Exercise After Bariatric Surgery

Dr. Faezeh Maleklou, MD

Sports and Exercise Medicine

Importance of Physical Activity and Exercise Intervention After Bariatric Surgery

- Increases total energy expenditure
- Greater BMI reduction
- Prevents weight regain within the first 2 years
- Improves body composition
- Greater physical fitness
- Increases quality of life
- Increases BMD
- Lower risk for premature death, complications, need for hospitalization

Hansen D, Decroix L, Devos Y, Nocca D, Cornelissen V, Dillemans B, et al. Towards Optimized Care After Bariatric Surgery by Physical Activity and Exercise Intervention: a Review. Obesity surgery. 2020;30(3):1118-25.

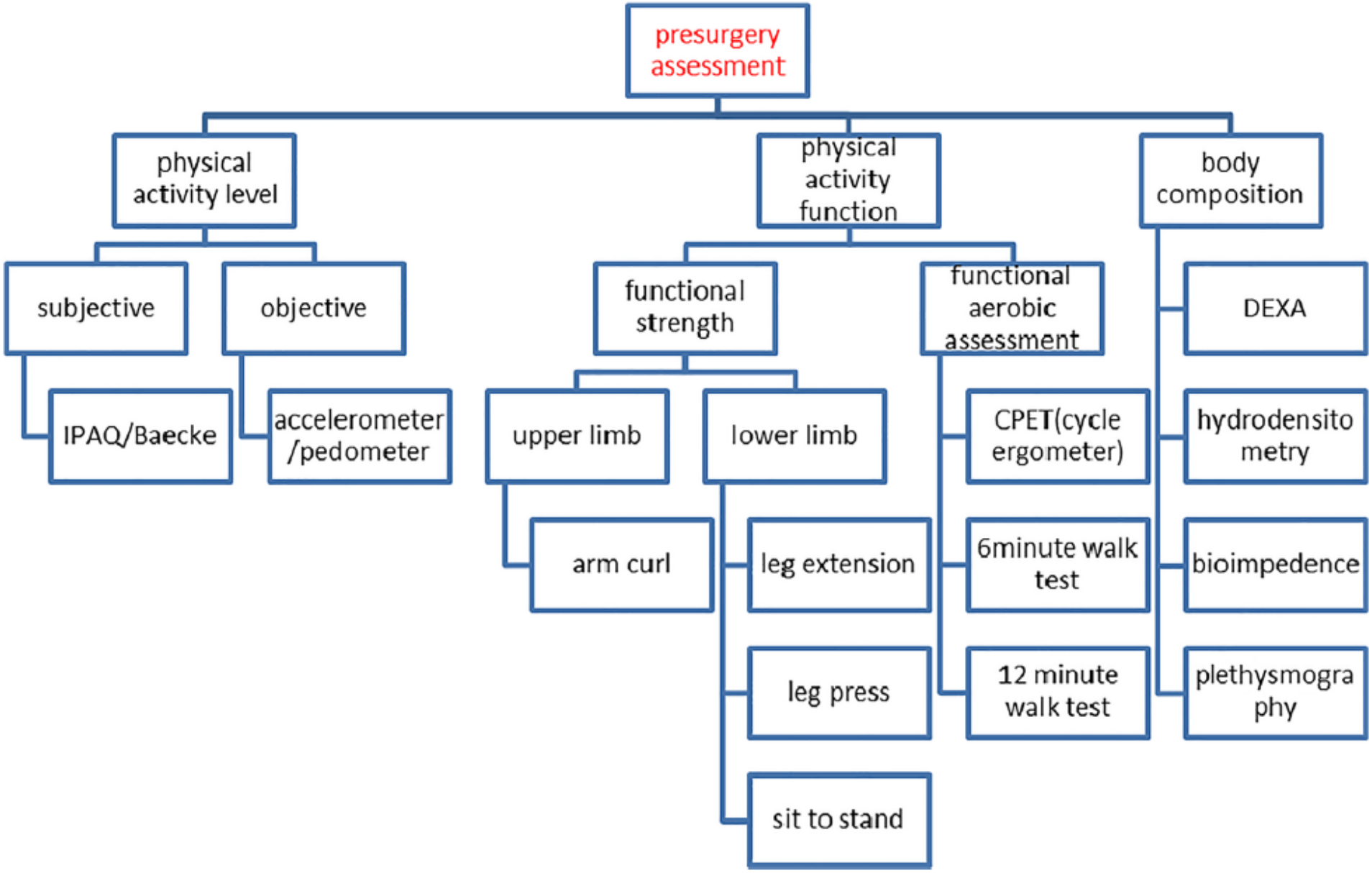
As result of bariatric surgery, 10–28%of the total body weight loss is attributed to decrements in muscle mass.

Moreover, a study found that the prevalence of sarcopenia rose from 8% up to 32% within 1 year after sleeve gastrectomy.

A muscle strength decline independently translates into a greater risk for premature death and loss of independence.

Significant reductions in muscle strength are observed in association with significant reductions in functional capacity/exercise capacity.

Before recommending any exercise program to surgery candidates, the patient’s current physical activity level, mobility level, functional capacity, body composition, and potential needs for medical assessments should be assessed.



Recommended assessments before exercise prescription

A pre-operative start-up of exercise training could lead to a greater adherence to post-operative exercise intervention and post-operative clinical benefits.

Bariatric patients should be well guided to set realistic goals and consider their healing process to prevent any damages or injuries.

They should simultaneously be encouraged to avoid longtime rest and immobilization.

Exercise Prescription

- There is no specific guideline for physical activity prescription before and/or after bariatric surgery. Based on general guidelines:
- At least 150 min/week moderate to vigorous physical activity (equivalent 3–6 METs) or 10,000 steps/day for improving the general health,
- 150–250 min/week equivalent to 1200– 2000 kcal/week for preventing weight regain,
- More than 300 min/week for weight maintenance after weight loss.

Tabesh MR, Maleklou F, Ejtehadi F, Alizadeh Z. Nutrition, Physical Activity, and Prescription of Supplements in Pre- and Post-bariatric Surgery Patients: a Practical Guideline. 2019;29(10):3385-400

Pedometer:

- < 5000 steps/day: ‘sedentary lifestyle’
- 5000–7499 steps/day: ‘low active’
- 7500–9999 steps/day: ‘somewhat active’
- > or = 10,000 steps/day: ‘active’
- >12,500 steps/day: ‘highly active’

It is noticed that exercise or physical activity with smaller total exercise volumes actually fail to maximize weight loss after surgery.

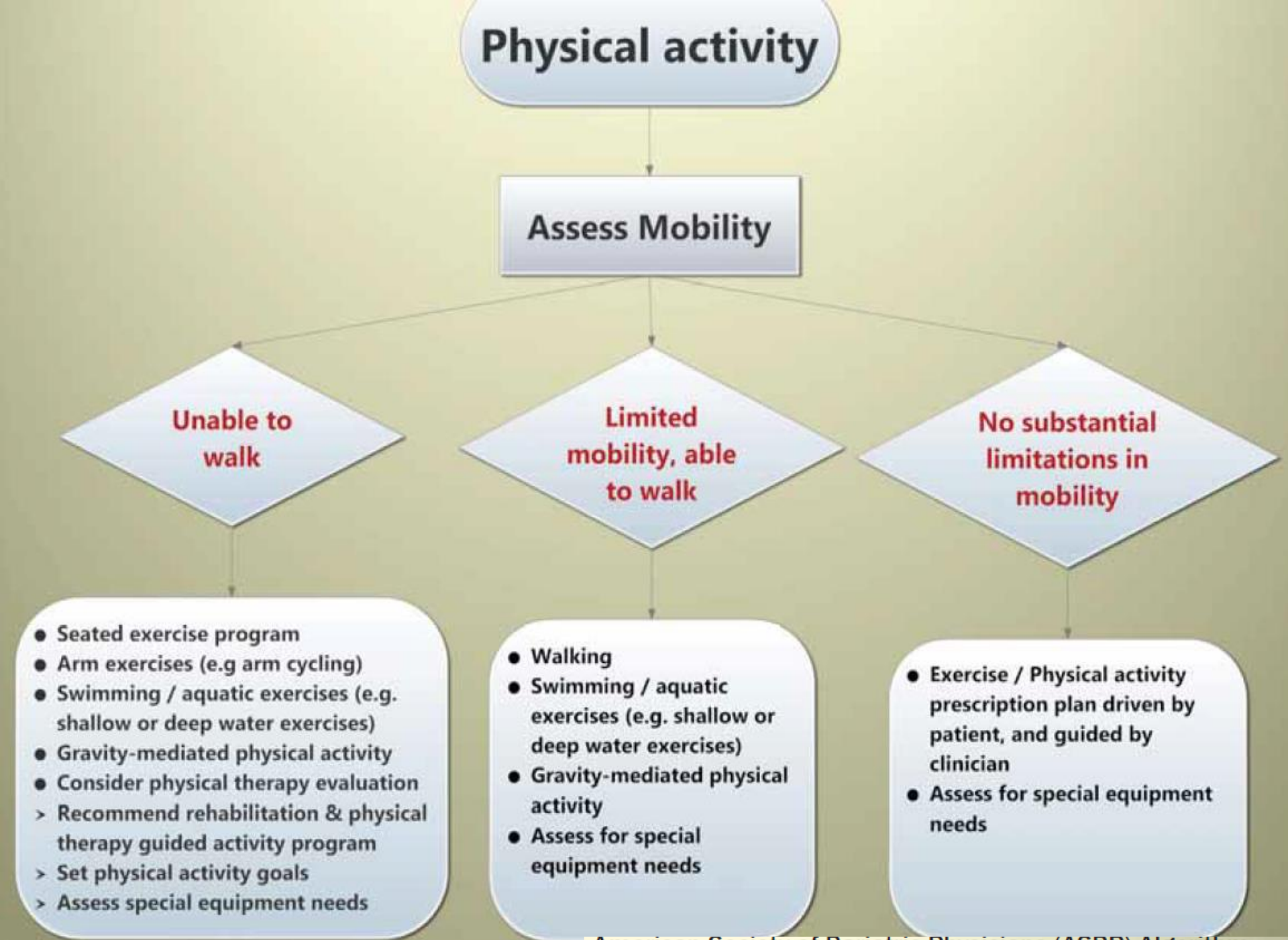
Intensity：

	METs*	Borg	Examples
Low-intensity physical activity	< 3	9–11	Walking slowly, simple daily living activity such as using a computer at a desk, using light hand tools, washing dishes, ironing, and preparing food
Moderate intensity physical activity	3–6	12–13	Walking at brisk space, cleaning the house, washing car, vacuuming, sports training
High-intensity physical activity	> 6	14–17	Walking very brisk, jogging, running, bicycling, swimming, competitive sports

It is advised to permanently increase daily physical activity (non-structured physical activity) next to supervised exercise training (structured physical activity) to minimize body weight regain.

Combination of aerobic exercises with resistance training, besides diet restrictions before and after bariatric surgery, leads to better weight loss results.

To stimulate muscle mass gain or acquire a better preservation of lean tissue mass, it can also be advised to combine strength training with sufficient intake of proteins and amino acids.



American Society of Bariatric Physicians (ASBP) Algorithm

When to Start the Physical Activity After Bariatric Surgery?

- Individuals should be encouraged to start physical activity from the day of the surgery by leaving the bed and walking short distances. Then, they should increase their physical activity gradually by walking further on the next days.

Tabesh MR, Maleklou F, Ejtehadi F, Alizadeh Z. Nutrition, Physical Activity, and Prescription of Supplements in Pre- and Post-bariatric Surgery Patients: a Practical Guideline. 2019;29(10):3385-400.

- Two weeks after laparoscopic surgery, patients can start daily exercise up to pain threshold under the surgeon's permission. This time may be longer in open surgery.

Exercise intervention should best be designed to specifically affect fat mass, muscle mass, endurance exercise capacity and bone mineral density in patients who have underwent bariatric surgery.

- During the first 4 weeks, recommended physical activity programs include walking around, taking deep breaths, and doing normal daily activities.

- During 4–6 weeks, patients can gradually increase their activity with the surgeon’s permission and supervision. Lifting weights more than 15 lbs during the first 6 weeks after surgery and abdominal exercise during the first 8–12 weeks should be avoided.

- During the first few months after surgery, the patients should increase their activity level gradually under supervision in a pain-free range and avoid high-intensity exercise.

- There is no precise advice for starting core exercises after bariatric surgery. However, according to general guidelines, patients can start taking deep breaths the day after surgery and continue with doing simple exercises such as abdominal draw in. Core exercises should be done in a pain free range and increase gradually.

- Return to sport and sport-specific exercises are not determined as well and may take a long time based on the surgical method and patient’s condition.

Exercise recommendation:

Timing	Endurance exercise	Resistance exercise	Additional measures
Before surgery	20–45 min/session, 45–54% peak heart rate or 10–11 Borg ratings of perceived exertion (RPE) scale), 2–3 days/week	< 60% of 1-repetition maximum (1RM), 12–15 repetitions, ≥ 6 muscle groups, 3 series/large muscle group, 2–3 days/week	None
After surgery	Weekly endurance exercise volume up to 250–400 min, moderate effort (55–70% peak heart rate, Borg RPE 12–14), involving large muscle groups (e.g. walking, stepping, rowing, cross-training), from 3 up to 5 days per week	Moderate-to-high-intense resistance exercises (≥ 70% of 1RM), 12–15 repetitions for 3 series each exercise, targeting large muscle groups (e.g. m. quadriceps femoris, hamstrings, calfs, abdominal and back muscles, m. biceps brachi, m. triceps brachi, shoulder muscles)	Minimize sedentary time and stimulate habitual activity, ensure 60–120 g/day of protein and amino acids (especially leucine) intake

Hansen D, Decroix L, Devos Y, Nocca D, Cornelissen V, Dillemans B, et al. Towards Optimized Care After Bariatric Surgery by Physical Activity and Exercise Intervention: a Review. Obesity surgery. 2020;30(3):1118-25

Type of exercise	Start before surgery	Start after surgery
Aerobic	150–250 min/week moderate intensity	Day 1–week 4: walking around, slowly increase speed, time and intensity
Resistive	2–3 sets 8–12 Repetition 3 days/week (48 h rest for large muscle groups)	Week 6, starting without weight such as active range of motion hip and shoulder against gravity and then adding devices such as weight or elastic band with caution
Stretching	Stretching especially large muscles, 4 repetitions, with 10–30 s holding	Not specific time sites far from surgery location immediately after surgery in a pain-free range of motion
Core stability	Core stability as routine in patient's tolerance range	Taking deep breaths, the day after surgery and start to draw in pain-free range whenever she/he is ready
Abdominal	As tolerated according to patient capacity	Weeks 8–12
Leisure time	As usual	2–4 weeks after surgery, mild intensity
Sport-specific	As usual	Not determined, depending on the patient in the pain-free range

Tabesh MR, Maleklou F, Ejtehadi F, Alizadeh Z. Nutrition, Physical Activity, and Prescription of Supplements in Pre- and Post-bariatric Surgery Patients: a Practical Guideline. 2019;29(10):3385-400.

	Progress	Goal	Examples
Aerobic	Week5–12: 150–200 min/week, 3–5 days/week, moderate intensity, Borg scale12–14*	300 min/week, 5–6 days/week 60%–80% max HR**	- Walking and running (outdoor or on the treadmill) - Cycling - Dancing - Swimming
Resistive	Gradually Increase of sets/reps/intensity	60–80%1RM, 2–3 set, 10–15 rep, free weight/elastic band, etc. 3 days/week	- Chest press - Shoulder press - Lateral pull down - Leg press - Squat - Lunge
Stretching	Modified stretching, increase the time of holding and repetition an on regular basis	A static stretch for 10–30 s to the point of tightness or slight discomfort without pain, most of the days/week	- Hamstring stretching - Quadriceps stretching
Core stability	Slowly increase exercises in a symptom-free range	2–5 times/day core stability exercises on a regular basis, keep the ideal body posture	- Draw in (supine and in daily living activities) - Single knee to chest - Pelvic tilt
Abdominal	Similar to core exercises	Similar to core exercises, gradually increasing the level of training and repetition	- Crunch - Alternative leg lift - Partial sit up
Leisure time	Increase activity by increasing intensity and duration	daily	- Outdoor activities
Sport-specific	Progress slowly depending on body status and symptoms	Moderate to vigorous, 2–3 days/week	- Football - Tennis - Jogging

The long-term adherence to physical activity guidelines may be problematic in a significant proportion of patients after bariatric surgery.

Although it remains to be studied in patients who underwent bariatric surgery, telemonitoring and exercise followed up by telemonitoring systems in cardiovascular disease is highly effective to preserve the physical activity

Current clinical guidelines stipulate that patients undergoing bariatric surgery should be treated/followed in a multidisciplinary setting.