

Title: Adolescent Cardiovascular Fitness Changes One Year Post Gastric-Band Surgery

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Purpose: The purpose of this study was to describe cardiovascular fitness changes one year post Gastric-Band surgery in severely obese adolescents. **Methods:** A retrospective chart review was conducted of patients who had Gastric-Band surgery and maximal fitness testing pre and 1 year post -surgery. Maximal cycle ergometer fitness was assessed using a 20 watt ramp protocol. Fitness measurements were absolute VO₂ (L/min), relative VO₂ (ml/kg/min), relative VO₂ fat free mass (FFM) and maximal work (watts). **Results:** There were 21 patients, aged 14-18 (mean 15.8±1.0), 16 females, 15 Caucasians. Average weight loss was 22.05±13.83 kg (range -4.6-49.5kg) and percent excess weight loss was 31.02%±19.08% (range -8.87-75.37). Weight and BMI significantly decreased one year post-surgery. Resting HR, max HR and max blood pressure, trended towards a significant decrease and relative VO₂ trended towards a significant increase. Maximum absolute VO₂ (baseline 2.84, 1 year post 2.80, p=0.697), relative VO₂ FFM (baseline 42.54, 1 year post 46.60, p=0.658), Watts (baseline 163, 1 year post 167, p=0.318), and respiratory exchange ratio were not significantly different.

	N	Baseline (mean ± stand.dev.)	1 year Post (mean ± stand.dev.)	Significances
Weight (kg)	21	145.97 ± 23.70	127.83 ± 23.33	P<0.001
BMI	21	50.69 ± 8.61	44.40 ± 7.80	P<0.001
Resting HR	21	92 ± 14	86 ± 14	P=0.087
Max HR	21	178 ± 13	182 ± 10	P=0.103
Max blood pressure	20	172/63 ± 19/16	161/58 ± 16/12	P=0.139, P=0.119
Relative VO ₂ (ml/kg/min)	21	19.54 ± 3.56	21.22 ± 4.2	P=0.099

Conclusion: Gastric-band surgery is effective in decreasing weight in adolescent patients. Despite significant weight loss there was not a corresponding significant improvement in cardiovascular fitness. Further research is needed to determine the most effective dose and intensity of exercise in this specific population.

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