**Supplementary Material (Online Publication Only)**

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| **Supplementary Table 1.** Identifying obese individuals using anthropometric indices |
| Anthropometric indices | Number of Obese Individuals, n (%) | Positive Predictive Value (%) | Negative Predictive Value (%) |
| Traditional |  |  |  |
|  Waist Circumference [WC3] | 15 (17.2%) | 69.4 | 80.0 |
|  Waist to Hip Ratio [WC3] | 23 (26.4%) | 73.4 | 73.9 |
|  Waist to Height Ratio [WC3] | 4 (4.6%) | 63.9 | 100 |
| Body Mass Index | 7 (8.0%) | 62.5 | 57.1 |
| Proposed |  |  |  |
| Body Fat Index (Model 3) | 31 (35.6%) | 87.5 | 87.1 |
| Obesity was defined as percent body fat >25% for males and >30% for females (n=34 (39.1%)).Abbreviations: WC3; waist circumference measured at the superior border of the iliac crest (WC3 was used to calculated waist to hip ratio, waist to height ratio, and body fat index).Operative definition: Waist Circumference; Asian males ≥ 90cm, Asian females ≥ 80cm, non-Asian males ≥ 102cm, non-Asian females ≥ 88cm, Waist to Hip Ratio; males ≥ 0.90, females ≥ 0.85, Waist to Height Ratio; males ≥ 0.63, females ≥ 0.58, Body Mass Index; Asian ≥ 25, non-Asian ≥ 30, Body Fat Index; males ≥ 25%, females ≥ 30%. |

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| **Supplementary Table 2.** Characteristics of participants in the randomly split sample groups |
|  | Random Group 1 (n=61) | Random Group 2 (n=26) | *p* |
| Sex (n) |  |  | 0.983 |
|  Male | 28 (45.9%) | 12 (46.2%) |  |
|  Female | 33 (54.1%) | 14 (53.8%) |  |
| Race (n) |  |  | 0.587 |
|  Asian | 15 (24.6%) | 5 (19.2%) |  |
|  Non-Asian | 46 (75.4%) | 21 (80.8%) |  |
| Age (years) | 23.56 ± 4.09 | 23.31 ± 3.70 | 0.789 |
| DXA Percent Body Fat (%) | 27.09 ± 9.54 | 24.97 ± 9.34 | 0.343 |
| Waist Circumference (cm) [WC3 | 83.66 ± 8.01 | 81.88 ± 6.39 | 0.317 |
| Body Mass Index (kg/m2) | 23.90 ± 2.84 | 23.44 ± 2.49 | 0.479 |
| Body Fat Index (Model 3) [WC3] | 26.79 ± 7.96 | 25.68 ± 8.06 | 0.556 |
| Data are presented as mean ± standard deviation unless otherwise stated.Abbreviation: WC3; waist circumference measured at the superior border of the iliac crest, DXA; percent body fat measured with a dual-energy x-ray absorptiometry. |

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| **Supplementary Table 3.** Comparison of Body Fat Index with percent body fat measured with DXA in the randomly split sample groups |
|  | Difference (DXA\_PBF vs BFI) (%) | *p* | r |
| Random Group 1 (n=61) | 0.30 ± 5.50 | 0.67 | 0.82\*\* |
| Random Group 2 (n=26) | 0.71 ± 4.23 | 0.40 | 0.89\*\* |
| Data are presented as mean ± standard deviation unless otherwise stated.\* significant correlation of *p* < 0.05 (2-tailed). \*\* significant correlation of *p* < 0.001 (2-tailed).Abbreviation: DXA; dual-energy x-ray absorptiometry, DXA\_PBF; percent body fat measured with a dual-energy x-ray absorptiometry, BFI; Body Fat Index. |