

Notes on article 1, Risks of Beta-Alanine

- Intro
 - B-alanine is one of 5 IOC recognized supplements that improve performance
 - B-alanine, caffeine, creatine, nitrate, and sodium bicarbonate
 - Methods
 - Used risk assessment guidelines from Council for Responsible Nutrition *Vitamin and Mineral Safety Handbook*
 - Results
 - Paraesthesia at less than 20% with 6g/d for 28 days
 - At higher doses paraesthesia is more irritable (40mg beta-alanine) / (1kg body mass) ~ 3.2g ingested
 - No significant change to bio markers in healthy young men and women and cyclists
 - No change to cardiac function in 4 week supplementation study when taking between 3.2g and 6.4g per day
 - Discussion
 - No adverse effects from beta-alanine oral supplementation identified in this meta analysis
 - Paraesthesia appears to be harmless thus not considered adverse effect
This phenomenon is generally considered to be both transient and harmless and appears not to be a cause for concern. Indeed some athletes have reported the sensation of paraesthesia improve their affective response to exercise although other participants in the same study reported the sensation to be uncomfortable or unpleasant, demonstrating that the experience of paraesthesia, and whether it should be considered a beneficial side effect or adverse effect, is a subjective experience that is specific to the individual

Notes on article 2, Effects of Beta-Alanine on Cycling

- Intro
 - β -alanine supplementation is one nutritional strategy that acts to raise carnosine concentrations in human muscle, resulting in improved buffering capacity
 - Exercises between 60-240s show improvement more so than >240s
 - <60s does not appear to have improvement
- Methods
 - Note, these are experienced trained cyclists in the study
 - 6.4g a day for 28 days then 1.2g/day for maintenance
- Results
 - No benefit in the 1 and 10km
 - 4km likely showed improvement
 - Time to total exhaustion (TTE)
 - ~8% improvement in 4km test
- Discussion
 - For the trained cyclists in the current study, β -alanine supplementation significantly improved TTE at a supramaximal intensity which may have implications for improving high-intensity training sets that maximally stress exercise capacity. Further- more, athletes competing in high-intensity events that are ~6 min in duration may receive worthwhile improvements in performance, but there appears to be limited benefit of β -alanine supplementation in very short (~1 min) and longer TT (~15 min).

Notes on article 3, Beta-Alanine and 5 week strength training

- Methods
 - Back squat, barbell step up, loaded jumping lunge were tested
 - Weight adjusted based on RPE
 - Rest time decreased each week
 - Number of sets increased each week
 - Weight, speed, and distance measured to determine velocity, acceleration, power, and force

- Results/conclusions
 - Noted increases in
 - Power output at 1rm
 - Weight moved at 1rm
 - Power output gains at max power
 - Number of sets executed
 - No noticeable increase in
 - Jump height
 - Velocity of movements

Notes on article 4, Isometric, isokinetic, isotonic

- Notes before continuing
 - Isotonic
 - Constant weight while joint moves
 - Squat, bench press, push-up, etc
 - Isokinetic
 - Constant speed at varying forces
 - Uses specialized equipment
 - Isometric
 - Constant weight and no movement
 - Plank, wall sits, L-sit, etc
 - Abstract
 - 6.4g a day
 - High intensity exercise
 - 4 weeks long
 - Introduction
 - Supplementation with beta-alanine has been consistently reported to increase intramuscular carnosine content (Harris et al. 2006; Saunders et al. 2017a) which should theoretically enhance intracellular buffering capacity (Artioli et al. 2010).
 - I have seen buffering mentioned in multiple studies and meta analysis'.

- Maintains lower intramuscular pH thus less fatigue
 - At least that's my current understanding
- Increase in carnosine content
 - Can improve performance in high-intensity 30 sec - 10 min exercise/activity
- Methods
 - Young, healthy omnivorous men with at least 1x bodyweight bench and 3x bodyweight 45 degree leg press
 - 6.4g a day divided into 4 1600 mg doses to avoid paraesthesia
- Results
 - Isotonic strength endurance
 - Supplementation showed no effects in number of reps in either bench press or leg press
 - Isometric Endurance test
 - Strong evidence of increased TTE
 - Isokinetic Endurance
 - No influence on work done, peak torque, or muscle fatigue

Notes on article 5, creatine + beta alanine

- Notes before notes
 - I did not purchase this study as I am currently poor and can't justify paying \$50 for a paper vs rent, utilities, food, and life enjoyment
 - Thus, I only have access to the abstract
- Abstract Conclusion, literally copied and pasted
 - Beta-alanine and beta alanine plus creatine supplementations have strong performance enhancing effect by increasing mean power and delaying fatigue Index during the repeated WAnT.

1. Eimear Dolan, Paul A Swinton, Vitor de Salles Painelli, Benedict Stephens Hemingway, Bruna Mazzolani, Fabiana Infante Smaira, Bryan Saunders, Guilherme G Artioli, Bruno Gualano, A Systematic Risk Assessment and Meta-Analysis on the Use of Oral

β -Alanine Supplementation, *Advances in Nutrition*, Volume 10, Issue 3, May 2019, Pages 452–463, <https://doi.org/10.1093/advances/nmy115>

2. Phillip M. Bellinger & Clare L. Minahan (2016) The effect of β -alanine supplementation on cycling time trials of different length, *European Journal of Sport Science*, 16:7, 829-836, DOI: 10.1080/17461391.2015.1120782
3. Maté-Muñoz, J.L., Lougedo, J.H., Garnacho-Castaño, M.V. *et al.* Effects of β -alanine supplementation during a 5-week strength training program: a randomized, controlled study. *J Int Soc Sports Nutr* 15, 19 (2018). <https://doi.org/10.1186/s12970-018-0224-0>
4. Bassinello, D., de Salles Painelli, V., Dolan, E. *et al.* Beta-alanine supplementation improves isometric, but not isotonic or isokinetic strength endurance in recreationally strength-trained young men. *Amino Acids* 51, 27–37 (2019). <https://doi.org/10.1007/s00726-018-2593-8>
5. Okudan N, Belviranlı M, Pepe H, Gökbel H. The effects of beta alanine plus creatine administration on performance during repeated bouts of supramaximal exercise in sedentary men. *J Sports Med Phys Fitness*. 2015 Nov;55(11):1322-8. Epub 2014 Oct 7. PMID: 25289715.