FUELING SUCCESS: OPTIMIZING NUTRITION IN GLP-1 AGONIST THERAPY

HOLLY F. LOFTON, MD, DABOM

CLINICAL ASSOCIATE PROFESSOR OF SURGERY AND MEDICINE, NYU GROSSMAN SCHOOL OF MEDICINE

DIRECTOR, MEDICAL WEIGHT MANAGEMENT PROGRAM, NYU LANGONE HEALTH

OBJECTIVES

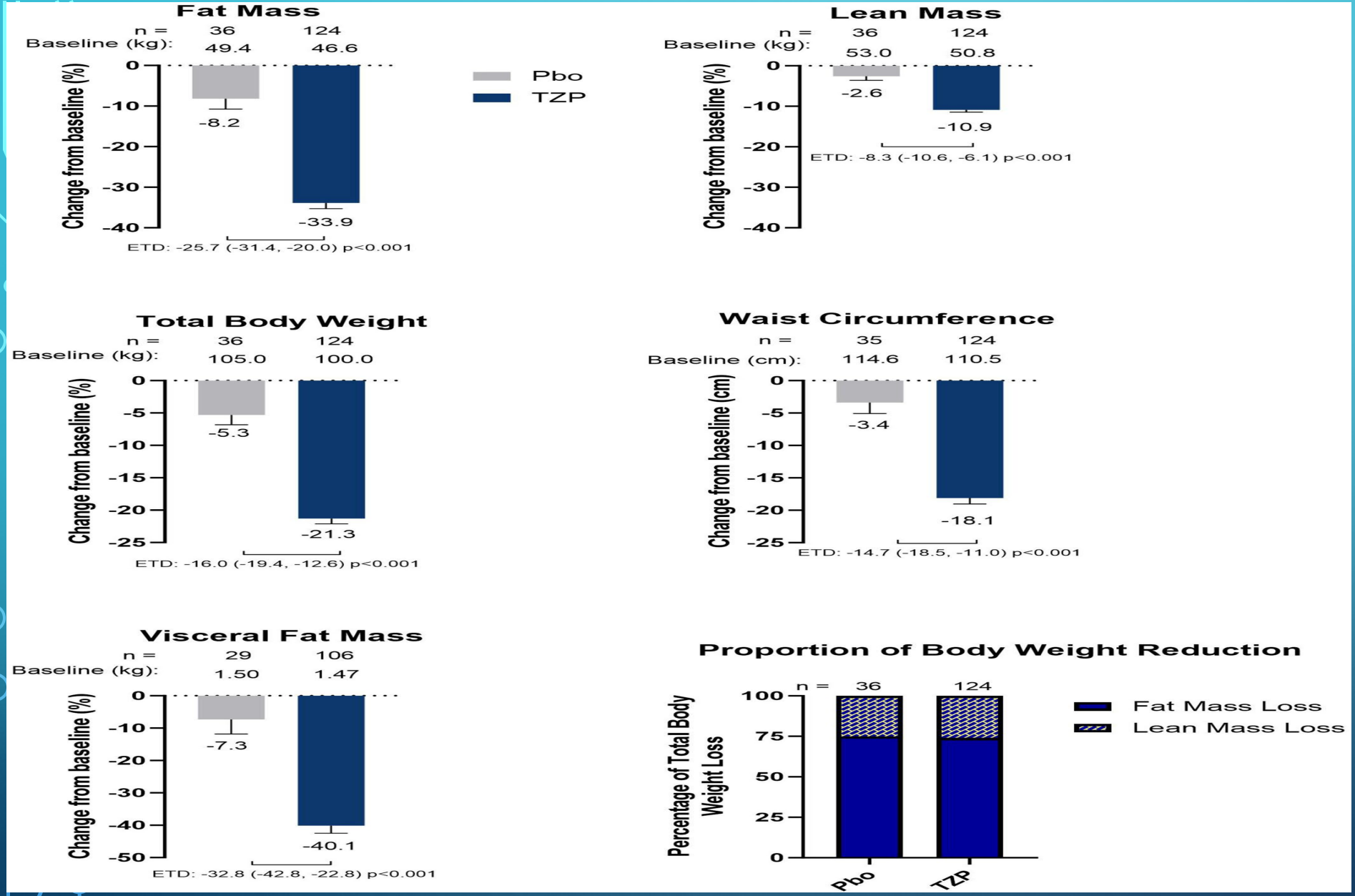
- Introduction to GLP-1 receptor agonists (GLP1-RA)
- Review body composition data from GLP-1RA studies
- Discuss potential nutrient deficiencies in patients on GLP-1 RA
- Discuss detrimental outcomes from these deficiencies
- Review methods to measure body composition
- Define the optimal diet for patients on GLP1-RA

INTRODUCTION TO GLP-1 AGONISTS

- GLP-1 agonists are used for type 2 diabetes and weight loss management, CV risk reduction, and obstructive sleep apnea
- They mimic the GLP-1 hormone, increasing insulin secretion, reducing glucagon secretion, slowing gastric emptying, and reducing appetite
- Common side effects include: nausea, constipation, diarrhea, abdominal pain, reflux

GLP-1 RECEPTOR AGONIST NOMENCLATURE

Type 2 Diabetes	Scientific Name	Weight Management
Victoza	liraglutide	Saxenda
Ozempic	semaglutide	Wegovy
Mounjaro	tirzepatide	Zepbound



Diabetes Obesity Metabolism, First published: 25 February 2025, DOI: (10.1111/dom.16275)

Look M, et al.Body composition changes during weight reduction with tirzepatide in the SURMOUNT-1 study of adults with obesity or overweight. Diabetes, Obesity, Metabolism Feb 25, 2025

BODY COMPOSITION IN PATIENTS TAKING GLP-1S

Fat Mass Loss

- Significant Reduction: GLP-1 receptor agonists are effective in reducing body fat. Studies show that these medications primarily reduce fat mass, with a significant decrease in body weight, BMI, and waist circumference

Genetic Insights

- A Mendelian randomization study found that genetic traits mimicking GLP-1 receptor agonism resulted in a more pronounced decrease in fat mass compared to muscle mass.

BODY COMPOSITION IN PATIENTS TAKING GLP-1S

Muscle Mass Loss

- Variable Impact: The impact on muscle mass varies across studies. Some research indicates that between 20% and 50% of the total weight lost may be lean body mass (LBM), which includes muscle
- Adaptive Changes: Recent evidence suggests that muscle changes with GLP-1 receptor agonists may be adaptive, meaning they align with expected physiological responses to weight loss, maintaining muscle quality and function

BODY COMPOSITION IN PATIENTS TAKING GLP-1S

- Older individuals or those with pre-existing muscle conditions may experience more significant muscle loss, raising concerns about sarcopenia

Overall Impact

- Body Composition: While GLP-1 receptor agonists primarily reduce fat mass, there is a need for more precise measurements of muscle mass and function to fully understand their impact on body composition
- Future Research: Ongoing studies aim to develop strategies to maintain or improve muscle mass during GLP-1 therapy, emphasizing the importance of exercise and nutritional support

PROTEIN INTAKE AND MUSCLE PRESERVATION

- Protein is crucial for maintaining muscle mass and preventing muscle loss during weight loss with GLP-1 agonists
- Aim for 0.8-1 gram of protein per kilogram of body weight daily to minimize muscle loss
- Include lean protein sources like chicken, fish, tofu, beans, and low-fat dairy in every meal

NUTRIENT DEFICIENCIES WITH GLP-1 AGONISTS

- Common deficiencies include protein, vitamin D, calcium, vitamin B12, and iron
- Reduced appetite and gastrointestinal side effects can exacerbate deficiencies
- Consider a daily multivitamin to supplement dietary intake

PRACTICAL NUTRITION STRATEGIES

- Eat high-protein foods first to ensure adequate intake
- Protein Supplements: Consider adding protein shakes or bars if solid foods are difficult to tolerate due to nausea.
- Prioritize nutrient-dense foods like vegetables, whole grains, and healthy fats
- Stay hydrated with at least 80 ounces of fluid per day
- Eat smaller, more frequent meals to manage appetite suppression and gastrointestinal side effects

PRACTICAL NUTRITION STRATEGIES

Animal-Based Proteins

- Lean Meats: Chicken breast, turkey breast, lean beef cuts, and pork tenderloin.
- Fish and Seafood: Salmon, tuna, cod, shrimp, and other fish.
- Eggs: Rich in protein and monounsaturated fats, which can help trigger GLP-1 release
- Dairy: Low-fat Greek yogurt, cottage cheese, and whey protein powder

PRACTICAL NUTRITION STRATEGIES

Plant-Based Proteins

- Legumes: Lentils, chickpeas, black beans, and other types of beans
- Soy Products: Tofu, tempeh, and seitan
- Plant-Based Alternatives: Beyond Meat, Quorn, and pea protein powder
- Nuts and Seeds: While not as high in protein as other sources, nuts and seeds like almonds and chia seeds can contribute to overall protein intake

PRACTICAL NUTRITION STRATEGIES

- Eat High-Protein Foods First: Prioritize protein at the start of meals to ensure adequate intake
- Use Protein Supplements: If solid foods are difficult due to nausea, consider protein shakes or bars
- Incorporate Protein-Rich Snacks: Options like Greek yogurt, protein bars, or edamame can help maintain satiety between meals

By focusing on these protein-rich foods and incorporating them into your meals and snacks, you can support muscle health and optimize the benefits of GLP-1 therapy.

EXERCISE AND LIFESTYLE CONSIDERATIONS

- Incorporate resistance exercises to support muscle maintenance and strength
- Monitor and adjust diet and exercise based on individual needs and side effects
- Consult with healthcare providers or exercise physiologists regularly for personalized advice

KEY COMPONENTS OF AN IDEAL DIET

High-Protein Foods:

- Protein is essential for maintaining muscle mass and supporting overall health, especially during weight loss
- Inadequate protein intake can lead to muscle loss, reduced metabolic rate, and increased risk of sarcopenia
- Recommended Intake: Aim for 0.8-1.5 grams of protein per kilogram of body weight daily, depending on activity level and health goals

Sources: Include lean proteins like chicken, fish, tofu, beans, and low-fat dairy in every meal

KEY COMPONENTS OF AN IDEAL DIET

Healthy Fats:

- Healthy fats support hormone production and can enhance GLP-1 secretion, aiding in blood sugar control
- Sources: Avocados, nuts, olive oil, and fatty fish

Hydration:

- Adequate hydration is crucial to prevent dehydration and support digestion, especially since GLP-1 agonists can slow gastric emptying
- Drink at least 48-80 ounces of water daily
- Divide weight in pounds by 2 and drink that many ounces daily

METHODS FOR MONITORING MUSCLE MASS

Body Composition Analysis

- Dual-Energy X-ray Absorptiometry (DXA): This method provides detailed measurements of body fat and lean mass, including muscle mass
- Bioelectrical Impedance Analysis (BIA): A non-invasive technique that estimates body composition by measuring electrical resistance

METHODS FOR MONITORING MUSCLE MASS

Anthropometric Measurements:

- Circumference Measurements: Regularly measuring the circumference of your arms, thighs, and waist can help track changes in muscle mass.
- Skinfold Measurements: Using calipers to measure subcutaneous fat can indirectly assess muscle mass changes.

Muscle Strength Tests:

- Grip Strength: A simple and effective way to monitor muscle strength, which can reflect overall muscle health
- Resistance Exercises: Regularly performing exercises like squats, lunges, and push-ups can help assess muscle function and strength

SUMMARY: DETRIMENTAL EFFECTS OF INADEQUATE PROTEIN INTAKE

- Muscle Loss: Inadequate protein intake can lead to muscle loss, reducing metabolic rate and potentially hindering long-term weight management
- Increased Hunger: Protein is highly satiating, and insufficient intake may lead to increased hunger and overeating of high-calorie foods, impacting weight loss and blood sugar control
- Health Complications: Protein deficiency can contribute to various health issues, including hair loss and impaired immune function

SUMMARY: IMPACT OF INADEQUATE PROTEIN INTAKE ON WEIGHT LOSS WITH GLP-1 AGONISTS

Nutrient Deficiencies

- Risk: Reduced appetite from GLP-1 agonists can lead to overall decreased food intake, increasing the risk of nutrient deficiencies, including protein, vitamins, and minerals
- Consequences: Deficiencies can impair overall health, affecting energy levels, immune function, and potentially leading to issues like hair loss
- Consequences: Inadequate protein can lead to fatigue, making it difficult to adhere to exercise routines, further impacting muscle mass and weight loss.

SUMMARY: RECOMMENDATIONS FOR ADEQUATE PROTEIN INTAKE

- Protein Goals: Aim for 0.8-1.5 grams of protein per kilogram of body weight daily, depending on activity level and health goals
- High-Protein Foods: Include lean protein sources like chicken, fish, tofu, beans, and low-fat dairy in every meal, protein shakes, bars, supplements
- Meal Frequency: Eat smaller, more frequent meals to manage appetite suppression and ensure consistent protein intake

By prioritizing adequate protein intake, individuals using GLP-1 agonists can better maintain muscle mass, support satiety, and enhance overall weight loss outcomes

SELECTED REFERENCES

- Wilding, J. P. H., et al. (2021). Once-weekly semaglutide in adults with overweight or obesity. New England Journal of Medicine, 384(11), 989–1002. doi: 10.1056/NEJMoa2032183
- West, D. W. D., et al. (2015). Resistance training-induced changes in integrated myofibrillar protein synthesis are related to hypertrophy only after significant muscle damage. Journal of Applied Physiology, 119(1), 141–148. doi: 10.1152/japplphysiol.00134.2015
- Pharmacovigilance study of GLP-1 receptor agonists for metabolic and nutritional adverse effects.
- Healthline. (n.d.). *GLP-1 diet: Foods to eat and foods to avoid*. Retrieved from https://www.healthline.com/health/nutrition/glp-1-diet