If you're taking—or considering—a GLP-1 medication, you may NHS weight management service be wondering whether weight loss will cost you muscle as well as body fat. The short answer is: **some lean mass can be lost during substantial weight loss, but losing muscle is not inevitable, and resistance training can help you preserve lean mass**.



Medicines such as semaglutide can make it easier to eat less by reducing appetite and increasing feelings of fullness. That can create a sizable caloric deficit, especially early in treatment. The challenge is to lose weight in a way that supports your strength, health, and day-to-day function—not just a lower number on the scale.

This guide explains how GLP-1 receptor agonists work, what research can and cannot tell us about muscle loss, how to build a practical resistance training plan, and what to discuss with your prescriber. It is general information, not a substitute for individualized medical advice.

What are GLP-1 medicines, and how do they work?

GLP-1 stands for glucagon-like peptide-1, a hormone involved in appetite and blood sugar regulation. GLP-1 receptor agonists act on pathways that can increase fullness, reduce hunger, and slow stomach emptying. Semaglutide is one medicine in this class. In the US, Ozempic is approved for certain people with type 2 diabetes, while Wegovy is approved for chronic weight management in eligible patients. They contain the same active ingredient but have different approved uses and dosing schedules.

By helping people eat less, treatment can support weight loss. But when food intake drops, it may be harder to get enough protein, energy, and other nutrients. If the resulting caloric deficit is large, weight can come from both fat and lean tissue. Lean mass includes more than skeletal muscle—it also includes organs, body water, and other non-fat tissue—so a reported change in lean mass does not equal the same amount of muscle lost.

What do the STEP trials and other research show?

The STEP clinical trial program studied semaglutide for weight management in adults with overweight or obesity, alongside lifestyle support. In STEP 1, participants receiving semaglutide lost substantially more weight on average

over 68 weeks than those receiving placebo. These results show that the medication can be effective for weight loss; they do not mean every person will have the same response.

A body-composition analysis of a subset of STEP 1 participants used DXA scans to estimate fat and lean mass. Both declined with weight loss. In that analysis, fat mass fell more in absolute terms, while lean mass also decreased. Because overall weight fell considerably, the proportion of body weight made up of lean mass increased. This distinction matters: a person can lose some lean tissue while still improving their overall body composition.

Other randomized controlled trials (RCTs) of semaglutide have reinforced its effects on weight and metabolic health. However, many weight-loss trials were not designed to test a structured strength-training program against no strength training, and body-composition measures have limitations. We therefore have strong evidence that semaglutide can produce substantial weight loss, but less direct evidence defining exactly how much muscle a specific resistance training plan will preserve for each person.

Research on weight loss more broadly supports resistance exercise as a useful way to protect strength and muscle function, especially when paired with adequate nutrition. It cannot guarantee that no lean mass will be lost. The aim is to give your body a reason—and the resources—to maintain muscle as weight changes.

How to preserve lean mass while losing weight

1. Strength train consistently

For many people, a practical starting point is two or three full-body sessions per week, with recovery days between harder sessions. Choose movements that train the major muscle groups, such as a squat or sit-to-stand, a hip hinge, a push, a pull, and a carry or core exercise. Machines, dumbbells, resistance bands, and body-weight movements can all work.

Start at a level that feels manageable, especially if you are new to lifting or experiencing nausea or fatigue. Use controlled repetitions and finish most sets feeling that you could still do a few more with good form. Gradually add repetitions, resistance, or sets as your confidence and recovery improve. If pain, dizziness, or unusual weakness occurs, stop and seek appropriate advice.

2. Avoid making the deficit unnecessarily aggressive

A medication may reduce appetite so much that regular meals become difficult. A very large caloric deficit can make it harder to train, recover, and meet nutrient needs. Work with your prescriber or a registered dietitian on an eating pattern that is appropriate for your health, medication, and rate of weight loss. There is no single calorie target that suits everyone.

3. Make protein and nutrient-dense food a priority

Protein supports muscle repair, but needs vary with body size, age, health, and activity. Ask a dietitian or clinician what intake is suitable for you, particularly if you have kidney disease or another condition that affects dietary advice. If large meals feel uncomfortable, smaller meals or snacks may be easier to tolerate. Include a variety of foods that provide protein, fiber, vitamins, and minerals rather than relying on supplements without guidance.

4. Track more than body weight

Weight is useful, but it does not tell the whole story. Consider tracking training consistency, strength on key movements, energy, walking capacity, and how you feel doing daily tasks. A clinician may also assess

measurements or body composition when appropriate. Home scales that estimate muscle or fat can be imprecise, so avoid treating small changes as definitive.

A sample beginner resistance training plan

This is an example, not a prescription. Adjust exercises to your abilities, equipment, and any medical or physical limitations. A physical therapist or qualified trainer can help you find safe options.

Session Exercise pattern Example Starting dose Full body A Squat, push, pull, hinge, core Chair squat, wall or machine press, seated row, glute bridge, dead bug 1–2 sets of 8–12 comfortable repetitions Full body B Step or lunge, push, pull, hinge, carry Low step-up, incline push-up, band row, light hip hinge, farmer carry 1–2 sets of 8–12 comfortable repetitions

Alternate A and B with at least a day between sessions—for example, Monday and Thursday. When the work feels controlled and you can complete the upper end of the repetition range, consider a small increase in resistance. If you are already training, you may not need to start over; instead, adjust volume and effort to match your recovery and food intake.

NICE guidance and eligibility: what to know

In the UK, the National Institute for Health and Care Excellence (NICE) recommends semaglutide for weight management only for eligible groups and under specified conditions. NICE guidance generally places treatment within specialist weight-management care, alongside a reduced-calorie diet and increased physical activity. Eligibility is based on factors such as BMI, weight-related health conditions, and access to the relevant service. BMI thresholds may be adjusted for some ethnic backgrounds because health risks can occur at lower BMI values.

NICE's recommendation includes limits on treatment duration in the relevant specialist service and a review of response; its guidance says treatment should be stopped if a person has not lost at least 5% of their initial weight after six months on the highest tolerated dose. Exact access and local service arrangements can change, so check current NICE guidance and discuss your circumstances with an NHS clinician.

Eligibility is not the same in every country, and prescribing rules differ. In the US, FDA-approved indications and insurance coverage determine access. Do not use another person's medication or change your dose based on online advice.

Side effects and monitoring

Common side effects can include nausea, diarrhea, constipation, vomiting, and abdominal discomfort. These may be more noticeable when starting treatment or increasing a dose. Eating smaller portions, eating slowly, and following the prescriber's dosing instructions may help, but persistent or severe symptoms need medical attention.

Contact your clinician promptly about severe or ongoing abdominal pain, repeated vomiting, dehydration, or other concerning symptoms. The prescribing team can advise on potential complications, medication interactions, and whether treatment is suitable for your medical history. Monitoring may include weight and treatment response, side effects, hydration, nutrition, blood sugar where relevant, and other health measures based on your circumstances.

Tell your healthcare team about all medicines and supplements you take. If you have diabetes and use medicines that can lower blood sugar, your clinician may need to review your treatment plan. Do not stop or adjust prescribed medicines without professional advice.



Be cautious with online claims and products

Online marketplaces and social media channels can make GLP-1 products, “muscle-preserving” supplements, and dramatic transformation stories look easy to access. Be wary of unverified sellers, counterfeit or improperly stored medicines, advice to use someone else’s prescription, and promises of rapid results. Use medicines only through legitimate, regulated healthcare pathways, and take questions about products to a pharmacist or prescriber.

The bottom line

Some lean mass may be lost during substantial weight loss with semaglutide, but that does not mean you are destined to lose significant muscle or strength. A sensible caloric deficit, adequate nutrition, regular resistance training, and clinical monitoring can all support better outcomes. Build a resistance training plan you can sustain, pay attention to how you function as well as what the scale says, and work with your healthcare team to tailor the approach to your health and treatment.