

Abstract

Low energy availability (EA) has been recognized as an instigator of menstrual dysfunction and subsequent hypoestrogenism that leads to deterioration in bone health. Elite Kenyan male athletes have been reported to often function under low energy balance. Therefore, the purpose of this study was to determine EA and menstrual function (MF) among elite Kenyan female athletes; and to explore the association between EA and MF in the athletes. The data were collected from 25 elite Kenyan runners and 14 non-athletes. Energy intake (EI) minus exercise energy expenditure (EEE) normalized to fat free mass (FFM) determined EA. EI was determined through weight of all food and liquid consumed over three consecutive days. EEE was determined after isolating and deducting energy expended in exercise or physical activity above lifestyle level from the total energy expenditure output as measured by Actigraph GT3X+. FFM was assessed using DXA. A daily temperature-menstrual log kept for nine continuous months was used to establish menstrual function. Overall, EA below $45 \text{ kcal/kgFFM.d}^{-1}$ was seen in 61.53% of the participants (athletes: $28.07 \pm 11.45 \text{ kcal/kgFFM.d}^{-1}$, non-athletes: $56.97 \pm 21.38 \text{ kcal/kgFFM.d}^{-1}$). Results on menstrual dysfunction were as follows: oligomenorrhea (athletes: 40%; non-athletes: 14.3%) and amenorrhea (non-athletes: 14.3%). None of the athletes were amenorrheic. Results did not show any significant association between EA and MF, but the low to sub-optimal EA among elite Kenyan female athletes raises concern for their future menstrual and bone health. Educating the athletes and coaches will enhance achievement of the specific dietary and nutritional needs appropriate to their competition events.