

Impact of Energy Balance on Body Composition of Sport Sciences Undergraduates in Sri Lanka

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Energy Balance is where energy intake (EI) equals the energy expenditure (EE). When $EI > EE$, it is known as energy surplus (+EB) and, when the $EE > EI$, it is known as energy deficit (-EB). This study examines the impact of energy balance on the body composition of Sport Sciences undergraduates. Sport sciences undergraduates ($n = 101$) voluntarily participated and completed the assessments at the beginning and the end of the study year (42 weeks). The body composition and basal metabolic rate (BMR) were measured using the bioelectrical impedance analyzer. EI was measured by the three-day food diary. The EE was calculated by adding the thermic effect of food expenditure and physical activity energy expenditure (International Physical Activity Questionnaire), and BMR. A total of 35 female (55%) and 11 (30%) male undergraduates reported an average of +EB of 319 ± 248 kcal, 189 ± 177 kcal respectively while 29 females (45%) and 26 male (70%) undergraduates reported an average -EB of -244 ± 163 kcal and -421 ± 262 kcal respectively. Undergraduates with +EB displayed an increase in their Bodyweight (Bw), Fat Mass (FatM), and Fat Free Mass (FFM), while -EB undergraduates displayed a decrease in their Bw, FatM, and FFM. Only female undergraduates with -EB significantly reduced their Bw from 54.74 ± 10.88 kg to 52.55 ± 10.81 kg ($t = -4.63$, $P = 0.000$), FatM from 16.66 ± 7.35 kg to 15.75 ± 7.48 kg ($t = -3.05$, $P = 0.005$) and FFM from 38.08 ± 4.05 kg to 37.17 ± 3.99 kg ($t = -3.91$, $P = 0.001$). Positive and -EB exhibited a significant impact only on the female Bw (0.57 ± 2.09 kg, -2.19 ± 2.55 kg, $t_{(54)} = 4.68$, $P = 0.000$), FatM (0.21 ± 1.85 kg, -0.91 ± 1.61 kg, $t_{(61)} = 2.60$, $P = 0.012$) and FFM (0.21 ± 1.01 kg, -0.91 ± 1.26 kg, $t_{(53)} = 3.88$, $P = 0.000$). Therefore, our results have shown that the -EB has a significant negative impact on the female body composition which also reflects on their dietary pattern.

Keywords: *Energy balance, Fat mass, Fat free mass*