ATHLETES

HOW MUCH?

Most nitrate studies showing performance effects do supplement more than 1-3 days. In general, it can be considered that you should supplement about 5 days or more to have the most effect of nitrate supplementation. It seems that a dose should be at least 400mg, maybe 600, and maybe even up to 800 when you are talking about more highly trained, elite athletes. Let's keep in mind scientists are still in debate on the specific dose that needs to be used to be effective.

Everyones body will react differently, more or less to highly standardized nitrate meal or supplement.

So the next critical question is...

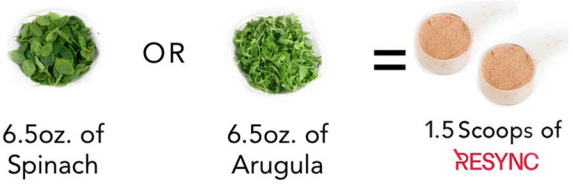
WHEN?

Most studies show that 2-3 hours before a sports event seems to be the most efficient and also when it comes to gastrointestinal complaints, etc. it seems better for athletes to have this time before a sport event. When it comes to nitrate peaking in blood between 2-3 hours and remaining stable about 5 hours, it seems quite relevant for most sports, not just marathon runners.

WHAT?

Most studies have used beetroot juice however other leafy, root, vegetables have also proven to be effective on sports performance. For example red spinach extract which has higher nitrate standardization (9%) than red beets (1.5% - 2%).

When it comes to vegetables, it is possible but you would need to use about 300-400g of a portion and that might not be very convenient before a sports event.



But it is possible and some athletes do consume a lot of vegetables and what is important is to consider what an athlete uses in a regular diet before you provide advice on how much to supplement.

It should be considered, but it is definitely not usually enough to skip the beetroot juice and rely on a normal leafy root vegetable intake. There is an interesting data from a Master's thesis of Eva Piatrikova. A study on VO2 kinetics, looking at the effect of pervasive, high-fat, and high-carbohydrate diet with nitrate and placebo supplementation. In the carbohydrate condition, nitrite supplementation causes typical elevation in plasma nitrite, whereas, when these participants were on the high-fat diet, this increase in nitrite was significantly attenuated in comparison to the high-carbohydrate condition. The high-fat diet might somehow affect the oral microbiome and cause reduced efficacy of nitrate reduction.

WHO?

It seems to be mostly in the oxygen-limiting sports – for example, in team sports of high-intensity such as soccer or American football, other highly-intense, team sports where you sprint a lot back and forth or when athletes are also quite a lot underwater, and in oxygen-limiting conditions. On the other side, the very highly sprint sports such as speed skating, or ice skating also and sprint itself. Studies have shown that nitrate might have a higher potential with nitrate supplementation than endurance sports. It has been suggested that this has to do with the higher improvement of these type II muscle fibers. And in a mouse study, it was shown that nitrate is particularly active in these type II muscle fibers in improving the force development.

In general, a recreational athlete might benefit more from natural nitrates. Likely because she/he still has a greater potential or opportunity to improve performance but also because a recreationally active athlete will also more often experience that oxygen is a limiting factor of exercise. On the other side, the elite athlete could benefit but then under very extreme conditions, such as high-intensity sports but also at altitude or perhaps underwater. And the effect is larger in recreational athletes, however the impact might be higher in the elite athlete since a small improvement could be the difference between winning and losing.