

ESSR Journal Club

Covered Article: “Exercise and the Gut Microbiome”

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- 1) What is the gut microbiota? What factors influence the composition of the gut microbiota?
- 2) How do culture-based methodologies differ from molecular approaches for studying the gut microbiota?
- 3) What is the difference between alpha and beta diversity?
- 4) Describe some of the changes in the gut microbiota that occur with exercise training in animal studies and name two factors that might explain the discrepancies between individual studies.
- 5) Explain why cross-sectional studies cannot adequately determine whether exercise training changes the gut microbiome.
- 6) The short-chain fatty acid butyrate is produced from the bacterial fermentation of dietary fiber. Why is butyrate important, and how is butyrate influenced by exercise training in human longitudinal studies?
- 7) Name some of the potential mechanisms by which aerobic exercise might change the gut microbiota.
- 8) The authors propose that exercise could act as a hormetic stressor to the gut barrier. Explain what this means and discuss how it compares to adaptations seen during resistance training of skeletal muscle.
- 9) In mouse models, voluntary wheel running has been shown to be protective against colitis. Explain how we know that this effect is at least partly mediated by beneficial exercise-induced changes in the gut microbiome.
- 10) Exercise is known to be beneficial for cognition and mental health. Discuss how exercise-induced changes in the gut microbiota could peripherally affect the brain.