

# Estrogen prevents the reduction in fractional calcium absorption due to energy restriction in mature rats

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Weight reduction is a risk factor for bone loss. We previously showed that energy restriction is associated with a decrease in calcium (Ca) absorption and decreased estrogenic activity (EA). We hypothesized that this hypoestrogenic status may be the cause of the decrease in Ca absorption and that estrogen replacement during energy restriction would prevent it. Six-month-old rats were ovariectomized and implanted subcutaneously with 17 $\beta$ -estradiol (E<sub>2</sub>) pellets to maintain levels within the physiological range. After 3 wk, rats ate ad libitum [control (CTL) group, n = 12] or were 40% energy restricted (EnR group, n = 12) for 10 wk. At the end of this study, rats were divided into 2 groups according to their uterine weight: those with higher EA and those with lower EA. Whereas CTL rats gained 46% weight from baseline, EnR rats maintained their weight throughout the study. Energy restriction was associated with lower Ca absorption (5-d measurement, <sup>45</sup>Ca radioisotope) and Ca balance in low