

apnea screening tool and postanesthesia care assessment.  
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## Prehabilitation versus Rehabilitation

To the Editor:

We read with a great interest the article of Gillis *et al.*<sup>1</sup> In this study, 77 patients undergoing colorectal resection for cancer were randomized to receive either prehabilitation or rehabilitation. Prehabilitation group was able to walk significantly further in 6 min, showing that a prehabilitation program could improve postoperative functional exercise capacity.

Rigorously, the authors scheduled in the study design to measure patients' compliance to the postoperative rehabilitation program. This program was based on exercise, nutrition, and psychological interventions. It was reported in the study that the compliance to this trimodal rehabilitation program from surgery to 4-week period was significantly higher in the prehabilitation group than in the rehabilitation group (53 *vs.* 31%, respectively,  $P < 0.001$ ). As a result, we could hypothesize that the enhance in exercise capacity observed in the prehabilitation group could be the result of a greater compliance to the postoperative program rather than the usefulness of a prehabilitation program.

We would like to know how the authors dealt with this problem.

### Competing Interests

The authors declare no competing interests.

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### Reference

1. Gillis C, Li C, Lee L, Awasthi R, Augustin B, Gamsa A, Liberman AS, Stein B, Charlebois P, Feldman LS, Carli F: Prehabilitation versus rehabilitation: A randomized control trial in patients undergoing colorectal resection for cancer. ANESTHESIOLOGY 2014; 121:937–47

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In Reply:

We thank Bordes *et al.* for the opportunity to clarify this point. Our results<sup>1</sup> indicate that the compliance to the trimodal program in the first 4 weeks postsurgery was significantly higher in the prehabilitation group than in the

rehabilitation group (53 *vs.* 31% respectively,  $P < 0.001$ ). Bordes *et al.* thus hypothesized that the observed improvement in functional walking capacity in the prehabilitation group could be the result of a greater compliance to the postoperative program rather than the usefulness of a prehabilitation program.

We would argue that the usefulness of the prehabilitation program is directly linked to the ability to maintain compliance postoperatively. Our argument is based on two main points: (1) Prehabilitation maintains functional integrity so that patients are physically capable of complying with the trimodal program postoperatively; and (2) Prehabilitation is rooted in the belief that the preoperative period is an opportune time to encourage compliance by educating and preparing patients for the tasks that need to be completed in the postoperative period.

The prehabilitated patients gained, on average, +25.2 m (50.2 m) in functional walking distance before surgery; a mean difference of distance walked of approximately 40 m between groups. This preoperative difference was considered clinically and statistically significant ( $P < 0.001$ ) and substantiates the impact of prehabilitation. The finding attests to successful attainment of a “buffer” (*i.e.*, reserve) against the expected decline in physical function and overall well-being that is typically observed postoperatively. Moreover, a number of investigations have identified preoperative physical fitness as a predictor of surgical complications and early convalescence.<sup>2–6</sup>

Compliance was tabulated subjectively, based on adherence to the *entire* trimodal program. The value reported is an equally weighted average among all three interventions, as prehabilitation is believed to be a work of synergy. It should be noted that the self-reported physical activity, as measured using the validated CHAMPS questionnaire, 4 weeks after surgery was not significantly different between the two groups. This implies that prehabilitated patients were more compliant with the nutrition and psychological component, rather than the exercise component, of the trimodal intervention after surgery. Although anxiety reduction strategies likely contributed to overall well-being, there is no direct link between these techniques and improvement in functional capacity. Similarly, maintenance of adequate dietary protein is essential to preserve lean body mass and therefore skeletal muscle function; however, it is generally accepted that exercise is the main anabolic stimulus and that adequate nutrition augments the effect.<sup>7–9</sup> Adherence to the nutrition intervention after surgery may have been useful in sustaining the functional gain achieved in the preoperative period, yet unlikely to stimulate anabolic gains independent of increased exercise.

Finally, the use of preoperative counseling to provide information on the expectations of surgical procedures is believed to reduce fear and anxiety and enhance postoperative recovery.<sup>10,11</sup> It is a fundamental component of Enhanced Recovery Programs.<sup>11</sup> Preoperative instruction