High-intensity interval training (HIIT) has been shown to improve bone metabolism, enhance bone mineral density (BMD), and release lactate into the bloodstream. Lactate may mediate the enhancement in bone growth and metabolism following HIIT, serving as a cost-effective strategy for bone augmentation in the management of osteoporosis.

Study groups:
- Nonovariectomized control group
- Ovariectomized group (OVX)
- HIIT group (OVX + HIIT)
- HIIT with lactate transporter inhibition group (OVX + HIIT + INH)
- Lactate subcutaneous injection group (OVX + LAC)

Compared to OVX alone:
- OVX + HIIT and OVX + LAC groups: Increased BMD, Significant improvement in mechanical properties
- OVX + HIIT + INH group: Benefits of exercise on bone microstructure and biomechanics, Expression of osteoblastic biomarkers
- OVX + LAC group: Bone augmentation, mechanical properties, and tissue level material properties

Lactate Mediates the Bone Anabolic Effect of High-Intensity Interval Training by Inducing Osteoblast Differentiation

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Role of Lactate in the Bone Anabolic Effect of High-Intensity Exercise