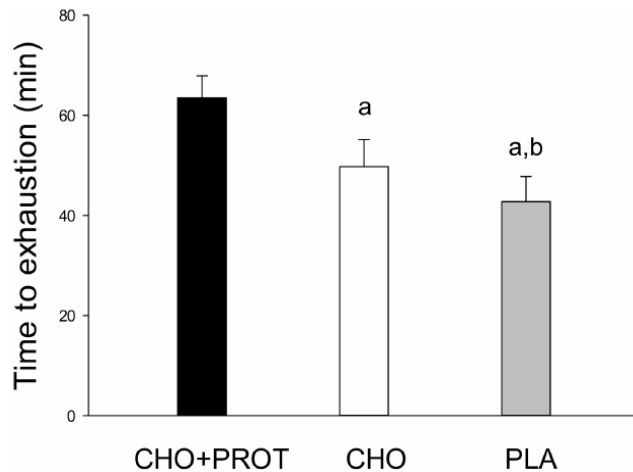




*Performance test after 18 h recovery receiving Carbohydrate + Protein (CHO+PROT), Carbohydrate (CHO) or Placebo (PLA).*

Another study (Rowlands 2016) looked at the biochemical affects of consuming a protein supplement after a ride.

This study, had cyclists perform a 100 minute cycle that included high-intensity intervals (70-90%  $W_{max}$ ). Following this exercise, the participants were provided with a supplement that was carbohydrate/protein mix or placebo. There were two different mixes tested with different concentrations of leucine (an essential amino acid).

Blood samples and biopsies were taken from the subjects during the following 2 hours and studied for markers that indicated that the body was undergoing a restorative process.

The subjects who received the higher concentration of leucine showed better modulation in the inflammatory processes within the muscle. This implies that increased levels of leucine ingestion post exercise supports better skeletal muscle restoration.



## Summary

All of these studies are small and so any definitive conclusions should be made carefully.

There is no good evidence to support protein supplements as beneficial to cycling performance when taken on the day of the event.

There is some good evidence supporting the usefulness of protein supplements in relation to recovery. This is both in increased performance the following day and in reducing inflammation within the muscle and promoting repair.

If you are a serious cyclist looking for maximum performance on multiple days, then consuming a protein supplement within two hours of a ride will aid performance the following day.

## References

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# Protein Supplements for Cyclists: Useful or Useless?



Cycling is a popular sport in Australia with 15.5% of people riding in the previous week (National Cycling Participation Survey 2017). Of these, over 80% of stated the reason for their ride was recreation.

Due to this popularity, there is also an increase in products that are claimed to aid performance for those enthusatic amateurs at Club Races. But are these products beneficial?

Some cyclists will tell you that taking a protein supplement after a long ride will aid in muscle recovery or improve performance on following days. But is there any evidence to support this?

Protein Supplements are big business. It was estimated in 2011 that the global market for protein supplements was \$US30 billion (Supplement Business Report cited in McLellan 2013), although the decision to use a protein supplement tends to be based on marketing claims rather than evidence-based research.

Research relating to protein supplement tends to be grouped into two areas, improved performance or improved recovery.



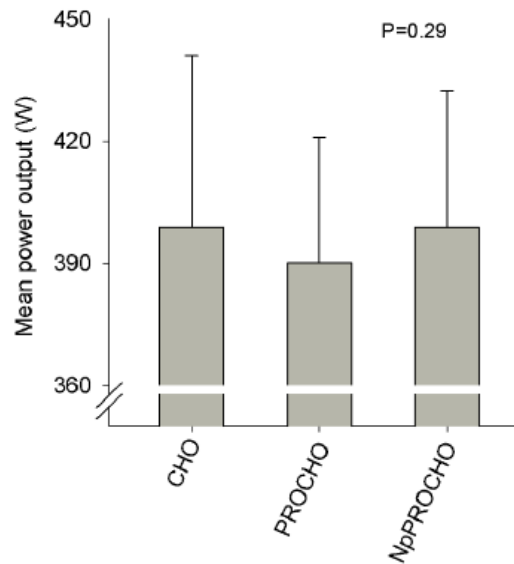
## Performance

Does taking a protein supplement before or during a long ride provide a benefit? Does it matter if you take it before the ride? Or during the ride? Does the source of the protein matter?

There are limited studies looking at the performance of endurance cyclists who consumed a protein supplement during exercise. None of these studies were able to show a significant benefit relating to

performance when cycling. One study (Vegge 2014) supplied cyclists with two different types of proteins and carbohydrate mix or a straight carbohydrate supplement prior to a two hour cycle and then undergoing a five minute all out test. There was no difference between the straight carbohydrate supplement and a marine protein mix. However, there was a decrease in performance if the protein was from a whey source. It should be noted that this correlation seemed to be strong with cyclists who had a lower  $VO_{2max}$ .

There may be minimal improvement in performance if a protein from marine sources is consumed prior to exercise for cyclists with lower  $VO_{2max}$ . Given that this study was quite small it is difficult to make any definite conclusions.



Mean Power output during 5-min mean power test. Carboydrate only (CHO), Carboydrate and Whey Protein (PROCHO) and Carboydrate and Marine Protein (NpPROCHO). (Vegge 2014)



## Recovery

The general thought amongst cyclists is that protein should be used post ride. The idea being that it aids muscle recovery. If it does aid muscle recovery, is there a certain amount of time required for it to have an impact?

There have been multiple studies looking at the impact of protein supplements for recovery. Some of these looked at the biochemical impact of increased protein after the exercise while others had the cyclists perform again a day later.

A study (Rustad 2016) looked at how cyclists were able to perform one day after an exhaustion ride having been provided with either a carbohydrate drink, a carbohydrate and protein drink, or a placebo.

The protocol for this test was a ride to exhaustion at 72% of their recorded  $VO_{2max}$  and then consuming their allocated drink. The three groups all managed an average of about 85 minutes prior to exhaustion. They returned the following day (after an 18 hour rest period) and completed another ride to voluntary exhaustion.

The cyclists who received the carbohydrate and protein recorded an average time to exhaustion of 63.5 minutes ( $\pm 4.4$  minutes) compared to 49.8 minutes ( $\pm 5.8$  minutes) for the carbohydrate and only 42.8 minutes ( $\pm 5.1$  minutes) for the placebo.

The RPE (Rate of Perceived Exertion) was recorded for all cyclists at the end of this second ride and all three groups reported similar levels. This strongly implies that all three groups were riding to their limits.