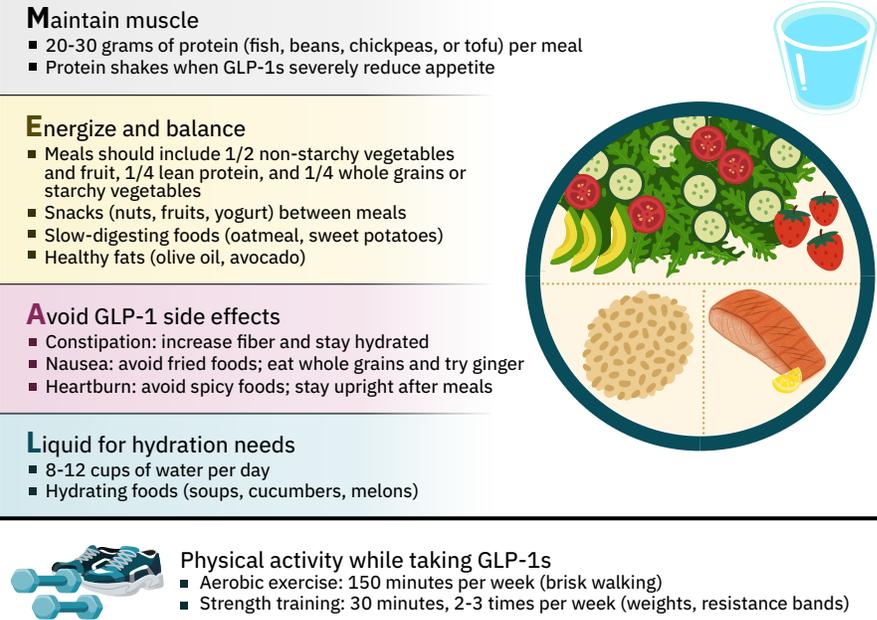


Maintaining Muscle Mass While Taking GLP-1s

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Glucagon-like peptide-1 (GLP-1) receptor agonists and related therapies, such as dual agonists, are widely used medical treatments for type 2 diabetes and obesity. Newer GLP-1-based therapies, such as semaglutide and tirzepatide, are particularly effective for overall weight loss. While these medications can reduce body fat, they may also lead to muscle loss. Research indicates that lean body mass loss occurs at varying rates across different weight-loss interventions: approximately 25% with lifestyle changes (diet and exercise), approximately 30% with metabolic and bariatric surgery, and 15% to 45% with GLP-1-based-therapies, as a proportion of total weight loss.^{1,2}

Figure 1. MEAL Plan: Diet and Exercise Guidance for Patients Taking GLP-1-Based Therapies

<p>Maintain muscle</p> <ul style="list-style-type: none"> 20-30 grams of protein (fish, beans, chickpeas, or tofu) per meal Protein shakes when GLP-1s severely reduce appetite 	
<p>Energize and balance</p> <ul style="list-style-type: none"> Meals should include 1/2 non-starchy vegetables and fruit, 1/4 lean protein, and 1/4 whole grains or starchy vegetables Snacks (nuts, fruits, yogurt) between meals Slow-digesting foods (oatmeal, sweet potatoes) Healthy fats (olive oil, avocado) 	
<p>Avoid GLP-1 side effects</p> <ul style="list-style-type: none"> Constipation: increase fiber and stay hydrated Nausea: avoid fried foods; eat whole grains and try ginger Heartburn: avoid spicy foods; stay upright after meals 	
<p>Liquid for hydration needs</p> <ul style="list-style-type: none"> 8-12 cups of water per day Hydrating foods (soups, cucumbers, melons) 	
<p>Physical activity while taking GLP-1s</p> <ul style="list-style-type: none"> Aerobic exercise: 150 minutes per week (brisk walking) Strength training: 30 minutes, 2-3 times per week (weights, resistance bands) 	

Adapted from *I am taking a GLP-1 weight-loss medication—What should I know?*⁴

Health Consequences of Muscle Loss

Excessive muscle loss can reduce muscle strength and functional capacity and may lead to sarcopenia, the age-related progressive loss of skeletal muscle mass and strength, particularly in older adults and individuals with chronic medical conditions. Muscle loss or weakness can lead to falls, serious injuries, and decreased quality of life. Research is limited on how GLP-1-based therapies affect muscle strength and mass. Additionally, it is unclear which tests best measure the effects and how to prevent muscle loss when people lose weight. Clinicians should be aware of signs of excessive weight loss, including a low body mass index or symptoms of anorexia (e.g., < 800 calories/day or very low protein intake).³

Strategies to Preserve Muscle Mass

Current evidence suggests that a combination of physical activity and dietary change may benefit muscle health and long-term weight maintenance (Figure 1).^{3,4} Resistance training and aerobic exercise can preserve muscle mass and improve muscle strength in people with obesity, especially when supplementing the diet with foods that are high in protein, such as fish, beans, chickpeas, or tofu.

For more information, access Cardi-OH's expanded resources [outpatient diabetes management](#) and [obesity and weight loss management](#).

References

- Conte C, Hall KD, Klein S. Is weight loss-induced muscle mass loss clinically relevant? *JAMA*. 2024;332(1):9-10. doi:10.1001/jama.2024.6586.
- Neeland IJ, Linge J, Birkenfeld AL. Changes in lean body mass with glucagon-like peptide-1-based therapies and mitigation strategies. *Diabetes Obes Metab*. 2024;26 Suppl 4:16-27. doi:10.1111/dom.15728.
- Mehrtash F, Dushay J, Manson JE. Integrating diet and physical activity when prescribing GLP-1s—lifestyle factors remain crucial. *JAMA Intern Med*. 2025;185(9):1151-1152. doi:10.1001/jamainternmed.2025.1794.
- Mehrtash F, Dushay J, Manson JE. I am taking a GLP-1 weight-loss medication—what should I know? *JAMA Intern Med*. 2025;185(9):1180. doi:10.1001/jamainternmed.2025.1133.

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