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Polyphenols and Performance: A Systematic Review and Meta-Analysis

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Systematic Review
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Abstract

Background

Polyphenols exert physiological effects that may impact athletic performance. Polyphenols are antioxidants that have been noted to hinder training adaptations, yet conversely they stimulate stress-related cell signalling pathways that trigger mitochondrial biogenesis and influence vascular function.

Objective

To determine the overall effect of polyphenols on human athletic performance.

Methods

A search strategy was completed using MEDLINE, EMBASE, CINAHL, AMED and SPORTDiscus in April 2016. The studies were screened and independently reviewed by two researchers against predetermined criteria for eligibility. As a result of this screening, 14 studies were included for meta-analysis. Of these, the studied populations were predominately-trained males with an average intervention dose of 688 ± 478 mg·day^{-1}.

Results

The pooled results demonstrate polyphenol supplementation for at least 7 days increases performance by 1.90% (95% CI 0.40–3.39). Sub-analysis of seven studies using quercetin identified a performance increase of 2.82% (95% CI 2.05–3.58). There were no adverse effects reported in the studies in relation to the intervention.

Conclusion

Overall the pooled results show that polyphenols, and of note quercetin, are viable supplements to improve performance in healthy individuals.

Keywords

Quercetin Polyphenol Resveratrol Mitochondrial Biogenesis Athletic Performance
These keywords were added by machine and not by the authors. This process is experimental and the keywords may be updated as the learning algorithm improves.

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Notes

Author contributions

VS and AB conceived and designed the study; VS and CB performed the literature search and were responsible for decisions on inclusion/exclusion of articles (with AB as the decider if there was disagreement); VS analysed the data; VS and AB wrote the article.

Compliance with Ethical Standards

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Conflict of interest

Vaughan Somerville, Cameron Bringans and Andrea Braakhuis declare that they have no conflicts of interest relevant to the content of this review.

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