

Get the Facts - Supplemental Protein

Myth: If I take supplemental protein without working out, it will make me fat.

Fact: I want to start by saying if you begin eating more of anything without replacing something else with it or adding more exercise to your routine, you will gain weight (or you will stop losing as much weight).

Assuming we keep the number of calories the same, protein consumption in replace of fat or carbohydrate consumption will maintain muscle mass. For example, if someone eats 1000 kcals less than needed with 45% carbs, 45% fats, and 10% protein, they will experience significantly more muscle mass loss than those who consume a protein supplement to increase the percent of protein in their daily kcal allowance.

In a study by Frestedt et al., 59 overweight individuals did exactly this. One arm consisted of consumption of 500 kcals under the Basal Metabolic Rate (BMR) eating a normalized diet. The second arm also consumed 500kcal under BMR but supplementing a 30g protein shake in the morning and at night (this required manipulation of the normal diet to ensure the same kcal amount as the other arm). After analysis via DEXA scan, researchers observed on average a greater fat mass loss in the protein arm as compared to control (3.5kg vs 1.5) and less lean muscle mass loss in the protein group as well (1kg vs 2.5kg). This study was only over 12 weeks and these are untrained individuals experiencing no excess muscle stimulation. Combine these results with a nice resistance training regimen and you could imagine the benefits.

How can we as med students apply this information further? Well in another article by Alex Ritson MSc, protein breakdown and supplementation was discussed in the context of the bed-bound and immobilized. As we know, one of the largest hospital populations is the elderly. Each person over 60 years old spends an average of 6 days in the hospital per visit and, depending on which unit they stay in, can be pretty expensive. After one day of being bed ridden, muscle atrophy occurs at approximately a rate of 0.5% per day with the greatest rates in the first 2 weeks. With that being said, those who also need to remain inactive for recovery take an additional hit. As muscle atrophies, it doesn't just disappear. It results in hypocalcemia, myosteatosis (fat accumulation in between muscle fascicles), and functional strength capacity diminishes (Ritson, 2016). Thinking again beyond exercise, this can have profound impacts on other areas of health. For example, DVT formation from lack of lower limb strength, or wasting/deterioration of diaphragmatic or accessory breathing muscles (an especially important factor in those with COPD).

Supplementation and diet alteration with protein products have also shown a decreased rate of this breakdown in the bed-bound population.

Conclusion: Whether it's in the gym or on the wards, we should remember the importance of personalizing diets to conform to the needs of the person. Exercising to gain muscle requires proper fuel for stimulation and growth, and muscle disuse requires a well-tailored nutrition plan to prevent as much loss as possible. Preventing one fall and subsequent hip fracture or increasing the chances of helping one person come off the ventilator sooner because they haven't lost as much diaphragmatic function can save cost, time, and personal suffering. So remember protein shakes aren't just for gym rats.

I strongly recommend reading the Riston review article if you are interested in this topic. Email me if you need access.

Adam Heilmann - Adheilmann@cailionclinic.org

References:

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