Pendulum

Protocol: Post Antibiotic Athlete Gut Health Support

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Description

Antibiotics play a critical role in the treatment of infections; however, their non-selective mechanism of action results in the depletion of both pathogenic and commensal gut bacteria.[1, 2, 3] This disruption in microbial diversity and community structure can lead to persistent alterations in the gut microbiome, promoting dysbiosis. While moderate-intensity exercise is generally associated with enhanced microbial diversity, the sustained high-intensity training typical of athletes has been linked to reductions in diversity, immune disturbances, and elevated inflammatory responses. [4, 5]

These stressors, combined with athlete-specific factors such as increased gut permeability, specialized diets, travel demands, and frequent immune challenges, uniquely shape and often compromise the athletic gut microbiome. Given its essential role in energy metabolism, nutrient absorption, inflammation regulation, and psychological well-being, maintaining microbiome integrity is critical for supporting endurance, recovery, and overall performance in athletes. Fortunately, the following evidence-based strategies can mitigate the adverse effects of antibiotics on the gut microbiome:

- Maintain or restore gut microbiome diversity
- Support gut barrier integrity, immune function, and inflammation
- Safeguard performance, energy metabolism, and recovery

Why this matters for athlete health and performance

Microbiome disruption leads to the loss of keystone species (e.g. *Akkermansia muciniphila*, Clostridium butyricum.)[6,7] Decreased *Akkermansia muciniphila* and *Clostridium butyricum* leads to decreased gut barrier integrity, decreased short-chain fatty acid production, decreased immune regulation, increased inflammation, decreased metabolic regulation, and increased GI-related symptoms.[8, 9] Collectively, this impacts performance, recovery, GI-symptoms, upper respiratory tract infection risk, endurance and resilience.

Protective & Restorative Strategies

1. **Diet:** Reinforce with fiber-rich, anti-inflammatory, and microbiota-supportive whole foods.
2. **Targeted Probiotics:** Supplementation with *Akkermansia* and *Clostridium butyricum* to restore key functions (e.g., mucin layer regeneration, butyrate production.[10,11] Restoring specific bacterial strains requires targeted supplementation, as these microbes are not readily modulated or reintroduced through diet alone.[12]
3. **Polyphenols & Prebiotics:** Promote recolonization and support microbial diversity (e.g., green tea, berries, garlic, chicory root.)[13]

Aim for 1-3 servings of these high-polyphenol, -prebiotic foods in each meal

Grains/Legumes	Fruit	Vegetables	Nuts + seeds	Extras
Oats	Blueberries	Mushrooms	Flaxseeds	Dark chocolate
Barley	Pomegranate	Garlic	Cashews	Chicory Root
Black Beans	Apples	Artichokes	Pecans	Coffee
Garbanzo Beans	Avocado	Onions	Almonds	Seaweed
Lentils	Blackberries	Asparagus	Walnuts	Green tea

Supplement Plan

*Intended for 3 months post antibiotic use:

Weeks 1-4:

- Pendulum Akkermansia 500 Pro: 1 capsule, once daily with food
- Pendulum Polyphenol Booster: Support Akkermansia and overall microbiome diversity
- Consider supplementation with *Saccharomyces boulardii*
- Consider use of serum bovine immunoglobulins to manage bacteria die-off

Weeks 4-12:

- Pendulum Glucose Control Pro: 1 capsule, twice daily with food
- Encourage intake of polyphenols and prebiotic rich foods
- Supplement as necessary with Pendulum Polyphenol Booster to boost Akkermansia and support overall microbiome diversity
- Consider supplementation with *Saccharomyces boulardii*
- Consider the use of serum bovine immunoglobulins to manage bacteria die-off

References

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