

Protein Supplements Intake by Recreational Gymnasium Users- A Review

Akansha Bhatnagar¹, Nidhi Jaiswal², Priti Rishi Lal³

¹Assistant Professor, Swami Vivekanand Subharti University, Meerut, India

²Assistant Professor, Department of Food and Nutrition, Lady Irwin College, University of Delhi, India

³Scientist E, ICMR-NIN, Hyderabad, India.

Corresponding Author: Akansha Bhatnagar

ABSTRACT

With the increasing incidence of obesity resulting from sedentary lifestyle the consciousness towards maintaining a healthier lifestyle, particularly toned body is also increasing. Due to time paucity the people are more attracted towards achieving a healthy body in short time leading to increased enrolment rates in gymnasiums. Gymnasium is a place for physical training and is associated with consumption of high protein diets including fitness supplement intake for improved muscle mass and better health outcomes. With the increase of fitness supplement industries in the market and their claims of enhancing physical fitness components and performance, their popularity among the people is increasing particularly of protein supplements that claims to increase muscle mass and strength. Intake of protein rich diets and extreme exercise without the proper guidance of nutrition professional can lead to deleterious effects on the body. Hence, intake of proper balanced diet along with proper fluid intake is important component of overall fitness and better health outcomes. This article highlights the intake of protein particularly protein supplements among the gymnasium users and its current recommendations for intake.

Key words: Obesity, protein supplement, fitness, gymnasium, balanced diet, physical activity.

INTRODUCTION

A large percentage of people in India are inactive with fewer than 10% engaging in recreational physical activity (Anjana et al. 2014) but with the increasing awareness about fitness and healthy lifestyle the involvement of people in fitness programs and enrollment rate in gymnasiums have increased considerably, the dissatisfaction regarding the body image i.e. how a person perceives his/her body, is higher among the gymnasium users in India (Parmar & Desai 2015).

Exercise training such as body weight/ gym-specialized/ strength training as well as high intensity interval training (HIIT) are the most preferred workouts along with mixed work-outs, cross training work-outs, express work-outs, functional

fitness, natural body movements, personalized training, and stay-at-home workouts among the gymnasium users. Along with the exercise intake of high protein diets is also a popular among the recreational gym users which is majorly achieved by the intake of protein supplements apart from dietary protein.

PROTEIN SUPPLEMENTS

Active persons ingest protein supplements primarily to promote muscle strength, function, and possibly size (Wolfe 2000). The advent of processing techniques has shifted some of this attention and ignited the sports supplement marketplace with derivative products such as whey, casein and soy. Individually, these products vary in quality and applicability to certain populations (Hoffman et al. 2004). Whey

products in the form of concentrates (29 to 89% whey protein by weight), isolates (90% whey protein), and hydrolysates (peptides and free amino acids) are particularly popular, whey protein concentrate and isolate are produced as a by-products of cheese production while hydrolysates are produced by partial enzymatic hydrolysis of whey proteins (Maughan 2012). The studies

on prevalence of intake of protein supplements conducted by various researchers is given in table 1.1. Some studies have concluded a positive impact of protein supplement intake on muscle growth (Devries & Philips 2015) while others have not found a positive relation between them (Lockwood 2017).

Table 1.1: Prevalence of use of protein supplements by gymnasium users

Sl. no.	Reference	Prevalence of protein supplement usage among the studied group
1	Morrison, Shorter & Gizis (2004)	42%
2	Goston et al. 2010	58%
3	Malik & Malik 2010	20.4%
4	Bianco et al. 2011	50%
5	Oliver et al. 2011	28%
6	Bianco et al. 2014	30%
7	Hartman & Siegrist	46%
8	Alshammari et al.	83%
9	Jawadi et al.	22.1%
10	Attlee et al.	49%

PROTEIN RECOMMENDATIONS FOR ACTIVE INDIVIDUALS

According to WHO/FAO/UNU (2007) adult protein requirement is 0.8g/kg/day and for normal Indian adult is 1g/kg/day (ICMR 2010). For exercising individuals, the protein needs are increased (ACSM/ADA 2000) and hence factors such as protein quality, energy intake, carbohydrate intake, mode and intensity of exercise, and the timing of the protein intake should to be considered before determining the recommendations (Lemon 2000). ACSM (2011) recommends 1.2-1.7g/kg/day protein to increase muscle mass in combination with physical activity for regular weight lifters or training for running and cycling event.

According to International Society of Sports Nutrition position statement (2007), Safe levels of protein intake for physically active individuals fall in the range of 1.4-2g/kg/day and may improve training adaptations to exercise. These levels of protein intake when forms a part of balanced diet, are not detrimental to kidney function or bone metabolism in healthy and active individuals.

In latest ISSN sports nutrition review protein recommendations for individuals involved in a general fitness

program is 0.8 - 1.0 g/kg/day, and for athletes involved in moderate amounts of intense training 1 - 1.5 g/kg/day of protein while athletes involved in high intensity training 1.5 - 2.0 g/kg/day of protein is recommended (Kreider 2010).

HIGH PROTEIN DIET:

A diet is considered as high protein if the protein is as high as 35 % of total calories or intakes that exceeds the RDA (Tipton 2011). Some studies have concluded that high protein diets (4.4 g/kgbw/d) have no effects on the changes in fat mass as well as fat free mass and hypercaloric high protein diet does not result in increased body fat (Antonio et al. 2014) nor there was any deleterious impact on the measures of blood lipids as well as liver and kidney function (Antonio et al. 2016).

Apart from the benefits there are some limitations of high protein diets such as increased acid load to the kidneys or high fat content of animal proteins (Pesta et al. 2014). Excessive levels of protein intake on the order of 200 to 400 g/d, i.e. approximately 5 g/kgbw/d, may exceed the liver's capacity to convert excess nitrogen to urea and the dangers of excessive protein intake, defined as when protein constitutes > 35% of total energy intake, include

hyperaminoacidemia, hyperammonemia, hyperinsulinemia nausea, diarrhea, and even death (Bilsborough & Mann 2006).

CONCLUSION

Protein forms an essential component of daily diet and high protein may be appropriate for some individuals, but it may also cause negative effects in the body, hence proper knowledge and assistance must be taken from health professionals before adopting such a diet. Also, care must be taken to make sure that the diet contains all the essential nutrients in required proportions along with the adequate fluid intake to support the training load. Physical fitness should not be considered as a goal but it should be taken as a day-to-day practice which can be achieved by maintaining a healthy lifestyle and adopting a well-balanced diet that includes minimally processed foods from all the major food groups.

REFERENCES

1. Alshammari SA, AlShowair MA and Al Ruhaim A, 2017. 'Use of hormones and nutritional supplements among gyms' attendees in Riyadh'. *Journal of family & community medicine*, 24(1), pp.6.
2. American College of Sports Medicine ed., 2013. ACSM's health-related physical fitness assessment manual. Lippincott Williams & Wilkins.
3. Anjana RM, Pradeepa R., Das AK, Deepa M, Bhansali A, Joshi SR, Joshi PP, Dhandhanian, VK, Rao PV, Sudha V and Subashini R., 2014. Physical activity and inactivity patterns in India—results from the ICMR-INDIAB study (Phase-1) [ICMR-INDIAB-5]. *International Journal of Behavioral Nutrition and Physical Activity*, 11(1), p.26.
4. Antonio J, Ellerbroek A, Silver T, Vargas L, Tamayo A, Buehn R and Peacock CA, 2016. A high protein diet has no harmful effects: a one-year crossover study in resistance-trained males. *Journal of nutrition and metabolism*, 2016.
5. Antonio J, Peacock CA, Ellerbroek A, Fromhoff, B and Silver T, 2014, 'The effects of consuming a high protein diet (4.4 g/kg/d) on body composition in resistance-trained individuals. *Journal of the International Society of Sports Nutrition*, vol.11, no. 1, p.19.
6. Attlee A, Haider A, Hassan A, Alzamil N, Hashim M and Obaid RS, 2018. Dietary Supplement Intake and Associated Factors Among Gym Users in a University Community. *Journal of dietary supplements*, vol.15, no.1, pp.88-97.
7. Bianco, A, Mammina, C, Thomas, E, Bellafiore, M, Battaglia, G, Moro, T, Paoli, A & Palma, A 2014, 'Protein supplementation and dietary behaviours of resistance trained men and women attending commercial gyms: a comparative study between the city centre and the suburbs of Palermo, Italy', *Journal of the International Society of Sports Nutrition*, vol.11, no. 1, pp.30.
8. Bianco, A., Mammina, C., Paoli, A., Bellafiore, M., Battaglia, G., Caramazza, G., Palma, A. and Jemni, M., 2011. Protein supplementation in strength and conditioning adepts: knowledge, dietary behavior and practice in Palermo, Italy. *Journal of the International Society of Sports Nutrition*, 8(1), p.25.
9. Bilsborough, S and Mann N, 2006, 'A review of issues of dietary protein intake in humans. *International journal of sport nutrition and exercise metabolism*, vol.16, no. 2, pp.129-152.
10. Campbell, B, Kreider, RB, Ziegenfuss T, La Bounty, P, Roberts, M, Burke, D, Landis, J, Lopez, H & Antonio, J 2007, 'International Society of Sports Nutrition position stand: protein and exercise', *Journal of the International Society of Sports Nutrition*, vol.4, no.1, pp.8.
11. Devries, MC & Phillips SM, 2015, 'Supplemental protein in support of muscle mass and health: advantage whey', *Journal of food science*, vol.80.
12. Goston JL & Correia MITD 2010, 'Intake of nutritional supplements among people exercising in gyms and influencing factors', *Nutrition*, vol.26, no.6, pp.604-611.
13. Hartmann, C & Siegrist, M 2016, 'Benefit beliefs about protein supplements: A comparative study of users and non-users', *Appetite*, vol.103, pp.229-235.
14. Hoffman, JR & Falvo, MJ 2004, 'Protein— which is best?', *Journal of sports science & medicine*, vol.3, no.3, pp.118.

15. Jawadi, AH, Addar, AM, Alazzam, AS, Alrabieah, FO, Al, Alsheikh, AS, Amer, RR, Aldrees, AAS, Al Turki, MA, Osman, AK & Badri, M 2017, 'Prevalence of Dietary Supplements Use among Gymnasium Users', *Journal of nutrition and metabolism*.
16. Joint, WHO 2007, 'Protein and amino acid requirements in human nutrition', *World health organization technical report series*, (935), pp.1.
17. Kreider, RB, Wilborn, CD, Taylor, L, Campbell, B, Almada, AL, Collins, R, Cooke, M, Earnest, CP, Greenwood, M, Kalman, DS & Kerksick, CM 2010, 'ISSN exercise & sport nutrition review: research & recommendations', *Journal of the International Society of Sports Nutrition*, vol.7, no.1, pp.7.
18. Kreider, RB, Wilborn, CD, Taylor, L, Campbell, B, Almada, AL, Collins, R, Cooke, M, Earnest, CP, Greenwood, M, Kalman, DS & Kerksick, CM 2010, 'ISSN exercise & sport nutrition review: research & recommendations', *Journal of the International Society of Sports Nutrition*, vol.7, no.1, pp.7.
19. Lemon, P.W., Berardi, J.M. and Noreen, E.E., 2002. The Role of Protein and Amino Acid Supplements in the Athlete's Diet: Does Type or Timing of Ingestion Matter? *Current sports medicine reports*, vol.1, no.4, pp.214-221.
20. Lockwood, CM, Roberts, MD, Dalbo, VJ, Smith-Ryan, AE, Kendall, KL, Moon, JR & Stout, JR 2017, 'Effects of hydrolyzed whey versus other whey protein supplements on the physiological response to 8 weeks of resistance exercise in college-aged males', *Journal of the American College of Nutrition*, vol.36, no.1, pp.16-27.
21. Malik A & Malik, S 2010, 'Prevalence of nutritional supplements in gyms', *British Journal of Sports Medicine*, vol.44, no.1, pp.44.
22. Maughan, RJ 2012, 'Quality Assurance Issues in the Use of Dietary Supplements, with Special Reference to Protein Supplements', *The Journal of nutrition*, vol.143, no.11, pp.1843S-1847S.
23. Morrison, LJ, Gizis, F & Shorter, B 2004, 'Prevalent use of dietary supplements among people who exercise at a commercial gym', *International journal of sport nutrition and exercise metabolism*, vol.14, no.4, pp.481-492.
24. Nutrient Requirements and Recommended Dietary Allowances for Indians 2010, ICMR, National Institute of Nutrition, Hyderabad.
25. Oliver, A, Miranda León, MT & Guerra Hernández, E 2011, 'Prevalence of protein supplement use at gyms', *Nutricion hospitalaria*, vol.26, no.5.
26. Parmar, S.D. and Desai, M.D., 2015. Body Weight Effect on Body Image among Gym Users and Non-Gym Users.
27. Pesta, DH & Samuel, VT 2014, 'A high-protein diet for reducing body fat: mechanisms and possible caveats', *Nutrition & metabolism*, vol.11, no.1, pp.53.
28. Tipton, KD, 2011, 'Efficacy and consequences of very-high-protein diets for athletes and exercisers', *Proceedings of the Nutrition Society*, vol.70, no.2, pp.205-214.
29. Wolfe, RR 2000, 'Protein supplements and exercise', *The American journal of clinical nutrition*, vol.72, no.2, pp.551S-557S.

How to cite this article: Bhatnagar A, Jaiswal N, Lal PR. Protein supplements intake by recreational gymnasium users- a review. *Int J Health Sci Res.* 2020; 10(3):164-167.
