hinge & Shoulder Girdle Prep*

Double Banded KB Swings 2x15



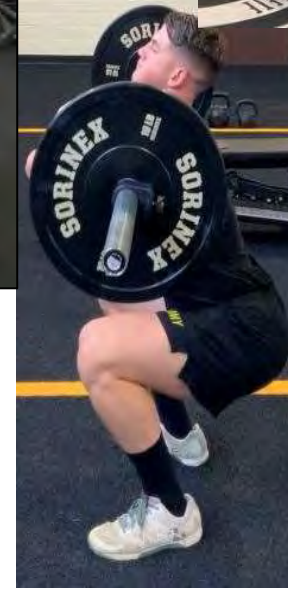
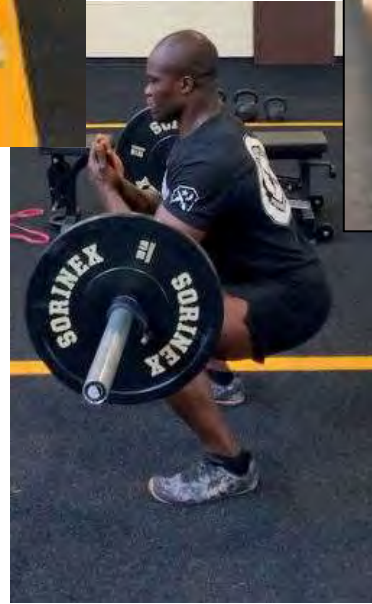
Scapulae pullups 2x15



Scapulae Retraction 2x15



# *Unlimited Variations of the Squat*



# Mobility & Post WO Recovery

Calve Voodoo Floss



10 minutes of Walking Backwards!!

Ankle Distraction



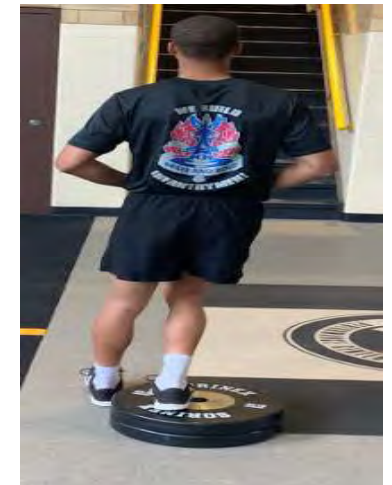
KB Glute Smash



Groin Voodoo Floss



SL ECC Step Downs



# Post WO Recovery

Trusted by 300+ Pro and College Teams



The firefly device is a sports recovery device powered by *OnPulse™* technology that increases blood circulation.

Firefly decreases **muscle** soreness and reduces **recovery** time allowing an athlete to train harder and improve **performance**.

The firefly **technology** is clinically-proven to increase blood flow by 400% to enable significantly faster recovery time – 3x faster.



OneTime powerlifting  
How many times did God sacrifice his son, Jesus? The Perfect Sacrifice, ONCE!  
Galatians 1:4 Christ obeyed God our Father and gave himself as a sacrifice for our sins to rescue us from this evil world.