

# Periodizing Antioxidant Intake: Why “Recovery” and “Adaptation” Phases Need Different Advice

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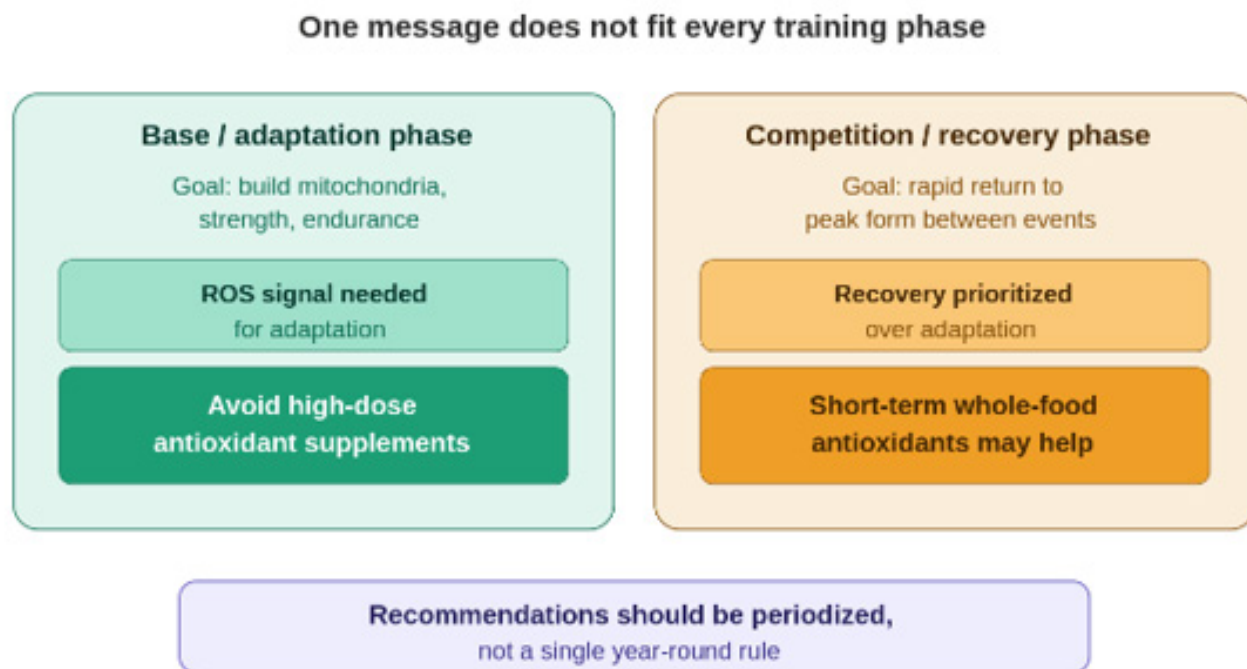
Dear Editor,

Debate over whether athletes should take antioxidant supplements often proceeds as though a single answer must apply at all times. I write to suggest that the more useful question is not whether, but when—and that antioxidant advice should be periodized to the training phase.

According to PubMed, antioxidant supplementation can blunt the redox-sensitive signaling—through pathways such as MAPK and PGC-1 $\alpha$ —that drives mitochondrial biogenesis and other adaptations to training, which argues against routine high-dose

use during phases where adaptation is the goal. The reactive oxygen species generated by exercise are, in this sense, part of the training stimulus rather than simply a cost.

Yet the same compounds may have a legitimate role at other times. According to PubMed, a review of tart cherry juice in athletes found that its polyphenols can lessen pain and accelerate strength recovery while reducing inflammation and oxidative stress, and explicitly noted that such supplementation may not be optimal during the adaptation or build phase but may be beneficial when recovery between intense competitions is the priority. The benefit and the harm depend on the phase.



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This reframing dissolves much of the apparent contradiction in the literature. Studies that suppress adaptation and studies that aid recovery are often both correct; they simply examined different phases with different goals. A recommendation that ignores this distinction will inevitably be wrong for one phase or the other.

I would therefore encourage practitioners and guideline authors to frame antioxidant recommendations in periodized terms: minimize high-dose antioxidant supplementation during base and adaptation training to preserve the redox signal, and consider short-term, preferably whole-food, antioxidant strategies during competition and recovery windows when rapid restoration of function outweighs further adaptation. A periodized message is

both more accurate and more actionable than a single year-round rule.

Sincerely,

Mueen Ahmed KK

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