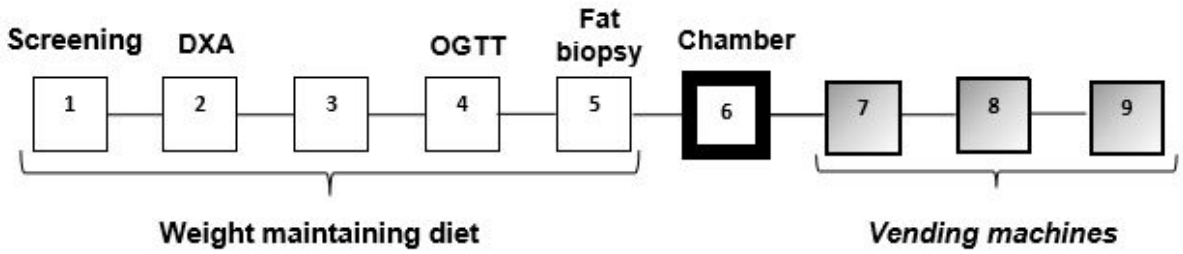
SUPPLEMENTARY MATERIAL

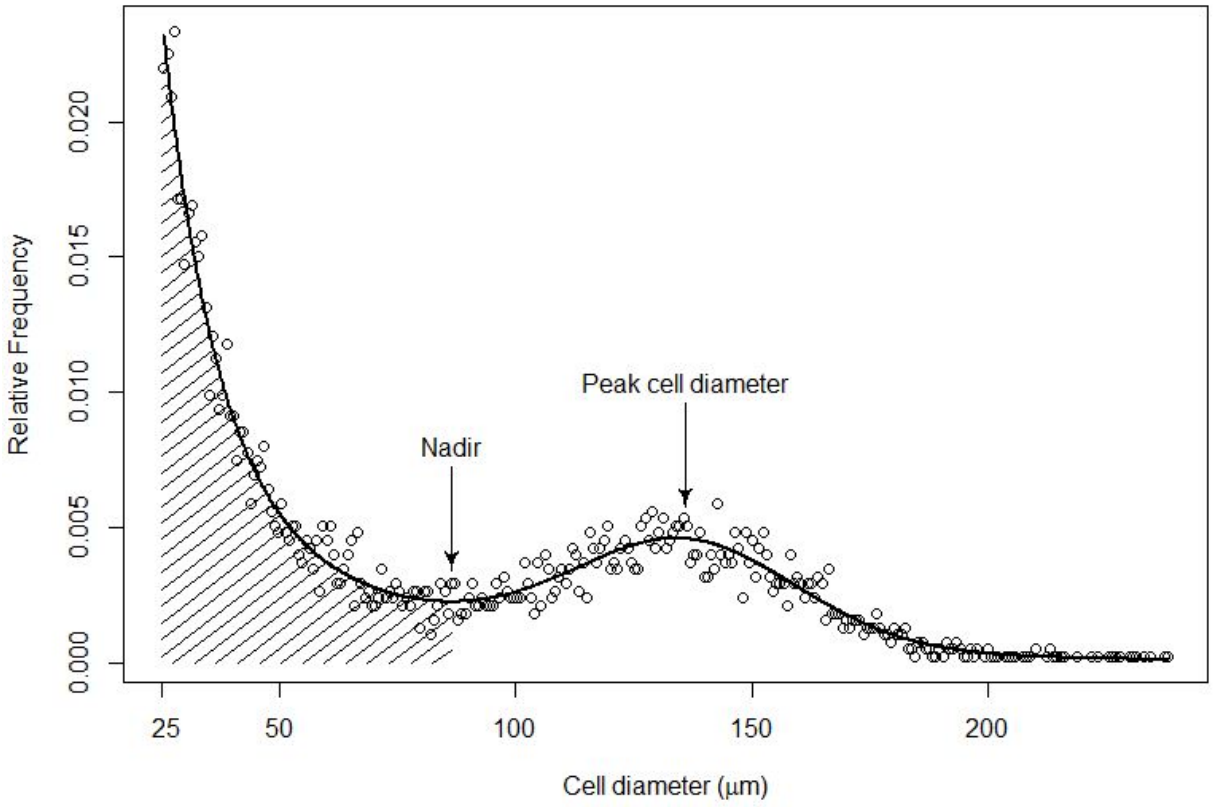
Basolo et al. Thigh adipocyte size is inversely related to energy intake and respiratory quotient in healthy women

Fig. S1. Clinical study outline.



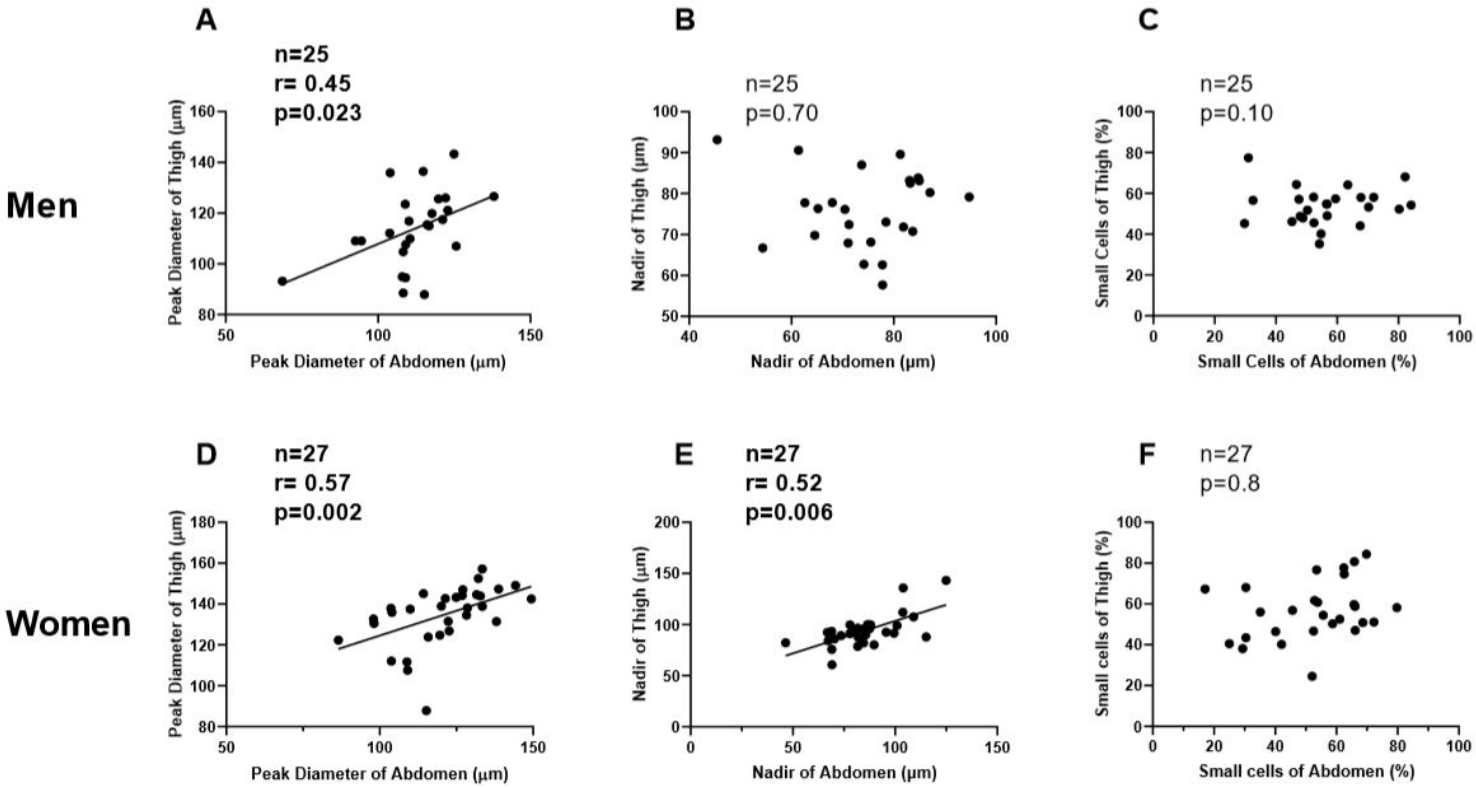
Day 1: Screening interview including informed consent and screening labs
Day 2: DXA (dual-energy X-ray absorptiometry)
Day 4: OGTT (oral glucose tolerance test)
Day 5: Subcutaneous adipose tissue biopsy of thigh and abdomen for adipocyte size measurements
Day 6: 24-h stay in the metabolic chamber
Day 7: Fasting blood draw prior to assessment of *ad libitum* food intake
Day 7-8-9: Assessment of *ad libitum* food intake via vending machine paradigm

Fig. S2. Representative bimodal distribution.



Cell size distributions were modelled as the sum of two exponential functions representing the leading trail of small cells and a Gaussian function representing the large cell population. The peak cell diameter of the large adipocyte population, nadir diameter (defined as the mid-point between the large and small populations), and percent small cells (defined as the percent of cells with diameter less than the nadir as shown in the hatched region) are derived from the parameters of this formula fitted to a participant's cell count data.

Fig. S3. Relationship between adipocyte size in the abdominal and thigh regions.



Intrasubject correlation between thigh and abdominal regions for peak diameter (panel A), nadir diameter (panel B), and percent small cells (panel C) in men. Intrasubject correlation between thigh and abdominal regions for peak diameter (panel D), nadir diameter (panel E), and percent small cells (panel F) in women. Pearson's correlation coefficient (r) is reported along with its significance (p).

Supplementary Table S1. Determinants of daily *ad libitum* energy intake.

	Daily energy intake	
	Males	**Females**
Explained variance (global p value)	R^2=0.24 p=0.3	**R^2=0.51** **p<0.01**
Age (years)	–25.3±23.8 (–74.8, 24.1) Partial r: –0.22 p value: 0.29	**23.4±11.4** **(–0.19, 47.1)** **Partial r: 0.40** **p value: 0.05**
Ethnicity (Native American)	942.2±506.8 (–111.6, 1996.1) Partial r: 0.38 p value: 0.07	173.3±290.8 (–429.7, 776.4) Partial r: 0.13 p value: 0.5
Fat free mass (kg)	40.3±54.2 (–72.3, 152.9) Partial r: 0.16 p value: 0.5	**67.4±23.7** **(18.2, 116.6)** **Partial r: 0.5** **p value: 0.01**
Fat mass (kg)	–14.2±59.8 (–138.5, 110.1) Partial r: –0.05 p value: 0.8	–21.1±19.2 (–60.8, 18.7) Partial r: –0.23 p value: 0.3
Peak Diameter of Thigh Adipocyte	–9.5±19.1 (–49.3, 30.2) Partial r: –0.10 P value: 0.6	**–26.5±11.8** **(–50.8, –2.1)** **Partial r: –0.40** **p value: 0.03**
Intercept	3455.3±3771.7 (–4388.5, 11299) p value: 0.4	3160.5±1808.1 (–589.1, 6910.2) p value: 0.09

Multivariable models for the determinants of 24-h respiratory quotient, carbohydrate oxidation, and lipid oxidation measured during energy balance conditions. The β coefficient estimate in each cell is reported with ± SE and 95% confidence interval in parentheses, along with partial correlations and p value. Significant results are highlighted in **bold**. The Non-Native American group (not shown) is the ethnic group used as reference.

Supplementary Table S2. Determinants of 24-h respiratory quotient, carbohydrate oxidation, and lipid oxidation.

	24-h RQ		CARBOX		LIPOX	
	Males	**Females**	**Males**	**Females**	**Males**	**Females**
Explained variance (global p value)	**R^2=0.45 p=0.04**	**R^2=0.54 p<0.001**	**R^2=0.36 p<0.01**	**R^2=0.34 p<0.01**	**R^2=0.56 p<0.01**	**R^2=0.65 p<0.01**
Age (years)	**–0.002 ± 0.0008 (–0.004, –0.0006) Partial r: –0.55 p value: 0.01**	–0.0001±0.001 (–0.003, 0.002) Partial r: –0.03 p value: 0.91	**–16.1±6.5 (–29.7, –2.49) Partial r: –0.50 p value: 0.02**	–2.1±9.3 (–21.8, 17.6) Partial r: –0.05 p value: 0.83	**22.8±7.2 (7.6, 38.0) Partial r: 0.60 p value: 0.01**	–2.0±7.8 (–18.8, 14.7) Partial r: 0.07 p value: 0.80
Ethnicity (Native American)	–0.007±0.02 (–0.04, 0.03) Partial r: –0.09 p value: 0.69	**0.06±0.03 (–0.0006, 0.12) Partial r: 0.48 p value: 0.052**	–133.7±129.8 (–406.35, 139.0) Partial r: –0.23 p value: 0.32	417.7±224.0 (–59.7, 895.2) Partial r: – 0.06 p value: 0.55	–44.7±145.1 (–349.6, 260.1) Partial r: 0.07 p value: 0.76	–511.2±189.8 (–349.6, 260.1) Partial r: –0.57 p value: 0.02
Peak Diameter of Thigh Adipocyte	–0.0007±0.0005 (–0.002, 0.0003) Partial r: –0.32 p value: 0.2	**–0.002±0.001 (–0.004, –0.0001) Partial r: –0.47 p value: 0.04**	–4.9±4.8 (–15.0, 5.3) Partial r: –0.23 p value: 0.1	**–15.3±12.5 (–28.5, –2.1) Partial r: –0.51 p value: 0.02**	6.35±5.4 (–27.8, 0.29) Partial r: 0.27 p value: 0.2	**16.3±10.7 (0.56, 32.0) Partial r: 0.47 p value: 0.04**
Body fat Percentage (%)	0.0009±0.002 (–0.003, 0.005) Partial r: 0.12 p value: 0.62	–0.002±0.002 (–0.007, 0.003) Partial r: 0.18 p value: 0.49	28.7±14.6 (–2.1, 59.5) Partial r: 0.42 p value: 0.06	1.8±19.5 (–39.7, 43.3) Partial r: 0.024 p value: 0.92	–2.8±16.4 (–37.2, 31.7) Partial r: –0.04 p value: 0.87	31.9±16.5 (–3.2, 67.2) Partial r: 0.45 p value: 0.07
Energy Balance	**0.0001±0.00004 (0.00003, 0.0002) Partial r: 0.56 p value: 0.01**	0.0002±0.0001 (–0.00002, 0.004) Partial r: 0.44 p value: 0.07	0.34±0.29 (–0.28, 0.95) Partial r: 0.26 p value: 0.26	0.72±0.76 (–0.91, 2.35) Partial r: 0.24 p value: 0.36	**–1.3±0.33 (–2.0, 0.63) Partial r: –0.69 p value<0.001**	**–1.8±0.65 (–3.2, –0.45) Partial r: –0.58 p value: 0.01**
Intercept	**0.99±0.06 (0.86, 1.12) p value<0.0001**	**1.29±0.22 (0.82, 1.75) p value<0.001**	**1560.34±488.14 (534.8, 2585.9) p value:<0.01**	**3573.91±1742.2 (–139.6, 7287.4) p value: 0.058**	–736.9±545.7 (–1883.3, 409.5) p value: 0.19	–2593.9±545.7 (–1883.3, 409.5) p value: 0.19

Multivariable models for the determinants of 24-h respiratory quotient, carbohydrate oxidation, and lipid oxidation measured during energy balance conditions. The β coefficient estimate in each cell is reported with ± SE and 95% confidence interval in parentheses, along with partial correlations and p value. Significant results are highlighted in **bold**. The Non-Native American group (not shown) is the ethnic group used as reference.