OPTAVIA ACTIVE™

Frequently Asked Questions for OPTAVIA ACTIVE™ Whey Protein

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Common Abbreviations:

EAAs: Essential Amino Acids
BCAAs: Branched Chain Amino Acids

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General Product Information

1. **How do I use OPTA**VIA **ACTIVE Whey Protein?**

   For best results, consume within 60 minutes after exercise or enjoy anytime as part of your protein-balanced meal plan.

   You may use up to 3 servings of **OPTA**VIA ACTIVE Whey Protein daily as part of the Optimal Health 3 & 3 ACTIVE Plan™ or in conjunction with any healthy eating meal plan based on your personal needs (e.g., exercise level, daily calorie needs, etc.). One serving of whey protein counts as 1 Healthy Exchange on the Optimal Health 3 & 3 ACTIVE Plan. Be sure to monitor and track your intake throughout your journey to make appropriate adjustments to your Healthy Eating and Healthy Motion habits.

   Sample Day

   - Optimal Health 3 & 3 ACTIVE Plan + Whey Protein
   - 3 Balanced Meals
   - 3 **OPTA**VIA Fuelings
   - 2 servings of **OPTA**VIA ACTIVE Whey Protein, one first thing in the morning as part of a balanced meal (ex: Whey Protein with oatmeal and berries) and a second serving within 60 minutes after exercise.

   OPTAVIA ACTIVE Whey Protein is not recommended for use while on the Optimal Weight meal plans, including the Optimal Weight ACTIVE meal plans. It was not designed to fit within the nutritional guardrails of the Optimal Weight meal plans and therefore, could impact your weight loss results.

2. **How do I prepare OPTA**VIA **ACTIVE Whey Protein?**

   Mix one level scoop with 6-8 fl. oz. cold water in a shaker or BlenderBottle® and shake until dissolved. For best results, consume within 60 minutes after exercise or enjoy anytime as part of your protein-balanced meal plan.

3. **Can I mix OPTA**VIA **ACTIVE Whey Protein with OPTA**VIA **Fuelings?**

   It is a personal choice if you'd like to mix the whey protein with an **OPTA**VIA Fueling (reminder: whey protein is not recommended for the Optimal Weight meal plans, including the Optimal Weight 5 & 1 ACTIVE Plan™). Some people, for example, may like to sprinkle whey protein on their oatmeal or mix it in with a shake. Mixing the whey protein with a Fueling may impact taste, appearance, texture, and other sensory components.

4. **What flavors do OPTA**VIA **ACTIVE Whey Protein come in?**

   Vanilla and chocolate.

5. **What is OPTA**VIA **ACTIVE Whey Protein sweetened with?**

   Contains 2% or less of steviol glycosides.

6. **Is OPTA**VIA **ACTIVE Whey Protein Kosher? Vegetarian? Soy-free? Dairy-free?**

   OPTAVIA ACTIVE Whey Protein is Kosher dairy, vegetarian-friendly, and soy-free. The whey protein contains dairy.

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7. **What is the benefit of OPTA**VIA **ACTIVE Whey Protein compared to others on the market?**

   OPTAVIA ACTIVE Whey Protein contains 24g of high-quality protein and when paired with a healthy diet and resistance exercise, can help build muscle and strength.

   - Contains no sweeteners, colors or flavors from artificial sources, and no stimulants
   - Certified by an independent third-party organization, Informed Sport
   - Readily digestible and absorbed
   - Comes with the support and encouragement of your independent **OPTA**VIA Coach & Community

8. **What is whey protein concentrate?**

   Milk is made up of two major types of proteins, casein and whey. Whey protein is the protein contained in whey, the watery portion of milk that separates from the curds when making cheese. Whey protein can undergo several processing steps to increase its protein content, while reducing its fat and carbohydrate content. Whey protein concentrate has had some of the non-protein components of whey removed to yield a higher percentage of protein compared to carbohydrate and fat.

9. **Where is OPTA**VIA **ACTIVE Whey Protein manufactured?**

   Made in the USA with globally sourced ingredients.

10. **Is OPTA**VIA **ACTIVE Whey Protein certified?**

    Yes. **OPTA**VIA ACTIVE Whey Protein is certified by an independent third-party organization, Informed Sport. This certification tests and certifies that the product does not contain any banned substances. For more information about Informed Sport certification, visit their site at https://sport.wetestyoutrust.com/.

11. **Why take OPTA**VIA **ACTIVE Whey Protein within 60 minutes after exercise?**

    OPTAVIA ACTIVE Whey Protein is a fast-digesting protein source, making it beneficial for post-workout consumption. It provides a complete profile of all the amino acids, including the EAAs. You can consume **OPTA**VIA ACTIVE Whey Protein within 60 minutes after your workout to further support muscle recovery, muscle protein synthesis and muscle growth.

How to Incorporate into OPTAVIA Plans

12. **How does OPTA**VIA **ACTIVE Whey Protein count On Plan? Can I use it on the Optimal Weight 5 & 1 ACTIVE Plan?**

    You may use **OPTA**VIA ACTIVE Whey Protein as part of the Optimal Health 3 & 3 ACTIVE Plan or in conjunction with any healthy eating meal plan. One serving of **OPTA**VIA ACTIVE Whey Protein can count as 1 Healthy Exchange on the Optimal Health 3 & 3 ACTIVE Plan. Be sure to monitor and track your intake throughout your journey to make appropriate adjustments to your Healthy Eating and Healthy Motion habits.

    OPTAVIA ACTIVE Whey Protein is not recommended for use while following any of the Optimal Weight meal plans (i.e., Optimal Weight 5 & 1 Plan®, Optimal Weight 5 & 1 ACTIVE Plan, transition, Optimal Weight 4 & 2 & 1 Plan®, Optimal Weight 4 & 2 ACTIVE Plan™, Optimal Weight 5 & 2 & 2 Plan®). It was not designed to fit within the nutritional guardrails of the Optimal Weight meal plans and therefore, could impact your weight loss results.

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13. Which of the OPTAVIA **ACTIVE products can I use on the Optimal Weight 5 & 1 ACTIVE Plan?**

At this time the **OPTA**VIA ACTIVE EAAs are the only products that can be consumed on the Optimal Weight 5 & 1 ACTIVE Plan.

14. Can I substitute OPTAVIA **ACTIVE EAAs or Whey Protein for my lean option of the Lean & Green™ Meal?**

We do not recommend using **OPTA**VIA ACTIVE EAAs or Whey Protein as the lean option for the Lean & Green Meal.

There is an ever-changing and increasing number of products on the market but the **OPTA**VIA Program is designed to be hassle-free and simple to follow. Many different foods can fit within the nutritional parameters of the program; however, the Lean & Green Meal is designed with specific nutritional requirements; therefore, we recommend sticking to the plan as written for best success. This simplified approach ensures healthy choices become second nature as it avoids any unnecessary confusion and over-complication with nutritional parameters.

We do not recommend using **OPTA**VIA ACTIVE Whey Protein on any of the Optimal Weight meal plans; they can be incorporated during the Optimization phase of your journey.

The Lean & Green Meal is designed to help you develop the healthy habit of preparing healthy meals for long term success.

15. Can I use OPTAVIA **ACTIVE Whey Protein during transition?**

No, we do not recommend incorporating **OPTA**VIA ACTIVE Whey Protein during transition for a few reasons: 1) to allow you to reintroduce all the food groups and learn proper portion sizes for healthy eating and 2) to keep transition simple-to-follow as you gradually increase your calorie intake and allow your body to adjust. You may use **OPTA**VIA ACTIVE Whey Protein as part of the Optimal Health 3 & 3 ACTIVE Plan or in conjunction with any healthy eating meal plan.

16. How do I incorporate OPTAVIA **ACTIVE products on the Optimal Health 3 & 3 ACTIVE Plan™? What do they count as?**

You may use **OPTA**VIA ACTIVE Whey Protein as part of the Optimal Health 3 & 3 ACTIVE Plan or in conjunction with any healthy eating meal plan. One serving of **OPTA**VIA ACTIVE Whey Protein can count as 1 Healthy Exchange on the Optimal Health 3 & 3 ACTIVE Plan. If you choose to use the EAAs as well, two servings count as 1 Healthy Exchange.

Be sure to monitor and track your intake throughout your journey to make appropriate adjustments to your Healthy Eating and Healthy Motion habits.

Optimal Health 3 & 3 ACTIVE Plan Sample Day with Whey Protein + Exercise

- 3 Balanced Meals
- 3 **OPTA**VIA Fuelings
- 2 servings of **OPTA**VIA ACTIVE Whey Protein

Note: Optimal Health 3 & 3 ACTIVE Plan Sample Day with EAAs + Exercise would be the same as the above; just swap the whey protein with EAAs.

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Optimal Health 3 & 3 ACTIVE Plan Sample Day with EAAs and Whey Protein + Exercise

- 3 Balanced Meals
- 3 **OPTA**VIA Fuelings
- 1 serving of **OPTA**VIA ACTIVE EAAs
- 1 servings of **OPTA**VIA ACTIVE Whey Protein

Optimal Health 3 & 3 ACTIVE Plan Sample Day with EAAs and Whey Protein + Vigorous Lifestyle/Ultra Health

- 3 Balanced Meals
- 3 **OPTA**VIA Fuelings
- 2 serving of **OPTA**VIA ACTIVE EAAs
- 2 servings of **OPTA**VIA ACTIVE Whey Protein

17. Can I substitute another Product for one of the OPTAVIA ACTIVE Products?

For best results, we recommend using **OPTA**VIA ACTIVE products. **OPTA**VIA ACTIVE EAAs were designed for the Optimal Weight 5 & 1 ACTIVE Plan and all **OPTA**VIA ACTIVE products have no colors, flavors, or sweeteners from artificial sources, and no stimulants. In addition, the support and encouragement of your **OPTA**VIA Coach is one of the biggest differences we offer. They will continue to support you on your journey as you incorporate the Healthy Habit of Motion along with the other Habits of Health®.

18. Does OPTAVIA ACTIVE Whey Protein count towards my water intake?

Yes. Keep in mind that hydration needs vary from person to person, especially with exercise, so we encourage you to listen to your body and to talk with your healthcare provider for additional guidance. We recommend drinking 64 ounces of water each day. Consult with your healthcare provider prior to changing the amount of water you drink as it can affect certain health conditions and medications.

Exercise Questions

19. What are the exercise recommendations for the Optimal Health 3 & 3 ACTIVE Plan and Optimization?

For those in Optimization and following the Optimal Health 3 & 3 ACTIVE Plan, we recommend incorporating at least 200 to 300 minutes of moderate exercise per week to help prevent weight regain [51,52]. That's about 60 minutes of physical activity most days of the week. It's important to maintain an exercise routine that incorporates a variety of physical activities, especially strength training and medium to high intensity aerobic exercise.

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20. At what level of exercise (duration, time, intensity) do OPTAVIA **ACTIVE products become beneficial on the Optimal Health 3 & 3 ACTIVE Plan?**

- **OPTA**VIA ACTIVE EAAs activate muscle protein synthesis and help support healthy muscle, which is beneficial with any level of exercise, including non-exercise days. They have been scientifically formulated to provide the right balance of EAAs needed for optimal muscle protein synthesis.
- **OPTA**VIA ACTIVE Whey Protein is a source of high-quality protein that contributes to your daily protein intake, both of which are beneficial with any level of exercise, including non-exercise days. Individuals who engage in vigorous and/or endurance exercise may benefit from additional calories and protein and thus, may want to consider havin additional servings of **OPTA**VIA ACTIVE Whey Protein spaced evenly throughout the day (up to 3 servings per day is generally recommended).

Keep in mind, additional supplementation will not provide extra benefit as the body can only utilize a certain amount of amino acids/protein at one time. Amino acids/protein still contribute calories, so for best results, we recommend taking as directed on the package. Excess of anything (i.e., water, vitamins/ minerals, supplements, food, medication, etc.) carry risks, therefore, we recommend consuming **OPTA**VIA ACTIVE products as directed on the package.

21. Do I have to exercise to use OPTAVIA **ACTIVE Whey Protein? I don't exercise, should I take OPTA**VIA **ACTIVE Whey Protein?**

OPTAVIA ACTIVE Whey Protein helps support healthy muscle for both exercisers and non-exercisers. Even if you do not regularly exercise, daily lifestyle activities, such as household work, gardening, and walking, all count as movement, and **OPTA**VIA ACTIVE Whey Protein can be used in conjunction with other protein foods to help you consume adequate protein throughout the day. A protein-balanced meal plan may help keep you feeling full and satisfied, which can be a helpful tool for long term weight management.

In general, there are many benefits of healthy muscle, including physical function, weight management, blood sugar regulation, growth and repair of tissues, and quality of life to name a few.

22. Will OPTAVIA **ACTIVE Whey Protein help build muscle or bulk up?**

OPTAVIA ACTIVE Whey Protein can help build lean muscle and strength with resistance exercise. Experts recommend resistance/strength training at least 2 times per week with a routine that targets all of the major muscle groups; this can be low intensity (yoga, pilates) or medium/high intensity (squats, weight training) resistance/strength exercise[51]. As you progress, consider adding other types of exercise into your routine for optimal health like aerobic and lifestyle exercise.

23. Will OPTAVIA **ACTIVE Whey Protein help me recover from exercise faster?**

If taken as directed*, **OPTA**VIA ACTIVE Whey Protein supports post-exercise muscle recovery and reduced muscle soreness after exercise. The branched chain amino acids signal our body to make protein and all of the EAAs work together to make new muscle protein.

**For best results, consume within 60 minutes after exercise or enjoy anytime as part of your protein-balanced meal plan.*

24. How do I determine if I should take OPTAVIA **ACTIVE EAAs, Whey Protein, or both?**

Choose **OPTA**VIA ACTIVE EAAs if you...

- Are in weight loss, transition, or Optimization
- Want a lower calorie option to stimulate muscle protein synthesis/promote
- Prefer a fruit-flavored drink
- Want something that "feels lighter"

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Choose **OPTA**VIA ACTIVE Whey Protein if you...

- Are in weight maintenance/Optimization
- Want more energy to fuel your higher intensity/vigorous activity
- Are trying to add more protein to your overall intake
- Are feeling hungry
- Want an easy protein fix in the morning, afternoon, or right before bed to stimulate muscle protein synthesis throughout the day and overnight

Choose both if you...

- Have a vigorous active lifestyle and/or have multiple workouts a day, aiming for ultra health
- Want more energy to fuel your higher intensity/vigorous activity
- Are trying to add more protein to your overall intake
- Are feeling hungry
- Want variety and flexibility with taste, mouthfeel, etc.

Claims

25. What are **OPTA**VIA **ACTIVE Whey Protein product claims?**

Nutrient Content Claims

- High in protein
- Excellent source of protein

Protein Quality Claims

- High quality protein
- High quality whey/dairy protein
- Readily digestible and absorbed

Muscle Health Claims

- Activates muscle protein synthesis/activates the muscle building process
- Helps support healthy muscle
- Helps support muscle health

Muscle Strength and/or Growth Claims

- Supports lean muscle/muscle mass growth
- Supports muscle growth
- Helps build and maintain mass and strength (with resistance exercise)
- Build lean muscle and strength (with resistance exercise)

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Physical Performance and/or Recovery Claims

- Supports post-workout recovery
- Supports muscle recovery after intense/strenuous activity
- With essential amino acids (EAAs)/branched chain amino acids (BCAAs) to support post-workout recovery
- (Essential Amino Acids) Reduce muscle soreness after exercise
- Alleviate muscle soreness after exercise
- Aid in/support post-exercise muscle recovery
- Reduce muscle damage and accelerate muscle recovery after exercise
- Fuel post-workout recovery

Retention of Lean Mass on a Reduced-Calorie Diet Claims

- As part of a reduced-calorie diet, adequate protein consumption can aid in the retention of lean muscle mass
- As part of a reduced-calorie diet, adequate consumption of proteins and amino acids aids in the retention of lean muscle mass

Other Protein/Satiety Claims

- Anytime protein or post-workout recovery
- Protein helps to increase (feelings of) satiety/fullness
- Protein can help to reduce (feelings of) hunger

Medical Questions / Considerations

26. Are there any medical conditions or medications that would prohibit the use of OPTAVIA **ACTIVE Whey Protein or warrant any special considerations?**

Please refer to our full medical disclaimer for recommendations and considerations regarding the **OPTA**VIA program and products. We recommend you consult with your healthcare provider about the program and **OPTA**VIA ACTIVE Whey Protein prior to and throughout your journey for personalized guidance.

27. I am lactose intolerant, can I use OPTAVIA **ACTIVE Whey Protein?**

Whey protein concentrate contains some lactose. Whether or not you can consume whey protein if you are lactose intolerant will depend on several factors, including the severity of your lactose intolerance and your personal threshold of tolerance. Some people who experience mild discomfort when eating large quantities of dairy may not be bothered by the relatively small amount of lactose in whey protein, however, those with stronger intolerances may not be able to digest lactose in the whey protein. We recommend you consult with your healthcare provider for personalized guidance.

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28. Can kids and/or teens use OPTAVIA **ACTIVE Whey Protein?**

Per our medical disclaimer, "Do NOT use any **OPTA**VIA plan if you are pregnant or under the age of 13." The **OPTA**VIA program and products, including **OPTA**VIA ACTIVE Whey Protein and EAAs, are not appropriate for children under the age of 13.

We recommend children and teens incorporate all food groups, like fruit and dairy, into their daily meal plan to promote healthy habits.

OPTAVIA ACTIVE Whey protein and EAAs are recommended for those 18 years and older. These products were not designed for and/or tested in a teen population. Therefore, we recommend you consult with your teen's healthcare provider.

Children and teens have unique nutritional needs required for optimal growth and well-being. A child/teen's body is still developing both physically and mentally. The amount of vitamins, minerals, and other essential nutrients required to properly support growth and development are unique to this stage in the life cycle.

29. Can I take other exercise or dietary supplements in conjunction with OPTAVIA **ACTIVE products?**

It is a personal choice whether you take additional supplements in conjunction with **OPTA**VIA ACTIVE products. Typically, we do not recommend taking vitamin and mineral supplements while on the Optimal Weight meal plans unless prescribed by a healthcare provider. Each **OPTA**VIA Fueling contains 20% of the daily value for at least 20 vitamins and minerals (note: vitamin D is 50% of the daily value per Fueling), which means on the Optimal Weight 5 & 1 ACTIVE Plan you are receiving at least 100% of the daily value for those 20 vitamins and minerals. For some individuals, additional supplementation may be appropriate if prescribed by their healthcare provider; for example, those with vitamin and mineral deficiencies, certain medical conditions, or a history of gastric bypass surgery.

We recommend you talk to your healthcare provider about the program and any dietary supplements you are or are considering taking. They can assess your personal needs, provide recommendations, and monitor as they deem appropriate.

30. Can I adjust the dose recommendations for OPTAVIA **ACTIVE Whey Protein?**

OPTAVIA ACTIVE Whey Protein is formulated to provide the right balance of protein needed to help support healthy muscle. Additional protein will not necessarily provide extra benefit as the body can only utilize a certain amount of protein at one time. Protein still contributes calories, so for best results, we recommend taking as directed on the package.

Excess of anything (i.e., water, vitamins/ minerals, supplements, food, medication, etc.) carry risks, therefore, we recommend consuming **OPTA**VIA ACTIVE Whey Protein as directed on the package.

31. Can I use OPTAVIA **ACTIVE EAAs and OPTA**VIA **ACTIVE Whey Protein together? If so, how?**

Yes, you may use both **OPTA**VIA ACTIVE EAAs and whey Protein together if you are in the Optimization phase of your journey. However, we do not recommend whey protein on any of the Optimal Weight meal plans.

If using **OPTA**VIA ACTIVE EAAs and Whey Protein together during Optimization, we recommend evenly spacing your protein intake throughout the day. Start the day with either 1 serving of EAAs or whey protein and have 1 serving of EAAs or whey protein during or immediately after exercise. The additional servings of EAAs (up to 2 servings per day) or whey protein (up to 3 servings generally recommended) can be consumed with other meals/Fuelings throughout the day.

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Optimal Health 3 & 3 ACTIVE Plan Sample Day with EAAs and Whey Protein + Exercise

- 3 Balanced Meals
- 3 **OPTA**VIA Fuelings
- 1 serving of **OPTA**VIA ACTIVE EAAs
- 1 servings of **OPTA**VIA ACTIVE Whey Protein

Optimal Health 3 & 3 ACTIVE Plan Sample Day with EAAs and Whey Protein + Vigorous Lifestyle/Ultra Health

- 3 Balanced Meals
- 3 **OPTA**VIA Fuelings
- 2 serving of **OPTA**VIA ACTIVE EAAs
- 2 servings of **OPTA**VIA ACTIVE Whey Protein

32. Can I combine OPTAVIA **ACTIVE EAAs and OPTA**VIA **ACTIVE Whey Protein into one drink?**

It is a personal choice whether you'd like to combine EAAs and Whey Protein into one drink. Two considerations: 1) Combining the **OPTA**VIA ACTIVE EAAs and Whey Protein may help you increase your total protein intake for the day. There is, however, a threshold for muscle protein synthesis, so if your goal is to maximize muscle protein synthesis, you will likely be able to achieve that by doing one or the other at one time. Distributing adequate protein intake throughout the day will help maximize muscle protein synthesis. 2) Combining **OPTA**VIA ACTIVE EAAs and Whey Protein may impact taste, appearance, texture, and other sensory components.

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References

1. Albert J, Weisell R, Lee WTK, Tomé D, Kurpad AV, Uauy R. Research Approaches and Methods for Evaluating the Protein Quality of Human Foods Proposed by an FAO Expert Working Group in 2014. The Journal of Nutrition. 2016;146(5):929-932. doi:10.3945/jn.115.222109

2. Organization WH. Protein Quality Evaluation: Report of the Joint FAO/WHO Expert Consultation, Bethesda, Md., USA 4-8 December 1989. Food & Agriculture Org.; 1991.

3. Boye J, Wijesinha-Bettoni R, Burlingame B. Protein quality evaluation twenty years after the introduction of the protein digestibility corrected amino acid score method. The British journal of nutrition. Aug 2012;108 Suppl 2:S183-211. doi:10.1017/S0007114512002309

4. USAID. Whey Protein Concentrate Commodity Fact Sheet | Agriculture and Food Security | Food Assistance | U.S. Agency for International Development. 2023. Wed, 03/22/2023 - 10:48. https://www.usaid.gov/whey-protein-concentrate-commodity-fact-sheet

5. Rutherfurd SM, Fanning AC, Miller BJ, Moughan PJ. Protein digestibility-corrected amino acid scores and digestible indispensable amino acid scores differentially describe protein quality in growing male rats. The Journal of Nutrition. 2015;145(2):372-379.

6. Boirie Y, Dangin M, Gachon P, Vasson MP, Maubois JL, Beaufrere B. Slow and fast dietary proteins differently modulate postprandial protein accretion. Proc Natl Acad Sci U S A. Dec 23 1997;94(26):14930-5.

7. Burd NA, Yang Y, Moore DR, Tang JE, Tarnopolsky MA, Phillips SM. Greater stimulation of myofibrillar protein synthesis with ingestion of whey protein isolate v. micellar casein at rest and after resistance exercise in elderly men. British Journal of nutrition. 2012;108(6):958-962.

8. Dangin M, Boirie Y, Guillet C, Beaufrère B. Influence of the protein digestion rate on protein turnover in young and elderly subjects. The Journal of nutrition. 2002;132(10):3228S-3233S.

9. Dangin M, Boirie Y, Garcia-Rodenas C, et al. The digestion rate of protein is an independent regulating factor of postprandial protein retention. American journal of physiology Endocrinology and metabolism. Feb 2001;280(2):E340-8.

10. Dangin M, Guillet C, Garcia-Rodenas C, et al. The rate of protein digestion affects protein gain differently during aging in humans. The Journal of physiology. 2003;549(2):635-644.

11. Loveday SM. Protein digestion and absorption: the influence of food processing. Nutrition research reviews. 2022:1-50.

12. Schoenfeld BJ, Aragon AA. How much protein can the body use in a single meal for muscle-building? Implications for daily protein distribution. Journal of the International Society of Sports Nutrition. 2018;15(1):10.

13. Biolo G, Maggi SP, Williams BD, Tipton KD, Wolfe RR. Increased rates of muscle protein turnover and amino acid transport after resistance exercise in humans. The American journal of physiology. Mar 1995;268(3 Pt 1):E514-20. doi:10.1152/ajpendo.1995.268.3.E514

14. Borsheim E, Cree MG, Tipton KD, Elliott TA, Aarsland A, Wolfe RR. Effect of carbohydrate intake on net muscle protein synthesis during recovery from resistance exercise. J Appl Physiol (1985). Feb 2004;96(2):674-8. doi:10.1152/japplphysiol.00333.2003

15. MacDougall JD, Gibala MJ, Tarnopolsky MA, MacDonald JR, Interisano SA, Yarasheski KE. The time course for elevated muscle protein synthesis following heavy resistance exercise. Canadian journal of applied physiology = Revue canadienne de physiologie appliquee. Dec 1995;20(4):480-6.

16. Miller SL, Tipton KD, Chinkes DL, Wolf SE, Wolfe RR. Independent and combined effects of amino acids and glucose after resistance exercise. Medicine and science in sports and exercise. Mar 2003;35(3):449-55. doi:10.1249/01.MSS.0000053910.63105.45.

17. Yarasheski KE, Zachwieja JJ, Bier DM. Acute effects of resistance exercise on muscle protein synthesis rate in young and elderly men and women. The American journal of physiology. Aug 1993;265(2 Pt 1):E210-4. doi:10.1152/ajpendo.1993.265.2.E210.

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18. Tang JE, Moore DR, Kujbida GW, Tarnopolsky MA, Phillips SM. Ingestion of whey hydrolysate, casein, or soy protein isolate: effects on mixed muscle protein synthesis at rest and following resistance exercise in young men. Journal of applied physiology. 2009/09/01 2009;107(3):987-992. doi:10.1152/japplphysiol.00076.2009.

19. Witard OC, Jackman SR, Breen L, Smith K, Selby A, Tipton KD. Myofibrillar muscle protein synthesis rates subsequent to a meal in response to increasing doses of whey protein at rest and after resistance exercise. The American Journal of Clinical Nutrition. 2014;99(1):86-95. doi:10.3945/ajcn.112.055517.

20. Jager R, Kerksick CM, Campbell BI, et al. International Society of Sports Nutrition Position Stand: protein and exercise. Journal of the International Society of Sports Nutrition. 2017;14:20. doi:10.1186/s12970-017-0177-8.

21. Gropper SS, Smith JL, Groff JL. Advanced Nutrition and Human Metabolism. 4th Edition ed. Thomas Wadsworth; 2005.

22. Bohé J, Low JFA, Wolfe RR, Rennie MJ. Rapid report: Latency and duration of stimulation of human muscle protein synthesis during continuous infusion of amino acids. The Journal of physiology. 2001;532(2):575-579.

23. Fujita S, Dreyer HC, Drummond MJ, et al. Nutrient signalling in the regulation of human muscle protein synthesis. The Journal of physiology. 2007;582(2):813-823.

24. Institute of Medicine, Food and Nutrition Board, Dietary Reference Intakes: energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein and amino acids. 2005.

25. Phillips SM, Tang JE, Moore DR. The role of milk-and soy-based protein in support of muscle protein synthesis and muscle protein accretion in young and elderly persons. Journal of the American College of Nutrition. 2009;28(4):343-354.

26. Cermak NM, Res PT, de Groot LC, Saris WH, van Loon LJ. Protein supplementation augments the adaptive response of skeletal muscle to resistance-type exercise training: a meta-analysis. Am J Clin Nutr. Dec 2012;96(6):1454-64. doi:10.3945/ajcn.112.037556.

27. Morton RW, Murphy KT, McKellar SR, et al. A systematic review, meta-analysis and meta-regression of the effect of protein supplementation on resistance training-induced gains in muscle mass and strength in healthy adults. British journal of sports medicine. 2018;52(6):376-384.

28. Pasiakos SM, McLellan TM, Lieberman HR. The effects of protein supplements on muscle mass, strength, and aerobic and anaerobic power in healthy adults: a systematic review. Sports Medicine. 2015;45(1):111-131.

29. Stokes T, Hector A, Morton R, McGlory C, Phillips S. Recent Perspectives Regarding the Role of Dietary Protein for the Promotion of Muscle Hypertrophy with Resistance Exercise Training. Nutrients. 2018;10(2):180. doi:10.3390/nu10020180.

30. Pasiakos SM, Lieberman HR, McLellan TM. Effects of protein supplements on muscle damage, soreness and recovery of muscle function and physical performance: a systematic review. Sports Medicine. 2014;44:655-670.

31. Wilkinson SB, Tarnopolsky MA, Macdonald MJ, Macdonald JR, Armstrong D, Phillips SM. Consumption of fluid skim milk promotes greater muscle protein accretion after resistance exercise than does consumption of an isonitrogenous and isoenergetic soy-protein beverage. Am J Clin Nutr. Apr 2007;85(4):1031-40.

32. Lunn WR, Pasiakos SM, Colletto MR, et al. Chocolate milk and endurance exercise recovery: protein balance, glycogen, and performance. Medicine & Science in Sports & Exercise. 2012;44(4):682-691.

33. Cintineo HP, Arent MA, Antonio J, Arent SM. Effects of protein supplementation on performance and recovery in resistance and endurance training. Frontiers in nutrition. 2018:83.

34. Flakoll PJ, Judy T, Flinn K, Carr C, Flinn S. Postexercise protein supplementation improves health and muscle soreness during basic military training in Marine recruits. J Appl Physiol (1985). Mar 2004;96(3):951-6. doi:10.1152/japplphysiol.00811.2003.

35. Nosaka K, Sacco P, Mawatari K. Effects of amino acid supplementation on muscle soreness and damage. International journal of sport nutrition and exercise metabolism. Dec 2006;16(6):620-35.

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36. Greer BK, Woodard JL, White JP, Arguello EM, Haymes EM. Branched-chain amino acid supplementation and indicators of muscle damage after endurance exercise. International journal of sport nutrition and exercise metabolism. 2007;17(6):595-607.

37. Ra SG, Miyazaki T, Kojima R, et al. Effect of BCAA supplement timing on exercise-induced muscle soreness and damage: a pilot placebo-controlled double-blind study. The Journal of sports medicine and physical fitness. Nov 2018;58(11):1582-1591. doi:10.23736/s0022-4707.17.07638-1.

38. Matsui Y, Takayanagi S, Ohira T, et al. Effect of a leucine-enriched essential amino acids mixture on muscle recovery. Journal of physical therapy science. Jan 2019;31(1):95-101. doi:10.1589/jpts.31.95.

39. Ohtani M, Maruyama K, Suzuki S, Sugita M, Kobayashi K. Changes in Hematological Parameters of Athletes after Receiving Daily Dose of a Mixture of 12 Amino Acids for One Month during the Middle- and Long-distance Running Training. Bioscience, Biotechnology, and Biochemistry. 2001;65(2):348-355. doi:10.1271/bbb.65.348.

40. Dudgeon WD, Kelley EP, Scheett TP. In a single-blind, matched group design: branched-chain amino acid supplementation and resistance training maintains lean body mass during a caloric restricted diet. Journal of the International Society of Sports Nutrition. 2016;13:1. doi:10.1186/s12970-015-0112-9.

41. Josse AR, Atkinson SA, Tarnopolsky MA, Phillips SM. Increased consumption of dairy foods and protein during diet- and exercise-induced weight loss promotes fat mass loss and lean mass gain in overweight and obese premenopausal women. The Journal of nutrition. Sep 2011;141(9):1626-34. doi:10.3945/jn.111.141028.

42. Longland TM, Oikawa SY, Mitchell CJ, Devries MC, Phillips SM. Higher compared with lower dietary protein during an energy deficit combined with intense exercise promotes greater lean mass gain and fat mass loss: a randomized trial. Am J Clin Nutr. Jan 27 2016;doi:10.3945/ajcn.115.119339.

43. Arterburn LM, Coleman CD, Kiel J, et al. Randomized controlled trial assessing two commercial weight loss programs in adults with overweight or obesity. Obes Sci Pract. Feb 2019;5(1):3-14. doi:10.1002/osp4.312.

44. Chungchunlam SMS, Henare SJ, Ganesh S, Moughan PJ. Effect of whey protein and glycomacropeptide on measures of satiety in normal-weight adult women. Appetite. 2014;78:172-178.

45. de Carvalho KMB, Pizato N, Botelho PB, Dutra ES, Gonçalves VSS. Dietary protein and appetite sensations in individuals with overweight and obesity: a systematic review. European Journal of Nutrition. 2020;59:2317-2332.

46. Dhillon J, Craig BA, Leidy HJ, et al. The effects of increased protein intake on fullness: a meta-analysis and its limitations. Journal of the Academy of Nutrition and Dietetics. 2016;116(6):968-983.

47. Fuglsang-Nielsen R, Rakvaag E, Langdahl B, et al. Effects of whey protein and dietary fiber intake on insulin sensitivity, body composition, energy expenditure, blood pressure, and appetite in subjects with abdominal obesity. European journal of clinical nutrition. 2021;75(4):611-619.

48. Melson CE, Nepocatych S, Madzima TA. The effects of whey and soy liquid breakfast on appetite response, energy metabolism, and subsequent energy intake. Nutrition. 2019;61:179-186.

49. Moon J, Koh G. Clinical evidence and mechanisms of high-protein diet-induced weight loss. J Obes Metab Syndr. 2020;29(3):166.

50. Paddon-Jones D, Westman EC, Mattes RD, Wolfe RR, Astrup A. Protein, weight management, and satiety. Am J Clin Nutr. 2008;87:1558-1561.

51. Piercy KL, Troiano RP, Ballard RM, et al. The Physical Activity Guidelines for Americans. JAMA. 2018;320(19):2020-2028. doi:10.1001/jama.2018.14854.

52. Jensen md, ryan dh, apovian cm, et al. 2013 aha/acc/tos guideline for the management of overweight and obesity in adults: A report of the american college of cardiology/american heart association task force on practice guidelines and the obesity society [published correction appears in J am coll cardiol. 2014 jul 1;63(25 Pt B):3029-3030]. J Am Coll Cardiol. 2014;63(25 Pt B):2985-3023. doi:10.1016/j.jacc.2013.11.004.

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