



# 13<sup>th</sup> Congress of the International Federation for the Surgery of Obesity (IFSO) European Chapter

14-17 May 2025 | Venice, Italy

[ifso-ec2025.com](https://ifso-ec2025.com)

## Lifestyle intervention and physical exercise

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# Disclosure Slide

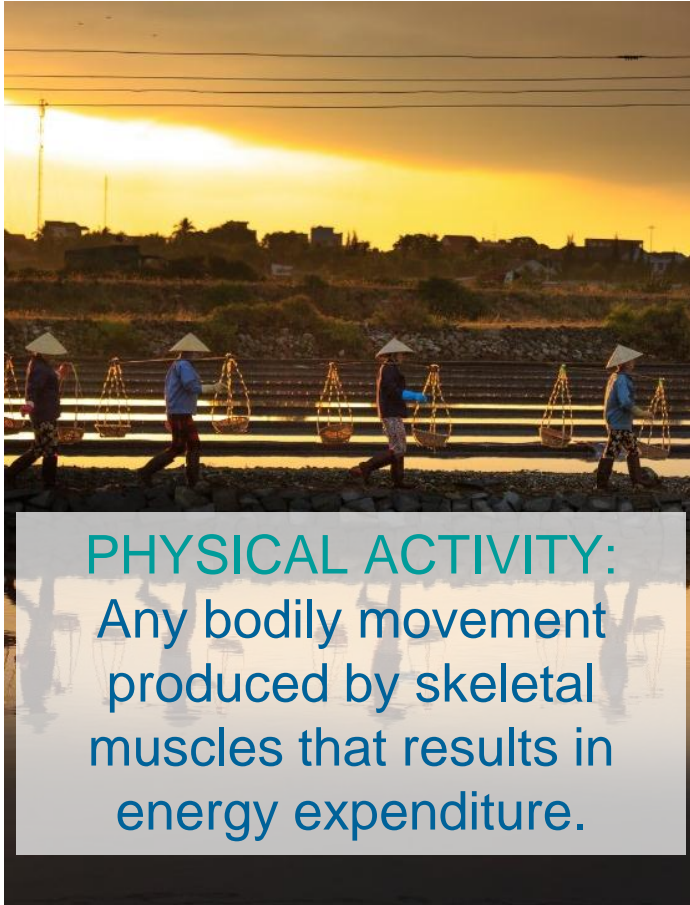
<input checked="" type="checkbox"/>	No, nothing to disclose
<input type="checkbox"/>	Yes, please specify:

# A new framework for the diagnosis, staging and management of obesity in adults

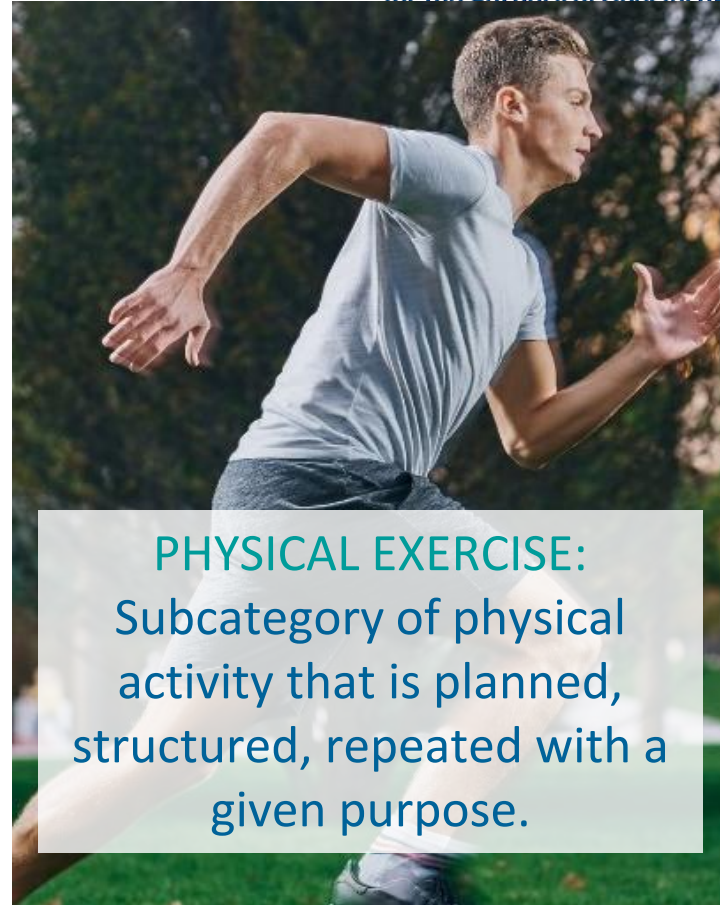
Luca Busetto, Dror Dicker, Gema Frühbeck, Jason C. G. Halford, Paolo Sbraccia, Volkan Yumuk & Gijis H. Goossens



Theme	N.	Statement	Consensus (%)
Therapeutic targets	22	Consider that the management and treatment of obesity have <b>wider objectives than weight loss</b> alone and include the prevention, resolution or improvement of <b>obesity-related complications, better quality of life and mental wellbeing</b> , and improvement of	100%
	25	<b>Obesity management</b> Considering the pillars of treatment of people with obesity (statements 15–21), our recommendations substantially adhere to current available guidelines <sup>4,8,9</sup> . Behavioral modifications, including nutritional therapy, physical activity, stress reduction and sleep improvement, were agreed as main cornerstones of obesity management, with the possible addition of psychological therapy, obesity medications and metabolic or bariatric (surgical and endoscopic) procedures. For the latter two options, the steering committee discussed the fact that cur-	96%



**PHYSICAL ACTIVITY:**  
Any bodily movement  
produced by skeletal  
muscles that results in  
energy expenditure.



**PHYSICAL EXERCISE:**  
Subcategory of physical  
activity that is planned,  
structured, repeated with a  
given purpose.

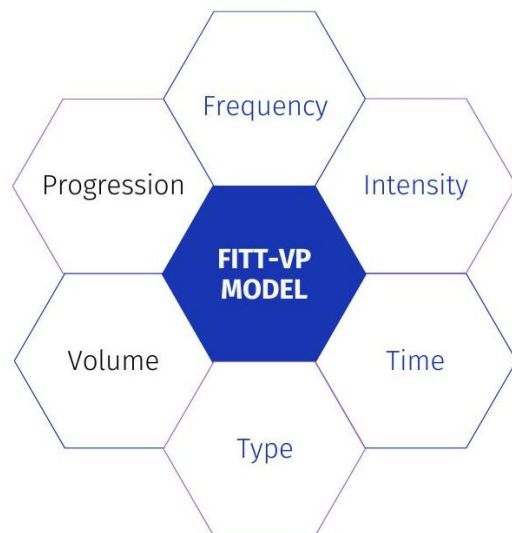


# Exercise training in the management of overweight and obesity in adults: Synthesis of the evidence and recommendations from the European Association for the Study of Obesity Physical Activity Working Group

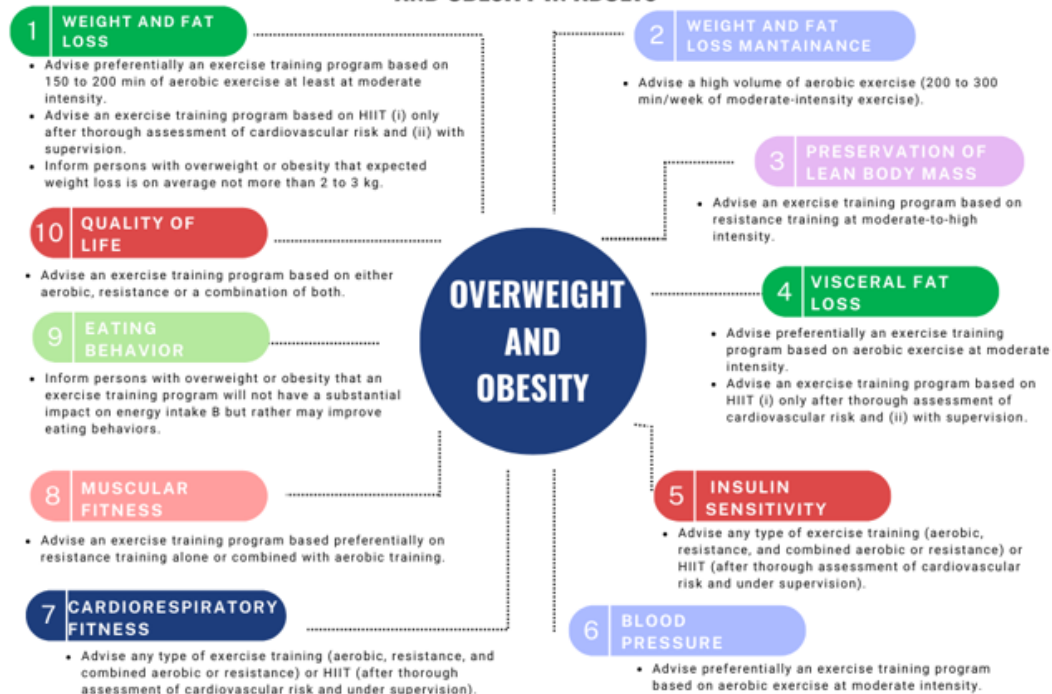
Jean-Michel Oppert<sup>1</sup> | Alice Bellicha<sup>2,3</sup> | Marleen A. van Baak<sup>4</sup> |  
 Francesca Battista<sup>5</sup> | Kristine Beaulieu<sup>6</sup> | John E. Blundell<sup>6</sup> | Eliana V. Carraça<sup>7</sup> |  
 Jorge Encantado<sup>8</sup> | Andrea Ermolao<sup>5</sup> | Adriyan Pramono<sup>4</sup> |  
 Nathalie Farpour-Lambert<sup>9,10</sup> | Euan Woodward<sup>9</sup> | Dror Dicker<sup>9,11</sup> |  
 Luca Busetto<sup>9,12</sup>

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## RECOMMENDATION FOR PHYSICAL ACTIVITY AND EXERCISE IN THE MANAGEMENT OF OVERWEIGHT AND OBESITY IN ADULTS



# Effect of Exercise in obesity: bariatric surgery

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## POSTOPERATIVE INTERVENTION

Outcome	N studies	MD [95% CI] or SMD [95% CI]	P value	I <sup>2</sup> - Tau <sup>2</sup> (P value)	[95% PI]
Effect observed after the intervention					
Change in body weight	14	MD: -1.8 [-3.2; -0.4] kg	0.01	35% - 2.28 (0.09)	[-5.4; 1.8]
Change in fat mass	9	MD: -2.1 [-3.7; -0.5] kg	0.01	50% - 2.76 (0.04)	
Change in lean body mass	11	MD: 0.7 [-0.2; 1.6] kg	0.13	45% - 0.92 (0.05)	[-1.7; 3.1]
Change in bone mineral density	3	SMD: 0.44 [0.21; 0.67]	0.0002	0% - 0.0 (0.40)	
Change in VO <sub>2</sub> max	8	SMD: 0.70 [0.35; 1.10]	<0.0001	42% - 0.10 (0.10)	
Change in muscle strength	9	SMD: 0.82 [0.48; 1.16]	<0.0001	42% - 0.11 (0.09)	
Change in walking distance	6	SMD: 1.46 [0.27; 2.66]	0.02	90% - 1.98 (<0.001)	
Systolic blood pressure	4	MD: -4.2 [-9.3; 1.0] mmHg	0.12	47% - 12.7 (0.13)	
Diastolic blood pressure	4	MD: -2.3 [-8.5; 3.9] mmHg	0.47	77% - 29.1 (0.005)	
HOMA-IR	2	SMD: 0.14 [-0.10; 0.38]	0.27	0% - 0.0 (0.49)	
LDL-c	3	SMD: -0.18 [-0.46; 0.09]	0.20	0% - 0.0 (0.59)	
HDL-c	4	SMD: 0.10 [-0.16; 0.37]	0.45	0% - 0.0 (0.51)	
Triglycerides	4	SMD: 0.01 [-0.26; 0.27]	0.97	0% - 0.0 (0.88)	
Quality of life—physical dimension	2	MD: -2.5 [-5.1; 0.2]	0.07	0% - 0.0 (0.32)	
Quality of life—mental dimension	2	MD: 3.9 [-0.5; 8.3]	0.08	0% - 0.0 (0.37)	
Effect observed after a follow-up without exercise <sup>a</sup>					
Change in body weight	2	MD: -4.7 [-7.2; -2.1] kg	0.0003	0% - 0.0 (0.49)	
Change in muscle strength	2	SMD: 0.78 [-0.08; 1.64]	0.08	57% - 0.23 (0.13)	

Note: 95% PI: 95% prediction intervals. 95% PI were calculated when the number of studies included in the meta-analysis was  $\geq 10$  for a given outcome. Abbreviations: HDL-c, high-density lipoprotein cholesterol; HOMA-IR, homeostatic model assessment of insulin resistance; LDL-c, low-density lipoprotein cholesterol; MD, mean difference; PI, prediction interval; SMD, standardized mean difference.

<sup>a</sup>Data are the difference between body weight or muscle strength after several months of follow-up without exercise (3 months in the study by Herring et al.<sup>49</sup> and 12 months in the study by Mundbjerg et al.<sup>27</sup>) versus same outcomes measured before the beginning of the exercise training program.

# Functional effects of bariatric surgery

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Parameter	Evaluation pre-LSG		Evaluation 6 months post-LSG		Evaluation 16 months post-LSG		
	Mean	SD	Mean	SD	Mean	SD	
BMI [kg/m <sup>2</sup> ] (n=24)	44.04	±5.84	32.19	±4.56	29.1	±4.01	<0.01*
METs max (n=24)	9.02	±2.27	11.27	±2.45	12.15	±2.15	<0.01*
Exercise time [s] (n=23)	762.74	±156.17	894.17	±175.06	942.30	±189.98	<0.01*
VO <sub>2</sub> peak [ml/min/kg] (n=24)	20.96	±3.75	26.13	±4.56	27.36	±5.24	<0.01*
VO <sub>2</sub> peak [ml/min] (n=24)	2 555.00	±561.23	2 335.79	±576.21	2 259.88	±566.49	<0.01*
GPAQ [METs-min] (n=21)	771.43	±1 512.99	2 404.76	±2 091.57	2 240.95	±2 138.97	<0.01*
GPAQ inactivity [min/d] (n=20)	496.50	±297.06	429.00	±215.26	336.00	±170.15	<0.01*

And what about exercise?

Weight related VO<sub>2</sub>  
(ml/min/Kg)



Absolute VO<sub>2</sub>  
(ml/min)



Level of physical  
activity



# Effects of physical exercise on physical fitness

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Outcome	Intervention	N	Comparator	N	(S)md	95% CI		I <sup>2</sup> (%)	P value
						min	max		
VO <sub>2</sub> max	Aerobic	995	No exercise	447	4.08	3.22	4.95	61	0.00001
	Resistance	75	No exercise	84	4.52	1.76	7.28	59	0.001
	Aerobic + Resistance	165	No exercise	153	4.57	2.14	7.00	74	0.0002
	HIIT	183	No exercise	123	4.31	2.81	5.80	51	<0.00001
	Resistance	143	Aerobic	137	-1.40	-2.41	-0.38	11	0.007
	Aerobic + Resistance	96	Aerobic	97	0.38	-0.63	1.38	0	0.46
	HIIT	300	Aerobic	221	0.99	0.25	1.73	0	0.008
Muscle strength	Aerobic	78	No exercise	76	0.26	-0.06	0.58	0	0.12
	Resistance	291	No exercise	206	0.74	0.54	0.93	0	<0.00001
	Aerobic + Resistance	74	No exercise	71	0.62	0.27	0.96	0	0.004
	Resistance	96	Aerobic	95	0.49	0.19	0.78	0	0.001
Physical fitness (flexibility, balance, walking speed, and global physical capacity score)	Resistance or Aerobic + Resistance	131	No exercise	98	0.66	0.37	0.95	0	<0.00001



## CARDIORESPIRATORY FITNESS

Aerobic, resistance, combined aerobic plus resistance, and HIIT interventions all increase VO<sub>2</sub>max.

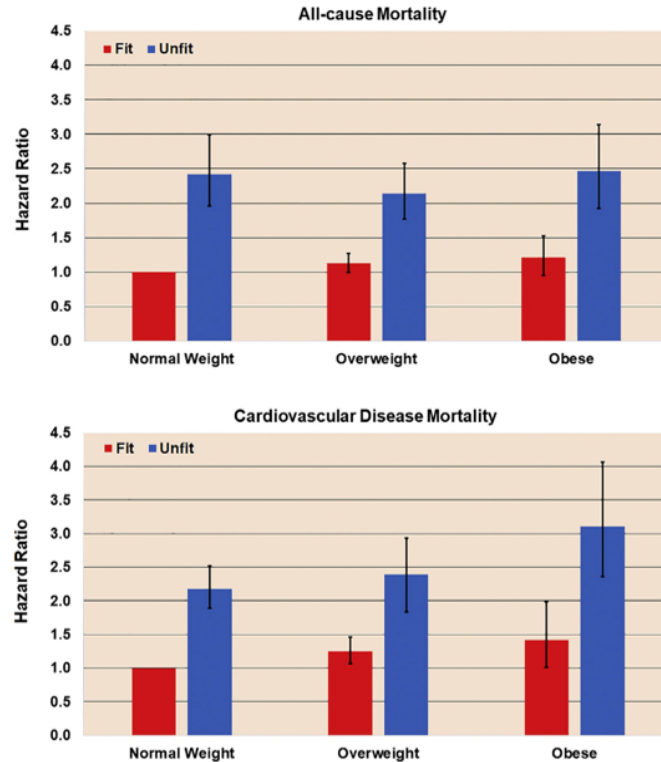
HIIT interventions and interventions that include aerobic training are more effective in improving VO<sub>2</sub>max.



## STRENGTH, FLEXIBILITY AND BALANCE

Resistance training interventions (alone or in combination with aerobic training) improves muscle strength compared with no exercise training. Aerobic training interventions do not improve muscle strength





Risk factor for morbidity  
and mortality also in people  
with **obesity** and  
**independent from BMI** .

Barry VW et al., *Progress in Cardiovascular disease*, 2014 & 2018  
Ross R, [...], Myers J et al. *Circulation*, 2016  
Myers J, Kokkinos P and Nvelin; *Nutrients*, 2019  
Oppert JM, Battista F, Ermolao A, et al. *Obesity Reviews*. 2021;e13273.

## WEIGHT AND FAT LOSS

**Aerobic training and HIIT** lead to similar **weight and fat loss** in groups of adults with overweight or obesity, as long as **the amount of energy expenditure is the same**.

## ASSOCIATION WITH DIET

**Aerobic training** alone or combined with **resistance training** performed during a weight-loss diet leads to an **additional weight loss** (1.5 kg on average) and fat loss, compared to controls with diet only.

## LEAN MASS

**Resistance training**, but not aerobic training, performed during a weight-loss diet **decreases the loss of lean body mass** in groups of adults with overweight or obesity, compared to controls with diet only.

## WEIGHT MAINTENANCE

Adults who engage in large amounts of **physical activity or aerobic exercise** ( $\geq 250$  min/week) are more likely to experience **successful weight maintenance** (low evidence).

# Effect on cardiometabolic health

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## BLOOD PRESSURE

Exercise training programs (aerobic, resistance, or HIIT) reduce systolic blood pressure by approximately 3 mmHg and diastolic blood pressure by approximately 2 mmHg on average.



## HOMA INDEX

Exercise training programs (aerobic, resistance, or HIIT) improve insulin sensitivity in groups of adults with overweight or obesity with or without type 2 diabetes.



## INTRAHEPATIC FAT

Exercise training programs (aerobic, resistance, or HIIT) reduce intrahepatic fat.



## VISCERAL FAT

Aerobic training and HIIT, but not resistance training, reduce abdominal visceral fat as measured by CT- or MRI scanning

# Exercise has more effects than just burning calories.

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Italy



**Weight management  
Body composition**



**Visceral fat  
Intrahepatic fat**



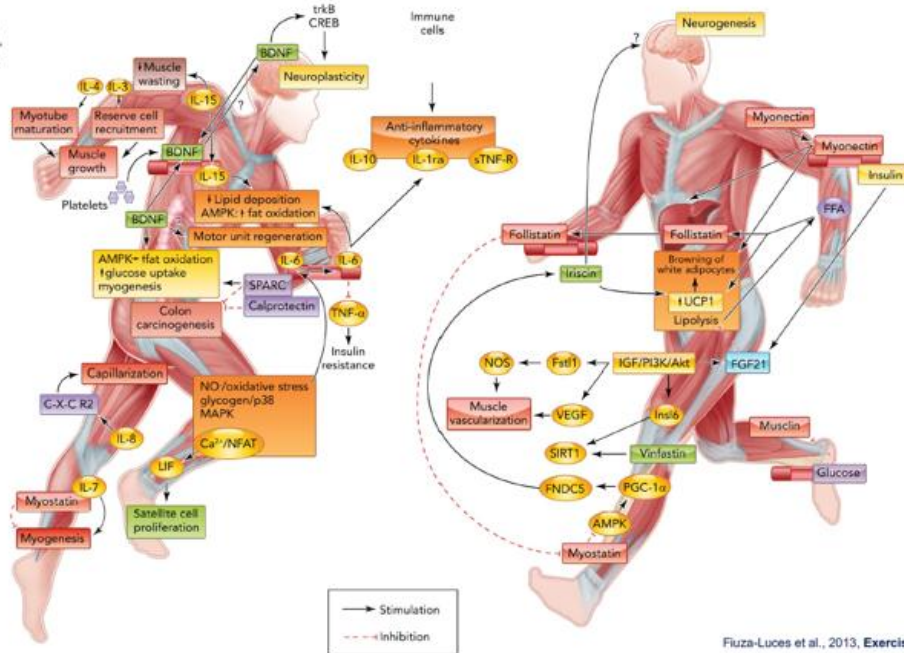
**Insulin resistance  
Lipid profile**



**Mental health**

**Eating behaviour**

**Quality of life**



Fiuza-Luces et al., 2013, Exercise is the Real Polypill



**Cardiorespiratory fitness  
Ventilatory limitations**



**Muscle mass, quality &  
function**



**Blood pressure control**



# Integrated therapy for obesity: beyond weight loss

BEHAVIORAL THERAPY  
PSYCHOLOGICAL SUPPORT

EXERCISE

DIET

DRUGS

BARIATRIC  
SURGERY

- ✓ *Global health*
- ✓ *Functional limitation*
- ✓ *Quality of life*
- ✓ *Mental wellbeing*

Image by



European Coalition  
for People living  
with Obesity

**START EVERYWHERE,  
EVERYWAY,  
EVERYTIME,  
EVERY MINUTE COUNTS!**

**Thank you and be  
active!**



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