



TRUSTRENGTH DYNAMOMETER

THE HANDGRIP TESTING SOLUTION

THE IMPORTANCE OF HANDGRIP ASSESSMENT AND MONITORING

Handgrip strength is one of the most widely used indicators of physical capability and neuromuscular function. Research consistently shows that grip strength is a powerful biomarker linked to functional capacity, healthy aging, independence, and overall health status ¹⁻³.

Handgrip is also associated with athletic neuromuscular performance, explosive strength, and fatigue levels, making it valuable in sports and high-performance settings ⁴. Grip strength remains remarkably stable as a standardized measure across the lifespan, with large-scale normative data supporting its use ⁵.

Using the TruStrength dynamometer system with the Handgrip attachment enables practitioners to gather quick, reliable, and repeatable grip-strength data in multiple standardized positions. These positions provide a holistic view of upper-limb and neuromuscular function.

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

- ***"Arm Bent" Test***
- ***"Arm Out" Test***
- ***"Arm Side" Test***

"ARM BENT" TEST

Equipment checklist

✓ TruStrength
✓ Handgrip Attachment

✓ Box or chair if doing seated version (not provided)



TEST SETUP INSTRUCTIONS

- Athlete sits or stands with elbow flexed to 90°.
- Wrist and forearm in neutral.
- Shoulder relaxed.
- Standardized grip width maintained.

EXECUTION

- Athlete squeezes maximally (typically for 3 or 5 seconds-maximum).
- Avoid contact between the upper arm and torso.

RATIONALE

This is the most commonly used clinical setup and is highly reliable for maximal force testing, widely recommended across clinical and performance settings ⁶⁻⁸.

"ARM OUT" TEST

Equipment checklist

✓ TruStrength
✓ Handgrip Attachment

✓ Box or chair if doing seated version (not provided)



TEST SETUP INSTRUCTIONS

- Athlete lifts the testing arm straight out in front at 90° of shoulder flexion.
- Elbow extended, wrist neutral.
- Standardized grip width maintained.

EXECUTION

- Athlete performs a maximal squeeze (typically for 3 or 5 seconds-maximum).
- Maintain level shoulders; avoid trunk rotation.

RATIONALE

Based on validated testing positions⁹, this elevated position provides additional context for assessments involving front-of-body tasks commonly found in sport and tactical professions.

"ARM SIDE" TEST

Equipment checklist

- ✓ TruStrength
- ✓ Handgrip Attachment

- ✓ Box or chair if doing seated version (not provided)

TEST SETUP INSTRUCTIONS

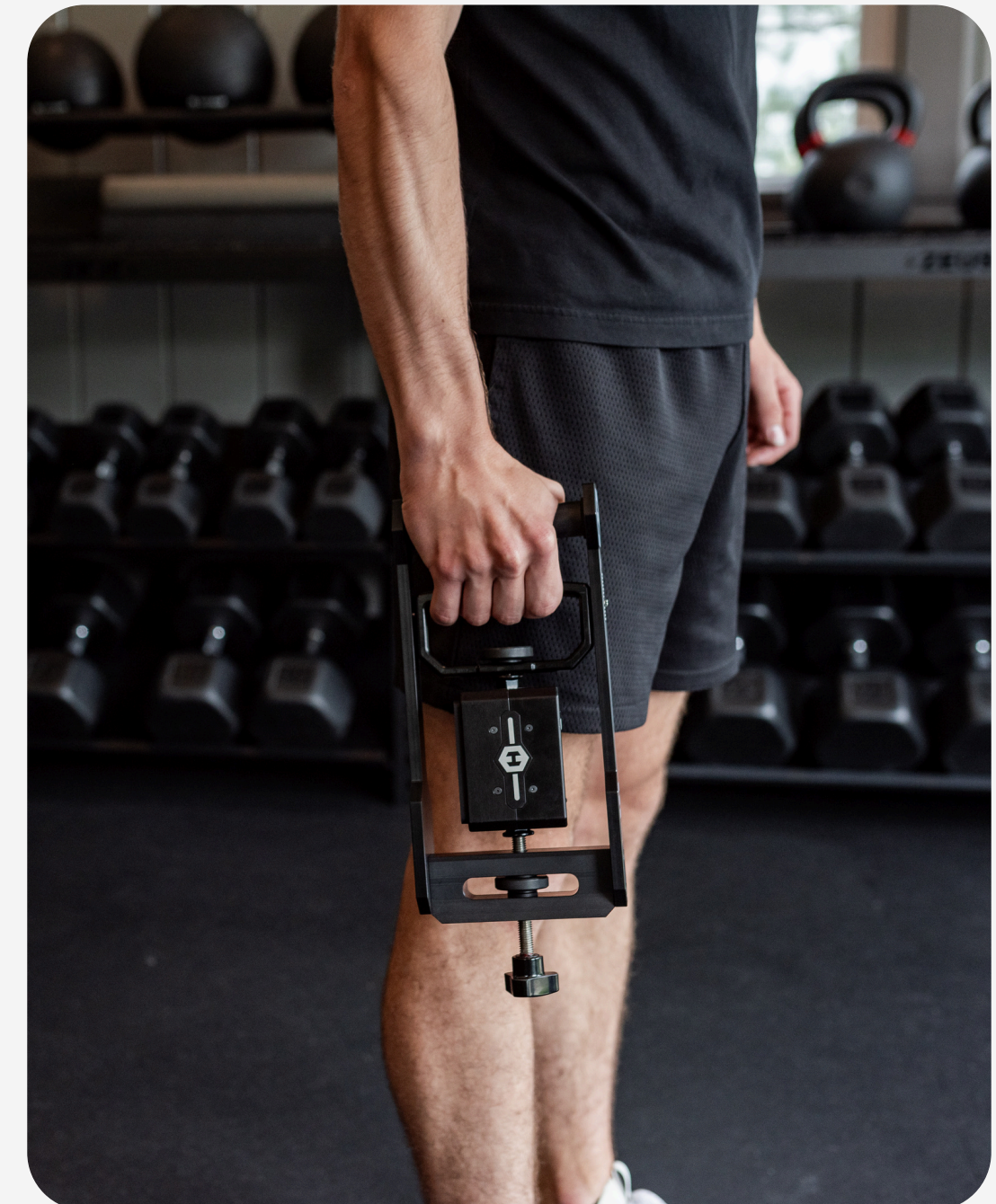
- Athlete stands or sits with their arm fully extended naturally by the side.
- Elbow extended, with wrist and trunk neutral.
- Standardized grip width maintained.

EXECUTION

- Athlete performs a maximal squeeze (typically for 3 or 5 seconds-maximum).
- Avoid shoulder elevation or leaning.

RATIONALE

This "arm dangled" position has been validated and produces grip strength values comparable to the "arm bent" (flexed-elbow) and "arm out" elevated-arm positions ¹⁰.



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.

PRO TIPS

PRO TIP

- Adjust the slider on the handgrip attachment so the athlete's proximal interphalangeal joint (middle knuckle) is flexed to 90°.
- Use the built-in ruler to record this distance for repeatability.

WHY THIS MATTERS

- Ensures consistent hand size-adjusted grip width.
- Matches standardised dynamometer methodology.
- Prevents athletes "cheating" by changing grip span
- Reduces variation across repeated testing sessions.



TAG SELECTION

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

TEST NAME: **HANDGRIP ARM OUT**
TEST LIMB: **RIGHT**



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 Bohannon RW. Grip Strength: An Indispensable Biomarker for Older Adults. *Clinical Interventions in Aging*. 2019;14:1681–1691.

² Cooper R, et al. Objectively measured physical capability levels and mortality: Systematic review and meta-analysis. *British Medical Journal*. 2010;341:c4467.

³ Syddall HE, et al. Grip strength measurement: A practical guide. *Age and Ageing*. 2017;46(4):628–635.

⁴ Savva C, et al. Associations between handgrip strength and muscle endurance, explosive power, and neuromuscular performance. *Journal of Strength and Conditioning Research* . 2014;28(6):1839–1848.

⁵ Dodds RM, et al. Grip strength across the life course: Normative data from 12 British studies. *PLoS ONE*. 2014;9(12):e113637.

⁶ Bohannon RW. Grip Strength: An Indispensable Biomarker for Older Adults. *Clinical Interventions in Aging*. 2019;14:1681–1691.

⁷ Cooper R, et al. Objectively measured physical capability levels and mortality: Systematic review and meta-analysis. *British Medical Journal*. 2010;341:c4467.

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⁸ Syddall HE, et al. Grip strength measurement: A practical guide. Age and Ageing. 2017;46(4):628–635.

⁹ El-Gohary TM, et al. Assessment of hand-grip and key-pinch strength at three arm positions among healthy college students. Journal of Taibah University Medical Sciences. 2019.

¹⁰ El-Gohary TM, et al. Assessment of hand-grip and key-pinch strength at three arm positions among healthy college students. Journal of Taibah University Medical Sciences. 2019.