

## **Does Prehabilitation Improve Outcomes in Complex Spine Surgery Patients?**

### **Development of Exercise-Focused Pilot Prehabilitation Program**

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#### **Abstract**

**Background:** Evidence has shown that patients with multiple comorbidities, who are frail, and/or obese have higher rates of complications and poorer post-operative outcomes after spine surgical treatment. Many comorbidities that contribute to frailty and obesity are modifiable with physical activity which contributes to improved overall health. Multiple studies have shown that patients can benefit from a prehabilitation intervention prior to various surgeries; however, the impact and necessary components of a prehabilitation protocol for patients with adult spinal deformity has not yet been established.

**Purpose:** The purpose of this project is to use current evidence to develop a pilot prehabilitation protocol for spine surgery patients.

**Methods:** We retrospectively reviewed a control group of patients with symptomatic degenerative disc disease requiring spinal surgery receiving standard of care with focus on comorbidities, peri- and postoperative outcomes, adverse events, and patient-centered outcomes. Using this data, we will compare the patient-reported and objective outcome measures in those participating in a pilot prehabilitation program developed with current evidence and delivered through a software platform for data tracking.

**Results:** An overwhelming majority of patients in the control group were either overweight or obese, 42.9% and 34.3% respectively while 57.1% of patients had hypertension, 42.9% had sleep apnea, 25.7% had diabetes mellitus. Average length of stay was  $6.6 \pm 3.9$  days. When tracked for the first post-operative year, patients were on opioids for  $4.6 \pm 4.7$  months post-operatively with 25.7% still on opioids at 1 year. The most common complication was durotomy (34.3%) and notably 20% of patients had re-operation within the first year.

**Conclusion:** This pilot program will help to establish a multi-disciplinary approach to optimization of health prior to spine surgery and provide guidance on the most important factors to emphasize in a prehabilitation program.