Unstable shoes increase energy expenditure of obese patients.

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Background: Ergonomic unstable shoes, which are widely available to the general population, could increase daily non-exercise activity thermogenesis as the result of increased muscular involvement. We compared the energy expenditure of obese patients during standing and walking with conventional flat-bottomed shoes versus unstable shoes.

Methods: Twenty-nine obese patients were asked to stand quietly and to walk at their preferred walking speed while wearing unstable or conventional shoes. The main outcome measures were metabolic rate of standing and gross and net energy cost of walking, as assessed with indirect calorimetry.

Results: Metabolic rate of standing was higher while wearing unstable shoes compared with conventional shoes (1.11±0.20 W/kg^{-1}vs 1.06±0.23 W/kg^{-1}, *P*=.0098). Gross and net energy cost of walking were higher while wearing unstable shoes compared with conventional shoes (gross: 4.20±0.42 $J/kg^{-1}/m^{-1}$vs 4.01±0.39 $J/kg^{-1}/m^{-1}$, *P*=.0035; net: 3.37±0.41 $J/kg^{-1}/m^{-1}$vs 3.21±0.37 $J/kg^{-1}/m^{-1}$; *P*=.032).

Conclusion: In conclusion, in obese patients, it is possible to increase energy expenditure of standing and walking by means of ergonomic unstable footwear. Long-term use of unstable shoes may eventually prevent a positive energy balance.