

**33° CONGRESSO
NAZIONALE SICOB
SORRENTO**

**29 · 31 OTTOBRE
2 0 2 5**



**HILTON
SORRENTO
PALACE**

L'ATTIVITÀ FISICA NEL PAZIENTE BARIATRICO

PROF. MONICA NANNIPIERI

SOD MEDICINA DELLO SPORT-AOUP

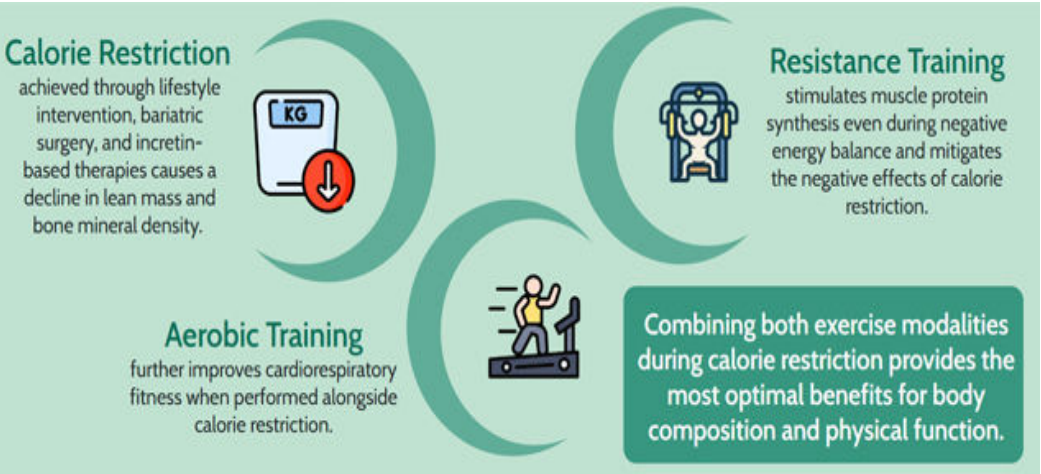
DIP. MEDICINA CLINICA E SPERIMENTALE

UNIVERSITÀ DEGLI STUDI DI PISA

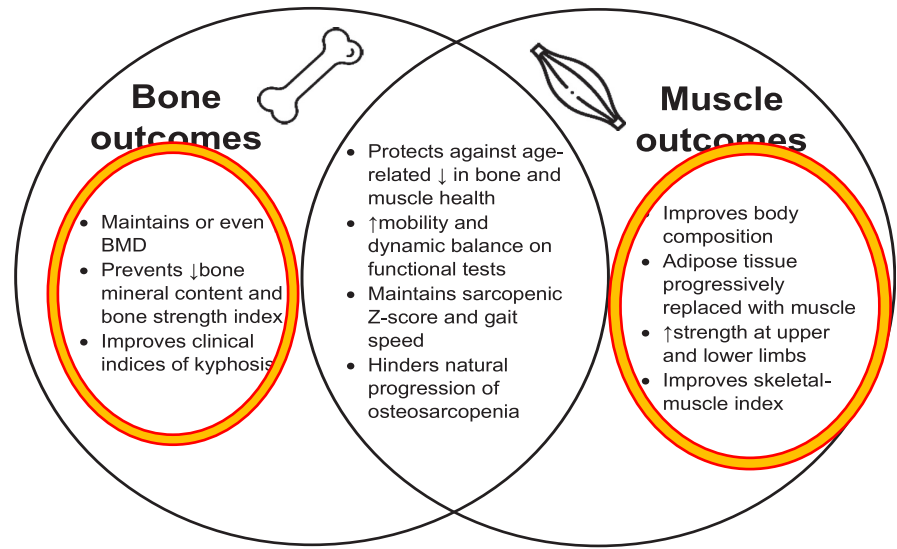
Busetto et al.: Practical Recommendations of the Obesity Management Task Force of the European Association for the Study of Obesity for the Post-Bariatric Surgery Medical Management

Table 2. List of graded clinical practical recommendations for post-bariatric nutritional management

Recommendations	Level of evidence	Grade of recommendation*
Regular physical activity should be encouraged after bariatric surgery, starting since after the recovery from surgery. Patients should be advised to incorporate moderate aerobic physical activity to include a minimum of 150 min/week and goal of 300 min/week, including strength training 2–3 times per week.	1	A

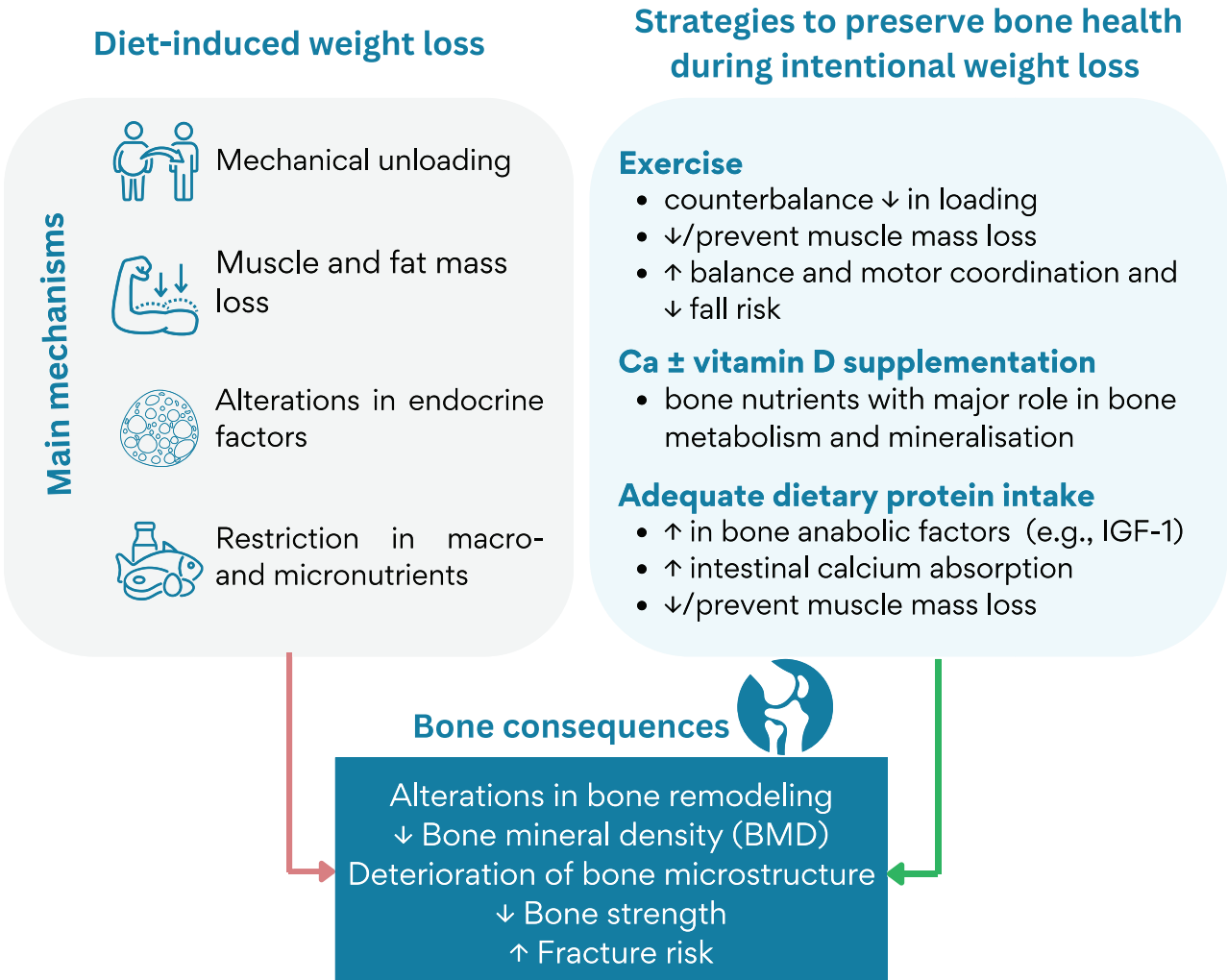


bone and muscle outcomes in response to exercise



Management of Adverse Skeletal Effects Following Bariatric Surgery Procedures in People Living with Obesity

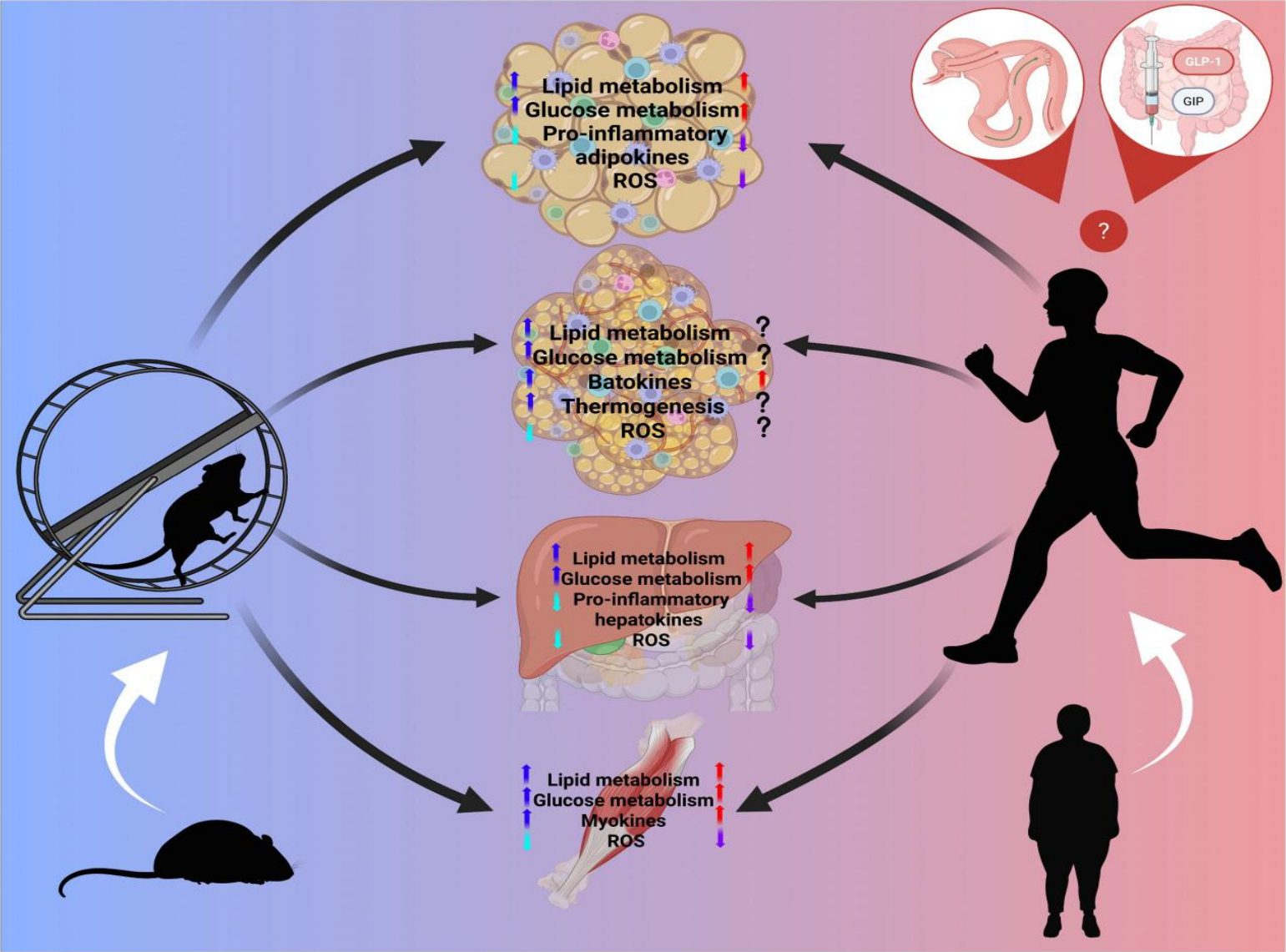
Léa Karam



Natasha Maria James



Exercise modulates potent beneficial effects to various metabolic organs impacted by obesity

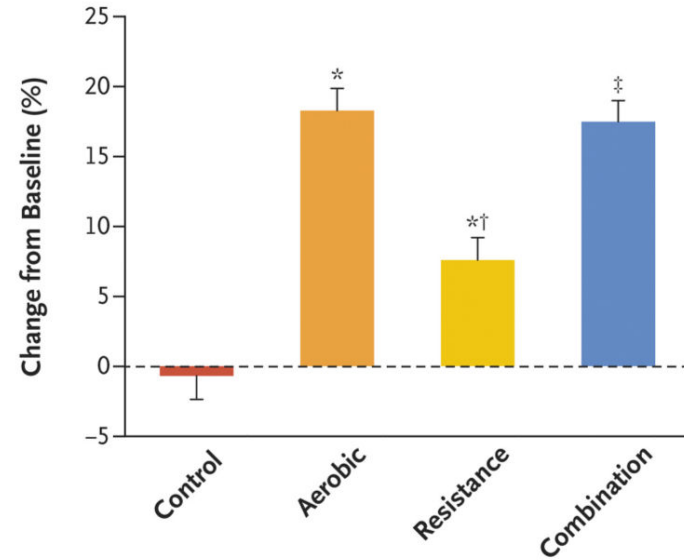


The Benefits of Exercise Training in Combination with Weight Loss Therapies

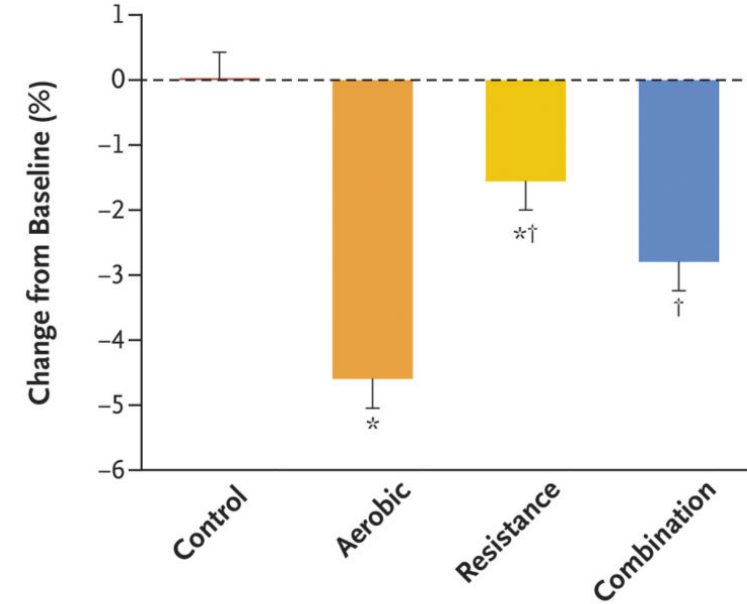
Bryan C. Jiang

Diabetes. Author manuscript; available in PMC 2025 September 08.

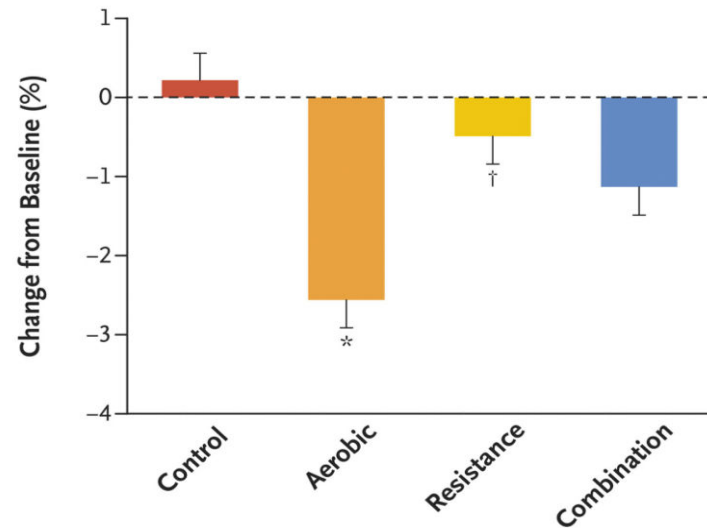
Peak Oxygen Consumption



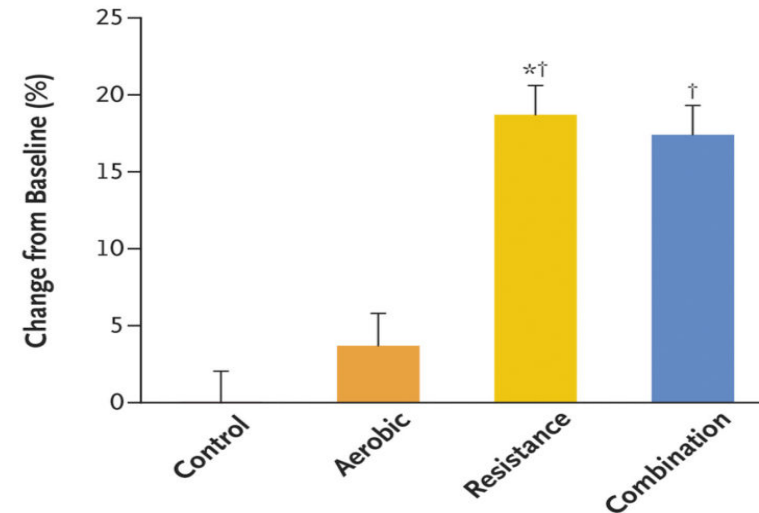
Lean Mass



BMD at Total Hip



Strength



Moderate-intensity constant or high-intensity interval training? Metabolic effects on candidates to undergo bariatric surgery

Methods

25 participants



Randomised



MICT
n=14



HIIT
n=11

Post-training
analysis

1 month post surgery
follow up

Main results



MICT

- Increased exercise capacity at follow up
- Decrease fat mass
- Increase muscle mass
- Decreased insulinemia after OGTT



HIIT

- Increased circulatory adiponectin
- Increased GDF15 at follow up

Conclusion

Both MICT and HIIT conferred benefits in candidates to undergo bariatric surgery, however, several of those effects were program-specific, suggesting that exercise intensity should be considered when preparing these patients.

Reference: Enríquez-Schmidt J,... Martínez-Huenschullán S. Moderate-intensity constant or high-intensity interval training? Metabolic effects on candidates to undergo bariatric surgery. Nutrition, Metabolism, and Cardiovascular Diseases, 2023.

Combinatorial therapies in human studies	Weight loss procedure	Interventions	Outcomes
Bariatric surgery and exercise	Presurgery	Aerobic dance-based exercise for 60 minutes, 2 days a week <u>for 8 weeks</u> Analysis after 8 weeks of intervention and 5 months post SG (349)	• <u>Improved functional capacity</u> • Improved muscle strength and endurance • Improved physical activity • Improved fatigue scores • These results were seen both at 8 weeks post intervention and 5 months postsurgery
		<u>12 weeks</u> of endurance and strength training. 3 sessions per week for 80 minutes and monthly aqua gym (350)	• Improved 6-minute walking test • Increased half-squats • Increased arm curl repetitions • Improved social interaction score
		1 year postsurgery RYBG or SG evaluation of presurgery exercise intervention mentioned previously (350, 351)	• Increased physical activity • Increased 6-minute walking test • Increased half-squat test • <u>Decreased BMI</u>
		Aerobic and stretching exercises, 25 minutes each, 2 sessions weekly in addition to cognitive-behavioral therapy (CBT), once a week for <u>4 months</u> (352)	• <u>Reduced body weight for the exercise and exercise + CBT groups</u> • Reduced BMI for the exercise group and exercise + CBT group • <u>Improved functional capacity and cardiometabolic parameters such as blood pressure for both exercise and exercise + CBT groups</u>
		Aerobic (including HIIT) and resistance training, 2 sessions per week for <u>6 months</u> (353)	• <u>Reduced BMI</u> • <u>Reduced fat mass</u> • <u>Improved blood pressure</u>

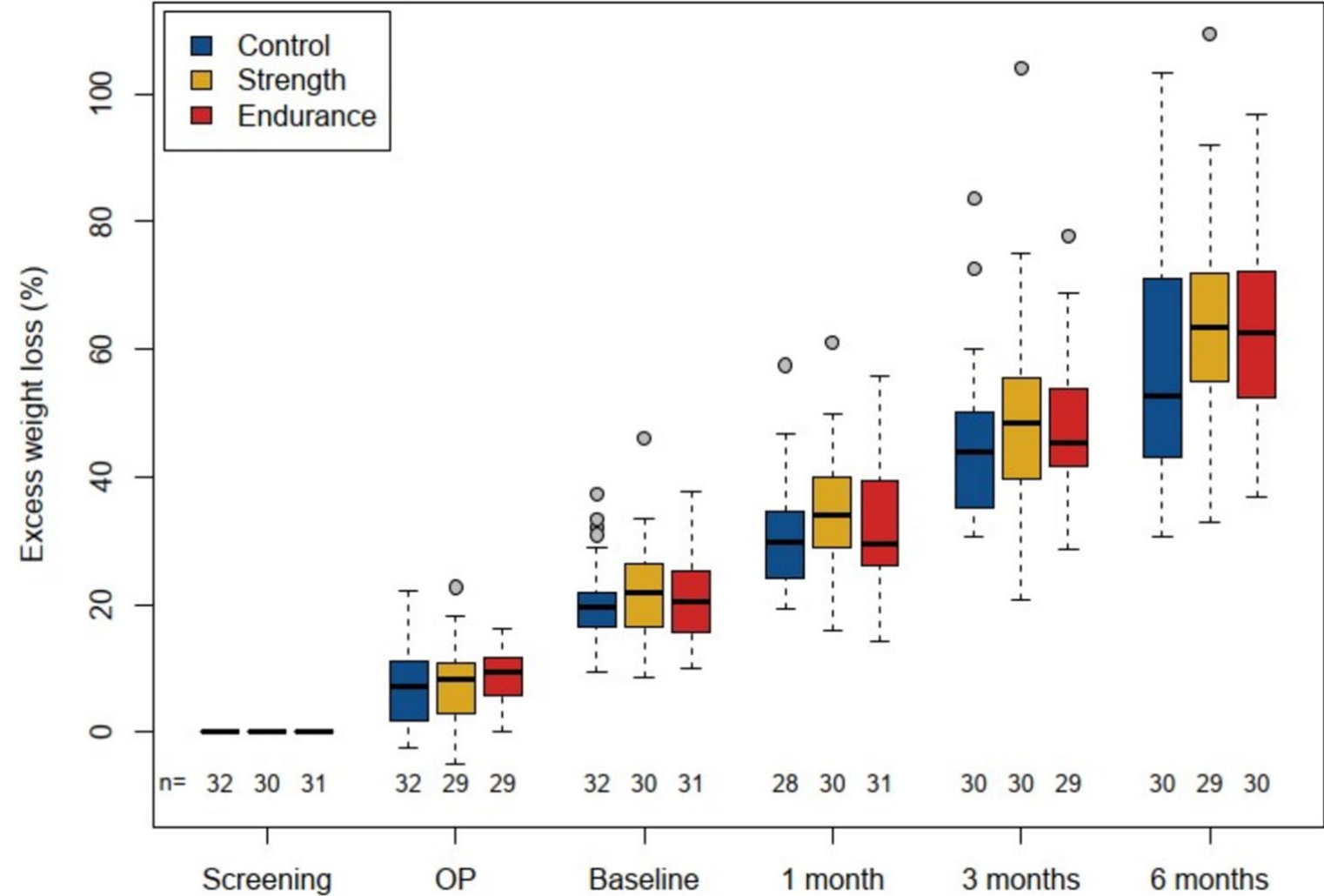
RESEARCH

The effect of 6 months of structured strength or endurance exercise program on weight loss after gastric bypass surgery in a randomized controlled trial

Stefanie Lehmann

Excess weight loss over time in all groups.

Excess weight loss in:
PIG vs CG was + 3.47%, $p<0.05$
ST vs CG: + 3.66%
ET vs CG: +3.29 %



RESEARCH

The effect of 6 months of structured strength or endurance exercise program on weight loss after gastric bypass surgery in a randomized controlled trial

Stefanie Lehmann

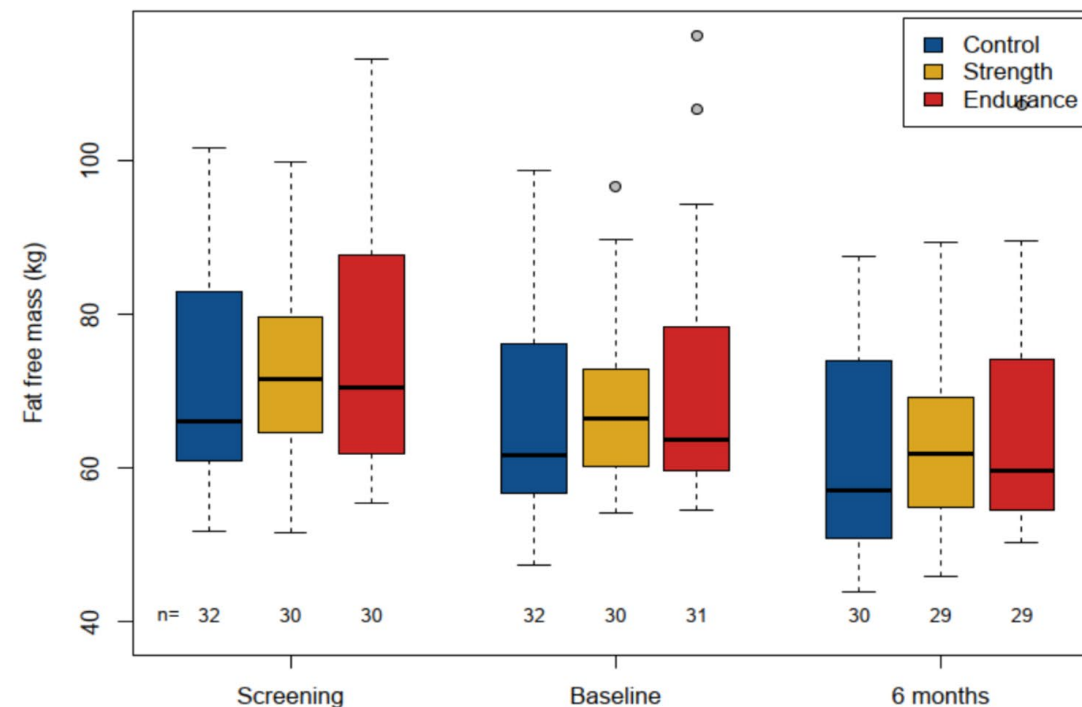
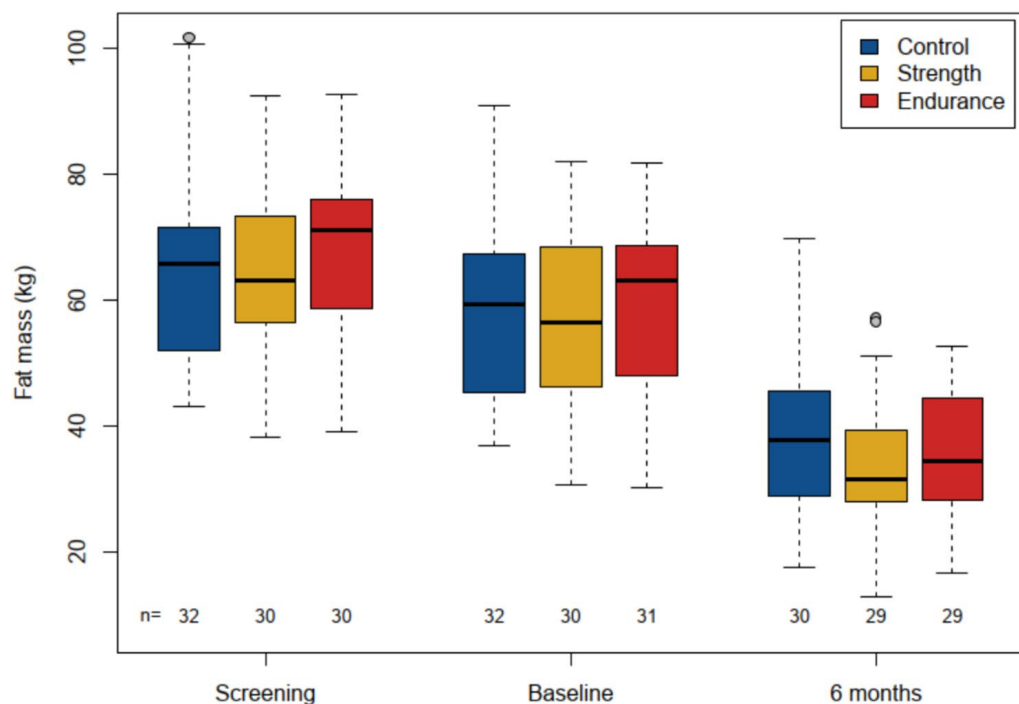
Fat mass loss in:

PIG vs CG was -3 kg, $p = 0.0037$

ST vs CG was -2.8 kg

ET vs CG -3.2 kg

Fat mass over time in all groups.



Fat-free mass over 6 months:

PIG vs CG was $+0.2$ kg; $p = 0.79$

ST vs CG was 0.2 kg

ET vs CG -0.2 kg

Conclusion An additional exercise training 6 months postoperatively, independent of the type of training, resulted in greater weight loss and loss of fat mass. However, it had no effect on free fat mass, glucose/lipid parameters or inflammation beyond the surgery itself.

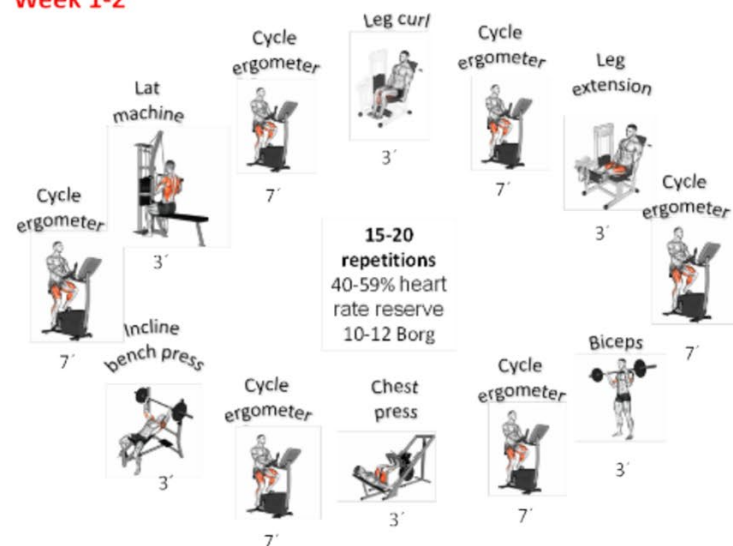


Effect of a 16-Week Exercise Program After Bariatric Surgery on Sarcopenia Parameters Based on FNIH, EWGSOP2, and EASO/ESPEN Criteria: the Results of the EXPOBAR Randomized Trial Program

Cláudia Mendes

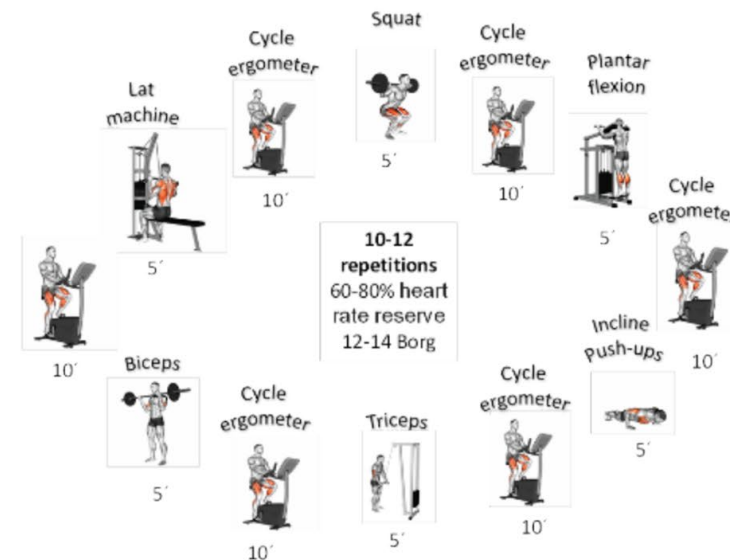
Phase I

Week 1-2

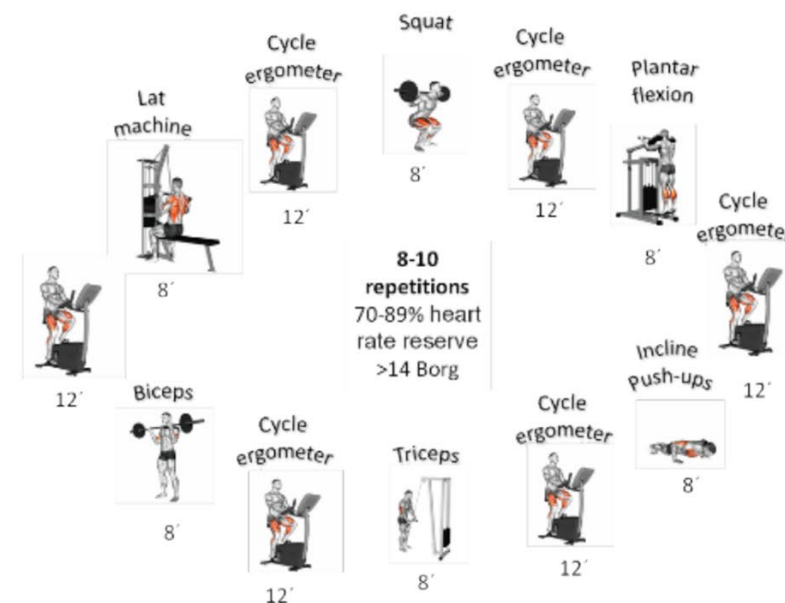


Week 3-4

Phase II Week 5-10



Phase III Week 11-16

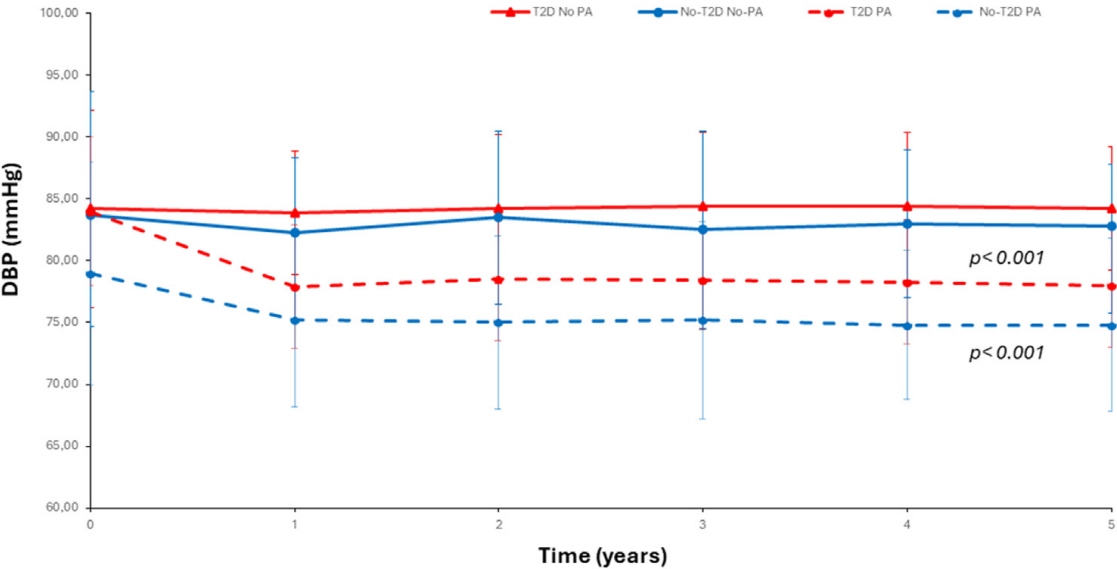
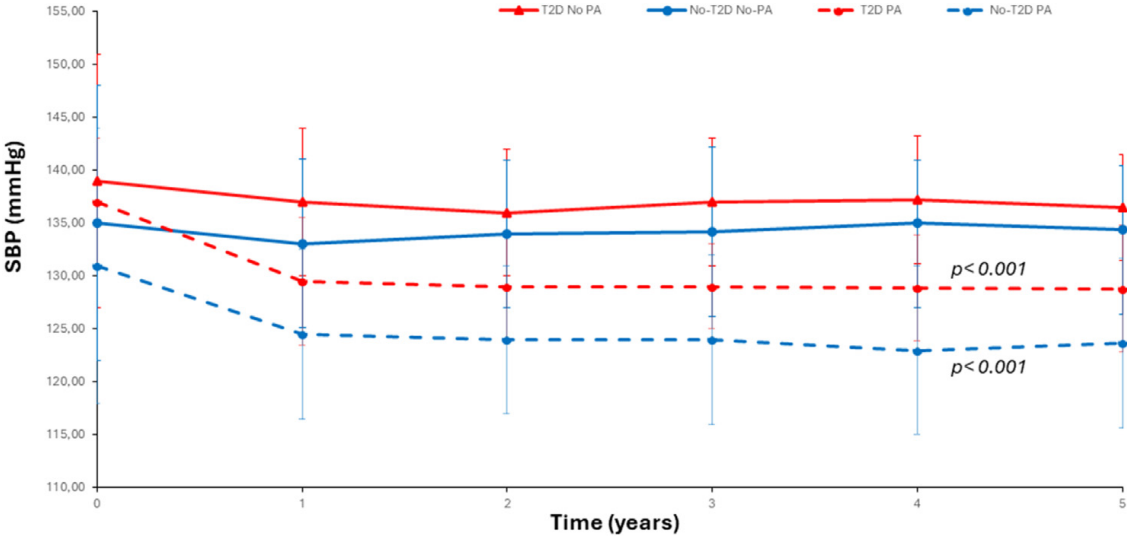
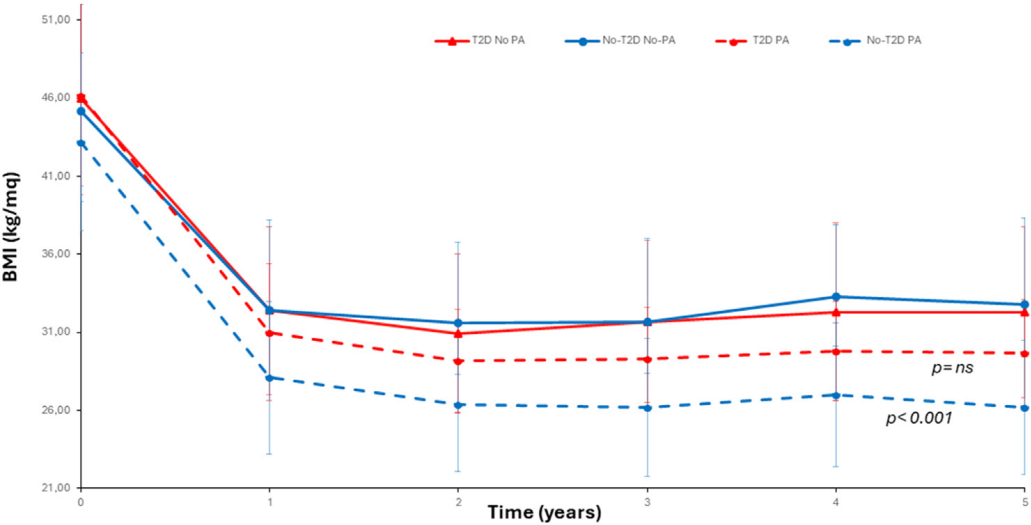


The EXPOBAR trial showed that the intervention had significant and meaningful effects on **body composition parameters, physical function, and strength outcomes**. However, muscle mass decreased continuously after surgery in both groups despite the exercise protocol used in the intervention group.

Long-Term effects of physical activity on weight loss, metabolic parameters and blood pressure in subjects undergoing bariatric surgery: A 5-year follow-up study



Diego Moriconi^{a,*}, Laura Manca^a, Eleni Rebelos^b, Emanuele Guidotti^c, Linda Bonvicini^a, Antonio Troilo^a, Marco Anselmino^d, Monica Nannipieri^{a,**}



In T2D individuals before surgery, PA showed significant reductions in blood pressure and a lower T2D recurrence (6.7 % vs 36 %) compared to No-PA group.

Combinatorial therapies in human studies	Weight loss procedure	Interventions	Outcomes
	Postsurgery	<u>Resistance training for 1 hour, 3 times a week for 18 weeks post RYGB in addition to supplemental whey protein dose of 48 grams/day (354)</u> 5-year postsurgery follow up of previously mentioned intervention (20, 354) 60-min group exercise classes with functional strength, flexibility, and aerobic activities, 2 times per week for 6 months and at least 3 days per week of self-directed exercise post RYG, SG, and GB (355) <u>12 weeks of aerobic and strength training, 3 times per week post RYGB and SG (356)</u> <u>Resistance training for 12 weeks, 60–80 minutes, 3 times a week post RYGB (357)</u> <u>Aerobic and resistance training for 60 minutes, 3 times a week for 12 weeks post RYGB, SG, and GB (358)</u> <u>Aerobic and resistance exercise up to 74 minutes, for 5 months separated into 5 blocks for every 4 weeks post SG (359)</u> <u>Aerobic exercise for 120 minutes, 3 to 5 times per week for 6 months post RYGB (360)</u>	• Increased lower-limb muscle strength • <u>Increased physical activity</u> • <u>Lower weight regain</u> • <u>Increased aerobic fitness after 6 months of intervention that lasted an additional 6 months with maintenance</u> Reduced weight Reduced percent body fat Reduced fat mass Increased change in 12-minute walk test • Improved muscle strength and quality including less press strength, leg extension strength, and leg press quality Decreased fat mass Improved physical function Reduced fat mass Reduced blood glycemic levels Reduced cholesterol levels • Reduced fat mass • Reduced abdominal adipose tissue • Maintenance of skeletal muscle mass

CONCLUSIONS

What We Currently Know

Beneficial Characteristics of Exercise Training Programs

Post MBS exercise training that combines endurance and resistance

→ + systolic blood pressure

Post MBS exercise training that lasts > 12 weeks

→ + systolic blood pressure

What We Think We Know

Effects of Exercise Training

Pre MBS Exercise Training

Exercise training

→ + BMI

→ + 6-minute walking test

→ NS quality of life

Exercise training and physical activity counselling

→ + VO₂max

Post MBS Exercise Training

Exercise training

→ + body weight and BMI

→ + waist circumference

→ + bone mineral density

→ + 6-minute walking test

→ + muscle strength

→ + systolic blood pressure

→ NS weight loss ≥12 months post-MBS

→ NS fat mass

→ NS fat-free and lean body mass^a

→ NS VO₂max

→ NS resting heart rate

→ NS diastolic blood pressure

→ NS fasting insulin and fasting glucose

→ NS total cholesterol, triglycerides, or low-density lipoprotein

→ NS high-density lipoprotein

What We Still Don't Know

Effects of Exercise Training

Pre MBS Exercise Training

Impact of exercise training on:

- fat mass
- fat-free and lean body mass^a
- muscle strength
- resting heart rate
- blood pressure
- glucose/lipid metabolism
- physical activity
- adverse surgical events
- hospital stay length

Post MBS Exercise Training

Impact of exercise training on:

- quality of life
- HOMA-IR, HbA1c, insulin sensitivity, AIRg, Di, SPISE and glucose effectiveness

Pre and Post MBS Exercise Training

Impact of exercise training on any variable in the long-term (i.e., > 12 months)

REVIEW
Bariatric Surgery

OBESITY
Reviews WILEY

Exercise training in metabolic and bariatric surgery: An overview of systematic reviews

Julia Hussien¹ | Marine Asselin^{1,2} | Dale Bond³ | Yin Wu³ | Valentina Ly⁴ |
David Creel⁵ | Pavlos Papasavas³ | Bret H. Goodpaster⁶ | Aurélie Baillot^{1,7,8}

Obesity Reviews. 2025;26:e13920.

Review article

Role of the exercise professional in metabolic and bariatric surgery

Matthew A. Stults-Kolehmainen, Ph.D.



CONCLUSIONS



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CONCLUSIONS

Exercise training in metabolic and bariatric surgery: An overview of systematic reviews

Julia Hussien¹ | Marine Asselin^{1,2} | Dale Bond³ | Yin Wu³ | Valentina Ly⁴ |
David Creel⁵ | Pavlos Papasavas³ | Bret H. Goodpaster⁶ | Aurélie Baillot^{1,7,8} |
Obesity Reviews. 2025;26:e13920.

Beneficial Characteristics of Exercise Training Programs

Post MBS exercise training that combines endurance and resistance

- + body weight and BMI
- + triglycerides

Exercise training starting < 6 months post MBS
→ NS body weight and BMI

Exercise training starting > 6 months post MBS
→ + body weight and BMI

Feasibility and Acceptability

Exercise training has:

- high attendance rates
- high retention rates
- low drop out rates
- low risk of serious exercise adverse events

Beneficial Characteristics of Exercise Training Programs

- any beneficial pre MBS exercise training characteristics (e.g., type, start time, duration, time/week) and all beneficial post MBS exercise training characteristics not mentioned in first two columns

Feasibility and Acceptability

- adherence rates to prescribed exercise training programs
- impact of exercise training characteristics (i.e., timing, modality, duration etc.) on feasibility and acceptability outcomes

Physiological adaptation to exercise training after bariatric surgery.

