

# Grip Strength: The Essential Biomarker for Surgery



**Imagine if a simple handshake could reveal a patient's readiness for surgery and predict their recovery.**

Grip strength has rapidly emerged as a critical biomarker in surgical care, offering a reliable, non-invasive tool for assessing a patient's overall health status. Its value extends across both major and minor surgeries for a number of health conditions, making it an indispensable tool in diverse surgical settings, including ambulatory surgery centers (ASCs).

Research shows that lower grip strength is linked to increased risks of complications, longer recovery times, and hospital readmissions, while stronger grip strength is associated with smoother recoveries.

Incorporating grip strength into routine preoperative assessments provides a simple and effective tool for predicting:



**Pre-surgical risk:** identifying those who are better equipped to handle surgical stress and those who may require additional support before their procedure.



**Post-surgery readiness for discharge:** providing a clear indication of a patient's recovery progress and helping to determine discharge timing, which is particularly important in settings where rapid yet safe turnover is required.

This document outlines how integrating grip strength measurements into surgical assessments can optimize patient management, enhance risk stratification, and reduce avoidable healthcare costs.

## Selective Highlights



### Pre-Surgical Risk

In patients undergoing **hip arthroplasty**, patients with low grip strength are **over 7 times more likely to experience a major complication within 90 days of surgery**, including heart attack, sepsis, stroke, prosthetic joint infection and death [1].

A minimum grip strength of **31.2 lbs\* for men and 17.5 lbs\* for women is the most important factor in predicting ambulation** within 3 days after **hip fracture surgery**. Patients demonstrating this early ambulation have **fewer complications** such as pneumonia, pressure ulcers, delirium, urinary tract infections, and blood clots [2].

In patients undergoing surgery for **vascular disease**, **every 19.3 lbs\* increase in grip strength decreases the risk of 30-day perioperative adverse events by 59%** (including surgical site infection, >2 day stay in ICU, hospital readmission) [3].



### Post-Surgical Readiness for Discharge

In patients undergoing surgery for **vascular disease**, **every 19.3 lbs\* increase in grip strength decreases the risk of non-home discharge (needing skilled nursing or rehab facilities) by 66%** (HR 0.34). Patients undergoing open surgeries (rather than endovascular surgery) have a **>10-fold increased risk of non-home discharge** (HR 10.36) [3].

Preoperative grip strength (OR=1.13) is **an independent predictive factor of early ambulation ( $\geq 30$  m within 24 hrs)**, as well as being a risk predictor for preoperative nutritional risk, in patients undergoing **laparoscopic surgery for Gastrointestinal Tumours** [4].

\*Note that all cut-offs points have been converted into GripAble-equivalent measurements for consistency.

### Citations

[1] Long et al 2021 [2] Chang et al 2021 [3] Reeve et al 2021 [4] Zhou et al 2023

# Grip Strength in Practice

## Clinical Application

Measure grip strength during routine preoperative assessments to make informed decisions about surgical risk and readiness for discharge. Pay attention when recorded grip strength is below normal cut-off points. This enables the early identification of high-risk patients, improving both short-term and long-term post-operative outcomes.

## Patient Empowerment

Provide patients with access to their grip strength scores, helping them to understand their physical readiness for elective surgery and whether they could benefit from prehabilitation. Ongoing access to grip strength scores empowers patients to actively participate in their recovery and rehabilitation process, which is critical to improving post-discharge outcomes and minimizing complications.

## Practical Considerations

**Ease of Use:** Grip strength measurement with hand dynamometers is simple, non-invasive and cost-effective, making it easy to integrate into pre-surgical assessments, especially in settings such as Ambulatory Surgical Centres where time and resources may be limited.

**Remote Monitoring:** Consider ongoing measurement of grip strength post discharge - monitor trends in grip strength to track patient progress, or spot declines which may be indicative of difficulties within the expected recovery trajectory. This could be especially useful in the elderly or those with pre-existing conditions such as cancer or frailty. A decline from pre-op baseline to post-surgical measurements could warrant clinical intervention.

## Impact

**Patients:** Grip strength enables early identification of potential complications, guiding targeted preoperative care such as nutritional support or physical therapy to improve outcomes. Patients with higher grip strength recover faster, with shorter hospital stays and smoother returns to daily life.

**Clinicians:** Grip strength offers a quick, objective measure of surgical readiness, ensuring safe and timely discharge, and supporting tailored care plans and assessment of recovery progress.

**For the Healthcare System (Including ASCs):** Grip strength testing is a cost-effective tool that enhances risk stratification, optimizes resource allocation, reduces readmissions, and ensures safe, efficient patient flow in ASCs.



# Able Assess

The Only Grip Strength Platform

Equipped for **Data-Driven Healthcare.**

**Designed to unlock the full potential of grip strength as a vital health biomarker, Able Assess meets the demand for high-quality, data-driven healthcare.**

Able Assess is a groundbreaking, digitally enabled platform for grip strength measurement.

It combines our advanced digital dynamometer sensor technology with a comprehensive integrative platform and the most up-to-date normative dataset on the market to empower clinicians with actionable information that traditional tools simply can't offer.

## What's Next?



**Explore:** Dive into our extensive library of studies on grip strength and surgery [\[here\]](#).



**Understand:** Get the essentials on hand dynamometry and how to integrate grip strength into your practice with our [comprehensive guide](#).



**Contribute:** Partner with us in research or patient case studies to advance the knowledge of grip strength as a biomarker.



**Get in touch:**  
Website: [www.able-care.co](http://www.able-care.co)  
Email: [hello@able-care.co](mailto:hello@able-care.co)