

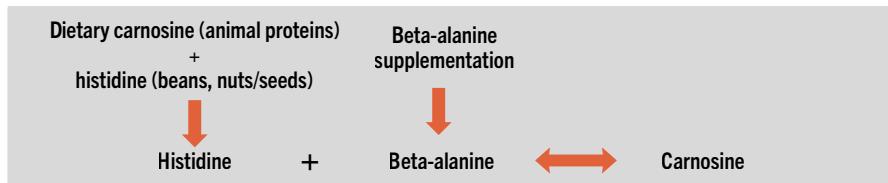
Beta-Alanine & Athletic Performance



What is beta-alanine?

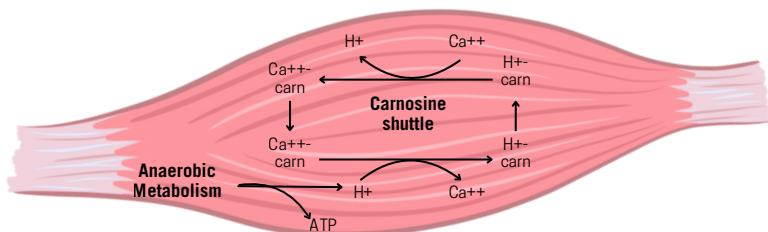
Beta-alanine is an amino acid produced in the body from the breakdown of various animal proteins like chicken and beef.

While beta-alanine does not contribute to muscle building, it is commonly used as a supplement due to its role as the rate-limiting ingredient for carnosine synthesis.



When you perform high-intensity exercise, H⁺ ions build up, creating a more acidic environment in your muscles which leads to fatigue.

Carnosine acts as a buffer against these ions, delaying the onset of fatigue. This makes beta-alanine especially effective in high-intensity, short-duration situations like sprinting and interval training.



What types of athletes might benefit most?

- Sprint-based sports (track, swimming, cycling, rowing)
- Athletes who's training/ performance consists of repetitive, high-intensity, short duration bouts (combat sports, football, rugby)
- Female athletes (15-20% lower muscle carnosine levels compared to men)
- Vegetarian athletes (estimated 20-40% lower muscle carnosine compared to omnivores)

Additional Resources

1. Stellingwerff, T. (2020). An update on beta-alanine supplementation for athletes. *Gatorade Sports Sci Exchange*, 29(208), 1-6.
2. Perim, P., Marticorena, F. M., Ribeiro, F., Barreto, G., Gobbi, N., Kerksick, C., ... & Saunders, B. (2019). Can the skeletal muscle carnosine response to beta-alanine supplementation be optimized?. *Frontiers in nutrition*, 6, 135.
3. Stellingwerff, T., Decombaz, J., Harris, R. C., & Boesch, C. (2012). Optimizing human *in vivo* dosing and delivery of β -alanine supplements for muscle carnosine synthesis. *Amino acids*, 43(1), 57-65.
4. Saunders, B., Elliott-Sale, K., Artioli, G. G., Swinton, P. A., Dolan, E., Roschel, H., ... & Gualano, B. (2017). β -alanine supplementation to improve exercise capacity and performance: a systematic review and meta-analysis. *British journal of sports medicine*, 51(8), 658-669.
5. Harris et al. (2006) - "The absorption of orally supplied β -alanine and its effect on muscle carnosine synthesis in human vastus lateralis" (Amino Acids, 30(3), 279-289).
6. Baguet et al. (2009) - "Carnosine loading and washout in human skeletal muscles" (Journal of Applied Physiology, 106(3), 837-842).

How do I use beta-alanine?

A dosage of 3-6 grams per day is typically needed for ergogenic effects. Oftentimes, a loading phase is completed at a higher dose for 4-8 weeks before transitioning to a lower maintenance dose (see below for examples).

Paresthesia (tingling of the face, arms, and legs) is a common side effect. Some may choose to prevent this by splitting the full dosage across the day or using a slow release product.

Note: recent studies have observed large ranges of variability for carnosine synthesis responses between individuals. This means some athletes may take longer to observe results than others.

Potential Dosing Strategies

1. Single Large Daily Dose

- a. Loading Phase: 3.2-6.4g taken w/ a pre-workout snack x4-8 weeks
- b. Maintenance Phase: 1.6-2g taken w/ a pre-workout snack

2. Multiple Smaller Doses Across Day

- a. Loading Phase: 1-1.6g taken 4 times per day w/ food (breakfast, lunch, dinner, snack) x4 weeks
- b. Maintenance Phase: .8-1g taken 2 times per day w/ food

Washout Period- how long do I lose it after not using it?

Once supplementation stops, carnosine levels gradually decline. Based on current research, the washout period is generally estimated at 6-15 weeks depending on factors like the dose that's been used and how long someone has supplemented.

For athletes, this means missing supplementation for 2-4 weeks. 1-2 times per year won't significantly impact carnosine levels and therefore performance. This can also help lower the cost of long-term supplementation.