

# ISQIC Pre-Operative Physical Function Optimization Toolkit



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# How to Use This Toolkit

Implementing a Pre-Operative Physical Function Optimization protocol requires significant coordination between groups within a hospital. Improving physical functioning may be unfamiliar territory for general surgeons and quality improvement professionals. There are protocol components that must be completed by the patient prior to surgery. Excellent resources have been created by groups across the country; therefore, this toolkit is meant to house many of those resources so you can easily see what each has to offer.

We hope you will find the resources and case studies in this toolkit useful and that you can easily tailor the interventions to your institution's needs.

The following functions have been added to this PDF to make it easy to navigate:

1. This PDF is searchable so you can type a page number or word into the search box to be taken to places in the toolkit where that search item appears.
2. Clicking on any section header or sub-header in the Table of Contents will take you directly to that section.
3. Clicking on the ISQIC logo in the bottom right corner of each page will take you back to the Table of Contents.
4. Clicking on the reference to an appendix in the text will take you directly to that appendix.
5. You may double click any caption or image that says "Click to open" and the attachment will open in a new PDF window or link in your browser. Adobe Reader is the preferred method for viewing attachments.

## Feedback on This Toolkit

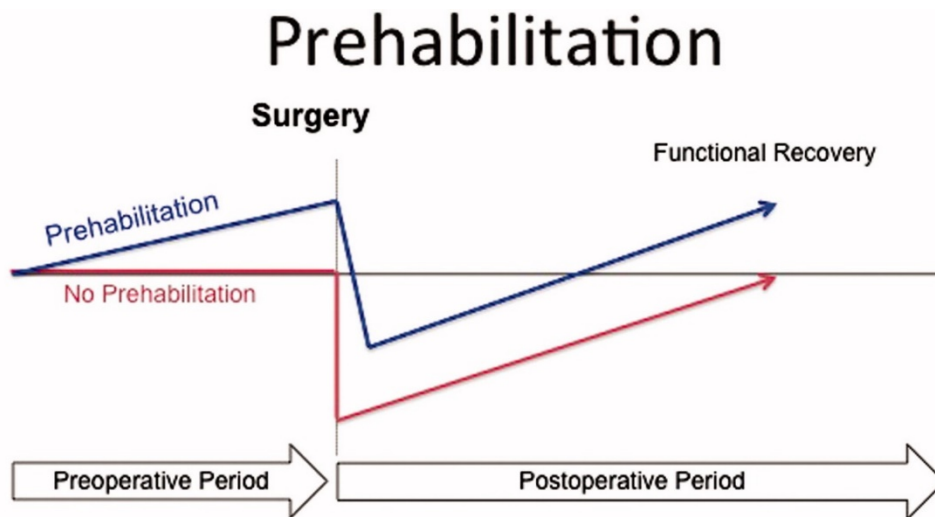
We hope this toolkit will assist your hospital in deciding how to implement the Pre-Operative Physical Function Optimization intervention and which tools and interventions may be optimal in your local care context. We welcome all feedback so we can iteratively update the toolkit to highlight new interventions, clarify existing ones, and generally make the toolkit more user-friendly and helpful. Please send any questions, comments, or overviews of what your institution implemented to Brianna D'Orazio ([bdorazio@isqic.org](mailto:bdorazio@isqic.org)).

# Introduction to Pre-Operative Physical Function Optimization

## The case for pre-operative physical function optimization

Interventions to improve physical function in the pre-operative period have demonstrated success in preparing patients for the immediate and long-term physical impacts of surgery.<sup>1</sup> Prehabilitation improves functional reserves prior to surgery, promoting earlier return to pre-operative physical function and reducing post-operative complications.<sup>2,3</sup> Patients participating in pre-operative physical function optimization programs show better compliance and higher levels of adherence to health promoting behaviors in the post-operative period.<sup>2</sup>

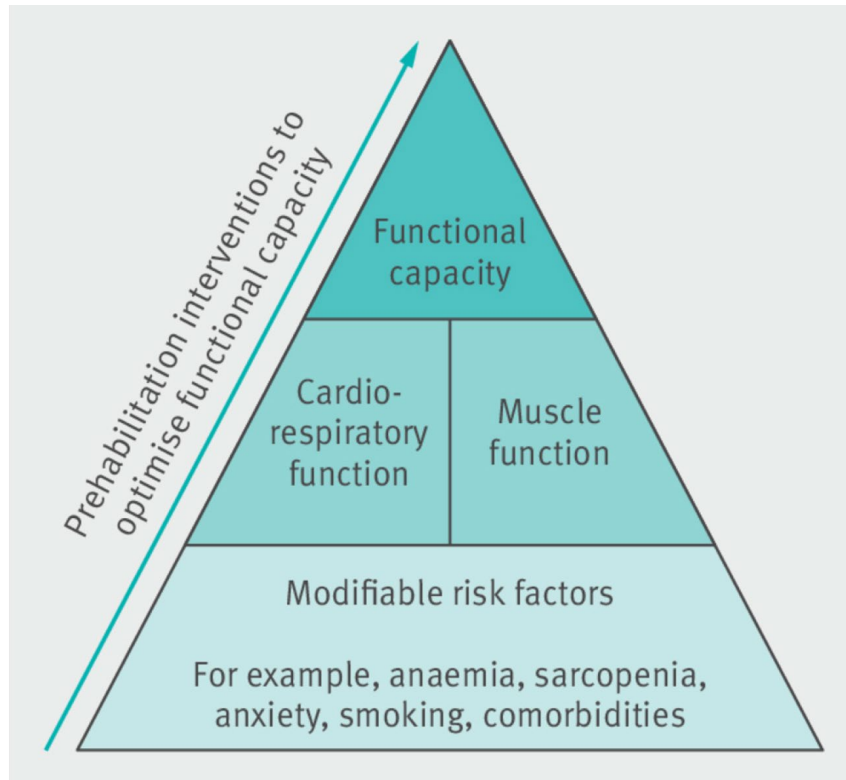
The figure below demonstrates the trajectory of patients participating in pre-operative physical function optimization (blue line) vs. no pre-operative physical function optimization (red line). Patients who complete a pre-operative physical function optimization program show less deterioration in the perioperative period and greater functional recovery postoperatively.



Carli F. et al. *Curr Opin Clin Nutr Metab Care.* 2005; 8: 23-32.

Trajectory of the perioperative period and impact of prehabilitation on accelerating postoperative functional recovery<sup>4</sup>

The diagram below shows the goals of a pre-operative physical function optimization program. Embarking on the rehabilitation process before surgery allows the provider and patient to address the management of risk factors that may adversely affect functional capacity and enhance cardio-respiratory and muscular function to improve post-operative outcomes.



The Prehabilitation Triangle<sup>5</sup>

## Implementing a Pre-Operative Physical Function Optimization Program

### What does physical function optimization look like?

The goal of the preoperative physical functioning program is to have patients perform approximately 30-60 minutes of daily physical aerobic activity intended to increase cardiovascular performance in the 2-4 weeks before surgery. Given the wide ranges of patients and diverse nature of ISQIC hospitals, physical activity can take many forms ranging from timed walking, running, cycling, aerobics classes or use of cardiovascular equipment (e.g. elliptical, stair climbers, arm bike, rowing) at home, on the street, or at a gym.

Pre-operative physical function optimization programs may take one of three formats dependent on the patient's insurance status and your hospital's resources. ISQIC recommends your hospital chooses one of the modes of preoperative physical function optimization described below and implement it for all of your hospital's participating surgeons. Given the breadth of different prehabilitation solutions that ISQIC hospitals will use, your local site should keep in mind that ISQIC is monitoring *referral to* (and not patient *adherence to*) a specific form of prehabilitation.

- An unmonitored program consists of home-based exercises prescribed by the clinician. This is the simplest program for hospitals to adopt but presents challenges in monitoring patient adherence given the lack of supervision and variations in patient health literacy. Since there is no monitoring, there is little assurance that patients are completing the program as intended. An example of an unmonitored program is providing patients with the ISQIC Physical Activity Guide (see “Resources for Unmonitored Interventions”).
- A fully monitored program consists of clinician-prescribed physical therapy or sessions with a personal trainer. Fully monitored programs allow physical function program development tailored to the patient’s performance status and personalized patient instruction. The supervision offered in the program provides theoretical advantages in patient adherence, provided the patient attends the sessions. Variations in insurance coverage and deductibles coupled with patient expenses, however, may make fully monitored programs more challenging to implement for your care teams. Unlike orthopedic and neurosurgeons, many general surgeons are not accustomed to the coding and necessary diagnoses (and resultant patient questions and insurance appeals) required for physical therapy.
- A partially monitored program consists of an initial visit with a physical therapist, personal trainer, or activity coach followed by a self-paced home-based program. This strategy minimizes resource utilization and costs associated with multiple provider visits in exchange for “homework” the patient completes at home or at the gym. This hybrid approach balances costly provider visits with trade-offs in patient adherence.

While some patients may benefit most from the oversight of a fully monitored program, many forms of insurance will not reimburse for physical therapy as pre-operative physical function optimization for colorectal surgery unless certain diagnoses are justifiably used. Self-directed programs are feasible and safe, have demonstrated similar outcomes as fully monitored options and can be accomplished at little or no cost to the patient.<sup>6</sup>

The McGill Peri Operative Program (POP) (<https://mcgill.ca/peri-op-program/about-pop-0>) is a successful example of implementing a physical function optimization program as part of the larger perioperative pathway. The McGill POP is an example of a partially monitored program, incorporating baseline assessments with a physical therapist prior to initiating the home-based program. A successful pre-operative physical function optimization program may include some or all of the components incorporated in their program. Note, however, that although the McGill program spanned 4-5 pre-operative weeks, ISQIC recommends not delaying surgery to complete prehabilitation. ISQIC’s ideal target intervention period for prehabilitation is 2-4 preoperative weeks.

The diagrams below outline the basic steps for implementing each of the physical function optimization programs as part of the larger perioperative prehabilitation pathway.

1. Example of an Unmonitored Program

## Example Unmonitored Program

- Step 1 After the patient's surgery is scheduled, the patient is given the ISQIC Physical Activity Guide or similar educational material.
- Step 2 The patient completes the activities detailed in the handout daily for 2-4 weeks prior to their scheduled surgery, tailored to their individual level of mobility and fitness, at home or at the gym. The patient may also elect to attend community-based fitness classes.
- Step 3 Based on the results of the baseline assessment, the physical therapist or personal trainer proposes a home-based program that includes 30-60 minutes daily of aerobic activity and twice weekly muscle strengthening activity.
- Step 4 The patient completes these activities in the 2-4 weeks prior to their scheduled surgery.



2. Example of a Fully Monitored Program

## Example Fully Monitored Program

- Step 1 After the patient's surgery is scheduled, the patient is given a prescription for physical therapy or referral to a personal trainer.
- Step 2 The patient sets an appointment with their physical therapist or personal trainer of choice for a baseline assessment.
- Step 3 The patient continues to complete sessions with their therapist or trainer 2-3 times per week in the 2-4 weeks prior to their scheduled surgery.
- Step 4 Prior to surgery, the physical therapist or personal trainer conducts a follow-up assessment to measure the change in the patient's overall aerobic and muscular fitness from baseline.
- Step 5 The patient may choose to resume sessions with the physical therapist or personal trainer following surgery.

### 3. Example of a Partially Monitored Program

## Example Partially Monitored Program

- Step 1 After the patient's surgery is scheduled, the patient is given a prescription for physical therapy or referral to a personal trainer.
- Step 2 The patient sets an appointment with their physical therapist or personal trainer of choice for a baseline assessment.
- Step 3 Based on the results of the baseline assessment, the physical therapist or personal trainer proposes a home-based program that includes 30-60 minutes daily of aerobic activity and twice weekly muscle strengthening activity.
- Step 4 The patient completes these activities in the 2-4 weeks prior to their scheduled surgery. They may also elect to attend community-based fitness classes or other self-lead fitness activities in addition to these exercises.

## Supporting Literature

Though this area of research is still new, several randomized clinical trials have evaluated the effectiveness of pre-operative physical activity programs on post-operative functional recovery in colorectal surgery patients. Below are examples of trials that studied each type of pre-operative program. *Click on the publication title below to access the article providing support for the program. Please note that this is a selection of articles but is not all-inclusive.*

### Fully Monitored Programs:

1. Soares SM de TP et al. Pulmonary function and physical performance outcomes with preoperative physical therapy in upper abdominal surgery: a randomized controlled trial. *Clinical Rehabilitation*. 2013;27(7), 616–627.
2. Dronkers JJ, Lamberts H, Reutelingsperger IM, et al. Preoperative therapeutic programme for elderly patients scheduled for elective abdominal oncological surgery: a randomized controlled pilot study. *Clin Rehabil*. 2010;24:614–622.
3. Dunne DF, Jack S, Jones RP, et al. Randomized clinical trial of prehabilitation before planned liver resection. *Br J Surg*. 2016;103:504–512.

### Partially Monitored Programs:

1. Barberan-Garcia A, Ubre M, Roca J et al. Personalised Prehabilitation in High-risk Patients Undergoing Elective Major Abdominal Surgery. *Annals of Surgery*. 2018;267(1):50-56.
2. Bousquet-Dion G, Awasthi R, Loisel S, et al. Evaluation of supervised multimodal prehabilitation programme in cancer patients undergoing colorectal resection: a randomized control trial. *Acta Oncologica*. 2018;57:6, 849-859.
3. Minnella EM, Awasthi R, Loisel S, et al. Effect of Exercise and Nutrition Prehabilitation on Functional Capacity in Esophagogastric Cancer Surgery: A Randomized Clinical Trial. *JAMA Surg*. 2018;153(12):1081–1089.

### Unmonitored Programs:

1. Gillis C, Li C, Lee L, et al. Prehabilitation versus rehabilitation: a randomized control trial in patients undergoing colorectal resection for cancer. *Anesthesiology*. 2014; 121:937–947.
2. Li C, Carli F, Lee L, et al. Impact of a trimodal prehabilitation program on functional recovery after colorectal cancer surgery: a pilot study. *Surg Endosc*. 2013;27:1072–1082.

## Which program is right for your hospital?

The attached decision aid can be used to determine which type of program would be best to implement at your hospital. Some patients may benefit from fully or partially monitored programs, though most forms of insurance will not reimburse for physical therapy as pre-operative physical function optimization for colorectal surgery unless the patient meets certain criteria and certain diagnosis codes are used. Unmonitored programs are feasible and safe, have demonstrated similar outcomes as the fully monitored option and can be accomplished at low or no cost to the patient.<sup>6</sup> *(Click image to open PDF)*

### Pre-operative Physical Function Optimization Program Decision Aid

Fully Monitored Program	Partially Monitored Program	Unmonitored Program
Clinician-prescribed physical therapy or structured sessions with a personal trainer in an individual or group exercise setting	Baseline assessment visit with physical therapist or personal trainer, followed by personalized home- or gym-based program	Self-directed program consisting of exercise handouts or other resources provided by the treating clinician
Highest cost to patient ✓ Patients would benefit from personalized attention due to frailty or comorbidities or lack of social support and have physical therapy coverage or willingness to pay out of pocket, OR hospital has in-house resources	Lower cost to patient ✓ Patients would benefit from baseline session and personalized program due to frailty or comorbidities, OR hospital has in-house resources	Lowest or no cost to patient ✓ Patients are motivated and/or able to carry out a self-paced routine at home or at gym
✓ Direct assessment of functional status and compliance in pre-surgical period	✓ Baseline assessment of functional status ✓ Self-reported compliance in pre-surgical period	✓ Baseline assessment of functional status in clinic or not at all ✓ Self-reported compliance in pre-surgical period

## Assembling your team

Implementing a pre-operative physical function program requires the coordination of the whole surgical team. As you've learned through the ISQIC quality and process improvement curriculum, a project team with defined ownership, accountability, and role definitions is critical to success. Teams consist of sponsors, process and improvement leaders, and other members. For a reminder of their roles as defined in the ISQIC curriculum, click [here](#).

Team members are responsible for contributing to the project's direction and implementation; therefore, it is important to ensure teams represent multiple disciplines and include most, if not all, of the relevant stakeholders. In addition to your ISQIC team, you may want to consider inviting representatives from some or all of these cohorts: surgeons, nurses, educators, physical therapists, and social workers, depending on which type of program you choose to implement and your local care context. Investigate if your hospital, local health center, or community center offers low-cost fitness monitored group classes that meet physical functioning criteria and engage those teams as necessary.

# Provider-level Strategies

## Incorporating the physical function optimization discussion in the pre-operative pathway

### Patient-level barriers to physical activity participation

In discussing the benefits of physical activity with patients prior to embarking on a pre-operative physical activity program, it is important for surgical providers to understand the current landscape of physical activity among adult Americans. Though the CDC recommends 150 minutes of physical activity per week (i.e., 30 minutes per day) for all adults,<sup>7</sup> only 54% of adults meet the CDC's minimum aerobic physical activity guidelines and 25% of adults do not engage in any leisure time physical activity (Click to open: [Trends in Meeting the 2008 Physical Activity Guidelines, 2008-2018, CDC](#)). This trend is more pronounced among older adults, who face higher barriers to participation in physical activity.<sup>8</sup>

As such, it is important to understand the potential patient-level barriers to physical activity in order to conduct effective discussions with patients. Six primary barriers to physical activity participation have been identified,<sup>8</sup> which have been highlighted by the Office of Disease Prevention and Health Promotion here: <https://health.gov/news-archive/blog/2011/04/barriers-to-physical-activity-among-older-adults/index.html>.

#### **The Six Barriers to Physical Activity Participation:**

1. Lack of interest (#1)
2. Shortness of breath
3. Joint pain
4. Perceived lack of fitness
5. Lack of energy
6. Doubting that exercise can lengthen life

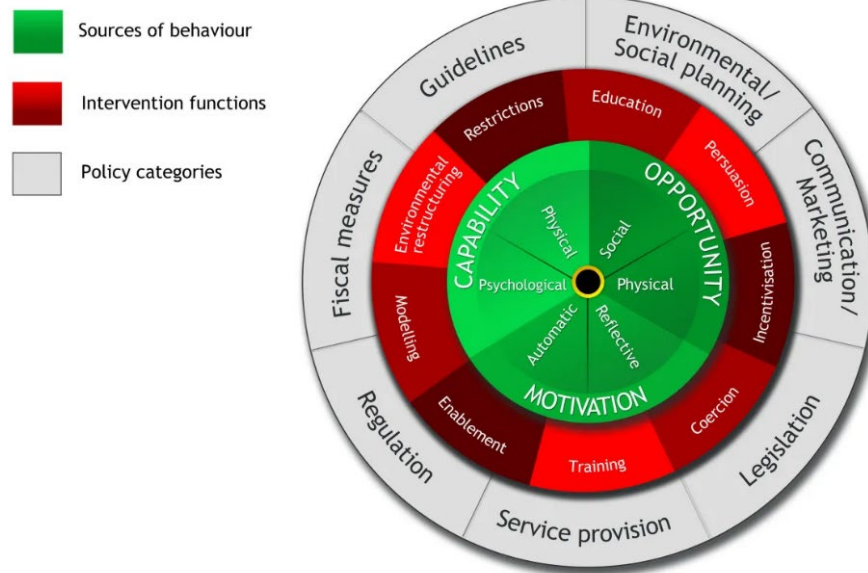
The CDC's discussion of these common barriers and ways to overcome them can be found here: <https://www.cdc.gov/physicalactivity/basics/adding-pa/barriers.html>.

### Motivational interviewing and behavior change resources

Motivational interviewing is a practical, short-term counseling method that helps people who express ambivalence towards a certain behavior to find the internal motivation to change their behavior.<sup>9</sup> Motivational interviewing can be implemented in pre-operative discussions with little disruption to workflow or increased time.

The Behavior Change Wheel (BCW) is another method to frame discussions with patients around undertaking a pre-operative physical activity program. The BCW was developed from 19 frameworks of behavior change identified in a systematic review of the literature, and consists of three layers.<sup>10</sup> The center, or hub, of the wheel identifies the sources of the behavior that could provide effective targets for intervention using the "capability, opportunity, motivation, and behavior" model (COM-B), which are all recognized to be interacting components of behavior. The middle layer consists of nine intervention functions to choose from based on the COM-B analysis. The outer layer identifies seven policy categories that can support the delivery of these interventions.

## The Behavior Change Wheel (BCW)



The table below from Michie et al defines each intervention and policy and provides examples of practical ways to implement each.<sup>10</sup>

**Table 1 Definitions of interventions and policies**

Interventions	Definition	Examples
Education	Increasing knowledge or understanding	Providing information to promote healthy eating
Persuasion	Using communication to induce positive or negative feelings or stimulate action	Using imagery to motivate increases in physical activity
Incentivisation	Creating expectation of reward	Using prize draws to induce attempts to stop smoking
Coercion	Creating expectation of punishment or cost	Raising the financial cost to reduce excessive alcohol consumption
Training	Imparting skills	Advanced driver training to increase safe driving
Restriction	Using rules to reduce the opportunity to engage in the target behaviour (or to increase the target behaviour by reducing the opportunity to engage in competing behaviours)	Prohibiting sales of solvents to people under 18 to reduce use for intoxication
Environmental restructuring	Changing the physical or social context	Providing on-screen prompts for GPs to ask about smoking behaviour
Modelling	Providing an example for people to aspire to or imitate	Using TV drama scenes involving safe-sex practices to increase condom use
Enablement	Increasing means/reducing barriers to increase capability or opportunity <sup>1</sup>	Behavioural support for smoking cessation, medication for cognitive deficits, surgery to reduce obesity, prostheses to promote physical activity
<b>Policies</b>		
Communication/ marketing	Using print, electronic, telephonic or broadcast media	Conducting mass media campaigns
Guidelines	Creating documents that recommend or mandate practice. This includes all changes to service provision	Producing and disseminating treatment protocols
Fiscal	Using the tax system to reduce or increase the financial cost	Increasing duty or increasing anti-smuggling activities
Regulation	Establishing rules or principles of behaviour or practice	Establishing voluntary agreements on advertising
Legislation	Making or changing laws	Prohibiting sale or use
Environmental/ social planning	Designing and/or controlling the physical or social environment	Using town planning
Service provision	Delivering a service	Establishing support services in workplaces, communities etc.

<sup>1</sup>Capability beyond education and training; opportunity beyond environmental restructuring

# Resources for Monitored and Partially Monitored Interventions

## Physical therapy referrals

Physical therapy prehabilitation for colorectal surgery begins with a baseline assessment of the patient's physical health:

1. Assessment of functional status
2. Identification of impairments
3. Provision of information and therapy to promote physical health

Depending on the type of insurance, patients may have coverage or prefer to pay out of pocket for individualized or group sessions with a physical therapist. Generally "prehabilitation" is not recognized by insurance companies as a billable reason for physical therapy. This means referring patients to a therapist with a diagnosis of "prehabilitation," "colon cancer," or "pre-op" generally will not be covered by insurance and may result in the patients having to pay in full the out of pocket cost for therapy.

Covered diagnoses may include, for example, "generalized deconditioning," "osteoporosis," or "muscle weakness" depending upon the appropriate clinical situation. Please note, the diagnosis used to refer a patient to a provider must accurately reflect the patient's underlying medical condition. ISQIC strongly suggests direct communication with the consulting provider (i.e. recipient of the referral) prior to making a referral for physical therapy to ensure the proper diagnoses are used and to review patient implications of deductibles, co-pays, and justifiable diagnoses/codes.

Partially monitored programs consist of a referral to physical therapy for a baseline assessment, after which the physical therapist will provide the patient with a self-guided, home-based exercise plan.

# Resources for Unmonitored Interventions

## Measuring baseline functional status

In unmonitored programs where patients are not assessed by physical therapy providers or personal training professionals, there are several simple baseline assessments that can be conducted during a pre-surgical visit to assess functional status. These tests are optional for motivated institutions and are not required for the ISQIC Prehabilitation Bundle.

### **1. 6-minute walk test (6MWT)**

The 6-minute walk test measures the distance that a patient can safely walk on a flat, hard surface in a period of 6 minutes (6-minute walking distance).<sup>11</sup> It is commonly used as a primary or secondary outcome in randomized clinical trials of pre-operative physical function optimization programs, which have demonstrated improved post-operative functional status in the pre-operative physical function groups.<sup>12-15</sup>

### **2. Timed Up and Go test (TUG)**

The Timed Up and Go test measures a patient's mobility and requires the use of both static and dynamic balance, timing the period of time it takes for a person to get up from a chair, walk three meters, walk back to the chair, and sit down.

The attached handout from the CDC is a step-by-step tool for providers to easily conduct and record the TUG. (Click image to open PDF)

**ASSESSMENT**

# Timed Up & Go (TUG)

**Purpose:** To assess mobility

**Equipment:** A stopwatch

**Directions:** Patients wear their regular footwear and can use a walking aid, if needed. Begin by having the patient sit back in a standard arm chair and identify a line 3 meters, or 10 feet away, on the floor.

① **Instruct the patient:**

**When I say “Go,” I want you to:**

1. Stand up from the chair.
2. Walk to the line on the floor at your normal pace.
3. Turn.
4. Walk back to the chair at your normal pace.
5. Sit down again.

② **On the word “Go,” begin timing.**

③ **Stop timing after patient sits back down.**

④ **Record time.**

**Time in Seconds:** \_\_\_\_\_

An older adult who takes  $\geq 12$  seconds to complete the TUG is at risk for falling.

CDC's STEADI tools and resources can help you screen, assess, and intervene to reduce your patient's fall risk. For more information, visit [www.cdc.gov/steadi](http://www.cdc.gov/steadi)

**NOTE:** Always stay by the patient for safety.

Patient \_\_\_\_\_

Date \_\_\_\_\_

Time \_\_\_\_\_  AM  PM


**OBSERVATIONS**

Observe the patient's postural stability, gait, stride length, and sway.

Check all that apply:

- Slow tentative pace
- Loss of balance
- Short strides
- Little or no arm swing
- Steadying self on walls
- Shuffling
- En bloc turning
- Not using assistive device properly

These changes may signify neurological problems that require further evaluation.

 Centers for Disease Control and Prevention  
National Center for Injury Prevention and Control

2017

**STEADI** Stopping Elderly Accidents, Deaths & Injuries



### 3. The Borg Scale of Perceived Exertion

The Borg Scale measures how hard a patient feels they are working during different activities, on a scale from 6 to 20.<sup>16</sup> The easier to use modified Borg scale may be useful for physicians when discussing physical exertion with patients. Prehabilitation exercises typically target a Borg score of 11-16 or modified Borg score of 3-6 (fairly light to hard exercise, ranging from walking through the grocery store to bicycling, swimming, or other activities that get the heart pounding and make breathing very fast).

#### 3A. Borg Scale

How you might describe your exertion	Borg rating of your exertion	Examples (for most adults <65 years old)
None	6	Reading a book, watching television
Very, very light	7 to 8	Tying shoes
Very light	9 to 10	Chores like folding clothes that seem to take little effort
Fairly light	11 to 12	Walking through the grocery store or other activities that require some effort but not enough to speed up your breathing
Somewhat hard	13 to 14	Brisk walking or other activities that require moderate effort and speed your heart rate and breathing but don't make you out of breath
Hard	15 to 16	Bicycling, swimming, or other activities that take vigorous effort and get the heart pounding and make breathing very fast
Very hard	17 to 18	The highest level of activity you can sustain
Very, very hard	19 to 20	A finishing kick in a race or other burst of activity that you can't maintain for long

Source: <https://www.hsph.harvard.edu/nutritionsource/borg-scale/>

#### 3B. Modified Borg Scale

##### Modified Borg Scale



Source: Carli F, Gillis C and Sceeded-Bergdahl C. Promoting a culture of prehabilitation for the surgical cancer patient. *Acta Oncologica*. 2017;56(2):128-33.

## Referrals and Reimbursement Options

There is a variety of community based fitness classes that can be used to create or supplement partially monitored, monitored, or unmonitored programs. Be creative, there are many excellent resources out there! Call your local hospitals, outpatient physical therapy centers, and community centers. Many cities offer low cost and free activity classes. Many community and religion organizations offer fitness classes to the general public (e.g., YMCA/YWCA, Catholic Youth Organization [CYO], Jewish Community Center [JCC]).

Examples of resources offered by hospitals in Illinois:\*

Loyola University Medical Center	<a href="https://www.loyolafitness.org/">https://www.loyolafitness.org/</a>
Northwestern Medicine	<a href="https://classes.nm.org/wlp2/classes/search//1/\$Type=FT">https://classes.nm.org/wlp2/classes/search//1/\$Type=FT</a>
Advocate Lutheran Hospital	<a href="https://www.advocatehealth.com/luth/health-services/fitness-wellness/classes-programs">https://www.advocatehealth.com/luth/health-services/fitness-wellness/classes-programs</a>
Shirley Ryan Ability Lab	<a href="https://www.sralab.org/services/adaptive-fitness">https://www.sralab.org/services/adaptive-fitness</a>
Amita Health	<a href="https://classes.amitahealth.org/wlp2/#!/classes/find/1/\$IgnoreClassed=true\$ExcludeScreenings=false\$ClassDate=02.09.2020\$UserField02=WLS">https://classes.amitahealth.org/wlp2/#!/classes/find/1/\$IgnoreClassed=true\$ExcludeScreenings=false\$ClassDate=02.09.2020\$UserField02=WLS</a>

\* Please note: these links are just an example of classes your hospital may already offer and ISQIC does not endorse any particular institution.


For those who are especially motivated to assist patients with insurance approvals for exercise equipment, pedometers, or personal trainers, the following resource explains how to write letters of medical necessity for FSA or HSA reimbursement: <https://www.medicalhomeportal.org/issue/writing-letters-of-medical-necessity>.

# Patient-level strategies

## ISQIC Physical Activity Guide

(Click image to open PDF)



### ISQIC Physical Activity Guide



Research shows that participating in physical activity even just a few weeks before surgery can **improve recovery** and possibly decrease complications from your surgery.

Physical activity programs include both **aerobic activity**, such as walking or running, and **muscle strengthening**, which uses resistance bands, hand weights, or body weight.

Use the guide below to plan your physical activity program. Your weekly plan should include both aerobic and muscle strengthening activities.

Categories (Choose activities from both)	What activities count?	How often should I do them?
 <b>Aerobic Activity</b>  <i>You can choose to do Moderate or Vigorous activities</i>	<b>Moderate Activities</b> <i>You should be able to talk while doing moderate activities</i>  <u>Examples:</u> Walking briskly Biking on level ground Sports such as baseball or tennis (doubles) Ballroom dancing Water aerobics	Aim for <b>30 to 60 minutes each day for 5 days per week</b> , or a total of 150 to 300 minutes per week
	<b>Vigorous Activities</b> <i>You should only be able to say a few words while doing vigorous activities</i>  <u>Examples:</u> Running or jogging Biking faster than 10 miles per hour Sports such as basketball or soccer Aerobic dance, such as Zumba Jumping rope	Aim for a total of <b>75 to 150 minutes each week</b> , for at least 10 minutes at a time
<div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 0 auto;">AND</div>  <b>Muscle Strengthening Activity</b>	Choose <b>five exercises</b> that target the major muscle groups. These include legs, back, chest, arms, stomach, shoulders, and hips.  Do <b>8-12 repetitions</b> of each exercise per session.	Aim for <b>30 minutes each day</b> for at least 2 days per week

## Other Patient Education Resources

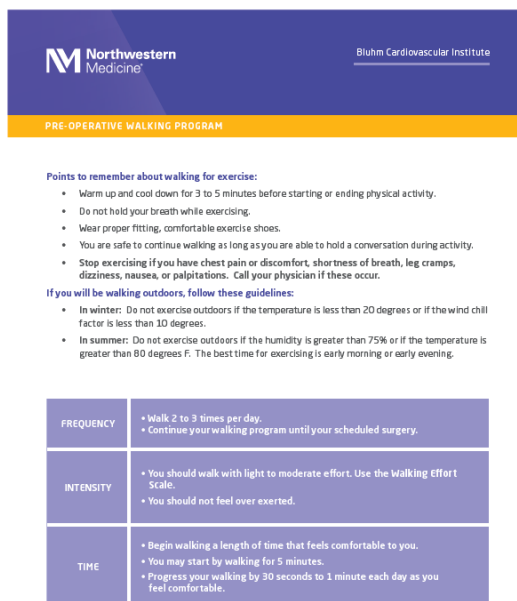
The following resources contain educational handouts for patients on the benefits of physical activity, activity planning resources, and strategies to overcome barriers to participation:

Make Physical Activity a Regular Part of the Day	<a href="https://www.choosemyplate.gov/resources/physical-activity-tips">https://www.choosemyplate.gov/resources/physical-activity-tips</a>
MyPlate MyWins: An active lifestyle	<a href="https://www.choosemyplate.gov/eathealthy/myplate-mywins">https://www.choosemyplate.gov/eathealthy/myplate-mywins</a>
Small Steps to Increase Physical Fitness	<a href="https://www.acefitness.org/education-and-resources/lifestyle/blog/6765/small-steps-to-increase-physical-activity">https://www.acefitness.org/education-and-resources/lifestyle/blog/6765/small-steps-to-increase-physical-activity</a>
Be Active Your Way	Click here to open
Move Your Way Activity Planner	<a href="https://health.gov/moveyourway/activity-planner/">https://health.gov/moveyourway/activity-planner/</a>
Overcoming barriers to completing physical activity	<a href="https://www.cdc.gov/physicalactivity/basics/addimg-pa/barriers.html">https://www.cdc.gov/physicalactivity/basics/addimg-pa/barriers.html</a>
Social support: Engaging family members to improve adherence - Tip Sheet - Engaging Family Members	<a href="https://choosemyplate-prod.azureedge.net/sites/default/files/tentips/DGTipsheet29BeAnActiveFamily_0.pdf">https://choosemyplate-prod.azureedge.net/sites/default/files/tentips/DGTipsheet29BeAnActiveFamily_0.pdf</a>

## Additional Resources for Unmonitored Programs

The following resources contain educational handouts and resources for patients as an adjunct to the ISQIC Physical Activity Guide:

- NM Pre-operative Walking Program (*click image to open PDF*)



**Northwestern Medicine** Bluhm Cardiovascular Institute

**PRE-OPERATIVE WALKING PROGRAM**

**Points to remember about walking for exercise:**

- Warm up and cool down for 3 to 5 minutes before starting or ending physical activity.
- Do not hold your breath while exercising.
- Wear proper fitting, comfortable exercise shoes.
- You are safe to continue walking as long as you are able to hold a conversation during activity.
- Stop exercising if you have chest pain or discomfort, shortness of breath, leg cramps, dizziness, nausea, or palpitations. Call your physician if these occur.

**If you will be walking outdoors, follow these guidelines:**

- In winter: Do not exercise outdoors if the temperature is less than 20 degrees or if the wind chill factor is less than 10 degrees.
- In summer: Do not exercise outdoors if the humidity is greater than 75% or if the temperature is greater than 80 degrees F. The best time for exercising is early morning or early evening.

<b>FREQUENCY</b>	<ul style="list-style-type: none"> <li>• Walk 2 to 3 times per day.</li> <li>• Continue your walking program until your scheduled surgery.</li> </ul>
<b>INTENSITY</b>	<ul style="list-style-type: none"> <li>• You should walk with light to moderate effort. Use the Walking Effort Scale.</li> <li>• You should not feel over exerted.</li> </ul>
<b>TIME</b>	<ul style="list-style-type: none"> <li>• Begin walking a length of time that feels comfortable to you.</li> <li>• You may start by walking for 5 minutes.</li> <li>• Progress your walking by 30 seconds to 1 minute each day as you feel comfortable.</li> </ul>

## Web- and App-based Resources

- Exercise applications and web-based planners:
  1. Move Your Way Activity Planner
    - Move Your Way Activity Planner, created by Health.gov, walks users through setting their own weekly goals using the national guidelines for physical activity, choose their activities, and get help staying motivated.
    - <https://health.gov/moveyourway/activity-planner/>
  2. MyFitnessPal and MapMyFitness
    - MyFitnessPal and MapMyFitness are easy ways to log and keep track of physical activity, with apps for both iPhone and Android.
    - <https://www.myfitnesspal.com/>
    - <https://www.mapmyfitness.com/>

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# Appendix

# 1. Additional Resources

The Use of Physical Functioning Improvement as Part of a Larger Prehabilitation Program:  
*Click on the publication title below to access the article providing support for the program.*

- Single institutions:
  1. Howard R, Yin YS, McCandless L, Wang S, Englesbe M, Machando-Aranda D. Taking Control of Your Surgery: Impact of a Prehabilitation Program on Major Abdominal Surgery. *J Am Coll Surg*. 2019;228(1):72-80.
  2. Liang MK, Bernardi K, Holihan J, et al. Modifying Risks in Ventral Hernia Patients With Prehabilitation. *Ann Surg*. 2018;268:674-680.
  3. Mayo NE, Feldman L, Scott S, et al. Impact of preoperative change in physical function on postoperative recovery: Argument for supporting prehabilitation for colorectal surgery. *Surgery*. 2011;150(3):505-514.
- Meta-analysis:
  1. Piraux E, Caty G, and Reychler G. Effects of preoperative combined aerobic and resistance exercise training in cancer patients undergoing tumour resection surgery: A systematic review of randomised trials. *Surg Oncol*. 2018;27(3):584-594.
- Review Articles, Commentaries, and Editorials:
  1. Baldini G, Ferreira V, and Carli F. Preoperative Preparations for Enhanced Recovery After Surgery Programs: A Role for Prehabilitation. *Surg Clin N Am*. 2018;98(6):1149-1169.
  2. Carli F, Silver JK, Feldman LS, et al. Surgical Prehabilitation in Patients with Cancer: State-of-the-Science and Recommendations for Future Research from a Panel of Subject Matter Experts. *Phys Med Rehabil Clin N Am*. 2017;28(1):49-64.
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# ISQIC Pre-Operative Physical Function Optimization Toolkit

