

## Adolescent Strength and Body Composition Changes One Year Post Gastric-Band Surgery

<sup>1</sup>Couper, B., <sup>1,2</sup>Falini, L., <sup>2</sup>Datto, G., <sup>2</sup>Reichard, K., <sup>1</sup>Reed, M., <sup>1</sup>Department of Kinesiology West Chester University, West Chester, PA <sup>2</sup>General Pediatrics, A.I. duPont Hospital for Children, Wilmington, DE

[BC672815@wcupa.edu](mailto:BC672815@wcupa.edu), [LFalini@nemours.org](mailto:LFalini@nemours.org), [gdatto@nemours.org](mailto:gdatto@nemours.org), [kreichar@nemours.org](mailto:kreichar@nemours.org), [MReed3@wcupa.edu](mailto:MReed3@wcupa.edu)

**Purpose:** The purpose of this study was to describe body composition and strength changes one year post Gastric-Band surgery in severely obese adolescents. **Methods:** A retrospective chart review was conducted of adolescents who underwent both Gastric-Band surgery and strength testing prior to and one year post-surgery. Muscular strength was measured by hand grip dynamometer with the elbow flexed at 90° using best of two trials. Body composition was measured by bioelectrical impedance analysis with the patient in a supine position. Electrodes were placed on the right wrist, hand, ankle, and foot. **Results:** There were 36 patients, aged 14-18 (mean 16.11±1.13), 31 females, 22 Caucasians. Average weight loss was 18.39±13.04 kg (range -4.6-49.5kg). Fat mass, fat-free mass, and right hand grip significantly decreased one year post-surgery. While left hand grip did not significantly decrease there was a trend toward a decrease one year post-surgery. Baseline right hand grip strength had a significant positive correlation with fat free mass loss (0.611, p=0.027).

	N	Base	N	1 year	Significance
Fat mass (kg)	35	76.24±15.45	18	59.43±20.65	P≤0.001
Fat-free mass (kg)	35	61.6±17.7	18	59.5±19.89	P≤0.001
Hand grip R (lbs)	36	75.08±13.71	17	64.76±14.61	P=0.017
Hand grip L (lbs)	36	68.86±11.81	17	61.82±13.75	P=0.086

**Conclusion:** Adolescents who had Gastric-Band surgery experienced significant weight loss one year following surgery. There were decreases in both fat mass and fat free mass. Patients who were stronger before surgery lost more fat free mass 1 year after surgery. These results suggest that a decrease in fat-free mass could lead to a decrease in hand grip strength. Further research is needed to determine the most effective strength training prescription to maintain or decrease fat-free loss following surgery.