



2022 NSCA PERSONAL TRAINERS VIRTUAL CONFERENCE

October 25 - 28, 2022 | ONLINE | 2.0 CEUs



CONFLICT OF INTEREST STATEMENT

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

WHO WE ARE

Lee Boyce

- PT, and ex collegiate level sprinter/long jumper
- The most prolific fitness writer in the world working today (featured everywhere, currently advisory board member for Men's Health, STRONG Magazine)
- Multiple time contributor to PTQ
- College Professor (Humber College – Fitness and Health Promotion diploma program in Faculty of Health Sciences and Wellness)
- New book with Melody coming out soon
- Part-Time Movie Aficionado



WHO WE ARE (cont'd)

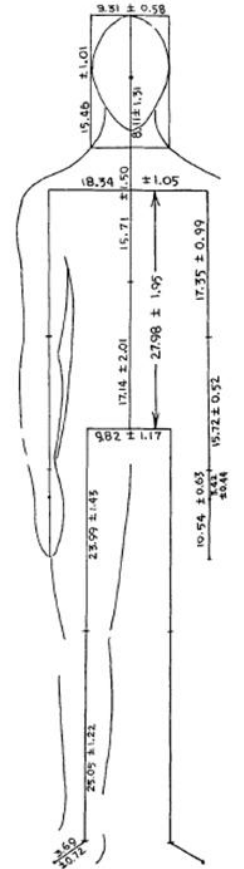
Melody Schoenfeld

- Yes, he's my brother
- NSCA PTOTY 2019
- Featured in Men's Health, Men's Fitness, Shape, etc etc
- Multiple publications in SCJ
- Author: *Pleasure Not Meating You*, *Diet Lies & Weight Loss Truths*, new book with Lee coming out later this year
- MA, health psychology
- Competitive Strength athlete (strongman, gripsport, mas wrestling)
- Performing Musician
- Lover of animals, eater of tofu, teller of horrible jokes



Do Leverages Really Matter?

- Some body measurements are used to track illness or growth patterns
- Legs are most efficient at propelling the body forward at about 50% total height
- Regulating temperature
- Carrying loads
- Nonverbal communication
- Running long distances
- Lifting heavy loads



Source: Arai, K., & Asmara, R. A. (2014). Gender classification method based on gait energy motion derived from silhouette through wavelet analysis of human gait moving pictures. *International Journal of Information Technology & Computer Science (IJITCS)*, 6(3).

Bogin & Varela-Silva, 2010

Proportions and Environment

- Climate/temperature of environment affects limb length
 - Long limbs/torsos help prevent overheating—maximize surface area to allow for heat loss.
 - Short limbs/large mass help retain warmth



-Ruff, 2002

Proportions and Health

- Nutrition/malnutrition
 - People with relatively short legs in proportion to body length may be at risk for CVD and obesity.
 - People with relatively long legs may be at higher risk for some cancers.
 - Short leg length can be related to malnutrition in childhood.

-Bogin & Varela-Silva, 2010



There Are Many Leverage Combinations

Tall/proportional limbs (USA): over 5'10" (men), over 5'5" (women)

Short/proportional limbs (USA): under 5'9" (men), under 5'4" (women)

"Big all over" – Independent of height; relating to overall mass. Males fitting into XL or larger clothing; women fitting into size 12 or larger clothing

Short arms/long legs

Short legs/long arms

Long torso (distance between hips and shoulders taking up more than half total height)

Long torso/short legs/long arms

Long torso/long legs/short arms

Short torso/short legs/long arms

Short torso/long legs/short arms

Long femurs, short shins / long shins, short femurs

Long humerus, short ulna/long ulna, short humerus

Small Hands

What does this mean for Personal Trainers?

- These leverage proportions aren't exclusive to athletes or elite lifters – they're part of the everyday gen.pop, possibly even more so
- More than anything, strength training is affected by leverages, and trainers should care
- 3 most popular patterns are worth a closer look when taking levers into consideration



Deadlift

- Body of average proportions may be at low risk, but for max performance, long arms and a shorter bar distance is ideal
- Long arms + longer torso = lower hip position and more vertical torso during conventional pull
- Larger hip angle = less demand on lumbar spine
- What does this suggest about volume/programming/selection when compared lifters with inverse proportions (short arms, long legs, short torso)?

Check it out: <https://www.facebook.com/48909427/videos/pcb.10105788816826960/10105788815759100>



The Trap Bar: The Common Alternative

- Higher handle option
- Neutral grip
- No bar to block shin
- Load surrounds body (rather than strictly in front)
- Note key differences among trap bars (overall weight, handle height, handle width, grip thickness)
- Finding other ways to bear load in deep hip flexion is key so as not to neglect this part of your ROM – think back extension, reverse hyper, SLDL

Check it out:

<https://www.facebook.com/coachleeboyce/videos/10106028277860130>



Squat

- Lifters with longer torsos and shorter legs have great strength potential and risk/reward ratio
- Long legged/short torso lifters will experience greater struggles squatting to full ROM, especially if mobility needs work

Check it out!

<https://www.facebook.com/48909427/videos/pcb.10105788816826960/10105788815843930>



Squat, cont'd

- Big all over lifters may struggle with shoulder and hip mobility and meet barriers to ROM. This may force feed a wider than ideal setup which may not be in line with actual skeletal anatomy
- The longer your femurs, the more important dorsiflexion becomes to maintain proper loading balance
- Back squat: The least “friendly” squat variation of all. Seek variety where possible



Some squat variations worth considering

- Safety Bar Squat/Cambered Bar Squat (Big All Over)
- Front Squat (Long legs, short torso)
- Goblet Squat (all body types)
- Box Squat (Tall Lifters)

Bench Press

- Ideal body type for bench press performance: Short arms, longer torso, smaller hands
- Pressing distance is reduced when lockout space is limited (due to arm length)
- Consider shoulder glide at bottom end ranges, especially with long arms



Bench Press, cont'd

- Close grip vs. Wide Grip, Hand Position and Strength
- Once again – how does all of this affect volume and programming of bench press patterns compared to other horizontal pressing movements?
- Pressing with axle bar/fat grips, chains/reverse bands, football bar



Bench Press Alternatives For All Bodies

- Push ups/loaded push ups. Allows scapulae to move and easier to select ideal hand position
- Landmine Pressing
- Incline DB Press
- Cable Pressing (angle of force is rarely directly downward, which can act very differently on shoulder joint)
- Pin Press for strength work
- The importance of isometrics to improve strength through entire joint ROM



There's So Much More!

Truth be told, this hardly scratches the surface of all the possible directions this conversation can go, and all the possible exercises these considerations can be applied to.

Our book ***Strength Training for All Body Types: The Science of Lifting and Levers***, published by Human Kinetics, will deep dive into more movements, more physics, more body type combinations, and more lifting alternatives and variations for low-risk strength training options for the masses, based on their anthropometry.



Questions?

Instagram:

Lee: @coachleeboyce

Melody: @5ftoffury1



References

Bogin, Barry, and Maria Inês Varela-Silva. "Leg length, body proportion, and health: a review with a note on beauty." *International journal of environmental research and public health* 7.3 (2010): 1047-1075.

Ruff, C. Variation in Human Body Size and Shape. *Annual Review of Anthropology*, 31:211-232, 2002. doi: <https://doi.org/10.1146/annurev.anthro.31.040402.085407>

