

Boost Your Endurance with

ASTAREAL® ASTAXANTHIN FOR MUSCLE HEALTH

The most studied brand of Astaxanthin

HOW TO INCREASE EFFICIENCY WHEN YOU EXERCISE

IT ALL COMES DOWN TO HOW YOU'RE
POWERING YOUR BODY.



Mitochondria are cell engines that turn nutrients into energy in the form of ATP. Every cell has mitochondria, but muscles are especially mitochondria-rich because they demand more energy.



AEROBIC VS. ANAEROBIC EXERCISE



AEROBIC EXERCISE

Is sustained by a rich supply of oxygen

Requires efficient energy production

Is **inhibited** by fatigue-causing free radicals

Improves muscle endurance and cardiovascular health

Is powered by energy made inside mitochondria

ANAEROBIC EXERCISE

Doesn't require oxygen

Builds muscle and improves health

Requires fast energy production

Is **inhibited** by lactic acid build-up

Is powered by energy made outside the mitochondria



LOW EFFICIENCY

Anaerobic exercise

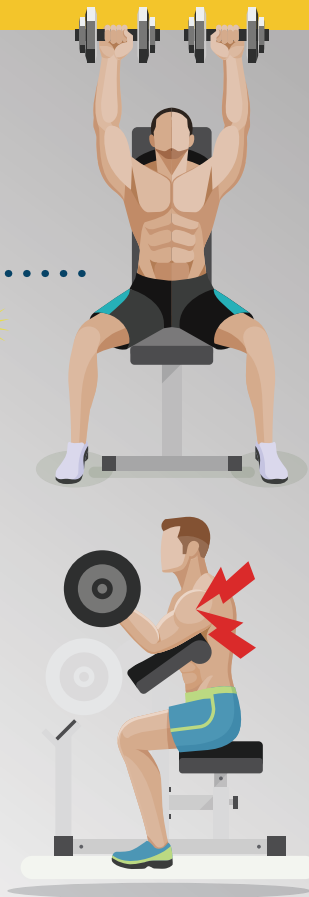
Good for muscle building

Energy is created outside of the mitochondria

Powered by carbohydrates

These conditions produce lactic acid

Causing cramping



HIGH EFFICIENCY

Anaerobic exercise

Gives you better endurance

Energy is created inside of the mitochondria



Powered by fat

1g of fat makes 6x more energy than 1g of carbohydrate



But once again, the byproduct is free radicals



Damaging mitochondria

Slowing down energy production, which compromises endurance



MEDIUM EFFICIENCY

Aerobic exercise

Gives you limited endurance

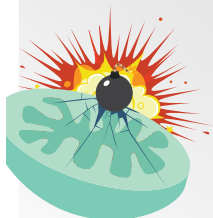
Energy is created inside of the mitochondria

Powered by carbohydrates

Which damage the mitochondria

These conditions produce free radicals

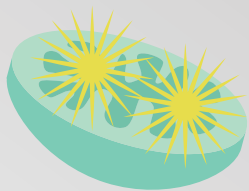
Slowing down energy production, which compromises endurance



BOOSTED EFFICIENCY

Aerobic exercise

AstaReal® Astaxanthin boosts energy efficiency & power output, giving you lasting endurance.



Energy is created inside of the mitochondria



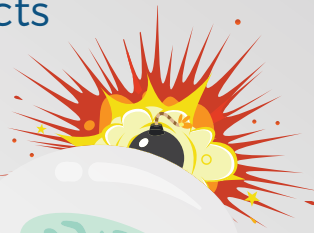
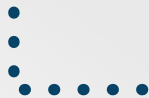
Powered by fat



Fear not! AstaReal® Astaxanthin protects the mitochondria from any damage

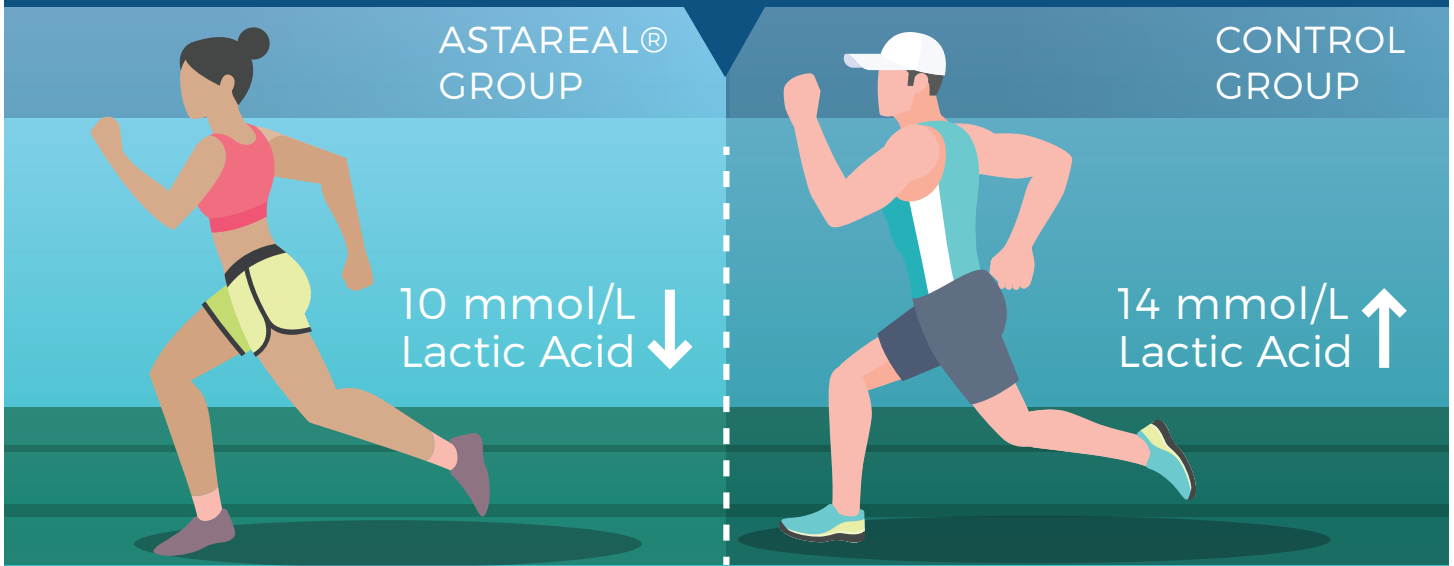


Free radicals are created

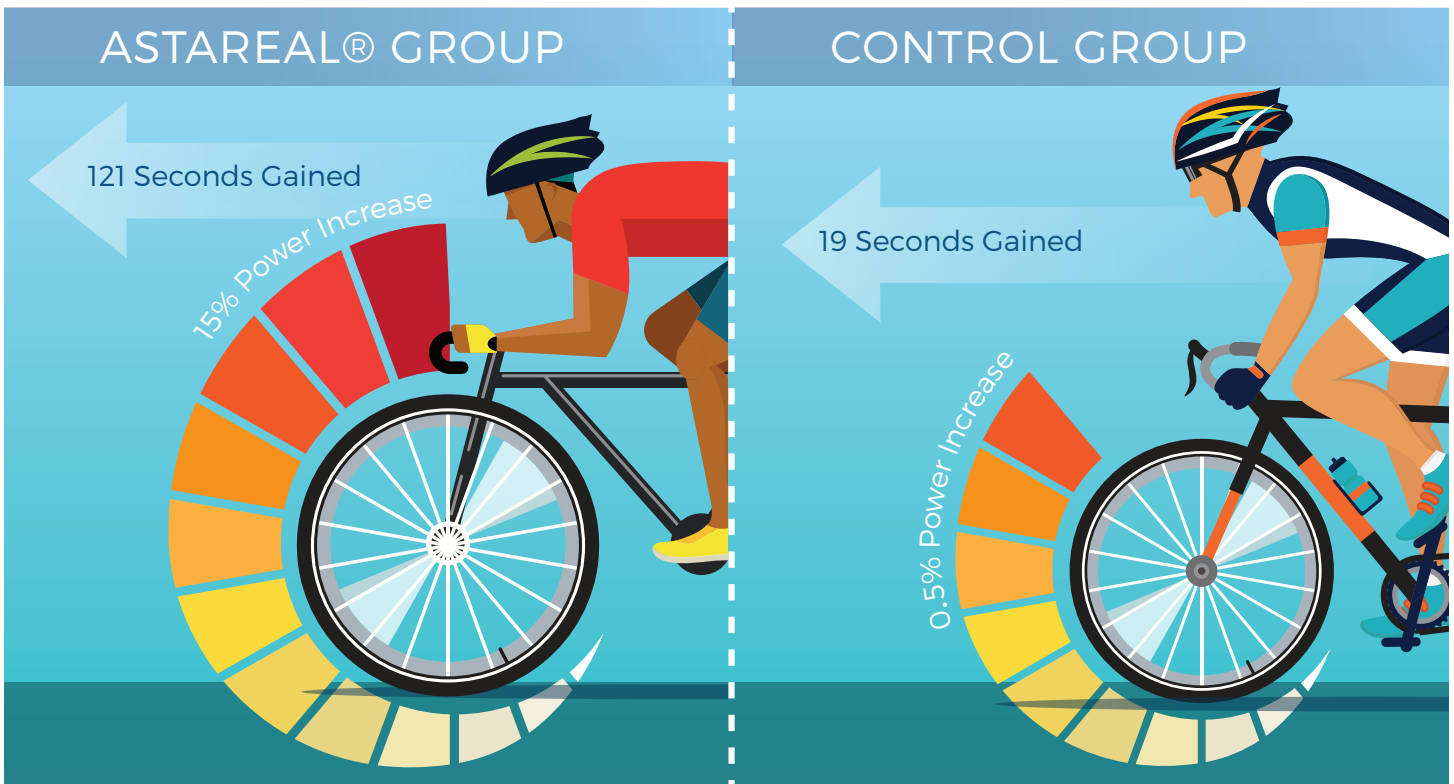


Boosting athletic performance by giving you optimal energy and muscle protection. Astaxanthin helps you go the distance by minimizing cramping and soreness.

PROOF THAT IT WORKS: ASTAREAL STUDIES



Track runners had significantly less lactic acid buildup after a 1200m run when supplementing with AstaReal® Astaxanthin. Lactic acid builds up during anaerobic respiration. By promoting aerobic respiration in the mitochondria, AstaReal® Astaxanthin helps reduce lactic acid build up, helping to lower the sensation of muscle burning and cramping during exercise.

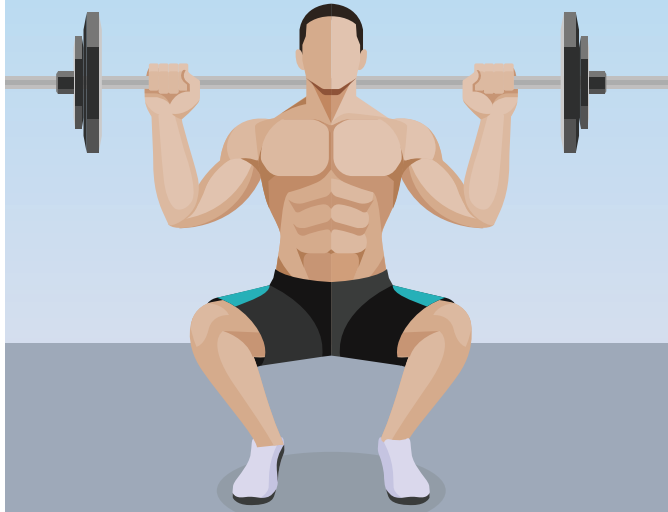


Cyclists supplementing with AstaReal® Astaxanthin experienced a 121 second improvement in their performance/speed and a 15% increase in their average power output. The placebo group experienced a 19 second improvement in performance/speed and a 0.5% improvement in power output.

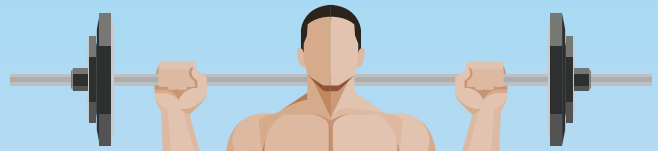
ASTAREAL® GROUP

49 → 76

55%

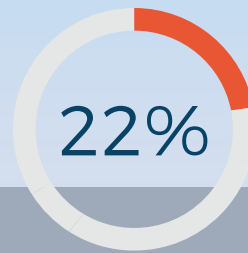


CONTROL GROUP



22%

46 → 55



Paramedics combining AstaReal® Astaxanthin together with training improved by an average of 55%. They were able to increase their number of squats from 49 to 76. Paramedics relying on training alone improved by 22%, increasing only from 46 to 55 squats.



To learn more about
natural astaxanthin and
your health visit
www.astaxanthin.net

SOURCES:

1. Aoi, W., Naito, Y., Takanami, Y., Ishii, T., Kawai, Y., Akagiri, S., Kato, Y., Osawa, T., Yoshikawa, T. Astaxanthin improves muscle lipid metabolism in exercise via inhibitory effect of oxidative CPT I modification. *Biochemical and biophysical research communications*. 22:366(4):892-7 (2008).
2. Baralic, I., Andjelkovic, M., Djordjevic, B., Dikic, N., Radivojevic, N., Suzin-Zivkovic, V., Radojevic-Skodric, S., Pejic, S. Effect of Astaxanthin Supplementation on Salivary IgA, Oxidative Stress, and Inflammation in Young Soccer Players. *Evidence-Based Complementary and Alternative Medicine*. 783761 (2015).
3. Baralic, I., Djordjevic, B., Dikic, N., Kotur-Stevuljevic, J., Spasic, S., Jelic-Ivanovic, Z., Radivojevic, N., Andjelkovic, M., Pejic, S. Effect of Astaxanthin Supplementation on Paraoxonase 1 Activities and Oxidative Stress Status in Young Soccer Players. *Phytotherapy Research: PTR*. 27(10):1536-42 (2013).
4. Djordjevic, B., Baralic, I., Kotur-Stevuljevic, J., Stefanovic, A., Ivanisevic, J., Radivojevic, N., Andjelkovic, M., Dikic, N. Effect of astaxanthin supplementation on muscle damage and oxidative stress markers in elite young soccer players. *The Journal of sports medicine and physical fitness*. 52(4):382-92 (2012).
5. Earnest, C.P., Lupo, M., White, K.M., Church, T.S. Effect of astaxanthin on cycling time trial performance. *International journal of sports medicine*. 32(11):882-8 (2011).
6. Fukamauchi M. Food functionality of astaxanthin-10: Synergistic effects of astaxanthin-10 intake and aerobic exercise. *Food Style* 21. 11:1-4. 15 (2007).
7. Hongo, N., Fujishita, M., Takahashi, J., Tominaga, K., Miura, N. Randomized controlled trial of the anti-fatigue effects of astaxanthin on mental and physical loads simulating daily life. (Rinsho Iyaku) *Journal of Clinical Therapeutics & Medicines*. 32(7):577-91 (2016).
8. Iwabayashi, M., Fujioka, N., Nomoto, K., Miyazaki, R., Takahashi, H. Efficacy and safety of eight-week treatment with astaxanthin in individuals screened for increased oxidative stress burden. *Anti-aging medicine*. 6(4):15-21 (2009).
9. Lodish, H., Berk, A., Zipursky, S.L., Matsudaira, P., Baltimore, D., Darnell, J. *Molecular Cell Biology*, 4th edition. New York: W. H. Freeman, Section 16.1, Oxidation of Glucose and Fatty Acids to CO₂ (2000).
10. Malmsten, C.L., Lignell, A. Dietary Supplementation with Astaxanthin-Rich Algal Meal Improves Strength Endurance – A Double Blind Placebo Controlled Study on Male Students. *Carotenoid Science*. 13:20-2 (2008).
11. Miyawaki, H., Takahashi, J., Tsukahara, H., Takehara, I. Effects of astaxanthin on human blood rheology. *Journal of Clinical Biochemistry and Nutrition*. 43(2):69-74 (2008).
12. Saito, M., Yoshida, K., Saito, W., Fujiya, A., Ohgami, K., Kitaichi, N., Tsukahara, H., Ishida, S., Ohno, S. Astaxanthin increases choroidal blood flow velocity. *Albrecht von Graefes Archiv für klinische und experimentelle Ophthalmologie*. 250(2):239-45 (2012).
13. Sawaki, K., Yoshigi, H., Aoki, K., Koikawa, N., Azumane, A., Kaneko, K., Yamaguchi, M. Sports performance benefits from taking natural astaxanthin characterized by visual acuity and muscular fatigue improvement in humans. (Rinsho Iyaku) *Japanese Journal of Clinical Ophthalmology*. 18(9):1085-100 (2002).