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RESEARCH

Physical Exercise in Obesity and Metabolic Bariatric Surgery: The First Latin American Consensus

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Abstract Physical activity and exercise are key components in obesity management and in the perioperative care of metabolic bariatric surgery (MBS) patients. However, in Latin America, clinical practice remains heterogeneous and lacks regionally adapted, evidence-informed recommendations.

Aim To develop clinical exercise recommendations for adults with obesity and for patients undergoing MBS, based on expert consensus informed by current evidence.

Methods A three-round modified Delphi process was conducted with Latin American experts in exercise science, obesity, and MBS. Recommendations covered assessment, exercise prescription, perioperative management, long-term follow-up, and virtual care. Experts were instructed to prioritize recent evidence published within the previous five years, and recommendations were formulated using the PICO framework as a pragmatic guide. Agreement was assessed on a 5-point Likert scale. Positive consensus required $\geq 70\%$ agreement, $\leq 15\%$ disagreement, standard deviation ≤ 1.0, and interquartile range ≤ 1.0. Response stability was evaluated using the coefficient of variation ($\leq 20\%$).

Results Thirty-one experts participated. Of 121 proposed recommendations, 106 reached positive consensus: 45 for obesity management and 61 for MBS. These recommendations provide guidance on individualized assessment, exercise prescription, perioperative strategies, long-term physical activity maintenance, and virtual care. No recommendations reached negative consensus.

Conclusions This consensus provides the first region-specific, clinically oriented exercise recommendations for obesity and MBS in Latin America. It supports multidisciplinary practice, promotes standardization of care, and provides a framework for future updates and implementation studies.

Key Points

- Physical exercise is an essential therapeutic component of comprehensive care across all phases of obesity management and metabolic bariatric surgery.
- Exercise prescription should be individualized, progressive, and multimodal, incorporating strategies to reduce sedentary behavior.
- Physical exercise should be initiated early and maintained long-term after metabolic bariatric surgery, as it plays a key role in optimizing and sustaining clinical outcomes.
- Long-term follow-up and virtual care models enhance adherence and support continuity of care.
- Exercise programs should be interdisciplinary and adapted to the Latin American context to ensure adherence and clinical effectiveness.

Keywords Obesity · Metabolic bariatric surgery · Exercise · Physical exercise · Consensus

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Introduction

Obesity is a chronic, multifactorial disease associated with a substantial increase in cardiometabolic morbidity and mortality, functional impairment, and significant psychosocial consequences [1–4]. Despite advances in understanding its pathophysiology, its global prevalence continues to rise, placing a substantial economic burden on healthcare systems worldwide [4, 5]. Nevertheless, most clinical guidelines for obesity management are based predominantly on evidence generated in European and North American populations, which may limit their applicability across diverse epidemiological, socioeconomic, and healthcare contexts [6].

In Latin America, this situation is further exacerbated by pronounced social inequalities, with physical activity and structured exercise levels consistently below international recommendations, driven in part by high rates of sedentary behavior across all age groups [7–9]. Excess body weight represents substantial and growing costs for individuals, healthcare systems, and national economies, largely driven by productivity losses and the increasing burden of chronic diseases [4, 10–13].

Metabolic Bariatric Surgery (MBS) is an effective intervention within the comprehensive management of obesity, resulting in substantial and sustained reductions in body weight, improvements in obesity-related comorbidities, and increases in life expectancy and quality of life [14]. Post-MBS outcomes exhibit clinically relevant variability influenced by biological and behavioral factors and adherence to long-term interventions, which may lead to weight regain or the need for pharmacotherapy or revisional surgery [15, 16]. This variability has prompted the development of international consensus initiatives to standardize definitions, clinical criteria, and therapeutic approaches in obesity and MBS [17–19], yet clinical implementation of physical exercise across therapeutic stages remains only partially addressed.

Evidence consistently supports the role of physical activity and structured exercise throughout the medical and surgical management of obesity. These interventions improve cardiorespiratory fitness, preserve fat-free mass, reduce sedentary behavior, and lower the risk of weight regain [20–24]. Long-term adherence is a key determinant of these benefits [25, 26]. Despite this evidence, important gaps remain in the integration of exercise into multidisciplinary obesity care, particularly regarding assessment strategies, professional roles, exercise prescription, and long-term follow-up [27, 28].

Despite the publication of international frameworks addressing physical activity in obesity, including the updated ACSM Consensus Statement (Jakicic et al., [29]) and the EASO Physical Activity Working Group synthesis (Oppert et al., (30]), several aspects of exercise assessment, prescription, and implementation across the continuum of obesity and MBS care remain insufficiently addressed. More recently, Fernández-Alonso et al. [31] synthesized the available randomized evidence and proposed expert-based recommendations for physical activity after MBS. However, these recommendations focus primarily on postoperative exercise and were not intended to address the broader spectrum of clinical care, including functional assessment, prehabilitation, perioperative management, long-term follow-up, virtual care, or implementation within the Latin American healthcare context.

MBS creates a distinct physiological context that justifies specific exercise recommendations. Rapid fat-free mass loss, exceeding 8 kg during the first postoperative year, together with the increased risk of sarcopenia and sarcopenic obesity, requires exercise strategies that differ from those recommended for obesity management alone [32–34]. In addition, procedure-specific mechanisms—including nutrient malabsorption, mechanical unloading, and hormonal changes—may differentially affect musculoskeletal health and require tailored monitoring and exercise prescription [35]. These physiological adaptations are accompanied by time-sensitive safety considerations, including the recommended initiation of resistance training at 4–6 weeks after surgery and the postponement of high-intensity exercise until 8–12 weeks postoperatively [31]. These aspects are not addressed in general physical activity guidelines for obesity and further support the need for MBS-specific exercise recommendations.

In Latin America, the rapid expansion of MBS programs and the progressive incorporation of kinesiologists, physiotherapists, and exercise professionals into multidisciplinary teams have created a growing need for region-specific, evidence-informed guidance. Obesity across the region is shaped by environmental, socioeconomic, cultural, and political determinants that are not fully reflected in existing international recommendations [36]. In addition, physical inactivity shows marked inequalities according to sex, income, and urban–rural residence [37].

Researchers in Latin American exercise science have consistently noted that many obesity-related strategies represent adaptations of recommendations developed in high-income countries without adequate contextualization [38]. Similar concerns have also been described in the global health literature, where clinical guidelines developed for resource-rich settings are often difficult to implement in low- and middle-income countries because of differences in healthcare infrastructure and resource availability, a phenomenon referred to as unfit guidelines [39]. Although national initiatives exist, including the Chilean recommendations for exercise after MBS [40], no previous Latin American consensus has comprehensively addressed functional assessment, exercise prescription, prehabilitation, perioperative management, and long-term follow-up across the diversity of healthcare settings in the region. The recommendations developed through this consensus were therefore designed to reflect the clinical, cultural, and healthcare characteristics of Latin America and to facilitate the implementation of evidence-based exercise within multidisciplinary obesity and MBS care across the region.

Methodology

A modified three-round Delphi methodology was conducted to establish recommendations based on expert opinion informed by recent scientific evidence [41–44]. A coordinating team of five physical activity science professionals was formed, all with postgraduate training and at least ten years of experience as clinicians, researchers, or both, dedicated to individuals with obesity and/or MBS, responsible for planning, execution, statistical analysis, and reporting.

Two chapters organized around thematic axes were structured as follows:

1. Obesity: comprehensive clinical and functional assessment, exercise prescription, maintenance through physical exercise, longitudinal follow-up, and virtual care.
2. Metabolic Bariatric Surgery: surgical prehabilitation, inpatient management, postoperative outpatient care up to 12 months, maintenance and follow-up beyond one year after surgery, and the use of virtual care.

For each thematic axis, two coordinating team members developed guiding questions to support the literature review and recommendation development, subsequently reviewed by two additional coordinators; a third arbitrated disagreements regarding inclusion or exclusion of questions (Supplementary Material 1).

Thirty-five experts from Latin America were contacted and invited to participate if they met the following eligibility criteria:

a) Residence or professional practice in Latin America, to ensure regional representativeness and geographic diversity.
b) Formal academic training including an undergraduate degree and postgraduate studies in physical activity sciences, physiotherapy, physical education, or medicine, with additional consideration for graduate training in clinical exercise physiology, sports medicine, public health, or MBS.
c) A minimum of five years of professional experience in exercise prescription and implementation for individuals with obesity and/or those undergoing MBS.
d) Verifiable technical or scientific involvement, including participation in scientific societies, contribution to clinical guidelines, or authorship of scientific publications in the field.

Interested experts were registered and eligibility documentation reviewed. Confirmed participants received formal invitations by email and returned a signed letter confirming voluntary, unpaid participation and disclosure of potential conflicts of interest.

On April 2, 2025, an online informational meeting was held to present the consensus methodology, establish working groups, distribute guiding questions, appoint group leaders, and share a Gantt chart of activities and timelines (Supplementary Material 2).

Consensus Criteria

Consensus criteria were established a priori using a 5-point Likert scale, as follows:

Positive Consensus: ≥70% of experts rated the recommendation with scores of 4 or 5, and ≤15% with scores of 1 or 2. Standard deviation ≤ 1.0. Interquartile range ≤ 1.0.

Negative Consensus: ≥70% of experts rated the recommendation with scores of 1 or 2, and ≤15% with scores of 4 or 5. Standard deviation ≤ 1.0. Interquartile range ≤ 1.0.

No Consensus: recommendations not meeting either of the above criteria. Items with high dispersion or without clustering at scale extremes (e.g., mode = 3) were considered to have no consensus. Recommendations reaching negative consensus were excluded from the final document [42, 45, 46].

Literature Review and Formulation of Recommendations

Following review of the guiding questions, each expert group selected questions for recommendation development and conducted the literature review. The review was conducted as a structured, evidence-informed search to support recommendation development within the modified Delphi process, rather than as a formal systematic review. Experts received methodological guidance to search PubMed, prioritizing evidence from the previous five years, and to consider systematic reviews with or without meta-analysis, randomized controlled trials, longitudinal cohort studies, and clinical practice guidelines relevant to physical exercise, obesity, and MBS. Search terms were tailored to each thematic axis, combining terms related to obesity, MBS, exercise prescription, functional assessment, prehabilitation, postoperative care, and telerehabilitation, as appropriate.

Expert groups reviewed available evidence and formulated preliminary recommendations, integrating clinical judgment, feasibility, safety, and applicability to Latin American contexts. When direct evidence from Latin American populations or specific MBS phases was limited, recommendations were developed by combining the best available international evidence with panel expertise. Adaptation of international evidence to the regional context was operationalized through the Delphi voting process itself, contextualizing implementation rather than modifying the underlying evidence, in which experts from different Latin American countries iteratively evaluated the feasibility, safety, and clinical applicability of each recommendation within their local practice settings. Recommendations were not tailored to specific countries or sub-regions; they represent pan-Latin American guidance, designed to be applicable across the region as a whole.

The PICO framework was suggested as a pragmatic guide for recommendation formulation, identifying the target population, intervention, comparator when applicable, and clinically relevant outcomes.

Each expert group translated evidence into recommendations for its assigned thematic axis. Recommendations were drafted, discussed within the group, and submitted to the coordinating team before Delphi rounds. Wording was refined based on evidence, clinical judgment, safety, feasibility, and applicability to Latin American healthcare contexts. A formal certainty-of-evidence grading system such as GRADE was not applied; recommendation strength reflects Delphi agreement and should not be interpreted as a formal evidence grade.

Recommendations were originally developed in Spanish and translated into English for journal submission after completion of the Delphi process and final approval.

After each round, the coordinating team analyzed agreement, disagreement, dispersion, and response stability, and summarized comments by chapter and axis. Recommendations requiring clarification or rewording were refined before the next round. The third round confirmed final agreement, response stability, and fulfillment of predefined consensus criteria.

The experts who formulated the preliminary recommendations also served as raters across the three Delphi rounds, consistent with established modified Delphi approaches in clinical practice guideline development. This overlap is acknowledged as a potential source of endorsement bias and is addressed in the Limitations section of the Discussion.

Survey Instrument

A structured electronic survey was developed using Google Forms and distributed via email. The instrument included both chapters with their thematic axes. Experts rated agreement with each recommendation using a 5-point Likert scale (1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree).

An open-text field allowed experts to submit comments on any recommendation. After each round, the coordinating team reviewed qualitative feedback, shared it with corresponding expert groups by chapter and thematic axis, and refined recommendations requiring clarification or further discussion before inclusion in the next round. Experts were instructed to rate overall agreement with each complete recommendation and to submit specific concerns via the comment field.

Prior to distribution, the survey instrument was pilot tested in July 2025 to assess clarity, comprehension, and technical functionality. Feedback obtained during piloting was used to refine item wording before the first Delphi round. Pilot responses were not included in the final consensus calculations.

Statistical Analysis

Statistical analyses were performed using SPSS version 24. For each recommendation, mean, median, mode, standard deviation, and interquartile range were calculated; frequencies and percentages were reported for Likert categories 1–2 (disagreement) and 4–5 (agreement) [41, 47]. Response stability was assessed using the coefficient of variation (CV ≤ 20% indicating good stability) [45, 46]. This consensus process was reported following the ACcurate COnsensus Reporting Document (ACCORD) checklist (Supplementary Material 6).

Ethical Considerations

The study was approved by the Scientific Ethics Committee of the Chilean Society of Metabolic Bariatric Surgery and conducted in accordance with the Declaration of Helsinki. The coordinating team declared no conflicts of interest and maintained confidentiality throughout the process.

Results

A total of 31 experts were recruited. Of these, two withdrew during the literature review and recommendation development phase, and two did not complete the third Delphi round. Table 1 summarizes the characteristics of the participating experts across the rounds.

Table 1 Characteristics Of The Expert Panel By Delphi Process Round

Characteristics	Round 1 (n=29) July 29–31, 2025	Round 2 (n=29) August 23–25, 2025	Round 3 (n=27) September 27, 2025
Female	14 (48,30)	14 (48,30)	13 (48,10)
Male	15 (51,70)	15 (51,70)	14 (51,90)
Country of residence, n (%)			
Chile	15 (51,70)	15 (51,70)	14 (51,90)
Argentina	6 (20,70)	6 (20,70)	6 (22,20)
Brazil	4 (13,80)	4 (13,80)	4 (14,80)
Colombia	1 (3,40)	1 (3,40)	1 (3,70)
Mexico	1 (3,40)	1 (3,40)	1 (3,70)
Uruguay	1 (3,40)	1 (3,40)	1 (3,70)
Peru	1 (3,40)	1 (3,40)	0 (0)
Profession, n (%) *			
Physiotherapy	17 (58,60)	17 (58,60)	16 (59,30)
Medicine	2 (6,90)	2 (6,90)	1 (3,70)
Physical Education Teacher	11 (37,90)	11 (37,90)	11 (40,70)
Strength and Conditioning Coach	2 (6,90)	2 (6,90)	2 (7,40)
Highest academic degree attained, n (%)			
Bachelor's degree	6 (20,70)	6 (20,70)	6 (22,20)
Postgraduate diploma	5 (17,20)	5 (17,20)	4 (14,80)
Master's degree	11 (37,90)	11 (37,90)	11 (40,70)
Doctorate PhD	2 (6,90)	2 (6,90)	2 (7,40)
Postdoctoral	4 (13,80)	4 (13,80)	3 (11,10)
Not specified**	1 (3,40)	1 (3,40)	1 (3,70)
Years of professional experience in the field, n (%)			
5 years	1 (3,40)	1 (3,40)	1 (3,70)
Between 6 and 10 years	12 (41,40)	12 (41,40)	11 (40,70)
Between 11 and 15 years	6 (20,70)	6 (20,70)	6 (22,20)
Between 16 and 20 years	3 (10,30)	3 (10,30)	3 (11,10)
More than 20 years	7 (24,10)	7 (24,10)	6 (22,20)
Previous participation in consensus processes, clinical practice guidelines, or technical standards in the field, n (%)			
Yes	9 (31)	9 (31)	7 (25,90)
No	20 (69)	20 (69)	20 (74,10)

*The "Profession" variable allowed multiple responses; therefore, percentages may exceed 100%

**One participant reported postgraduate clinical training (medical specialty) without an additional academic degree specified

A total of 121 recommendations were developed: 51 for obesity and 70 for MBS. Of these, 45 and 61, respectively, achieved consensus. Five recommendations in the obesity chapter and six in the MBS chapter had coefficients of variation greater than 20% and should therefore be interpreted with caution. No recommendations reached negative consensus. The recommendations are presented below according to chapter and thematic axis, together with their corresponding statistical results. Recommendations for the obesity chapter are summarized in Table 2, whereas those for the MBS chapter are presented in Table 3. Notes identifying recommendations with coefficients of variation greater than 20% are provided at the bottom of the corresponding tables.

The overall mean agreement score was 4.60 (range: 4.07–5.00) on a 5-point scale, with a mean agreement rate of 94.2% (scores 4–5). Thirty-three recommendations (31.1%) achieved 100% agreement with 0% disagreement: 13 from the obesity chapter and 20 from MBS; these are listed in Supplementary Material 5. Obesity recommendation 15, prescribing aerobic and muscle-strengthening exercise regardless of body weight loss, was the only recommendation to achieve a mean score of 5.0 with SD=0 and CV=0%, reflecting absolute panel unanimity. 63% of recommendations (n=67), across both chapters, recorded 0% disagreement. Regarding recommendations with a CV exceeding 20%, within MBS chapter prehabilitation (n=4) and outpatient (n=2) axes; within the obesity chapter, they were concentrated in the assessment (n=3) and maintenance and follow-up (n=2) axes. The highest mean agreement rates by thematic axis were observed in MBS follow-up (98.3%), obesity exercise prescription (96.3%), and MBS outpatient care (95.3%). The lowest mean agreement rates, although still well above the predefined 70% threshold, were observed in obesity assessment (91.9%) and MBS prehabilitation (92.1%), indicating comparatively greater variability in these thematic axes. Figure 1 maps the 57 recommendations with the highest consensus levels (≥90% agreement and 0% disagreement) onto a longitudinal clinical care pathway organized by phase of care.

Discussion

The First Latin American Consensus on Physical Exercise in Obesity and MBS established recommendations and standardized criteria for the assessment, prescription, and follow-up of physical exercise in individuals with obesity, including those undergoing MBS. By integrating the best available scientific evidence with expert clinical judgment, the consensus supports a longitudinal approach centered on functional capacity and cardiometabolic health rather than on body weight reduction alone. This perspective is consistent with the current recognition of obesity as a chronic, progressive disease that requires sustained and multidimensional management [2, 5, 17].

The final 106 recommendations achieved the predefined consensus criteria following three structured Delphi rounds, indicating broad agreement among experts regarding the role of physical exercise across the continuum of obesity and MBS care. Importantly, this agreement should be interpreted as consistency of expert judgment rather than as a measure of certainty of evidence or demonstrated clinical

Table 2 Obesity Chapter Recommendations

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
1. Cardiorespiratory capacity should be assessed before initiating a physical exercise program, as this parameter predicts cardiovascular morbidity and mortality and enables the safe prescription of exercise intensity.	Assessment	4,83	5	5	0,40	0	100	0	7,87
2. Muscular strength should be assessed at the beginning of a physical exercise program, particularly in the upper and lower extremities, as it is associated with functional capacity, independence, and the risk of sarcopenia or disability in individuals with obesity.	Assessment	4,72	5	5	0,80	0	96,55	3,45	16,95
3. Body composition should be assessed before initiating a physical exercise program to distinguish fat mass, fat-free mass, and their distribution, as body weight and body mass index (BMI) alone do not adequately identify clinically significant changes or guide the intervention.	Assessment	4,86	5	5	0,35	0	100	0	7,20
4. Dual-energy X-ray absorptiometry (DXA) is recommended for the precise assessment of total fat mass, lean mass, and their regional distribution (trunk and extremities), particularly in clinical or research settings where the equipment is available.	Assessment	4,31	5	4	0,81	1	86,21	3,45	18,79
5. The use of multifrequency bioelectrical impedance analysis (BIA) is recommended as an accessible, non-invasive, and practical method to estimate fat mass and lean mass, particularly in outpatient settings, provided that standardized protocols are applied and results are interpreted with caution.	Assessment	4,83	5	5	0,38	0	100	0	7,87
6. The use of computed tomography (CT) or magnetic resonance imaging (MRI) is recommended only in research or in specific clinical cases where direct quantification of visceral adipose tissue, subcutaneous adipose tissue, or intramuscular fat infiltration (myosteatosis) is required, due to their high cost and limited availability for routine use.	Assessment	4,24	4	4	0,64	1	89,66	0	15,09
7. Balance should be assessed in individuals with a history of falls, functional impairments, advanced age, or neuromuscular comorbidities, as excess fat mass may alter postural control.	Assessment	4,48	5	5	0,63	1	93,10	0	14,06
8. The use of the Short Physical Performance Battery (SPPB) is recommended to assess overall physical performance in individuals with obesity, particularly in older adults or in those with suspected functional decline, regardless of the presence of evident physical limitations.	Assessment	4,41	5	5	0,78	1	89,66	3,45	17,69
9. The 4-Meter Walk Test is recommended to assess gait speed as a simple indicator of functional mobility and a predictor of frailty in individuals with obesity, particularly in older adults or in those with reduced mobility. Gait speeds below 0.8 m/s indicate impaired physical performance. Although the 4-Meter Walk Test is a component of the Short Physical Performance Battery (SPPB), its standalone use is supported in settings where full battery administration is not feasible.	Assessment	4,38	5	5	0,78	1	89,66	3,45	17,81
10. It is recommended to assess handgrip strength using dynamometry as an indicator of overall strength, functionality, and nutritional status.	Assessment	4,69	5	5	0,54	1	96,55	0	11,51
11. Cardiovascular risk should be assessed before initiating a physical exercise program, using prediction tools validated in the local population and applicable to the patient's clinical and sociodemographic context. Recommended options include: ASCVD Risk Estimator Plus, SCORE2, Framingham Risk Score, Reynolds Risk Score (RRS), and PREVENT.	Assessment	4,41	5	5	0,73	1	93,10	3,45	16,55
12. Self-efficacy and motivation for physical activity should be assessed before initiating a physical exercise program, as they are associated with greater adherence, sustained participation, and improved clinical and functional outcomes.	Assessment	4,52	5	5	0,74	1	86,21	0	16,37
13. Weight-related quality of life should be assessed at the start of an exercise program, using validated instruments such as the IWQOL-Lite. This assessment helps identify functional limitations and psychosocial barriers, facilitating program personalization, the design of behavioral interventions, and an interdisciplinary approach.	Assessment	4,38	4	4	0,68	1	96,55	3,45	15,53

Table 2 (continued)

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
14. Musculoskeletal pain should be assessed before initiating a physical exercise program, given its high prevalence and its negative impact on adherence, safety, and training progression. This assessment allows for the adaptation of exercise prescription and the timely implementation of multidisciplinary strategies.	Assessment	4,52	5	5	0,78	1	89,66	3,45	17,26
15. Aerobic and muscle-strengthening exercise should be prescribed regardless of body weight loss, given their positive effects on physical, mental, cognitive, and social health. Regular practice contributes to reducing cardiometabolic risk factors; the risk, progression, and cost of various chronic diseases and their complications; disability, cancer prevalence and mortality; premature mortality, while improving lifestyle and quality of life.	Prescription	5	5	5	0	0	100	0	0
16. Regular engagement in physical activity and aerobic exercise is recommended as an adjunctive intervention to improve sleep quality and promote mental health benefits, including reduction of depressive and anxiety symptoms, and improvements in cognitive function.	Prescription	4,83	5	5	0,38	0	100	0	7,87
17. Combined training that integrates continuous moderate-intensity aerobic exercise and/or high-intensity interval aerobic exercise together with muscular resistance training is recommended, as this modality has demonstrated greater efficacy than isolated modalities for improving body composition and cardiometabolic health in individuals with overweight or obesity.	Prescription	4,72	5	5	0,53	0	96,55	0	11,23
18. At least 150 min per week of moderate- to vigorous-intensity physical activity is recommended as the minimum effective dose to improve insulin sensitivity, lipid profile, and to reduce visceral and total fat.	Prescription	4,59	5	5	0,73	1	93,10	3,45	15,90
19. To achieve clinically significant fat loss, exercise volume should be progressively increased to 225–300 min per week of moderate-intensity activity (or its equivalent in vigorous exercise).	Prescription	4,48	5	5	0,78	1	89,66	3,45	17,41
20. Engaging in between 200 and 300 min per week of moderate-intensity aerobic physical exercise, or at least 150 min of vigorous exercise, adjusted to individual tolerance, is recommended as an effective strategy to prevent weight regain and maintain lost weight.	Prescription	4,45	5	5	0,78	1	89,66	3,45	17,53
21. High-intensity interval training (HIIT) should be prescribed only after evaluation of the patient's cardiovascular and functional risk and implemented under professional supervision. This modality may be considered in individuals with obesity as an effective strategy to improve cardiorespiratory capacity and metabolic markers, provided it is tailored to individual tolerance and that safe progression of exercise intensity and volume is prioritized.	Prescription	4,59	5	5	0,73	1	93,10	3,45	15,90
22. To improve muscular strength and preserve fat-free mass, muscle strengthening training is recommended at least twice per week, on nonconsecutive days. The routine should include 8 to 10 exercises targeting the major muscle groups, using a load that allows completion of between 8–12 repetitions per set, performed to the point of voluntary fatigue, while ensuring proper and controlled technique.	Prescription	4,66	5	5	0,48	1	100	0	10,30
23. Systematic educational interventions should be incorporated into physical exercise programs to improve understanding of the actual effects of exercise on weight loss (typically less than 2–3 kg in the absence of dietary intervention), reinforce realistic expectations, and promote long-term adherence based on functional and metabolic benefits.	Prescription	4,69	5	5	0,47	1	100	0	10,02
24. Muscle-strengthening training should be complemented by an appropriate nutritional strategy prescribed by a qualified nutrition professional, ensuring adequate protein intake appropriately distributed throughout the day and tailored to individual needs, with the aim of preserving muscle mass and optimizing body composition.	Prescription	4,83	5	5	0,47	0	96,55	0	9,73

Table 2 (continued)

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
25. Clinical indicators (e.g., body mass index, waist circumference, and blood pressure) and functional indicators (e.g., cardiorespiratory capacity, muscular strength, and mobility) should be used complementarily to monitor progress and adjust physical exercise prescription safely, effectively, and comprehensively.	Prescription	4,72	5	5	0,45	1	100	0	9,53
26. Physical exercise programs implemented in community or primary care settings should integrate principles of safety, adaptability, and individualized progression within a multicomponent approach that includes aerobic, muscle-strengthening, balance, and flexibility exercises. Programs should also consider proper technique, progressive adjustment of training load, regular monitoring of progress, and adaptation to the individual's physical condition, functionality, and contextual resources.	Prescription	4,79	5	5	0,49	0	96,55	0	10,23
27. To ensure equitable access to physical exercise programs, structural and contextual adaptations that promote accessibility should be implemented. These adaptations should consider the social determinants of health, promote safe and culturally appropriate environments, and incorporate flexible program design to accommodate individual and community needs, capacities, and barriers.	Prescription	4,69	5	5	0,54	1	96,55	0	11,51
28. Outpatient clinical follow-up every 4 to 6 weeks is recommended for individuals participating in exercise programs. These visits help support lifestyle changes, address potential adverse effects or complications associated with anti-obesity medications, and promote accountability and behavioral change to facilitate sustained weight loss.	Maintenance, follow-up and virtual care	4,72	5	5	0,53	0	96,55	0	11,23
29. Body composition should be assessed every 3–6 months during the first year of treatment, and annually thereafter, or according to clinical progress. Methods such as bioelectrical impedance analysis (BIA) are accessible and useful for routine monitoring, whereas dual-energy X-ray absorptiometry (DXA) may be used when greater precision is required. The aim is to distinguish between fat mass and muscle mass loss, prevent sarcopenia, and estimate cardiometabolic risk while guiding adjustments to nutritional and exercise interventions.	Maintenance, follow-up and virtual care	4,59	5	5	0,73	1	93,10	3,45	15,90
30. Adherence to physical exercise programs should be assessed using multidimensional criteria, including session attendance, compliance with the FITT principle (frequency, intensity, time, and type), persistence over time, and perceived commitment. The combined use of objective tools such as accelerometers and pedometers and subjective instruments such as the International Physical Activity Questionnaire (IPAQ) or the Exercise Adherence Rating Scale (EARS) is recommended to obtain a comprehensive view of active behavior and improve intervention effectiveness.	Maintenance, follow-up and virtual care	4,69	5	5	0,47	1	100	0	10,02
31. Goals should be established to reduce sedentary time to less than 8 h per day, by interrupting prolonged periods every 30–60 min with active breaks such as walking or stretching. The aim is to improve the metabolic profile, increase daily energy expenditure, and reduce cardiovascular risk, thereby complementing physical activity interventions.	Maintenance, follow-up and virtual care	4,83	5	5	0,38	0	100	0	7,87
32. For individuals living with obesity, accumulating between 7,000–11,000 steps per day is recommended as a general physical activity target, provided that no health conditions limit the ability to achieve this goal. In specific cases, such as individuals with physical and/or functional limitations or restrictions, this target should be adjusted according to the evaluation and prescription of a qualified physiotherapist. To achieve these targets, progressive weekly increases of 10%-20% above the individual's baseline average daily step count are suggested, tailored to individual characteristics, considering sex, age range, and geographic context.	Maintenance, follow-up and virtual care	4,56	5	5	0,60	1	96	0	12,72

Table 2 (continued)

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
33. Personalized counseling on physical activity and sedentary behavior is recommended as a strategy to improve long-term adherence to active lifestyles. Based on behavior change theories such as Self-Determination Theory, Social Cognitive Theory, or the Transtheoretical Model, and supported by communication strategies such as motivational interviewing, this intervention aims to identify barriers, establish achievable goals, reduce sedentary behavior, and improve levels of moderate- to vigorous-intensity physical activity, thereby positively impacting cardiometabolic health.	Maintenance, follow-up and virtual care	4,72	5	5	0,45	1	100	0	9,53
34. Motivational interviewing (MI) is recommended to explore ambivalence and strengthen intrinsic motivation, alongside the establishment of SMART goals (specific, measurable, achievable, relevant, and time-bound). The aim is to enhance self-efficacy, support autonomous decision-making, and long-term adherence to exercise programs, recognizing progress not only related to weight, but also in mood and functional capacity.	Maintenance, follow-up and virtual care	4,55	5	5	0,63	1	93,10	0	13,85
35. Wearable technologies such as pedometers, accelerometers, smartwatches (Fitbit, Apple Watch), and mobile applications are recommended as part of clinical follow-up. These tools provide objective measurements and real-time feedback on steps, intensity, and sedentary behavior, aiming to improve adherence to therapeutic goals, reduce body mass index, and improve parameters such as waist circumference and blood pressure.	Maintenance, follow-up and virtual care	4,48	4	4	0,51	1	100	0	11,38
36. Telerehabilitation is recommended as a viable strategy for the evaluation, education, monitoring, and virtual care supervision of adapted physical exercise programs. With reported adherence of 95%, this intervention aims to overcome geographic and economic barriers, improve quality of life, increase physical activity, and reduce body weight, with outcomes comparable to in-person models and particular relevance in settings with limited access.	Maintenance, follow-up and virtual care	4,52	5	5	0,57	1	96,55	0	12,61
37. Exercise programs delivered through telerehabilitation should be personalized through an individualized initial assessment, the use of subjective exertion scales (Borg), behavior change techniques, motivational education, and regular feedback. The aim is to tailor exercise intensity and progression to patient's capacities and preferences, ensuring safety, improving adherence, and achieving sustained outcomes in virtual settings.	Maintenance, follow-up and virtual care	4,52	5	5	0,63	1	93,10	0	13,94
38. Long-term telerehabilitation should be maintained by ensuring continuous supervision, access to appropriate technology, social support, comprehensive programs that incorporate education, motivation, and progressive personalization. The aim is to sustain adherence, integrate healthy lifestyle habits, and improve metabolic and functional outcomes through effective and sustainable virtual care monitoring.	Maintenance, follow-up and virtual care	4,45	5	5	0,63	1	93,10	0	14,16
39. In-person supervision should be prioritized over virtual care modalities for individuals with high cardiovascular or musculoskeletal risk, uncontrolled chronic conditions, limited exercise experience, or contextual barriers such as unsafe environments or poor digital connectivity. The aim is to ensure clinical safety, prevent adverse events, and strengthen the therapeutic relationship to improve initial treatment adherence.	Maintenance, follow-up and virtual care	4,76	5	5	0,44	0	100	0	9,24
40. In Latin American contexts, economic barriers (low income, lack of free programs), cultural barriers (stigma, fatalistic beliefs), and environmental barriers (unsafe environments, lack of infrastructure) should be addressed through public policies promoting active urban design, free programs in primary care, and cultural campaigns that frame exercise as a pathway to well-being. The aim is to promote sustained adherence and ensure equitable access to physical activity interventions.	Maintenance, follow-up and virtual care	4,55	5	5	0,69	1	96,55	3,45	15,16
41. The Single-Leg Stance Test is recommended as an accessible tool to assess postural control under both eyes-open and eyes-closed conditions.	Assessment	4,07	4	4	0,84	1	82,76	6,90	20,64

Table 2 (continued)

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
42. The 6-Minute Walk Test (6MWT) is recommended to assess submaximal aerobic capacity due to its validity, sensitivity to change, and safety in this population.	Assessment	4,45	5	5	0,91	1	86,21	6,90	20,45
43. The 2-Minute Step Test (2MST) is recommended as an accessible and effective tool for assessing functional capacity.	Assessment	4,24	5	4	0,87	1	86,21	6,90	20,52
44. Regular physical exercise is recommended as a complementary strategy to promote an energy deficit and may, depending on the intensity of aerobic or muscle-strengthening exercise, induce transient appetite suppression and a temporary reduction in energy intake.	Maintenance, follow-up and virtual care	4,38	5	5	0,90	1	86,21	6,90	20,55
45. Virtual care functional assessment methods such as the Sit-to-Stand Test, the 6-Minute Walk Test (6MWT), and questionnaires including the International Physical Activity Questionnaire (IPAQ) or the Borg Rating of Perceived Exertion (RPE) scale are recommended. When conducted with virtual care supervision and informed consent, these methods allow safe assessment of physical performance, physical activity levels, and quality of life, facilitating individualized adjustments to exercise programs.	Maintenance, follow-up and virtual care	4,07	4	4	0,92	1	75,86	6,90	22,60

BMI: Body Mass Index. DXA: Dual-energy X-ray absorptiometry. BIA: Bioelectrical impedance analysis. CT: Computed tomography. MRI: Magnetic resonance imaging. SPPB: Short Physical Performance Battery. ASCVD: Atherosclerotic Cardiovascular Disease. SCORE2: Systematic Coronary Risk Estimation 2. RRS: Reynolds Risk Score. PREVENT: Predicting Risk of cardiovascular disease EVENTs. IWQOL-Lite: Impact of Weight on Quality of Life–Lite Questionnaire. HIIT: High-Intensity Interval Training. FITT: Frequency, Intensity, Time, and Type. IPAQ: International Physical Activity Questionnaire. EARS: Exercise Adherence Rating Scale. MI: Motivational Interviewing. SMART: Specific, Measurable, Achievable, Relevant, and Time-bound. 6MWT: 6-Minute Walk Test. 2MST: 2-Minute Step Test. RPE: Borg Rating of Perceived Exertion Scale

Note on assessment recommendations: The assessments included in this section represent optimal clinical practice recommendations, not mandatory prerequisites that delay exercise initiation. In settings with limited resources or staff, clinicians are encouraged to prioritize safety-oriented assessments (recommendations 1, 11, and 14) and initiate the exercise program while completing remaining evaluations progressively. While cardiopulmonary exercise testing (CPET) represents the gold standard for cardiovascular risk stratification, access is not uniform across all centers in the region and its cost limits routine use; the validated functional assessment batteries included in these recommendations constitute accessible, evidence-based alternatives

effectiveness. The multidisciplinary and multinational composition of the panel brought together complementary clinical and scientific expertise, while the predefined consensus methodology ensured a transparent and reproducible process consistent with established Delphi approaches and recent international consensus initiatives in obesity and MBS [18, 41–43, 45].

Greater variability in expert judgment was observed in recommendations related to obesity assessment and MBS prehabilitation, particularly those involving advanced body composition methods (DXA, CT, and MRI), preoperative fitness assessment, higher exercise volumes, and selected implementation strategies, including virtual care. Because the Delphi survey did not examine the reasons underlying individual ratings, these findings should not be interpreted as direct evidence of differences in resources or professional practice across countries. Nevertheless, the observed variability may partly reflect differences in healthcare organization, access to specialized assessment methods, professional integration, and capacity to implement structured exercise programs across Latin American clinical settings. Regional studies have documented marked social, economic, and territorial inequalities in physical activity, sedentary behavior, and access to structured interventions [7, 8, 37]. Consistent with this interpretation, the EASO Physical Activity Working Group identified professional capacity building and long-term exercise adherence among the priorities for future research [30]. Despite this variability, progressive convergence across Delphi rounds suggests that broad consensus could be achieved while preserving perspectives from different clinical settings and professional backgrounds.

The differences between Tables 2 and 3 reflect the fact that the obesity and MBS chapters were developed independently to address different clinical contexts and phases of care rather than conceptual disagreement. For example, the SPPB and 4-Meter Walk Test are included in the obesity chapter to identify functional decline, particularly in older adults, whereas the MBS chapter places greater emphasis on postoperative recovery and exercise progression. Likewise, wearable technologies are described in the obesity chapter and step counters in the MBS chapter. Both approaches support self-monitoring and physical activity promotion. Similarly, although the recommended daily step ranges differ slightly across chapters, they pursue the same clinical objective of promoting daily physical activity and should be interpreted as phase-specific targets that

Table 3 Metabolic Bariatric Surgery Recommendations

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
1. Professionals responsible for designing and implementing physical prehabilitation programs should possess comprehensive knowledge of exercise physiology, obesity-related pathologies, metabolic bariatric surgery, individualized exercise prescription, and health education. They must be able to individualize exercise interventions to the patient's functional condition and accurately identify osteoarticular, respiratory, and cardiovascular limitations.	Prehabilitation	4,97	5	5	0,19	0	100	0	3,82
2. Surgical prehabilitation in the context of metabolic bariatric surgery is recommended for patients as it improves physical condition and cardiovascular risk factors, such as blood pressure, thereby reducing the risk of events during or after surgery. However, the presence of preexisting limiting conditions should be carefully assessed, and patients should be monitored through a multidisciplinary approach.	Prehabilitation	4,76	5	5	0,50	0	96	0	10,92
3. Exercise programs should be implemented before surgery to help patients become familiar with exercise routines and develop sustainable habits promoting lifestyle changes and optimizing preoperative cardiovascular health.	Prehabilitation	4,90	5	5	0,31	0	100	0	6,33
4. Patient's physical limitations and barriers to exercise should be assessed before surgery to optimize surgical outcomes and long-term health.	Prehabilitation	4,52	5	5	0,74	1	93,10	3,45	16,40
5. Preoperative fitness assessment is recommended for all candidates for metabolic bariatric surgery to identify potential risks, optimize the patient's clinical condition, and tailor the prescription of prehabilitation physical exercise.	Prehabilitation	4,59	5	5	0,73	1	86,21	0	15,90
6. Preoperative assessment of body composition (especially lean mass), muscle strength, and functional capacity is recommended. These parameters are crucial for identifying patients at risk of sarcopenia, implementing prehabilitation strategies, and optimizing surgical outcomes and long-term quality of life.	Prehabilitation	4,83	5	5	0,38	0	100	0	7,87
7. In the context of preoperative evaluation for metabolic bariatric surgery, sedentary behavior should be assessed using objective methods (e.g., accelerometers) and indirect indicators (e.g., questionnaires) to estimate aspects such as daily sitting time.	Prehabilitation	4,66	5	5	0,48	1	100	0	10,30
8. Muscle-strengthening exercises should be prescribed before surgery to improve physical function, basal metabolism, the ability to perform daily activities, and to accelerate postoperative recovery.	Prehabilitation	4,76	5	5	0,51	0	96,55	0	10,70
9. Strength-training intensity should be moderate to vigorous, tailored to the patient's fitness level and comorbidities. It is advisable to begin with low impact exercises (e.g., light weights, resistance bands, or body weight), with progressive increases in load according to tolerance. Professional supervision should be emphasized to ensure proper technique, prevent injury, and optimize muscle stimulation. A frequency of 2–3 sessions per week is recommended, incorporating functional and postural control exercises.	Prehabilitation	4,83	5	5	0,38	0	100	0	7,87
10. Patients should be instructed in deep breathing techniques and assisted coughing as a key strategy to prevent respiratory complications, such as atelectasis, which are common in the postoperative period.	Prehabilitation	4,52	5	5	0,63	1	93,10	0	13,90
11. Counseling and education on physical activity and exercise are recommended before metabolic bariatric surgery to prepare patients and promote long-term adherence to an active lifestyle.	Prehabilitation	4,76	5	5	0,44	0	100	0	9,24
12. The use of step counters (e.g., pedometers) is recommended prior to metabolic bariatric surgery to assess, monitor, and promote physical activity levels.	Prehabilitation	4,38	5	5	0,78	1	89,66	3,45	17,80
13. In individuals with class III obesity who are candidates for metabolic bariatric surgery, the use of inspiratory muscle training devices (inspiratory valves) is recommended as part of preoperative respiratory training to improve respiratory muscle strength, oxygenation, and ventilatory capacity.	Prehabilitation	4,10	4	4	0,82	1	79,31	3,45	20

Table 3 (continued)

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
14. Respiratory physiotherapy is recommended from the immediate postoperative period, with noninvasive mechanical ventilation (NIV) support if necessary, to prevent reintubation and pulmonary complications, counteract the respiratory depressant effects of opioids, facilitate early mobilization, improve systemic oxygenation, and promote tissue healing.	Inpatient	4,52	5	5	0,74	1	86,21	0	16,37
15. Maximal-volume breathing exercises and the use of respiratory spirometers are recommended in the immediate postoperative period to maintain bronchial hygiene, reduce the risk of atelectasis, and optimize oxygenation.	Inpatient	4,38	5	4	0,68	1	89,66	0	15,53
16. Passive-assisted mobilization should be initiated in the immediate postoperative period in patients who are unable to participate actively, with the aim of preventing deep vein thrombosis, reducing orthostatic intolerance, and ensuring adequate tissue oxygenation.	Inpatient	4,55	5	5	0,63	1	93,10	0	13,85
17. Early mobilization, including sitting, standing, and ambulation, is recommended in the postoperative period to improve thoracic expansion, pulmonary ventilation, drug metabolism, gas exchange, and pain reduction.	Inpatient	4,90	5	5	0,31	0	100	0	6,33
18. Active exercise monitored using the Modified Borg Scale is recommended to improve functional capacity, accelerate gastrointestinal recovery, reduce the risk of postoperative complications, and optimize body composition.	Inpatient	4,62	5	5	0,49	1	100	0	10,61
19. Physiotherapy intervention should be discontinued in the presence of orthostatic intolerance, hemodynamic instability, uncontrolled pain limiting activation, or active bleeding, to ensure patient safety and prevent adverse events.	Inpatient	4,45	5	5	0,87	1	89,66	6,90	19,55
20. Initial physical assessment, supervision and follow-up of patients after metabolic bariatric surgery should be conducted by a professional with specialized training in exercise science and in bariatric patient care. Supervision ensures correct exercise technique, appropriate adjustment of exercise intensity, and early identification of signs of intolerance or complications, thereby maximizing the benefits of exercise and minimizing risks.	Outpatient	4,86	5	5	0,35	0	100,0	0	7,20
21. Early mobilization is recommended before initiating a supervised exercise program, typically between 2 and 4 weeks after surgery, once clinical stability has been achieved. This approach allows tissue recovery and the resolution of postoperative discomfort. Examples include breathing exercises, large-range joint movements without resistance, postural control and re-education exercises. The introduction of strength exercises with external loads should be evaluated on a case-by-case basis. During the first postoperative month, abdominal exercises are generally not recommended.	Outpatient	4,69	5	5	0,81	0	96,60	3,50	17,30
22. Initial limitations to physical exercise during the first postoperative weeks should be considered, particularly due to the very low caloric intake that may lead to fatigue. Session duration should be adjusted according to the patient's energy levels, and adequate hydration during exercise should be ensured. Additionally, potential nutritional deficiencies (e.g., iron, vitamins) that may cause exercise intolerance should be identified and addressed in coordination with the nutrition team.	Outpatient	4,66	5	5	0,67	1	96,60	3,50	14,40
23. A planned, structured, supervised, and individualized physical exercise program should be initiated as early as clinically feasible after metabolic bariatric surgery, preferably within the first four postoperative weeks, provided that the patient is clinically stable and has no acute postoperative complications or contraindications. Avoiding unnecessary delays may help mitigate early losses in fat-free mass and functional capacity.	Outpatient	4,88	5	5	0,33	0	100	0	6,76

Table 3 (continued)

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
24. To quantify baseline aerobic capacity and monitor postoperative progress, aerobic capacity in patients should be assessed using submaximal tests, such as the 6-Minute Walk Test (6MWT). When feasible, and with appropriate equipment and specialized personnel, objective measurements of oxygen consumption may also be obtained through Cardiopulmonary Exercise Test (CPET).	Outpatient	4,48	5	5	0,87	1	93,10	3,50	19,40
25. Muscular strength should be assessed to identify possible losses in functional capacity and to appropriately plan exercise training. This can be achieved using Handgrip Dynamometry Test to measure grip strength, as well as submaximal strength assessments in specific muscle groups. In patients without prior exercise experience or with reduced mobility, functional performance tests, such as the Sit-To-Stand Test may also be useful.	Outpatient	4,66	5	5	0,72	0	93,10	3,50	15,50
26. Body composition should be assessed during follow-up using Bioelectrical Impedance Analysis (BIA) in the clinical setting, or more precise techniques such as Dual Energy X Ray Absorptiometry (DXA), allowing monitoring of the quality of weight loss. This assessment should be performed in the preoperative period as a baseline and repeated periodically during the postoperative period (e.g., at 3, 6, and 12 months).	Outpatient	4,76	5	5	0,51	0	96,60	0	10,70
27. Habitual physical activity levels should be assessed using objective methods (e.g., pedometry or accelerometry) or subjective methods (e.g., validated questionnaires, such as International Physical Activity Questionnaire or Global Physical Activity Questionnaire). Sedentary behavior (e.g., time spent sitting or inactive during the day) should also be evaluated after surgery, to identify and support changes in unhealthy habits, for example, by introducing active breaks given that sedentary behavior is an independent risk factor separate from insufficient physical exercise, thereby optimizing the patient's health.	Outpatient	4,72	5	5	0,65	0	96,60	3,50	13,80
28. Physical exercise should not be initiated in the presence of: - Unresolved acute postoperative complications: wound infection, anastomotic fistula, internal bleeding, or deep vein thrombosis. - Severely compromised general condition: extreme fatigue, marked dehydration, acute malnutrition, or other systemic conditions (systemic infection, high fever). - Impaired wound healing problems or risk of incisional hernia: if the surgical incision has not healed adequately or there is suspicion of dehiscence, physical efforts that increase intra-abdominal pressure should be avoided. - Unstable cardiovascular or pulmonary conditions. - Severe or limiting pain. In the absence of these situations, most patients may begin light early mobilization (such as walking short distances) within a few days after surgery.	Outpatient	4,83	5	5	0,47	0	96,60	0	9,70
29. Clear criteria for immediate interruption of activity should be recognized in patients, particularly during the early postoperative phases in the presence of the following signs: chest pain, chest tightness, or acute cardiorespiratory symptoms; dizziness, confusion, or syncope. Acute abdominal pain or signs at the surgical site. Sudden and severe joint or muscle pain. Inadequate response or extreme exhaustion. After discontinuing the activity, the patient should be referred for medical evaluation. Patient safety is the priority; therefore, healthcare professionals must remain vigilant for these warning signs during all exercise sessions.	Outpatient	4,90	5	5	0,31	0	100	0	6,30
30. Muscle-strengthening training should be considered a cornerstone of the patient recovery throughout all postoperative phases.	Outpatient	4,76	5	5	0,44	0	100	0	9,20

Table 3 (continued)

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
31. During months 1 to 3 after surgery, resistance training should focus on progressive muscular adaptation and strengthening. Training should begin with single-joint exercises and gradually progress to multi-joint exercises targeting the major muscle groups, using body weight, elastic bands, or dumbbells.	Outpatient	4,66	5	5	0,48	1	100	0	10,30
32. During the first postoperative month, aerobic exercise should be performed either continuously or in intervals at light to moderate intensity, with a primary focus on patient recovery. Aerobic activities may include walking or pedaling on a stationary bicycle, with the daily duration distributed into short sessions of 5, 10, or 15 min throughout the day. This approach promotes circulation, maintains muscle activity, and helps prevent prolonged bed rest. Exercise intensity should be low (9–11 on the Borg 6–20 scale), corresponding to a relaxed walking pace.	Outpatient	4,69	5	5	0,54	1	96,60	0	11,50
33. Between 4 and 6 weeks after surgery, provided the patient is clinically stable and free of abdominal complications, abdominal training may be introduced progressively. During the early phase (weeks 4–8), exercises focusing on the activation of the deep core musculature (e.g., transversus abdominis, multifidus, and pelvic floor muscles) may be incorporated, with emphasis on lumbopelvic stability and avoidance of repetitive trunk flexion movements. The initial objective is not traditional abdominal strengthening, but rather postural re-education and neuromuscular control.	Outpatient	4,69	5	5	0,54	1	96,60	0	11,50
34. After the third postoperative month, resistance training should progress to higher intensities (70–80% of 1RM) using multi-joint exercises, with the aim of maintaining or increasing muscle mass and strength. The recommended training volume consists of 2–3 sets of 8–12 repetitions per exercise, distributed across 3–4 weekly sessions and targeting the major muscle groups. Additionally, more challenging balance and proprioceptive exercises should be incorporated to optimize functional capacity.	Outpatient	4,72	5	5	0,45	1	100	0	9,50
35. From the third postoperative month, patients should continue with a combined program of aerobic exercise and progressive resistance training. The aerobic component should be performed for at least 30 min per session, on a minimum of 5 days a week, aiming to gradually progress toward 60 min per day depending on physical condition and individual progression. Some sessions may incorporate higher-intensity efforts, guided by different indicators such as heart rate or perceived exertion. Suggested modalities include brisk walking or jogging, cycling, swimming, or participation in group aerobic activities, such as dance, selected according to the patient's preferences and tolerance.	Outpatient	4,28	5	4	0,74	1	84	0	17,29
36. During the first 6 postoperative months, exercise progression should follow the principles of progressive overload and safety, in accordance with the patient's adaptation, baseline physical condition, and comorbidities.	Outpatient	4,79	5	5	0,62	0	96,60	3,50	12,90
37. Perceived exertion and recovery criteria should be used to guide exercise progression, ensuring that the patients rate the current exercise intensity as "moderate" before increasing intensity and/or training volume.	Outpatient	4,59	5	5	0,57	1	96,60	0	12,40
38. The use of achieved functional goals is recommended as a criterion for exercise progression. For example, if the patient can walk comfortably for 30 consecutive minutes without excessive fatigue, the pace or incline may be increased to raise exercise intensity. In resistance training, if the patient is able to perform 15 repetitions with a certain load while maintaining proper technique, the load should be increased in subsequent sessions.	Outpatient	4,55	5	5	0,74	1	93,10	3,50	16,30
39. Exercise progression is recommended in the absence of adverse symptoms (e.g., dizziness, excessive pain), which should be used as indicators to maintain or reduce exercise intensity and volume.	Outpatient	4,59	5	5	0,78	1	89,70	3,50	17,00

Table 3 (continued)

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
40. Exercise progression should follow a clear and safe sequence: first increasing frequency by gradually adding more days of practice per week; then extending the duration of each session and finally progressing toward higher levels of intensity. This approach supports the consolidation of exercise habits and the achievement of an adequate volume of physical activity before introducing greater physiological demands. According to WHO (2024) recommendations, adults aged 18–64 years should accumulate at least 150–300 min of moderate-intensity aerobic physical activity per week, or 75–150 min of vigorous-intensity activity, complemented by muscle-strengthening activities involving major muscle groups at least twice per week.	Outpatient	4,44	5	5	0,77	1	92	4	17,34
41. Patient-perceived limitations and barriers to exercise should be systematically identified, and structured physical activity counseling should be implemented during the postoperative period, through individual consultations, group workshops, or virtual care follow-up, in order to promote and maintain adherence to regular exercise.	Outpatient	4,86	5	5	0,35	0	100	0	7,20
42. When planning a postoperative physical exercise program, psychological and adherence-related factors should be considered, recognizing that patients experience significant lifestyle changes (e.g., body image and eating behaviors). Coordination with psychologists is advised if issues such as body image concerns or depression affect participation, and collaboration with nutritionists is recommended to adjust dietary intake to match the patient's energy expenditure as exercise progresses.	Outpatient	4,79	5	5	0,49	0	96,60	0	10,20
43. Structured and progressive physical exercise should be integrated as part of the comprehensive management of patients undergoing metabolic bariatric treatment, as it constitutes a key component of successful multidisciplinary treatment.	Outpatient	4,79	5	5	0,49	0	96,60	0	10,20
44. When designing an exercise program for patients after surgery, it is recommended that the program beginconservatively and progress gradually, taking into account postoperative recovery and being individualized according to the patient's response. Emphasis should be placed on maintaining a balance between encouraging the patient to remain active and protecting them from potential risks during this vulnerable phase.	Outpatient	4,69	5	5	0,66	0	96,60	3,50	14,10
45. Physical, motivational/behavioral, environmental, and social barriers should be assessed on an individualized basis in order to optimize long-term outcomes and promote adherence to exercise after the first postoperative year, as part of a follow-up and maintenance strategy.	Follow-up	4,69	5	5	0,47	1	100	0	10,02
46. Regular physical activity, preferably of moderate to vigorous intensity and combining aerobic and resistance exercises, is recommended to maintain the metabolic and body composition benefits achieved after metabolic bariatric surgery, particularly beyond the first postoperative year, and should be considered an essential component of postoperative management.	Follow-up	4,79	5	5	0,41	0	100	0	8,56
47. To maintain metabolic and body composition benefits beyond the first postoperative year after surgery, patients are recommended to accumulate at least 7,000–10,000 steps per day, ensuring that a portion of these steps are performed at moderate to vigorous intensity, ideally in continuous bouts.	Follow-up	4,52	5	5	0,74	1	93,10	3,45	16,37
48. Sedentary time should be reduced to less than 8 h per day, and prolonged uninterrupted periods of sedentary behavior should be avoided to maintain the metabolic and body composition benefits beyond the first postoperative year.	Follow-up	4,72	5	5	0,45	1	100	0	9,53

Table 3 (continued)

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
49. Telerehabilitation and exercise counseling are recommended during the preoperative period prior to metabolic bariatric surgery, as they provide comprehensive patient education regarding the surgical procedure and support the adoption of a healthy lifestyle in the postoperative period.	Virtual care	4,48	5	5	0,69	1	89,66	0	15,40
50. Telerehabilitation is recommended during the first postoperative month after metabolic bariatric surgery, as it has been shown to be feasible, well tolerated by patients, and a safe alternative for individuals unable to attend in-person sessions.	Virtual care	4,69	5	5	0,54	1	96,55	0	11,51
51. Systematic supervision, personalized feedback, and digital platforms such as WhatsApp or mobile applications are recommended to enhance greater adherence, motivation, pain reduction, and user satisfaction.	Virtual care	4,69	5	5	0,54	1	96,55	0	11,51
52. Telerehabilitation is recommended, as it provides outcomes comparable to in-person rehabilitation in functional capacity, adherence, and quality of life. It also reduces geographic barriers, costs, and associated stigma. Among bariatric patients, telerehabilitation has been associated with greater emotional comfort, reduced public exposure, and increased digital empowerment.	Virtual care	4,38	5	4	0,68	1	89,66	0	15,53
53. Group-based activities or educational initiatives, such as pre- and postoperative group-based telerehabilitation sessions, are recommended, as they may enhance motivation for weight loss and improve adherence to physical activity and nutritional guidelines before and after surgery.	Virtual care	4,52	5	5	0,51	1	100	0	11,28
54. Weekly follow-up, including questionnaires and virtual physical assessments, is recommended, with exercises plans adjusted according to functional progression, to safely modify physical exercise programs.	Virtual care	4,48	5	5	0,69	1	89,66	0	15,40
55. To prevent adverse events, an emergency protocol should be implemented that includes direct contact with the patient, real-time monitoring, identification of warning signs, and prompt medical referral.	Virtual care	4,72	5	5	0,45	1	100	0	9,53
56. Prehabilitation should be initiated 4–12 weeks prior to metabolic bariatric surgery to improve functional capacity, metabolic profile, muscular strength, and psychological preparedness. Additional benefits may include improvements in body composition, distance covered in the 6-Minute Walk Test (6MWT), and overall quality of life.	Prehabilitation	4,31	5	5	0,93	1	82,76	6,90	21,58
57. Low-impact aerobic exercise (e.g., walking, stationary cycling, or elliptical training) should be prescribed during prehabilitation to improve cardiorespiratory fitness, oxygen consumption, and the preoperative metabolic profile.	Prehabilitation	4,38	5	5	0,90	1	86,21	6,90	20,55
58. A daily target of 6,000–10,000 steps is recommended before metabolic bariatric surgery, adjusted according to the patient's physical condition, to improve cardiorespiratory endurance, reduce sedentary behavior, and enhance functional mobility.	Prehabilitation	4,17	4	4	0,89	1	82,76	6,90	21,34
59. Surgical prehabilitation should be prescribed on a case-by-case basis following a comprehensive assessment that includes anthropometric measurements, physical activity level, sedentary behavior, functional capacity, cardiometabolic and biochemical parameters, respiratory function, psychosocial factors, baseline quality of life, and clinical considerations determined by the primary physician within the multidisciplinary care team.	Prehabilitation	4,28	5	5	0,88	1	79,30	3,50	20,60

Table 3 (continued)

Recommendations	Thematic Axis	Mean	Mode	Median	SD	IQR	% 4–5	% 1–2	CV
60. Exercise progression should prioritize frequency before intensity: first increasing the number of exercise days (e.g., from 3 to 4 days per week), then extending the duration of each session, and finally increasing intensity. This sequence prioritizes the consolidation of exercise habits and adequate training volume before increasing physical demands.	Outpatient	4,31	5	4	0,89	1	89,70	3,50	20,70
61. High-Intensity Interval Training (HIIT) may be considered from approximately six months after metabolic bariatricsurgery. These sessions should be conducted under professional supervision and reserved for patients with adequate baseline exercise capacity. To ensure safety and effectiveness, patients should have previously achieved sufficient levels of continuous to moderate-intensity aerobic training, present no medical contraindications, and progress gradually according to their cardiorespiratory capacity.	Outpatient	4,32	5	5	0,90	1	80,00	4	20,83

0NIV: noninvasive ventilation. 6MWT: 6-Minute Walk Test. CPET: Cardiopulmonary Exercise Test. BIA: Bioelectrical Impedance Analysis. DXA: Dual Energy X Ray Absorptiometry. 1RM: One Repetition Maximum. WHO: World Health Organization. HIIT: High-Intensity Interval Training

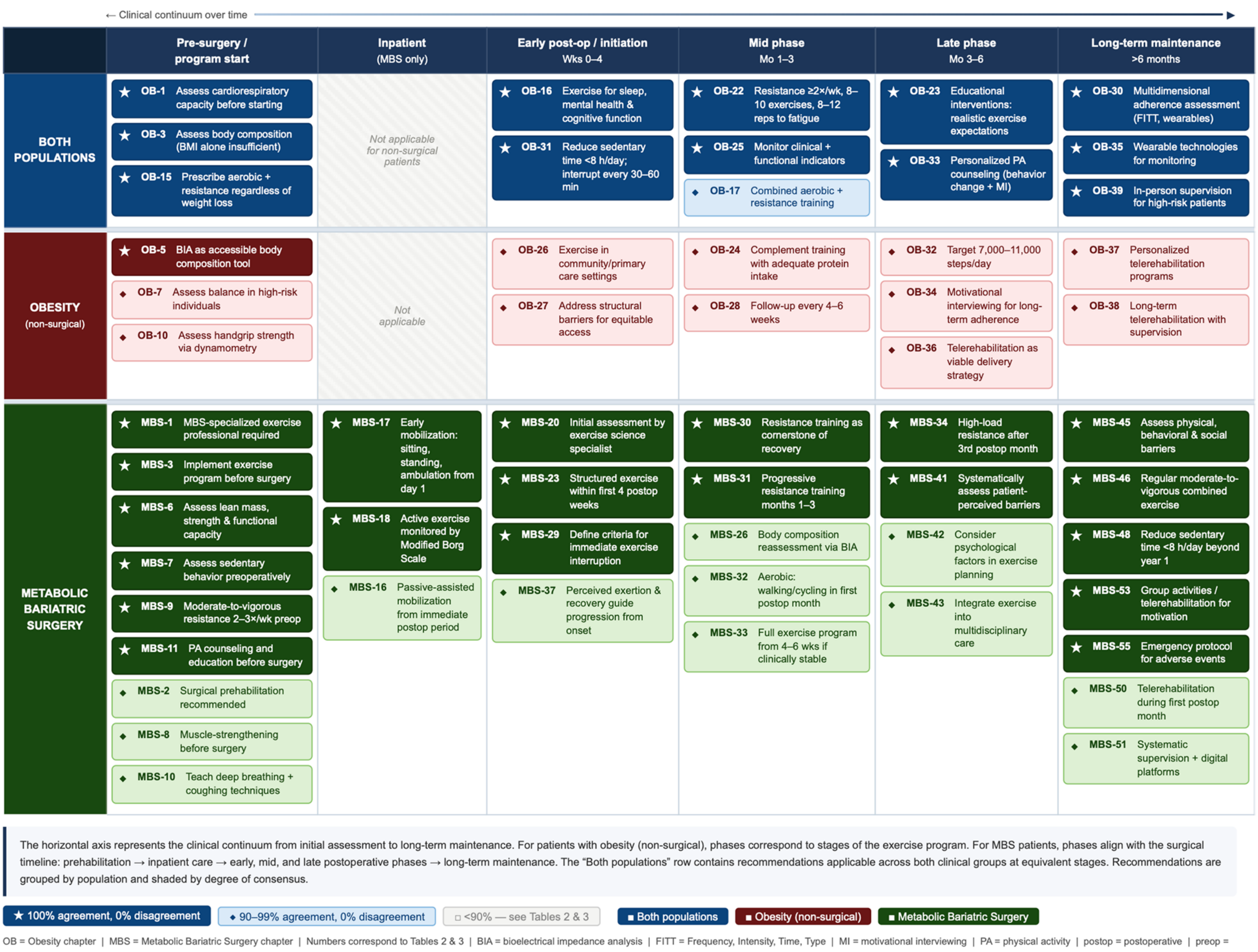

Fig 1 Clinical Continuum of Physical Exercise in Obesity and Metabolic Bariatric Surgery: Key Consensus Recommendations

are individualized according to clinical status rather than as competing thresholds.

Overall, these findings suggest that much of the available international evidence can be translated into clinical practice while highlighting the need for contextual adaptation to support implementation across diverse healthcare settings in Latin America.

When contrasted with existing international guidance, the present consensus is broadly consistent with the recommendations of the European Association for the Study of Obesity (EASO) Physical Activity Working Group [30], the ACSM Consensus Statement on Physical Activity Interventions for Adults with Obesity [29], and the systematic review of exercise guidelines for metabolic bariatric surgery by Fernández-Alonso et al. [31]. Collectively, these publications support progressive multicomponent exercise, resistance training to preserve fat-free mass, long-term physical activity, and structured follow-up as core components of obesity and MBS management. Consistent with these recommendations, the only statement that achieved complete consensus (mean = 5.0, SD = 0, CV = 0%) was the prescription of combined aerobic and resistance exercise irrespective of body weight loss. This finding further supports the growing recognition that exercise should be prescribed not solely to facilitate weight reduction, but also to improve physical function, cardiometabolic health, and overall well-being.

Another important consideration is the balance between a comprehensive pre-exercise evaluation and the timely initiation of physical exercise. The ACSM Consensus Statement [29] emphasizes that the risks associated with physical inactivity often outweigh those of initiating exercise without exhaustive pre-participation screening.

Accordingly, clinicians should distinguish between safety-oriented assessments proposed within the Assessment axis of the Obesity chapter (Recommendations 1, 11, and 14), which address cardiorespiratory fitness, cardiovascular risk screening, and musculoskeletal evaluation, and baseline assessments within the same axis (Recommendations 3, 12, and 13), which address body composition, self-efficacy and motivation, and weight-related quality of life. The latter can be completed progressively to support individualized exercise prescription without unnecessarily delaying the initiation of exercise. Within this framework, the functional assessment batteries included in this consensus provide practical options for baseline evaluation and exercise planning when cardiopulmonary exercise testing is unavailable; however, they should not be regarded as substitutes for formal cardiovascular risk assessment when this is clinically indicated. Future updates should further refine these assessment pathways according to clinical complexity and resource availability.

Recommendations from this consensus emphasize the assessment of cardiorespiratory fitness, muscular strength, functional capacity, and body composition, consistent with evidence identifying physical fitness and preservation of fat-free mass as key determinants of functional status and cardiometabolic prognosis in individuals with obesity and following metabolic bariatric surgery [23, 34, 48]. Similarly, the EASO Physical Activity Working Group assigned the highest level of evidence (Grade A) to exercise training after metabolic bariatric surgery, demonstrating improvements in body composition, cardiorespiratory fitness, muscle strength, and attenuation of fat-free mass loss during the first postoperative year [37]. Together, these findings reinforce the importance of assessing physical function throughout obesity and MBS care, not only to establish baseline status but also to guide exercise prescription and monitor treatment response over time.

Building on these international recommendations, this consensus provides practical guidance across the continuum of obesity and metabolic bariatric surgery care, including prehabilitation, inpatient respiratory physiotherapy, early mobilization, progressive resistance training, phase-specific exercise progression, and long-term follow-up. The recommendations developed in this consensus further address areas identified by the EASO Physical Activity Working Group as requiring additional guidance. Fernández-Alonso et al. [31] also highlighted that many randomized controlled trials lacked structured cardiovascular progression and prescribed insufficient resistance training volumes to preserve fat-free mass. In this context, this consensus incorporates explicit progression criteria and phase-specific resistance training recommendations that may facilitate implementation in routine clinical practice. Collectively, these recommendations provide a structured framework to support the integration of evidence-based exercise across the continuum of obesity and MBS care.

Conclusion

This First Latin American Consensus on Physical Exercise in Obesity and MBS provides evidence-informed recommendations to standardize the assessment, prescription, and follow-up of physical exercise in individuals with obesity throughout the perioperative and long-term phases of MBS. Developed through a structured Delphi process and informed by the best available evidence, the recommendations were adapted to the Latin American clinical context.

The consensus supports a longitudinal approach centered on functional capacity and cardiometabolic health, emphasizing functional assessment, multicomponent exercise prescription, structured follow-up, and the reduction of sedentary behavior. It also identifies priorities for future research, particularly regarding implementation, advanced assessment strategies, exercise dosing across different clinical settings, and sustainable models of supervised and hybrid care. As evidence continues to evolve, these recommendations should be periodically updated to maintain their relevance for clinical practice.

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Declarations

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