

Prehabilitation to Enhance Perioperative Care



Francesco Carli, MD, MPhil, FRCA, FRCPC^{a,*}, Celena Scheede-Bergdahl, MSc, PhD^{a,b}

KEYWORDS

• Surgery • Elderly • Cancer • Prehabilitation • Exercise • Nutrition

KEY POINTS

- Despite advances in surgical care, there remain patients with suboptimal recovery; elderly patients, especially those with cancer and limited protein reserve are at highest risk for negative postsurgical outcomes.
- Although more traditional approaches have targeted the postoperative period for rehabilitation, it has been shown that the preoperative period is most effective for intervention.
- Surgical prehabilitation is an emerging concept, deriving from the realization that effective perioperative care must include in addition to the clinical and pharmacological preparation of the surgical preparation, preoperative physical, nutritional and psychological optimization.

THE STRESS OF SURGERY AND TRAJECTORY OF RECOVERY

Tissue trauma, physical inactivity, quasi-starvation and psychological distress represent major stresses to the body. In turn, immediate systemic changes are initiated, resulting in both short- and long-term effects on the capacity to perform activities of daily living and on overall quality of life.

Despite advances in surgical technology, anesthesia and perioperative care, which have made surgery safer and more accessible to a variety of patients potentially at risk, there remains a group of patients who still have suboptimal recovery. Almost 30% of patients undergoing major abdominal surgery have postoperative complications,¹ and, even in absence of morbid events, major surgery is associated with a 40% reduction in functional capacity.² After surgery, patients experience physical fatigue, disturbed sleep, and a decreased capacity to concentrate for up to 9 weeks after discharge.³ Long periods of physical inactivity induce loss of muscle mass, deconditioning, pulmonary complications, and decubitus. Postoperative fatigue and

^a Department of Anesthesia, McGill University, Montreal, Quebec, Canada; ^b Department of Kinesiology and Physical Education, McGill University, Montreal, Quebec, Canada

* Corresponding author. Department of Anesthesia, McGill University Health Centre, 1650 Cedar Avenue, Room D10.144, Montreal, Quebec H3H 2R4, Canada.

E-mail address: franco.carli@mcgill.ca

complications have been found to be correlated with preoperative health status, functional capacity, and muscle strength.⁴ The elderly, persons with cancer, and persons with limited protein reserve are the most susceptible to the negative effects of surgery.

There is mounting evidence that many of the negative immediate effects of surgery such as pain, fatigue, and weakness, are potentially amenable to intervention. If proper interventions are carried out, these symptoms may be readily controlled, allowing for a faster recovery and early hospital discharge. However, the effects of surgery are felt far beyond the immediate convalescent period and patients can feel fatigued for many weeks; fatigue delays return to usual function and reduces quality of life. Thus, it would be of practical benefit if ways of improving postsurgery physical function and quality of life could be identified.

Traditionally, efforts have been made to improve the recovery process by intervening in the postoperative period. However, the postoperative period may not be the most opportune time to introduce interventions to accelerate recovery. Many of these surgical patients are concerned about perturbing the healing process as well as being depressed and anxious as they await extra treatment of the tumor and, therefore, are unwilling to be engaged in the process.

The preoperative period may be, then, a more emotionally opportune time to intervene in the factors that contribute to recovery. Patients are often scheduled for extra tests, anxiously waiting for surgery, and searching for explanation and reassurance. In the face of the powerlessness and diminished self-esteem that often follow a health threat, active engagement of the individual in the preparation process may have benefits beyond the physical and alleviate some of the emotional distress surrounding the anticipation of surgery and the recovery process.

SURGICAL PREHABILITATION AND THE PUBLISHED EVIDENCE

The process of enhancing functional capacity of the individual to enable them to withstand an incoming stressor has been termed prehabilitation.⁵ Although several programs have attempted to prepare patients for the postoperative recovery through education and positive reinforcement, little has been developed to systematically enhance functional capacity before surgery.

The theory of prehabilitation was initially supported in animal models. To investigate the effect of voluntary exercise on the tolerance to trauma, female rats, kept in cages with running wheels for periods of 3 to 7 weeks (exercise group), were subjected to trauma and compared with rats kept in cages without running wheels for the same period (sedentary group).⁶ Mortality was significantly decreased in rats kept in cages with running wheels for 5 weeks or 7 weeks, but not those in the 3-week group. These results indicated that voluntarily exercising rats showed increased resistance to trauma compared with rats kept under sedentary conditions.

Although the benefits of physical activity have been shown in many disabling conditions, there are limited clinical data on the role of exercise before surgery. However, the evidence of the role of exercise in disease prevention is overwhelming. In medicine, regular exercise has been shown to decrease the incidence of ischemic heart disease, diabetes, stroke, and fractures in the elderly as a result of improved balance and strength. As a result of exercise, there is an increase in aerobic capacity, decreased sympathetic overreactivity, increased antioxidant capacity, improved insulin sensitivity, and increasing ratio of lean body mass to body fat.⁷ Exercise training, particularly in sports medicine, has been used as a method of preventing a specific injury or facilitating recuperation. Thus, one would assume that by increasing the patient's aerobic and muscle strength capacity through increased physical activity

Download English Version:

<https://daneshyari.com/en/article/2744308>

Download Persian Version:

<https://daneshyari.com/article/2744308>

[Daneshyari.com](https://daneshyari.com)