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Anthropometrics provide a better estimate of urinary organic acid anion excretion than a dietary mineral intake-based estimate in children, adolescents, and young adults.

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The role of elevated net endogenous acid production (NEAP) in the causation of osteoporosis, muscle wasting, and kidney stones is currently under discussion. The aim of this study was to examine whether urinary organic acid anion excretion, a major component of NEAP, is predicted primarily by anthropometric- (OA(anthro)) or diet- (OA(diet)) based estimates. Dietary intakes, anthropometric data, and 24-h urinary excretion rates of organic acids (24h-OA(urine)) were determined cross sectionally in healthy children (6-7 y; n = 217), adolescents (13-14 y; n = 91), and young adults (18-22 y; n = 82). OA(anthro) was computed from body surface area and OA(diet) calculated using a published algorithm based on dietary intakes of mineral anions and cations. There was a significant increase ($P < 0.0001$) in 24h-OA(urine) across the age groups that was no longer discernible after correction for body surface area. In almost all sex-stratified subsamples, OA(anthro) had a higher correlation with 24h-OA(urine) than OA(diet). Multiple regression analyses, using energy-corrected diet variables, revealed that OA(anthro) was consistently the primary predictor of 24h-OA(urine) ($R(2)$ varying from 0.15 to 0.39) and dietary fat and protein were sporadic predictors. In accordance with the observed age independency of 24h-OA(urine) after body surface area correction, our findings indicate that OA(anthro) is a better estimate of 24h-OA(urine) in healthy children, adolescents, and young adults than OA(diet). This further confirms that the (principally diet-dependent) NEAP comprises a component, i.e., organic acid anions, that is reasonably predictable by anthropometrics. Consequently, the other component, i.e., the potential renal acid load, appears to be the primary parameter that characterizes the diet-induced acid load.