# Strength training before surgery boosts recovery and reduces complications, say Belfast surgeons



When we think about surgery, images of sterile hospital environments and skilled surgeons often come to mind, accompanied by the inevitable anxieties surrounding recovery. Yet, a growing body of evidence suggests that one of the most critical components of a successful surgical outcome may actually occur long before the patient arrives in the operating theatre.

At the forefront of this realisation are Dr Chris Hoo and Dr Ciara McGoldrick, consultant oncoplastic surgeons at the City Hospital in Belfast. Together, they are advocating for an approach that prioritises strength training as an integral part of surgical preparation and recovery. This insight was shared during a recent conversation with Rory Girvan, founder of the fitness company Hench, and head strength coach Conor Johnson, highlighting a shift in how medical professionals assess patient readiness for surgery.

Traditionally, Body Mass Index (BMI) has served as a standard measure to stratify surgical risks. However, this simplistic metric, based solely on height and weight, can obscure essential details about a patient’s overall health. Notably, a paper published in *Lancet Oncology* revealed that a patient's body composition—specifically the ratio of muscle to fat—provides a far more nuanced understanding of their health status. It indicates that individuals with a favourable muscle-to-fat ratio experience significantly better surgical outcomes, including shorter hospital stays and fewer complications.

This perspective aligns with recent systematic reviews and meta-analyses that illustrate the effectiveness of prehabilitation—an approach that incorporates tailored exercise regimes prior to surgery. For instance, one study involving 3,570 patients undergoing orthopaedic surgery demonstrated that prehabilitation programmes markedly enhanced preoperative function, muscle strength, and overall health-related quality of life compared to standard care. Although some analyses indicate that while prehabilitation improves physical function, it does not necessarily lower the rate of postoperative complications or significantly influence surgical outcomes, it underlines the value of individualised fitness training in preparation for surgery.

Drs Hoo and McGoldrick utilise advanced imaging techniques to assess a patient’s body composition, thereby allowing personalised recommendations to optimise surgical outcomes. This could involve delaying surgery to focus on building muscle mass, provided the patient's condition allows it. This proactive approach is crucial as maintaining muscle strength is vital not only for immediate recovery but also for long-term health, especially given that muscle mass declines with age.

In terms of practical application, patients are encouraged to engage in activities that enhance fitness prior to undergoing surgery. Studies suggest that even short periods of brisk walking can improve aerobic fitness significantly, while targeted strength training can boost muscle strength by over 20% in a matter of weeks. These gains can transform surgical preparedness akin to the benefits seen from quitting smoking—both avenues offer substantial reductions in surgical risk.

Despite this clear evidence, several misconceptions regarding fitness persist. One common fallacy is that rest before and after surgery is the best approach. In reality, appropriate physical activity is key to reducing complications and improving recovery outcomes. Additionally, many believe that strength training is inappropriate for older adults or those with health issues, whereas experts argue it is precisely these individuals who stand to gain the most from such interventions.

Rory Girvan's insights further highlight the importance of forming sustainable exercise habits that extend beyond pre-surgery preparation. For patients who may need to lose weight or improve their overall health before surgery, creating an “anchor habit”—a core behaviour that supports broader lifestyle changes—can lead to not just better surgical outcomes but a long-term enhancement of well-being.

Ultimately, the collaboration between patients and their healthcare providers is paramount. Strength and fitness should not merely be viewed through the lens of aesthetics; rather, they are foundational elements that contribute to an improved quality of life and longevity. As these findings continue to reshape pre-surgical protocols, it opens a pathway for individuals to take charge of their fitness journey, laying the groundwork for both surgical success and lifelong health.

### Reference Map:

1. Paragraph 1, 2, 3: [[1]](https://www.irishnews.com/life/health/survival-of-the-fittest-rory-girvan-on-how-strength-training-could-help-save-your-life-TIVQTO3WUZFBNMWE7WC6RTLM4U/)
2. Paragraph 4, 5: [[2]](https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2803788)
3. Paragraph 6: [[3]](https://pubmed.ncbi.nlm.nih.gov/36736208/)
4. Paragraph 7, 8: [[4]](https://pubmed.ncbi.nlm.nih.gov/26447015/)
5. Paragraph 9: [[5]](https://pubmed.ncbi.nlm.nih.gov/31768827/)
6. Paragraph 10, 11: [[6]](https://jamanetwork.com/journals/jamasurgery/fullarticle/2803109)
7. Paragraph 12: [[7]](https://josr-online.biomedcentral.com/articles/10.1186/s13018-023-04197-3)

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1. <https://www.irishnews.com/life/health/survival-of-the-fittest-rory-girvan-on-how-strength-training-could-help-save-your-life-TIVQTO3WUZFBNMWE7WC6RTLM4U/> - Please view link - unable to able to access data
2. <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2803788> - A systematic review and meta-analysis of 48 trials involving 3,570 patients found that prehabilitation programs significantly improved preoperative function, health-related quality of life, muscle strength, and reduced back pain in orthopedic surgery patients compared to usual care. Postoperatively, prehabilitation improved function in the short to medium term. The study suggests that prehabilitation is associated with improved outcomes both preoperatively and postoperatively for patients undergoing orthopedic surgery.
3. <https://pubmed.ncbi.nlm.nih.gov/36736208/> - This systematic review and meta-analysis evaluated the efficacy of supervised exercise prehabilitation programs in improving major abdominal surgery outcomes. The study found that prehabilitation programs with more than one supervised session per week improved physical function but did not enhance surgical outcomes. The authors concluded that while prehabilitation can improve physical function, it does not significantly impact postoperative complications or other surgical outcomes.
4. <https://pubmed.ncbi.nlm.nih.gov/26447015/> - A systematic review assessing the effectiveness of prehabilitation or preoperative exercise for surgical patients found that prehabilitation did not demonstrate benefits in objective and self-reported function at any postoperative time points. However, prehabilitation doses of more than 500 minutes reduced the need for postoperative rehabilitation. The study concluded that prehabilitation has no significant postoperative benefits in function, quality of life, and pain in patients who have had knee or hip arthroplasty for osteoarthritis.
5. <https://pubmed.ncbi.nlm.nih.gov/31768827/> - A meta-analysis of 11 randomized controlled trials involving 929 patients found that prehabilitation programs improved exercise capacity both before and after surgery in gastrointestinal cancer surgery patients. However, there were no significant differences in length of stay, postoperative complications, 30-day readmission, or mortality rates. The study suggests that while prehabilitation can enhance exercise capacity, it does not significantly affect other surgical outcomes.
6. <https://jamanetwork.com/journals/jamasurgery/fullarticle/2803109> - The PREHAB randomized clinical trial investigated the effect of a 4-week multimodal prehabilitation program on reducing postoperative complications and enhancing functional capacity following colorectal cancer surgery. The study found that prehabilitation resulted in a lower rate of severe complications and medical complications compared to standard care. Additionally, postoperative walking capacity and other functional outcomes were improved in the prehabilitation group, indicating the benefits of prehabilitation in colorectal cancer surgery patients.
7. <https://josr-online.biomedcentral.com/articles/10.1186/s13018-023-04197-3> - A prospective study on end-stage knee osteoarthritis patients awaiting total knee arthroplasty found that preoperative high-intensity strength training combined with balance training significantly improved knee flexor–extensor strength, balance, and early postoperative joint function. The study concluded that this combined training approach enhances knee function in the short term and aids in early recovery after knee arthroplasty.