The Effects of Whey Protein on Body Composition: A Meta-Analysis of Randomized Controlled Trials

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AGENDA

• Background
• Objective
• Methodology
• Key Findings
• Conclusion
• Future Research Needs
• Resources
BACKGROUND
Background

• A growing body of evidence has shown that diet composition, in addition to reduced calorie intake and increased physical activity, is a critical component of weight loss and weight maintenance\textsuperscript{1-3}.

• Recent findings have favored a higher protein, lower carbohydrate diet for weight loss\textsuperscript{2,3}.

• Higher protein diets appear beneficial for reducing fat mass as well as preserving lean body mass and resting energy expenditure\textsuperscript{3}.


<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Title</th>
<th>Journal</th>
<th>Date/Vol/Issue/Pg</th>
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<tr>
<td>Mojtabadi MC., et al.</td>
<td>The effects of a higher protein intake during energy restriction on changes in body composition and physical function in older women</td>
<td>The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences.</td>
<td>2011; 66(11): 1218-25</td>
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<td>Soenen S et al.</td>
<td>Changes in body fat percentage during body weight stable conditions of increased daily protein intake vs. control</td>
<td>Physiology &amp; Behavior</td>
<td>2010; 101: 635-638</td>
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<td>Wycherley TP, et al.</td>
<td>A High Protein Diet With Resistance Exercise Training Improves Weight Loss And Body Composition In Overweight And Obese Patients With Type 2 Diabetes</td>
<td>Diabetes Care</td>
<td>2010</td>
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<td>Luscombe-Marsh ND, et al.</td>
<td>Carbohydrate-restricted diets high in either monounsaturated fat or protein are equally effective at promoting fat loss and improving blood lipids</td>
<td>American Journal of Clinical Nutrition</td>
<td>2005; 81:762–72</td>
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</table>
High Protein Diets: Weight and Body Fat

Layman D., *J Nutr*, 2005
High Protein Diets: Body Fat


* = within group difference from baseline, p<0.05
# = treatment effect compared with baseline, p<0.05
High Protein Diets: Waist Circumference and Body Fat Mass

Means without a common letter differ at final measure, p < 0.05.

Baer, D. J Nutr, 2011
## High Protein Diets: Lean Body Mass & Muscle

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HIGH PROTEIN DIETS:
LEAN BODY MASS & MUSCLE

Layman D., J Nutr, 2005
HIGH PROTEIN DIETS: LEAN BODY MASS & MUSCLE

![Graph showing change in LBM (lbs) between Normal Protein and High Protein diets. Normal Protein shows a decrease of -6.6 ± 0.088 lbs, while High Protein shows a decrease of -4.18 ± 0.66 lbs. The p-value is less than 0.05.]

Tang, M. *Obesity*, 2013
HIGH PROTEIN DIETS: LEAN BODY MASS & MUSCLE

Leidy, H.  *Obesity*, 2007
OBJECTIVE
Meta-Analysis Objective

- Whey Added
- Whey Replaced
- Whey Added + Exercise
- Whey Replaced + Exercise

• Weight
• Body fat
• Waist circumference
• BMI
• Lean body mass/muscle
• Fat-free mass
METHODOLOGY
493 Articles Screened

455 Excluded based on review of title and/or abstract

38 Full-text articles evaluated for eligibility

- 24 Excluded upon full-text review
- 4 No relevant end points
- 6 Data required for inclusion not provided in article or by contacted authors
- 11 Whey protein was not examined
- 1 Non-randomized study design
- 1 Trial duration less than 1 month
- 1 Study included participants who were taking protein supplements before the start of the intervention

14 Articles identified for meta-analysis

33 Citations identified from reference lists

20 Articles were duplicates from initial search
13 Articles excluded based on abstract review

16
RESULTS
On average, people lost 4.2 kg (9.2 lbs) from baseline to trial end when whey protein iso-calorically replaced another protein source or carbohydrate.
CONCLUSION
Conclusion

• The authors concluded the current body of literature supports the use of whey protein to improve body composition, either as a supplement combined with resistance exercise or as part of a weight-loss or weight-maintenance diet.

• The beneficial effects of whey protein on body composition are most pronounced when consumed in concert with resistance exercise and an overall healthy diet that compensates for the additional calories from supplementation.
Future Research Needs

• Studies designed to examine the effects of whey protein by relevant demographic characteristics to determine the optimal dosage, trial duration and type and frequency of resistance exercise

• Longer-term (at least one year) randomized controlled trials with whey protein supplementation, calorie compensation and resistance exercise
Educational Resources
visit [http://www.wheyconsortium.org/meta-analysis](http://www.wheyconsortium.org/meta-analysis) for more information
Toolkit: Whey Protein Fact Sheet

Created for consumers
Highlights nutritional benefits
Includes general information on whey intake
Toolkit: Meta-Analysis Key Findings

- Created for health professionals
- Summarizes key findings from meta-analysis
- Includes study background, methodology and outcomes
Toolkit: Whey Protein Brochure

- Created for consumers
- Highlights benefits of whey protein
- Includes tips on incorporating whey into diet & lifestyle
Now available for free download...

The Effects of Whey Protein on Body Composition: A Meta-Analysis of Randomized Controlled Trials

A meta-analysis published in the March/April 2014 issue of the Journal of the American College of Nutrition titled “The Effects of Whey Protein on Body Composition: A Meta-Analysis of Randomized Controlled Trials” adds further evidence to the body of literature supporting the use of whey protein as part of a diet higher in protein to improve body composition and maintain weight, either as a supplement combined with resistance exercises or as part of a weight-loss or weight-maintenance diet.

Visit www.wheyconsortium.org/meta-analysis.com for more information about this and other research, as well as educational resources highlighting the growing body of research on the benefits of whey protein.

Check it out to find:

Key Findings. The Key Findings document highlights the key findings of the meta-analysis to provide a quick overview of the results from the meta-analysis.

Whey Protein Brochure. This brochure is designed specifically for clients and patients, will help tell the story behind the growing body of research on whey protein as part of a diet higher in protein and its effects on body weight and body composition.

Whey Protein Fact Sheet. This fact sheet provides a quick, at-a-glance overview of the benefits of whey protein and how clients and patients can incorporate whey protein into their diets and healthy.

Toolkit: Advertorial

• Created for health professionals
• Highlights contents of WPRC educational toolkit
Additional Resources

Whey Protein Research Consortium Members:
http://www.wheyconsortium.org/Pages/Home.aspx

- Agrimark http://www.agrimark.coop/
- American Dairy Products Institute http://www.adpi.org/
- Arla Foods http://www.arlafoodsusa.com/
- Danone http://www.danone.com/?lang=en
- Darigold http://www.darigold.com/
- Davisco Foods http://www.daviscofoods.com/
- Foremost Farms http://www.foremostfarms.com/
- Glanbia Nutritionals http://glanbianutritionals.com/
- Hilmar Ingredients http://www.hilmaringredients.com/home/
- Midwest Dairy Association http://www.midwestdairy.com/
- The Hershey Company http://www.thehersheycompany.com/
- U.S. Dairy Export Council http://www.usdec.org/home.cfm?navItemNumber=82205
- Volac International http://www.volac.com/
- Wisconsin Milk Marketing Board http://www.eatwisconsincheese.com/