



TRUSTRENGTH DYNAMOMETER

**THE FULL BODY
TESTING SOLUTION**

THE IMPORTANCE OF FULL BODY ASSESSMENT AND MONITORING

Standardised methods of assessing isometric strength are well established in sports science due to repeatable, low-risk protocols that enable practitioners to efficiently quantify maximal force production in tasks related to sport-specific movements ¹.

The increase in portable, valid, and reliable field-based based solutions ²⁻³ means that maximal full body strength diagnostics are more accessible than ever.

Different full body isometric strength tests are not interchangeable, as maximal force production will vary between assessments. Instead, choose the best test option according to your population group and overarching aim, and importantly, be consistent in monitoring adaptations in full body maximal force production over time.

The Hawkin team has designed and validated several reliable testing protocols, giving coaches and clinicians confidence in their full body or “compound” strength assessments.

Although the TruStrength dynamometer device can be used to assess full body force capabilities using a variety of protocols, our team recommends the following tests, which are described in this guide:

➔ ***Isometric Mid-Thigh Pull (IMTP) Test***

➔ ***Isometric Belt Squat (IBSQT) Test***

MID-THIGH PULL

Equipment checklist

- ✓ TruStrength
- ✓ Adjustable Strap
- ✓ Carabiner x2
- ✓ Hawkin Bar
- ✓ Lifting Straps x2 (not provided)
- ✓ Portable Iso Platform
- ✓ Eyebolt x1



TEST SETUP INSTRUCTIONS

- The IMTP is performed on a portable iso platform with TruStrength fixed to the centre bolt. The athlete stands in a position mimicking the second pull of a clean. Secure bar height by adjusting the adjustable strap to allow the athlete to obtain the optimal knee ($125\text{--}145^\circ$) and hip ($140\text{--}150^\circ$) angles ⁴.
- The athlete applies minimal pre-tension and the assessor cues them to PUSH once signalled by the Hawkin Capture app (i.e., our beep and flash cue). Then, the athlete PUSHES their feet into the base of the portable iso platform, whilst simultaneously pulling the bar as HARD and as FAST as possible (typically for 3 or 5 seconds-maximum) ⁴.
- Complete 2 trials as a minimum, ideally with $<5\%$ variation in peak force between trials (to indicate that a true and consistent maximum effort was performed each time) ⁴.
- Encourage athletes to wear lifting straps during the IMTP test to ensure that grip strength is not a limiting factor (pro tip: figure 8 straps work best with the Hawkin bar setup [see photo]).

BELT SQUAT TEST

Equipment checklist

- ✓ TruStrength
- ✓ Adjustable Strap
- ✓ Carabiner x2
- ✓ Portable Iso Platform
- ✓ Eyebolt x1
- ✓ Lifting Belt or Harness (not provided)



TEST SETUP INSTRUCTIONS

- The IBSQT is commonly used as an alternative to the IMTP due to not requiring grip and bracing of the upper body. Therefore, it is a great lower-body strength assessment for populations prone to upper-body injuries, such as collision sports, or for individuals with limited upper-body function or limb differences.
- The IBSQT places the athlete at 120-140° knee and 110° hip flexion and follows the same standardised protocol (i.e., joint angles) as the IMTP.
- Ensure that the athlete creates a minimal pretension in the strap prior to them initiating the test (adhering to the same cues as the IMTP test shown above).
- A whole body harness setup has been demonstrated to be reliable⁵ and produce more force than a hip belt⁶, potentially due to increased comfort during maximal efforts.

DATA & METRICS

Every TruStrength test is processed the same way, every time. Removing human error and inconsistency ensure results reflect real changes, not differences in how the data was handled.

PEAK NET FORCE

Peak Net Force provides insight into an athlete's maximal strength. This metric is great to track during mid-stage rehabilitation and/or pre-season, and early in-season.

NET IMPULSE / AVERAGE FORCE

The average force or impulse can give you insight into an athlete's ability to sustain force over the entire contraction duration.

RAPID FORCE / RFD

Net force at 50-200 ms and rate of force development (RFD) during the repetition can give you insight into the athlete's explosive strength capability.

The TruStrength system makes strength testing quick, reliable and repeatable, empowering practitioners with real-time data that supports decision making and elevates client outcomes.

TAG SELECTION

This example represents a tag workflow for the Isometric Belt Squat test. Accurate tags are essential for insightful data analysis, so you know HOW you tested when it comes to analysis.

TEST NAME: **IBSQT**
TEST LIMB: **N/A**



Protocol Considerations

LONGER DURATIONS

10+ seconds

Recommended if
muscle endurance is of
interest

MODERATE DURATIONS

3-5 seconds

Recommended if
maximal strength is of
interest

SHORT DURATIONS

1 second

Recommended if rapid
force expression is of
interest

VERBAL CUES

"fast" and "hard"

Recommended for any
test duration (assuming
uninjured athlete)

*Whether you are profiling, screening or monitoring
your athletes, TruStrength brings precision and
confidence to strength testing.*

Join leading professionals who are using Hawkin data to drive smarter decisions.

ENDNOTES

¹ Comfort, P., et al. Standardization and methodological considerations for the isometric midthigh pull. Strength & Conditioning Journal. 2019; 41(2):57-79.

² Pichardo, A.W., et al. Validity and reliability of force-time characteristics using a portable load cell for the isometric midthigh pull. The Journal of Strength & Conditioning Research. 2024; 38(1): 185-191.

³ Zeb, M., et al. Reliability of a portable fixed dynamometer during a legs only isometric squat assessment. The Journal of Sport and Exercise Science. 2025; 9(1): 52-58.

⁴ Comfort, P., et al. Standardization and methodological considerations for the isometric midthigh pull. Strength & Conditioning Journal. 2019; 41(2):57-79.

⁵ Zeb, M., et al. Reliability of a portable fixed dynamometer during a legs only isometric squat assessment. The Journal of Sport and Exercise Science. 2025; 9(1): 52-58.

⁶ Dufner, T.J., et al. Full-Body Harness versus Waist Belt: An Examination of Force Production and Pain during an Isoinertial Device Maximal Voluntary Isometric Contraction. Journal of Functional Morphology and Kinesiology. 2024; 9(3): 165.