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Bone metabolism in anorexia nervosa and hypothalamic amenorrhea

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**Abstract:**

Anorexia nervosa (AN) and hypothalamic amenorrhea (HA) are states of chronic energy deprivation associated with severely compromised bone health. Poor bone accrual during adolescence followed by increased bone loss results in lifelong low bone density, degraded bone architecture, and higher risk of fractures, despite recovery from AN/HA. Amenorrhea is only one of several compensatory responses to the negative energy balance. Other hypothalamic-pituitary hormones are affected and contribute to bone deficits, including activation of hypothalamic-pituitary-adrenal axis and growth hormone resistance. Adipokines, particularly leptin, provide information on fat/energy stores, and gut hormones play a role in the regulation of appetite and food intake. Alterations in all these hormones influence bone metabolism. Restricted in scope, current pharmacologic approaches to improve bone health have had overall limited success.

**Key Words:** anorexia nervosa, hypothalamic amenorrhea, low bone density, bone metabolism

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