Gray School of Medical Sciences
Gray Faculty of Medical & Health Sciences
Tel Aviv University

University of Colorado Anschutz Medical Campus

Exercise-induced energy compensation (ExEC)

Could changes in the energy cost of NEAT-related tasks play a role?

WHY IS NEAT DIFFICULT TO ASSESS?

Two common approaches — both indirect

01 RESIDUAL ESTIMATE

NEAT ≈ TDEE − RMR − DIT
Uncertainty in each component carries into the residual.

02 ACTIVITY PROXIES

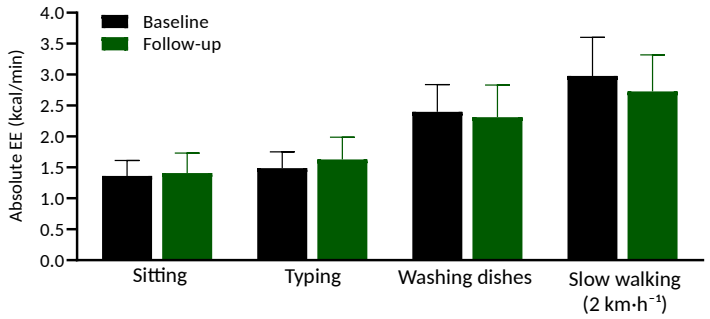
Accelerometers and heart-rate monitors capture movement/activity volume, not the energy cost of a specific task.

HOW DID WE TEST NEAT?

Direct task-level EE measurement using indirect calorimetry

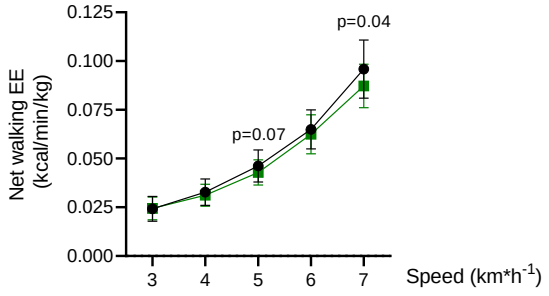
Middle-aged adults with overweight (BMI 25–30 kg/m²; n = 16)
Matched tasks/workloads before and after 12 weeks of supervised walking · ~20 kcal·kg^{-1}·week^{-1} · Adherence 95.4%

DAILY ACTIVITIES



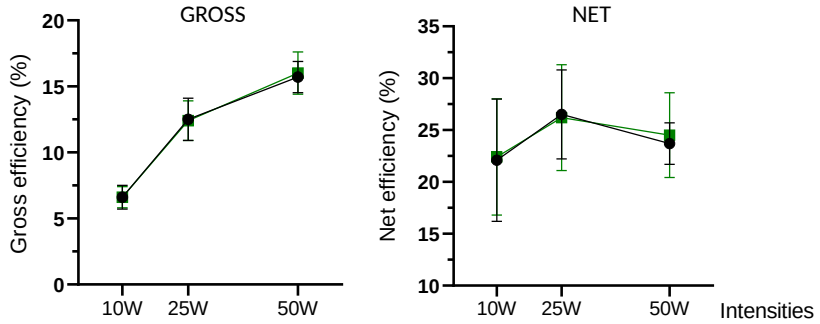
No FDR-significant reduction in absolute EE across routine tasks.

TREADMILL WALKING



Nominal reductions at 5 and 7 km·h^{-1} did not survive FDR correction.

CYCLING EFFICIENCY



No significant change in gross or net cycling efficiency.

TAKE-HOME

Limited generalization of improved movement economy beyond walking constrains its potential contribution to ExEC.

Tzachi Knaan, Eylam Ziv-Av, Gal Dubnov-Raz, Edward Melanson, Yftach Gepner | Communications Medicine (2026) · Obesity (2026)