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The effects of tree nut and peanut consumption on energy compensation and energy expenditure: a systematic review and meta-analysis

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Evidence suggests that habitual nut consumption is not associated with a higher body weight.[1] Potential energy regulating mechanisms may include a reduced subsequent energy intake[2] and increased energy expenditure[3] following nut intake. The aim of this systematic review was to examine the effect of tree nut and peanut consumption on energy intake, compensation, and expenditure (PROSPERO CRD42021252292). PubMed, MEDLINE, CINAHL, Cochrane and Embase databases were searched to 2 June 2021. Human studies with adults aged 18 years and older were included. Energy intake and compensation studies were restricted to acute effects (intervention duration of 24 hours or less) while intervention duration was not limited for energy expenditure studies. Random effects meta-analyses were conducted to explore weighted mean differences in resting energy expenditure. A total of 28 articles from 27 studies (16 energy intake studies, 10 energy expenditure studies and one study investigating both) were included in this review, with a variety of nut types addressed (almonds, Brazil nuts, cashews, chestnuts, hazelnuts, peanuts, pistachios, walnuts, and mixed nuts). Energy compensation occurred following most nut-containing loads, however, nut consumption was also found to increase subsequent energy intake in some studies. Energy compensation was varied and ranged from an increase in subsequent energy intake up to 280.5% of the energy from nuts to a reduction in subsequent energy intake up to 176.4% of energy from nuts. This variation in response depended on nut form, where whole nuts had a greater compensatory effect than finely ground nuts. Energy compensation was also influenced by how nuts were being consumed, where nuts consumed alone as a snack had a greater compensatory effect than nuts integrated within a meal or food. The findings of the effect of nut consumption on post-prandial energy expenditure were inconsistent and inconclusive. The meta-analyses identified a small, non-significant increase in resting energy expenditure associated with nut consumption (WMD: 28.58 kcal/d (95% CI [−10.66, 67.82]). This study provides support for energy compensation as a potential mechanism for a lack of association between nut consumption and body weight, while no evidence was found for energy expenditure as an energy regulating mechanism of nuts.

References

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