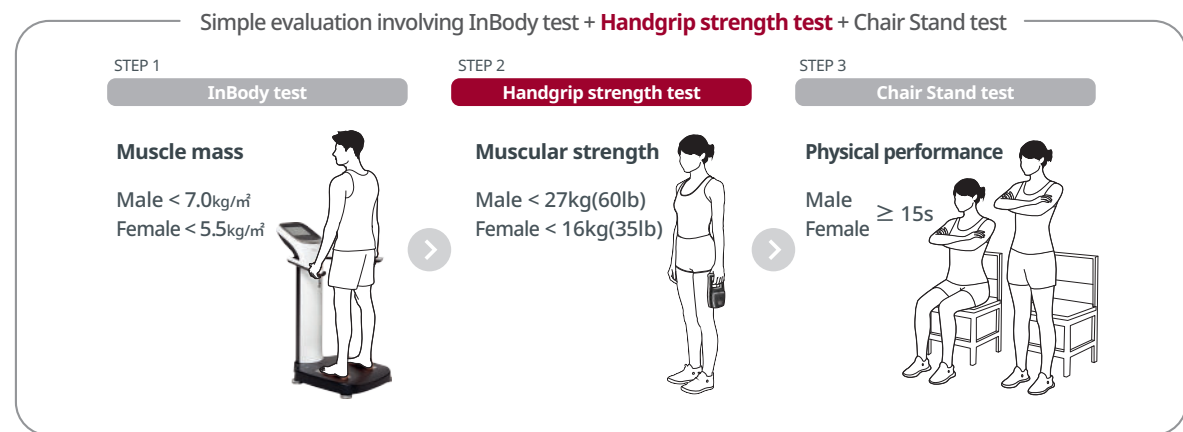
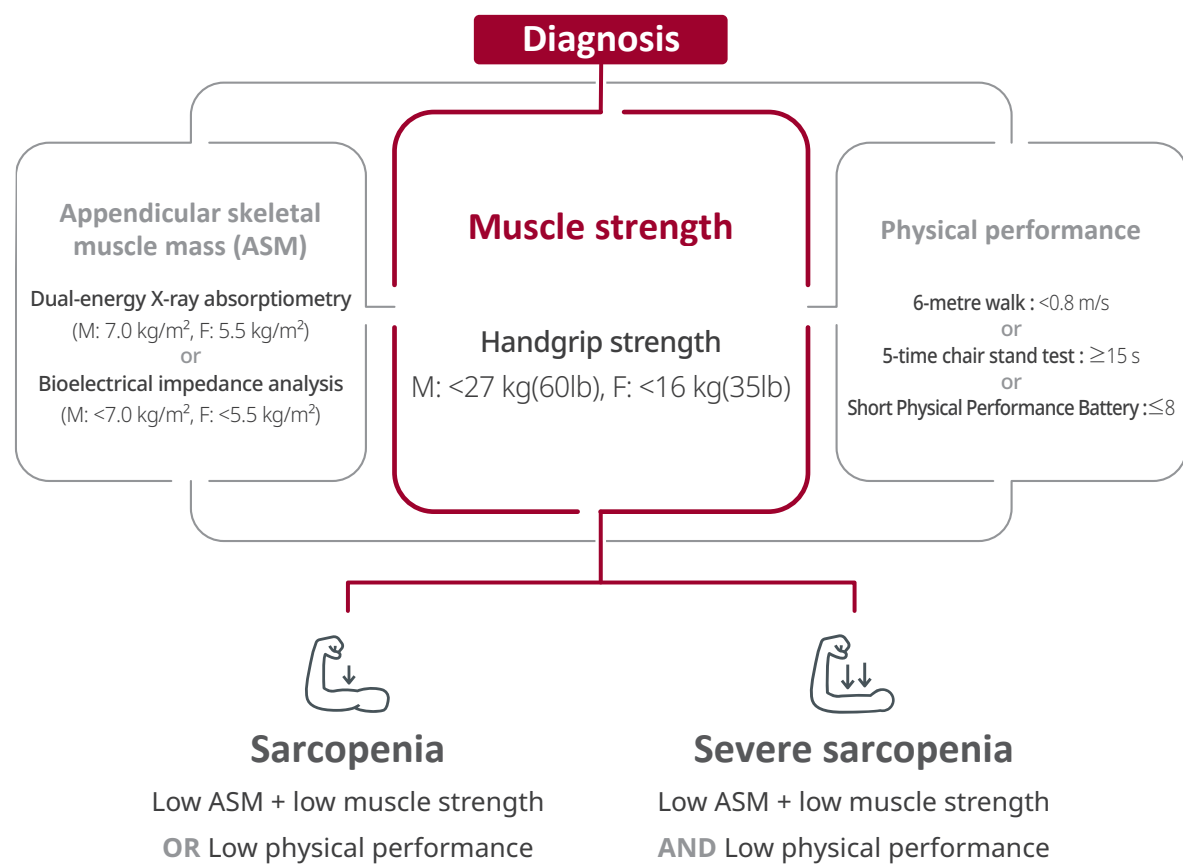


Testing handgrip strength, essential in assessing sarcopenia

Sarcopenia is not merely a natural consequence of aging; it is a recognized medical condition. The United States, in 2016, Japan, in 2018, and Korea, in 2021, have each designated Sarcopenia with an official disease classification code, acknowledging its status as a distinct ailment at the national level. One of the essential procedures to diagnose Sarcopenia is a handgrip strength test, which can be effectively conducted using the InGrip.

EWG SOP 2018 Sarcopenia Assessment Algorithm 2)



1) Carlos A Celis-Morales. Associations of grip strength with cardiovascular, respiratory, and cancer outcomes and all cause mortality: prospective cohort study of half a million UK Biobank participants. BMJ 2018; 361 doi: <https://doi.org/10.1136/bmj.k1651> (Published 08 May 2018)
 2) Alfonso J.Cruz-Jentoft. Sarcopenia: revised European consensus on definition and diagnosis. Age and Ageing 2019;48: 16-31 doi: 10.1093/ageing/afy169 (Published electronically 24 September 2018)



- InBody**
- InBody HQ [KOREA]**
InBody Co., Ltd.
625, InBody Bldg., Eonju-ro, Gangnam-gu, Seoul 06106 Republic of Korea
TEL: +82-2-501-3939 FAX: +82-2-578-5669
Website: inbody.com
E-mail: info@inbody.com
 - InBody USA [USA]**
Biospace Inc. dba InBody
13050 Cerritos Corporate Dr. Unit C Cerritos, CA 90703 USA
TEL: +1-323-932-6503 FAX: +1-323-952-5009
Website: inbodyusa.com
E-mail: info.us@inbody.com
 - InBody BWA [USA]**
InBody BWA Inc.
2550 Eisenhower Avenue, Suite C 209, Audubon, PA 19403
TEL: +1-610-348-7745
Website: inbodybwa.com
E-mail: bwainquiries@inbody.com
 - InBody Japan [JAPAN]**
InBody Japan Inc.
Tani Bldg., 1-28-6, Kameido, Koto-ku, Tokyo 136-0071 Japan
TEL: +81-3-5875-5780 FAX: +81-3-5875-5781
Website: inbody.co.jp
E-mail: inbody@inbody.co.jp
 - InBody China [CHINA]**
Biospace China Co., Ltd.
903/904, KingDi Plaza, No.1698 Yishan Road, Shanghai 201103 China
TEL: +86-21-64439705 FAX: +86-21-64439706
Website: inbodychina.com
E-mail: info@inbodychina.com
 - InBody Europe B.V. [NETHERLANDS]**
InBody Europe B.V.
Gyroscoopweg 122, 1042 AZ, Amsterdam, The Netherlands
TEL: +31-20-238-6080 FAX: +31-6-5734-1858
Website: nl.inbody.com
E-mail: info.eu@inbody.com
 - InBody Germany [GERMANY]**
InBody Europe B.V.
Niederlassung Deutschland, Mergenthalerallee 15-21, 65760 Eschborn, GERMANY
TEL: +49-619-6769-1662 FAX: +49-6196-76916-11
Website: de.inbody.com
E-mail: erfolg@inbody.com
 - InBody UK [UNITED KINGDOM]**
11 Phoenix Park, Telford Way, Stephenson Industrial Estate, Coalville LE67 3HB, United Kingdom
TEL: +44-1530-569620
Website: uk.inbody.com
E-mail: uk@inbody.com
 - InBody Oceania [AUSTRALIA]**
InBody Oceania Pty Ltd.
U2/82-86 Minnie Street, Southport, Queensland
TEL: +61-7-5681-1900
Website: au.inbody.com
Email: oceania@inbody.com
 - InBody Mexico [MEXICO]**
Biospace Latin America S. de R.L. de C.V.
Av. Eugenia 197 Piso 1 Ofic 1-B, Col. Narvarte, Benito Juarez, C.P. 03020, Ciudad de Mexico, Mexico
TEL: +52-55-5025-0147
Website: inbodymexico.com
E-mail: info.mx@inbody.com
 - InBody Asia [MALAYSIA & SINGAPORE]**
InBody Asia Sdn. Bhd.
Unit 3A-11, Oval Damansara, 685 Jalan Damansara Kuala Lumpur, WP KL 60000 Malaysia
TEL: +60-3-7732-0790 FAX: +60-3-7733-0790
Website: inbodyasia.com
E-mail: info@inbodyasia.com
 - InBody India [INDIA]**
InBody India Pvt.Ltd.
Unit No. G-B 10, Ground Floor, Art Guild House, Phoenix Market City, L.B.S. Marg, Kurla (West), Mumbai 400070 India
TEL: +91-22-6223-1911
Website: inbodyin
E-mail: india@inbody.com

Certifications obtained by InBody

InBody's Intellectual Property Rights

For more details about the patents that we acquired, please visit our website or refer to the patent gazette of intellectual property office of each country.

Measured items	Handgrip strength
Measuring range	1-100kg(2.2-220lb)
Error	± 0.5kg(± 1.1lb)
Unit of measure	0.1kg(0.22lb)
Results display	3-inch VA LCD
Power supply	3V Battery (AA type 2EA)
Interface	Wireless communication (Bluetooth5.0)
Sound	Buzzer
Size	140 (W) X 226 (L) X 50 (H) mm
Weight	Approx. 650g(1.4lb)
Operating environment	10-40°C(50-104°F), relative humidity 30-75% RH, 70-106kPa
Storage environment	-10-70°C(14-158°F), relative humidity 10-80% RH (50-106kPa) (No Condensation)

©2024 InBody Co., Ltd. retains all rights to this publication. IC-ENG-T4-B-240205



InGrip

- Accuracy**
At its core, the InGrip emphasizes on precision. With accurate results, it enables you to assess your current hand grip strength level and predict future well-being.
- Durability**
Ensuring the delivery of accurate and precise results even after prolonged use is paramount. Our meticulous design is dedicated to minimizing any margin of error with utmost durability.
- Convenience**
InGrip offers seamless program integration through Bluetooth wireless communication to interface directly with InBody, Body Composition Analyzer and Data Management Program.

While the Handgrip strength test may seem straightforward, it is one of the most significant biomarkers for predicting your future health.

Muscular strength is a fundamental factor that directly influences one's physical capabilities and serves as a predictive indicator for overall health. Handgrip strength, in particular, strongly correlates with one's overall body strength. This correlation makes the assessment of handgrip strength a practical alternative to gauging overall strength. Moreover, handgrip strength is an economical and convenient method for measuring muscle strength.



Numerous studies have consistently demonstrated a strong association between handgrip strength and mortality, as well as the prevalence of cardiovascular disease, chronic obstructive pulmonary disease, and various forms of cancer. Ongoing research continues to explore the health implications of handgrip strength. In a notable study on the right, a comprehensive examination tracked the handgrip strength of 500,000 individuals aged 40 to 69 over a span of 7 years in Korea. The study aimed to unveil the connections between grip strength, mortality and increased prevalence in various chronic diseases. 1)

Increase of Prevalence (%)	Hand Grip Strength (kg)	-5kg(11lb) decreased		"Weak" Category	
		Female	Male	Female	Male
Mortality		20%	16%	39%	67%
Cardiovascular disease		15%	11%	30%	36%
COPD		20%	15%	45%	38%
Cancer		10%	6%	21%	23%

※Threshold for "weak" handgrip strength: Female <16kg(35lb), Male <26kg(57lb)



Load cell sensor for accuracy and durability

The InGrip employs a load cell method, which effectively eliminates hysteresis, a common issue with other strain gauge-based handgrip strength dynamometer. Hysteresis, often caused by "elastic deformation," occurs when a strain gauge dynamometer is used multiple times without allowing sufficient "cool down" time between measurements. This can progressively worsen hysteresis and, consequently, affect the dynamometer's calibration, resulting in inaccurate readings. With continued use of a strain gauge dynamometer, the problem exacerbates, making accurate measurements unattainable.

In contrast, the InGrip, utilizing a load cell method, is immune to hysteresis concerns. Its robust sensor ensures the delivery of accurate measurements over an extended period.

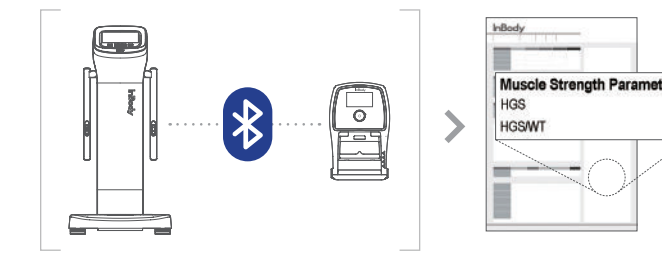
"Handle Guide" for consistent results

Previously, variations in results were common with many handgrip strength dynamometer due to the inconsistency in how users positioned their hands on the handle. This variance occurred because the load was distributed across different points on the handle, impacting the reliability of measurements. To mitigate these discrepancies, the InGrip features a "handle guide". This innovative design ensures that all users can consistently grasp the handle in the same position. Thanks to this integrated "handle guide," every user can measure their handgrip strength by applying force to the handle at the exact same position, effectively minimizing errors in the recorded values.

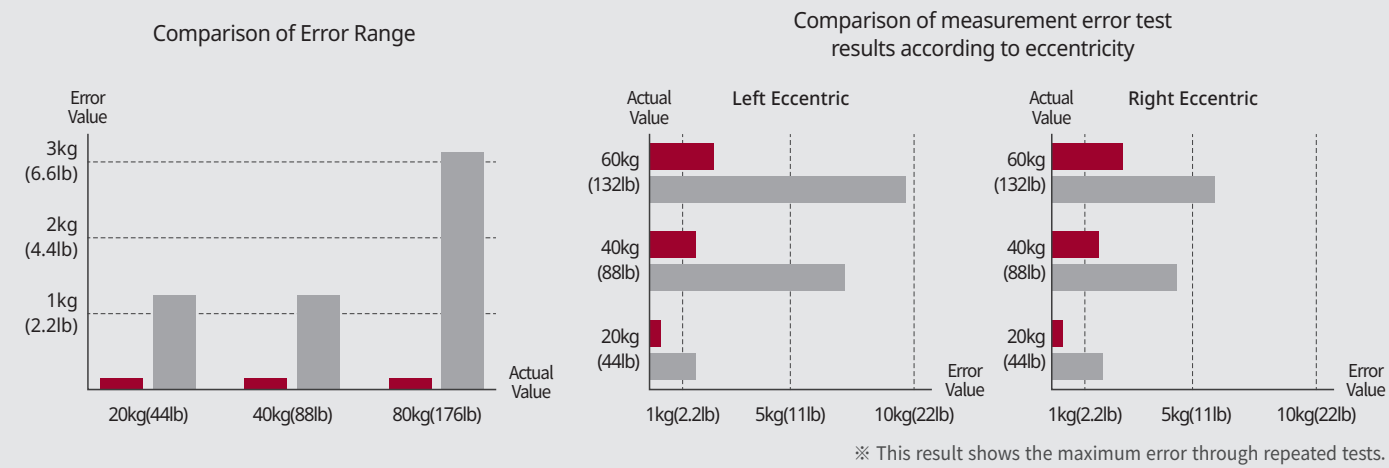


Wireless communication module

The InGrip is equipped with a wireless communication (Bluetooth) module, enabling seamless integration with other programs. Additionally, it can be seamlessly linked with the InBody, Body Composition Analyzer, unlocking a multitude of potential applications for the future.



Comparison of accuracy with existing dynamometers made by other companies



A handgrip strength dynamometer used to predict your health needs to be accurate.

A handgrip strength dynamometer, utilized for predicting mortality, disease incidents, and assessing muscle strength, must consistently deliver precise results.

To ensure accuracy, the InGrip features a "load cell sensor," a "handle guide," and a "reliability inspection" system.

