



Figure S1. Changes of intake fodder weight throughout the experiment. Con, Con+T, LPHF, LPHF+T, HPHF, and HPHF+T represent chow diet, chow diet plus training, low-protein high-fat diet, low-protein high-fat diet plus training, high-protein high-fat diet, and high-protein high-fat diet plus training, respectively. Feed, training, and interaction indicate a dominant effect of diet, treadmill exercise, and the interactive effect between feed and training, respectively. ** $p < 0.01$; *** $p < 0.001$. @, $p < 0.05$; &, $p < 0.01$; #, $p < 0.001$. Data are presented as the mean \pm SD. $n = 8$ for each group. Significance of differences between means was determined by Tukey's post hoc test when ANOVA revealed a significant effect from interaction of diet and training.

Table S1. Effects of LPHF, HPHF and/or training on absolute tissues/organs weight.

Tissue/Organ	Con groups		LPHF groups		HPHF groups		Significance		
	Con	Con+T	LPHF	LPHF+T	HPHF	HPHF+T	Training	Feed	Interaction
WAT, g	0.90 ± 0.31 ^e	0.43 ± 0.18 ^{ef}	0.53 ± 0.11 ^e	0.45 ± 0.12 ^{ef}	1.93 ± 0.72 ^{abcd^f}	1.01 ± 0.37 ^{bde}	***	***	**
BAT, g	0.11 ± 0.03	0.10 ± 0.03	0.09 ± 0.02	0.20 ± 0.36	0.13 ± 0.05	0.08 ± 0.03	n.s.	n.s.	n.s.
SKM, g	0.18 ± 0.02	0.18 ± 0.01	0.14 ± 0.01	0.14 ± 0.01	0.18 ± 0.01	0.18 ± 0.01	n.s.	***	n.s.
Liver, g	1.11 ± 0.14	1.10 ± 0.09	0.98 ± 0.12	0.98 ± 0.06	1.30 ± 0.31	1.20 ± 0.10	n.s.	***	n.s.
Kidney, g	0.32 ± 0.03	0.33 ± 0.03	0.23 ± 0.02	0.24 ± 0.01	0.34 ± 0.04	0.36 ± 0.02	n.s.	***	n.s.

WAT, BAT, and SKM represent white adipose tissue; brown adipose tissue; and skeletal muscle, respectively. Con, Con+T, LPHF, LPHF+T, HPHF, and HPHF+T represent chow diet, chow diet plus training, low-protein high-fat diet, low-protein high-fat diet plus training, high-protein high-fat diet, and high-protein high-fat diet plus training, respectively. Feed, training, and interaction indicate a dominant effect of diet, treadmill exercise, and the interactive effect between feed and training, respectively. n.s., no significance was observed. ** $p < 0.01$ and *** $p < 0.001$. Data are presented as the mean ± SD. $n = 8$ for each group. Significance of differences between means was determined by Tukey's post hoc test when ANOVA revealed a significant effect from interaction of diet and training. ^{a-f}, significantly different from Con, Con+T, LPHF, LPHF+T, HPHF, and HPHF+T, respectively.