GLP-1 medications and muscle mass preservation

Implications and recommendations for the health and fitness sector

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Contents

Foreword

Originally licensed for the treatment of type 2 diabetes, GLP-1 (glucagon-like peptide 1) receptor agonists are being heralded as “game-changers” for obesity and related illnesses, due to the significant weight loss associated with this group of drugs. As a result, a large and growing number of people are using GLP-1 receptor agonists for a wide range of disorders, whether obtained from NHS healthcare providers or private providers and non-prescription online access. Given the importance of lifestyle modifications (i.e. diet and exercise) in the success of GLP-1 agonist use, the fitness industry undoubtedly has a central role to play. Understanding the actions of GLP-1 receptor agonists and the side effects associated with their use is essential to ensure fitness professionals can provide safe and effective support and advice to their clients. As with all calorie-restricted weight-loss programmesmes, the loss of lean body mass (muscle and bone) associated with GLP-1 receptor agonists can have a significant negative impact on long-term health.

Accordingly, the role of exercise in maintaining lean body mass is of critical importance for individuals using GLP-1 agonists. The following report examines the action of GLP-1 and GIP (dual GLP-1/glucose-dependent insulinotropic polypeptide) receptor agonists and the side effects associated with their use, with a focus on muscle mass loss. Recommendations are provided for fitness professionals to support individuals who use these drugs, as is a call to action for the government to facilitate better integration between the healthcare and health and fitness sectors, to allow a holistic approach that supports better long-term health and longevity for patients.

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Executive Summary

Weight loss medications such as Ozempic®, Wegovy®, Rybelsus®, Victoza®, and Mounjaro® have seen an increase in popularity with a reported 840,000 items prescribed in the first Quarter of 2025 in the UK[1], with a total of 2.5 million people in the UK reported to be taking weight loss medication[2]. In addition to weight loss, people taking these medications also report higher self-esteem, improved social confidence, better self-perceived physical health, healthier eating habits,and improved mental health [3]. However, a significant proportion of the weight that is lost is lean body mass, which includes skeletal muscle[4,5].

Broadly, these medications work by acting on the receptors for GLP-1 (glucagon-like peptide 1) or GIP (dual GLP-1/glucose-dependent insulinotropic polypeptide), mimicking the effects of these hormones by stimulating insulin secretion, inhibiting glucagon secretion and slowing gastrointestinal motility which can help regulate appetite and food intake[6,7]. The decreased hunger experienced while on these medications combined with side effects (i.e. nausea and vomiting) leads to decreased calorie intake and concomitant weight loss.

While these medications are effective for weight loss[8], weight is often regained after discontinuing the medication due to a return of appetite[9]. Additionally, side effects include constipation, nausea, and vomiting due to slowed gastric emptying, low energy levels and decreased mood, as well as the loss of skeletal muscle mass and bone mass[4,5,8,10,11].

Executive Summary

It has been reported that lean body mass loss is similar to that seen following bariatric surgery, during cancer treatment, or approximately 10 years of aging[7]. The loss of muscle mass is particularly concerning for older adults as muscle mass naturally declines with age[12]. Muscle and bone mass loss associated with weight loss drugs may also increase frailty and risk of falls. Other populations that may also be at higher risk of muscle mass loss while on these medications include patients with chronic kidney disease, liver disease, or inflammatory bowel disease[13]. The loss of skeletal muscle mass can also decrease resting metabolic rate, which makes maintenance of weight loss more difficult, especially when these medications are discontinued[14].

Exercise has been found to be beneficial for muscle and bone mass maintenance while on weight loss medications following an initial caloric restriction[10,15] can help maintain weight loss after the medication has been discontinued[16]. Exercise is therefore recommended for individuals taking GLP-1 or GLP-1/GIP receptor agonists. Importantly, resistance training should be performed to limit muscle mass loss that accompanies significant weight loss, and to regain muscle mass during the weight maintenance phase of treatment[11,17].

There is, however, a lack of research on the specific resistance training protocols for people taking GLP-1 or GLP-1/GIP receptor agonists. Accordingly, recommendations in the literature are based on traditional resistance training guidelines: 2-3 times per week, 8-10 exercises targeting major muscle groups[18]. It is also recommended that individuals taking GLP-1 or GLP-1/GIP receptor agonists accumulate 150 minutes of moderate to vigorous physical activity per week.

In the UK, 11.5 million people, or 16.9% of the population, are members of a health and fitness club. This accounted for over 600 million visits to 5,607 facilities in 2024[19]. Given the scale and availability of gyms and leisure facilities across the UK, these locations present an opportunity for individuals taking weight loss medication to undertake exercise and resistance training to support the effectiveness of the medication and limit the side effects of muscle mass loss. Consumer insights also suggest that a stronger integration between the healthcare and health and fitness industries is crucial to promote preventative care and empower these individuals to achieve their activity goals[19].

The prevalence of obesity continues to increase over time, as does the associated healthcare burden from comorbidities such as cardiovascular disease, type 2 diabetes, and certain types of cancer. For individuals who have not been able to sustain weight loss using lifestyle interventions alone (i.e. diet and exercise), pharmacotherapy such as GLP-1 medications may be considered as an adjuvant intervention. The use of these medications for the treatment of obesity is rapidly increasing. Weight loss medications such as Ozempic®, Wegovy®, Rybelsus®, Victoza®, and Mounjaro® are becoming so commonly discussed in popular culture that they have become household names.

There are multiple forms of GLP-1 medications. The first GLP-1 medication approved for use as a treatment option in chronic weight management was liraglutide, which was approved by the United States Food and Drug Administration (FDA) in 2014[8]. FDA approval for the use of semaglutide for the treatment of obesity was granted in 2021[8,20], and tirzepatide in 2023[8]. In the United Kingdom (UK), the National Institute for Clinical Excellence (NICE) recommended liraglutide in 2020[21], semaglutide in 2022[22], and tirzepatide in 2024[23].

Each of these GLP-1 medications was recommended as an option for those managing being overweight and obesity alongside a reduced-calorie diet and increased physical activity in adults. They had similar restrictions based on body mass index (BMI), weight-related comorbidity, non-diabetic hyperglycaemia (for liraglutide), and the provision of the medication by the company within commercial arrangements.

As such, the use of these medications has rapidly increased. In 2025, one in eight adults in the United States reported taking a GLP-1 receptor agonist[11]. In the UK, The King's Fund reported that 840,000 items were prescribed in the first Quarter of 2025[1], however this is likely to be an underestimate of usage.

It has been reported that approximately 1.4 million people in the UK may be accessing these medications privately each month[24] and more recently, it has been reported that 2.5 million people in the UK are taking weight loss medication[2].

A recently published systematic review found that these medications are effective for acute weight loss, with participants losing an average of 15% of their body weight in interventions ranging from 68 weeks to 104 weeks[8]. In addition to substantial weight loss, people taking these medications report higher self-esteem, improved social confidence, better self-perceived physical health, healthier eating habits, and improved mental health[3]. However, a significant proportion of the weight that is lost is lean body mass, which includes skeletal muscle[4,5]. Exercise has been found to be beneficial for muscle mass maintenance while on weight loss medications following an initial caloric restriction[15] and can help maintain weight loss after the medication has been discontinued[16]. Exercise is therefore recommended for individuals taking GLP-1 or GLP-1/GIP receptor agonists, and has been recommended by the World Health Organization (WHO) in their recently published guidelines on the use of GLP-1 and GLP-1/GIP receptor agonists for the treatment of obesity in adults[25]. Importantly, resistance training should be performed to limit muscle mass loss that accompanies significant weight loss, and to regain muscle mass during the weight maintenance phase of treatment.

In the UK, 11.5 million people, or 16.9% of the population, are members of a health and fitness club. This accounted for over 600 million visits to 5,607 facilities in 2024[19]. Given the scale and availability of gyms and leisure facilities across the UK, these locations present an opportunity for individuals taking weight loss medication to undertake exercise and resistance training to support the effectiveness of the medication and limit the side effects of muscle mass loss.

Therefore, this narrative review will discuss the mechanism of action of GLP-1 weight loss medications, side effects including loss of muscle mass, and strategies to avoid the loss of skeletal muscle, with a particular focus on physical activity and resistance exercise. Implications for the health and fitness sector and policy recommendations based on these findings are provided.

GLP-1 and GLP-1/GIP Receptor Agonists: Mechanism of Action

Broadly, GLP-1 receptor agonist weight loss medications are classified as Incretin Therapy, as they are based on gut-derived nutrient-stimulated hormones known as incretins[7]. The two main medication classes are glucagon-like peptide 1 (GLP-1) receptor agonists and dual GLP-1/glucose-dependent insulinotropic polypeptide (GIP) receptor agonists[7,26]. GLP-1 receptor agonists include semaglutide (trade names Ozempic®, Wegovy®, and Rybelsus®) and liraglutide (trade name Victoza®). GLP-1/GIP receptor agonists include tirzepatide (trade name Mounjaro®). Both classes of medications work by acting on the receptors for GLP-1 or GIP, mimicking the effects of these hormones. They are typically injected subcutaneously weekly, however tablet forms (i.e. Rybelsus®) do exist.

Incretins stimulate insulin secretion[6]. The hormone GLP-1 is produced in the intestine in response to eating and acts to stimulate the pancreas to secrete insulin. It also inhibits glucagon secretion[6,7]. Insulin is a hormone that decreases blood sugar, and glucagon is a hormone that raises blood sugar, so by increasing insulin secretion and inhibiting glucagon secretion, GLP-1 can limit the spike in blood sugar that occurs after eating. In addition, it slows gastrointestinal motility[6], which can help to regulate appetite and therefore food intake[7]. GIP is also secreted in the intestine and acts to stimulate insulin secretion[27]. Because of their role in stimulating insulin secretion, GLP-1 receptor agonists and GLP-1/GIP receptor agonists have been used since 2006 to treat patients with type 2 diabetes. The decreased hunger experienced while on these medications can lead to decreased calorie intake and concomitant weight loss.

Effectiveness of GLP-1 and GLP-1/GIP Receptor Agonists for Weight Loss

The effectiveness of GLP-1 and GLP-1/GIP receptor agonists for weight loss was examined in a 2024 systematic review and meta-analysis[8]. Seven randomised, placebo-controlled trials were included, with a total sample size of 5140 participants. Five studies examined semaglutide, and two studies examined tirzepatide. The duration of intervention ranged from 68 weeks to 104 weeks, and all studies used lifestyle interventions (nutritional and physical activity counselling) in addition to the medication.

All of the studies reported significant reductions in body weight and waist circumference. The pooled estimates of the mean decreases in body weight were 12.9% and 19.2% for the semaglutide trials and tirzepatide trials, respectively, compared to placebo. Considering all studies together, the mean decrease in body weight was 15.0%. It should be noted that the Müllertz et al. (2024) systematic review and meta-analysis excluded participants with type 2 diabetes, limiting the generalizability of the findings. A more recent study, The SEMALEAN study[28], included participants with type 2 diabetes. By one year after starting treatment with semaglutide, participants had a mean body weight decrease of 13%, consistent with results reported by Müllertz et al. (2024). A subgroup analysis was performed on the participants with type 2 diabetes and prior use of GLP-1 medications, with these groups exhibiting smaller reductions in body weight[28].

Based on the above studies, it appears that GLP-1 and GLP-1/GIP receptor agonists are effective for acute weight loss. The long-term effects on weight maintenance, however, are less clear. Discontinuation of these medications is associated with weight regain once appetite returns[9]. Jensen et al. (2024) followed participants for an additional year after their one-year treatment with a GLP-1 receptor agonist (liraglutide), supervised exercise programme, or both was discontinued.

Participants who had previously received liraglutide alone regained 9.6kg in the year following liraglutide discontinuation, resulting in a net weight regain of 8.7 kg since their liraglutide treatment had started[16]. Of note, while all groups regained weight in the year after their intervention was stopped, it was reported that the participants who had received the exercise and liraglutide intervention for one year had less weight regain over the subsequent year compared with those who had received liraglutide alone[16].

Studying weight regain after discontinuation of these medications is relevant, because medication discontinuation is common. An estimated 34%-50% of people stop taking GLP-1 or GLP-1/GIP receptor agonists because of the side effects[11].

Side Effects of GLP-1 and GLP-1/GIP Receptor Agonists

Despite effectiveness for acute weight loss, discontinuation of these medications is common due to side effects. Müllertz et al. (2024) reported adverse events for the 7 trials included in their systematic review and meta-analysis. 91% of participants taking semaglutide reported at least one adverse event, however 88.9% of participants in the placebo group also reported at least one adverse event. The most common adverse events were gastrointestinal in nature, including nausea, diarrhoea, constipation, and vomiting. These gastrointestinal adverse events are thought to be due to the slow gastric emptying produced by the medication[11]. These occurred more frequently in participants taking semaglutide (76%) compared to those taking a placebo (52%)[8]. The gastrointestinal adverse events were more common in the dose titration period and decreased throughout the treatment period.

Considering all 5 semaglutide studies together, serious adverse events were more commonly reported in participants taking semaglutide relative to a placebo (9.5% vs. 6.7%), including gallstones (3.0% in semaglutide group vs. 1.2% in placebo group). Cardiovascular adverse events were less frequently reported in the semaglutide group (8.9%) compared to the placebo group (12.5%). There were no differences in the frequency of hepatic disorders, pancreatitis, hypoglycaemia, acute renal failure, malignant neoplasms, psychiatric disorders, and allergic and injection site reactions reported between participants taking semaglutide and participants taking a placebo.

Results for tirzepatide were similar[8]. 81.5% of participants taking tirzepatide reported at least one adverse event, compared to 73.5% of participants taking a placebo. As with semaglutide, the most common adverse events were gastrointestinal in nature, including nausea, diarrhoea, constipation, and vomiting, and they were more common in the dose titration period, decreasing throughout the treatment period. There were no differences in gallbladder disease, hepatic events, pancreatitis, major depressive disorder or suicidal ideation, cancer, and major cardiovascular events between participants taking tirzepatide and those taking a placebo. These serious adverse events were also reported infrequently (frequencies ranging from 0% to 1.1%). However, more serious gastrointestinal events were reported with tirzepatide (4.0%) vs. placebo (1.3%), as were hypoglycaemia (1.1% vs. 0.1%) and injection-site reactions (6.7% and 0.5%)[8].

In addition to the adverse events discussed above, low energy level and decreased mood from prolonged caloric restriction have also been reported[11]. Though not typically considered an "adverse event", when these medications are used to induce substantial weight loss from caloric restriction loss of lean body mass, including skeletal muscle and bone mass, they are undesirable consequences. It has been reported that 20% to 50% of the weight lost while taking GLP-1 and GLP-1/GIP receptor agonists can be attributed to loss of lean body mass[4,5,10]. High caloric deficits can lead to the body breaking down skeletal muscle tissue for energy. While Jastreboff et al. (2022) found improvements in body composition after a 72-week intervention of tirzepatide, in addition to a lifestyle intervention of a 500-kcal caloric deficit per day and 150 minutes of physical activity per week, there was still a decrease in lean mass of 6 kg, equating to a 10.9% reduction[29].

Similar lean mass reductions were reported for participants taking semaglutide[30]. This magnitude of lean body mass loss is similar to bariatric surgery, cancer treatment, or in approximately 10 years of aging[7]. It has been reported that the initial loss of lean mass stabilises over time. Alissou et al. (2025) tracked body composition in participants taking semaglutide. They found that participants lost 3 kg of lean body mass in the first 7 months, but lean body mass stabilised for the following 5 months of follow-up[28]. The proportion of lean body mass relative to total body mass significantly increased at 7- and 12-month follow-ups, indicating positive changes in body composition despite a falling lean body mass.

The loss of muscle mass while taking GLP-1 and GLP-1/GIP receptor agonists is particularly concerning for older adults, as muscle mass decreases with age, declining approximately 3%-8% per decade after the age of 30, and even more after 60 years of age[12]. Other populations who may be at a higher risk of muscle loss while taking these medications include patients with chronic kidney disease, liver disease, or inflammatory bowel disease[13]. Further reductions in muscle mass or decreased bone mineral density due to weight loss medications may increase the incidence of frailty and risk of falls in these populations[10]. The loss of skeletal muscle mass can also decrease resting metabolic rate, which makes maintenance of weight loss more difficult, especially when these medications are discontinued[14]. Exercise has an important role to play in maintaining weight loss and minimising muscle and bone loss while on these medications.

Skeletal muscle mass loss is not a guaranteed consequence of GLP-1 and GLP-1/GIP receptor agonist use. Some studies have shown no muscle mass loss in patients taking these medications who are engaging in exercise[15,31,32]. However, the intent of usage of these medications and subsequent dosage matters. Mensburg et al. (2017) found no loss in muscle mass in a group of patients with type 2 diabetes taking liraglutide combined with aerobic training twice weekly and resistance training once per week, but participants were told not to change their diet and therefore did not have a period of high caloric restriction. Ingersen et al. (2023) reported a decrease in both fat mass (5 kg) and lean mass (2 kg) in patients with type 2 diabetes while on semaglutide alone for 20 weeks, but patients had no further decrease in lean mass when they added cycling to their treatment. In both studies it is important to note that the GLP-1 receptor agonist was prescribed for diabetes management and not for weight loss. Participants in the study by Lundgren et al. (2021) did not have type 2 diabetes but were taking liraglutide for weight maintenance after an initial caloric restriction, rather than for weight loss. Since muscle mass is lost when the body breaks down skeletal muscle for energy during periods of high caloric restriction, taking the medication to curb appetite to maintain weight loss may not have detrimental effects on skeletal muscle mass.

Minimising Muscle Mass Loss while on GLP-1 and GLP-1/GIP Receptor Agonists

When any substantial weight loss occurs through caloric restriction, whether through dieting, bariatric surgery, or GLP-1 and GLP-1/GIP receptor agonists, loss of muscle mass is an unwanted consequence. High caloric deficits can lead to the body breaking down skeletal muscle tissue for energy. Importantly, the decrease in skeletal muscle mass induced by weight loss is due to an increase in muscle protein breakdown for energy, and not a decrease in muscle protein synthesis capacity. Thus, exercise and diet are important tools to mitigate the loss of muscle mass that accompanies rapid weight loss from caloric restriction as they can stimulate protein synthesis[4]. A 2022 systematic review and meta-analysis found that the combination of resistance training and caloric restriction was most effective for reducing body fat percentage and whole-body fat mass, and that lean mass could be maintained following interventions involving resistance training and caloric restriction[33]. However, the studies included in this systematic review and meta-analysis did not include participants taking weight loss medications.

It should be noted that the research in this area is sparse, with multiple publications reporting on the same group of participants[10,15,16,34]. This limits generalisability of the findings. More research in this area is needed before definitive exercise recommendations can be made. Lundgren et al. (2021) found that a one-year intervention of the combination of 150 minutes of moderate to vigorous physical activity per week and liraglutide was more effective in maintaining weight and body fat loss induced by 8 weeks of caloric restriction than exercise or liraglutide alone. While participants lost approximately 5 kg of lean mass following an 800 kcal per day diet for 8 weeks, the combination of exercise and liraglutide for one year following this initial caloric restriction resulted in an increase in lean mass and a continued loss of fat mass, whereas liraglutide alone only resulted in a continued loss of fat mass. Importantly, the loss of fat mass was greater when liraglutide was combined with exercise[15].

The exercise in this study consisted of 30 minutes of vigorous-intensity, interval-based indoor cycling and 15 minutes of circuit training in a group fitness class twice weekly, as well as moderate-to-vigorous-intensity exercise (e.g. cycling, running, brisk walking) done individually, as long as the total volume was 150 minutes per week[15]. In a secondary analysis of the same data set, it was found that while bone mineral density decreased in the year following the initial caloric restriction, the decrease was not as high in participants who had received the liraglutide and exercise intervention compared to those receiving liraglutide alone[10]. The combination treatment of exercise and medication also reduced the prevalence of reported side effects such as heart palpitations, dizziness, and fatigue, although these were still present in participants who took liraglutide (with or without the exercise component of the intervention)[15]. The combination of exercise and liraglutide also improved cardiorespiratory fitness and general health perception[15] and reduced metabolic syndrome severity, abdominal obesity, and inflammation[34] relative to liraglutide alone.

Of note, exercise during GLP-1 or GLP-1/GIP receptor agonist use appears to help maintain weight loss even after medication treatment is discontinued. The participants in the Lundgren et al. (2021) study were followed for one year after cessation of treatment. While all groups regained weight, it was reported that the participants who had received the exercise and liraglutide intervention for one year had less weight regain over the subsequent year compared with those who had received liraglutide alone[16]. Self-reported and accelerometer-measured physical activity metrics indicated higher levels of physical activity in the exercise and liraglutide group compared to the liraglutide alone group, even after formal exercise instruction had ceased, indicating that these participants had maintained their increased physical activity levels[16].

Diet may be a crucial component in minimising muscle mass loss, especially during periods of caloric deficit. Protein is necessary for muscle synthesis, so there must be adequate protein intake to preserve muscle mass with rapid weight loss. Grannell et al. (2021) examined the effects of a lifestyle intervention of diet and exercise combined with liraglutide compared to the lifestyle intervention alone. Exercise recommendations consisted of a progressive full body resistance training programme three times per week and 150 minutes per week of moderate to vigorous physical activity. The diet intervention was a high-protein (1 g protein per kilogram of body weight) calorie-restricted diet (1500 kcal per day for males and 1200 kcal per day for females). More body weight and more fat free mass (including muscle mass) was lost in the combination treatment (liraglutide plus lifestyle intervention) group than in the lifestyle intervention group. When controlling for weight loss, there was no difference in fat free mass lost between groups. This indicates that absolute weight loss seems to be the most important factor determining the magnitude of lean body mass lost during extreme caloric restriction. However, the authors acknowledged that the adherence to the exercise intervention was based on self-report, therefore the resistance training frequency may have been underreported. They also acknowledged that the protein intake may have needed to be higher to see an effect of resistance training on muscle mass maintenance. Both Mulcahy et al. (2025) and Grosicki et al. (2024) recommend 60-75 g/day, up to 1.5 g/kg body weight/day.

Achieving adequate protein intake can be challenging if experiencing the common side effects of decreased appetite, nausea, and vomiting associated with GLP-1 or GLP-1/GIP receptor agonists. Thus, some loss of lean body mass should be expected during a period of substantial caloric deficit. Typically, high dose GLP-1 or GLP-1/GIP receptor agonists are prescribed for an initial weight loss, and then dosages are reduced for weight maintenance.

A realistic goal may be to minimise muscle loss with resistance training and dietary protein during the weight loss phase of treatment and focus on building muscle once the maintenance phase of treatment is reached.

This would be consistent with studies showing that exercise combined with liraglutide can increase lean muscle mass following an initial period of substantial weight loss[15] and can set up sustainable physical activity habits so that weight regain is minimised when liraglutide treatment is stopped[16].

It should be noted that pharmaceutical companies are paying increased attention to preserving skeletal muscle mass while on GLP-1 and GLP-1/GIP receptor agonists. Combination treatments of GLP-1 or GLP-1/GIP receptor agonists in addition to other drugs such as myostatin inhibitors are being explored[35]. These approaches, however, are still at the clinical trial phase, and the long-term impact on muscle mass and health has not been determined. At present, clinical recommendations for minimising muscle mass loss consist of physical activity, particularly resistance training, combined with a high protein diet[11,14,17].

Recommendations in the Literature for Individuals taking GLP-1 or GLP-1/GIP Receptor Agonists

Exercise has been found to be beneficial for weight loss maintenance and increasing lean mass while taking weight loss medications following an initial caloric restriction[15,] and can help maintain weight loss after the medication has been discontinued[16]. Accordingly, exercise is recommended for individuals taking GLP-1 or GLP-1/GIP receptor agonists. Resistance training, in particular, should be performed to limit the amount of muscle and bone mass loss that accompanies any major weight loss, and to regain muscle mass during the weight maintenance phase of treatment[11,17].

There is a lack of studies on specific resistance training protocols for people taking GLP-1 or GLP-1/GIP receptor agonists, therefore recommendations in the literature fall within traditional resistance training guidelines[18]. Locatelli et al. (2024) recommend resistance training two to three times per week at an intensity of 50%-80% of one repetition maximum, with a minimum of seven exercises per session targeting large muscle groups. Grosicki et al. (2024) and Mulcahy et al. (2025) recommend a progressive resistance training programme starting with 10-15 repetitions of 8-10 exercises twice per week, progressing to 3 sets of 8-10 repetitions three times per week.

In addition to resistance training two to three times a week, it is recommended that individuals taking GLP-1 or GLP-1/GIP receptor agonists accumulate 150 minutes of moderate to vigorous physical activity per week. Studies have shown that this helps continue fat mass loss in the weight maintenance phase of treatment[15] and lessen weight regain when formal treatment has stopped[16]. Additionally, moderate to vigorous physical activity can improve cardiovascular fitness[15]. This is important, because while GLP-1 or GLP-1/GIP receptor agonist usage has been found to reduce the incidence of adverse cardiovascular events[8], there does not seem to be an increase in cardiovascular fitness that occurs through taking these medications[26], unless coupled with moderate to vigorous physical activity[15].

It is crucial to have adequate protein intake to preserve muscle mass with rapid weight loss and help gain muscle during the weight maintenance phase of treatment. GLP-1 and GLP-1/GIP receptor agonists result in slowed gastric emptying and decreased hunger, in addition to nausea and vomiting, therefore food may not be well tolerated. Protein intake can come from oral nutrition supplementation as needed. Both Mulcahy et al. (2025) and Grosicki et al. (2024) recommend 60-75 g/day, up to 1.5 g/kg body weight/day. Recent clinical guidelines agree with those target protein amounts, and also suggest small, nutrient-dense meals, including whole grains for satiety, sustained energy, and reducing constipation[36].

It should be noted that recommendations for individuals on these medications are largely based on clinical expertise; no randomised controlled studies have been performed yet on the effects of these recommendations. Newsom and Robinson (2024) note that there is an urgent need to identify if and how exercise can preserve skeletal muscle mass and function during weight loss while taking GLP-1 and GLP-1/GIP receptor agonists.

As a result, this poses a challenge for those working in the health and fitness sector, such as fitness and exercise professionals, and those who will be supporting individuals in undertaking physical activity who are also on GLP-1 medications. In the UK, 11.5 million people in the UK, or 16.9% of the population, are members of a health and fitness club[19]. This accounted for over 600 million visits recorded to 5,607 facilities in 2024. Given this scale and availability of gyms and leisure facilities across the UK, these locations present an important opportunity for individuals taking weight loss medication to undertake exercise and resistance training to support the effectiveness of the medication and limit the side effects of muscle mass loss.

Consumer insights from the same report also suggest that a stronger integration between the healthcare and fitness industries is crucial to promote preventative care and empower these individuals to achieve their activity goals[19]. The opportunity for the health and fitness sector has been discussed in a recent report that provides suggestions for how people taking GLP-1 medication can be supported[37], which complement the recommendations made from the evidence presented here.

Summary

In summary, the prevalence of GLP-1 and GLP-1/GIP receptor agonist use has rapidly increased since these medications have been approved for the treatment of obesity. Though effective for weight loss, concomitant loss of skeletal muscle remains a concern. Current clinical guidelines recommend resistance training and a high protein diet to mitigate muscle loss during the weight reduction phase and build muscle during the weight maintenance phase of treatment and following cessation of treatment. General recommendations for the health and fitness sector are provided below.

Recommendations

Recommendations have been developed based on the evidence collated, the potential role the health and fitness sector can play in holistic support for people taking weight loss medication, and the opportunity for cross-sector collaboration.

It may not always be obvious if an individual is taking weight loss medication, in which case the health and fitness sector and its workforce should continue their welcoming and supportive service but be aware of the impact of weight loss medication on those exercising within facilities.

The evidence, and these recommendations, are the start of the journey to a collaborative, evidence-based approach on the role exercise has in supporting people taking weight loss medication.

1

Recommendation 1:

The Government should urgently convene discussions with the nutrition/dietetics sector and the health and fitness sector on the required wrap around support offered for GLP-1 patients, with committed support and investment from the pharmaceutical sector.

2

Recommendation 2:

The health and fitness sector should review its health offering, as well as work proactively with the nutrition and obesity sector to forge partnerships to support people taking weight loss medication.

3

Recommendation 3:

Increase the knowledge and understanding across the health and fitness sector and its workforce, through specific training, consumer perceptions, and up to date evidence of weight loss medication mechanisms, effectiveness, side effects, and how exercise can support individuals taking weight loss medication.

This includes understanding the impact of side effects and low energy levels associated with caloric deficits and the impact this may have on the volume and progression of exercise initially, whilst continued encouragement of regular physical activity (150 minutes of moderate to vigorous activity per week) with a specific focus on resistance training (two to three times a week).

4

Recommendation 4:

Increase the healthcare sector's knowledge and understanding of how the health and fitness sector can support individuals taking weight loss medication through regular physical activity (150 minutes of moderate to vigorous activity per week) with a specific focus on resistance training (two to three times a week).

5

Recommendation 5:

Further research should be conducted on the role of exercise and in particular resistance training on the short- and long-term effectiveness of weight loss medication usage. This should include evidence to support the specific protocols of resistance training.

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