

**Supplemental Table S1.** Changes in body composition, physical activity (PA) and energy expenditure (EE) variables between RYGB and EX+RYGB.

Variables		Intervention Group				P-values				
		EX+RYGB		RYGB		$\Delta$	Group	Cov.	$\Delta$ x Cov.	$\Delta$ x Cov.x G
		Mean	SD	Mean	SD					
<b>Weight</b>	(kg)	-22.62	± 6.87	-22.47	± 9.22	<b>&lt;0.001</b>	0.421			
<b>Weight<sup>a</sup></b>	(kg)	-22.19	± 1.05	-22.42	± 1.09	<b>0.020</b>	0.616	*, †††, ‡‡	*, †††, ‡‡‡	-
<b>FFM</b>	(kg)	-1.43	± 2.56	-1.07	± 2.49	<b>&lt;0.001</b>	0.511			
<b>FFM<sup>a</sup></b>	(kg)	-1.34	± 0.39	-1.99	± 0.42	<b>0.048</b>	0.805	*, †††	-	-
<b>FFM<sup>a,b</sup></b>	(kg)	-1.35	± 0.39	-1.20	± 0.40	<b>0.049</b>	0.691	-	-	-
<b>FM</b>	(kg)	-20.27	± 6.52	-19.55	± 8.13	<b>0.001</b>	0.647			
<b>FM<sup>a</sup></b>	(kg)	-20.12	± 0.93	-19.40	± 0.92	<b>0.023</b>	0.400	†††, ‡‡‡	*, †††, ‡	-
<b>FM<sup>a,b</sup></b>	(kg)	-20.03	± 0.91	-19.01	± 0.90	<b>0.025</b>	0.375	<b>0.044</b>	-	<b>0.032</b>
<b>RMR</b>	(kcal.day <sup>-1</sup> )	-110	± 188	-45	± 318	<b>0.009</b>	0.262			
<b>RMRadj<sup>a</sup></b>	(kcal.day <sup>-1</sup> )	-123	± 41	-23	± 41	0.542	0.327	†††	*	-
<b>RMRadj<sup>c</sup></b>	(kcal.day <sup>-1</sup> )	-111	± 41	-43	± 40	<b>0.010</b>	0.234	<b>&lt;0.001</b>	<b>0.028</b>	<b>0.031</b>
<b>VO<sub>2max</sub></b>	(ml.min <sup>-1</sup> )	118	± 372	-70	± 279	0.257	<b>0.007</b>	-	-	-
<b>VO<sub>2max</sub><sup>a</sup></b>	(ml.min <sup>-1</sup> )	114	± 50	-67	± 47	0.116	<b>0.011</b>	-	-	-
<b>TDEE</b>	(kcal.day <sup>-1</sup> )	-359	± 291	-275	± 249	<b>0.0001</b>	0.155			
<b>TDEEadj<sup>a</sup></b>	(kcal.day <sup>-1</sup> )	-342	± 39	-291	± 39	0.778	<b>0.014</b>	†††	††	-
<b>TDEEadj<sup>d</sup></b>	(kcal.day <sup>-1</sup> )	-350	± 40	-276	± 39	0.236	<b>0.026</b>	<b>0.0001</b>	<b>0.004</b>	-
<b>TDEEadj<sup>a,d</sup></b>	(kcal.day <sup>-1</sup> )	-340	± 40	-287	± 40	0.061	<b>0.030</b>	<b>0.0001</b>	-	-
<b>PAEE<sup>a</sup></b>	(kcal.day <sup>-1</sup> )	54	± 43	108	± 43	<b>0.025</b>	<b>0.034</b>	-	†, ‡‡	
<b>NetPAEE<sup>a</sup></b>	(kcal.day <sup>-1</sup> )	-5	± 35	20	± 35	0.616	0.613	††	‡‡	
<b>SedEE<sup>a</sup></b>	(kcal.day <sup>-1</sup> )	-396	± 27	-398	± 27	0.391	0.950	†††, ‡‡‡	†††, ‡‡	
<b>NetSedEE<sup>a</sup></b>	(kcal.day <sup>-1</sup> )	-219	± 40	-275	± 39	0.712	0.313	†††, ‡‡‡	<b>**</b> , †††	
<b>LightEE<sup>a</sup></b>	(kcal.day <sup>-1</sup> )	19	± 24	28	± 24	0.839	<b>0.006</b>	-	-	-
<b>NetLightEE<sup>a</sup></b>	(kcal.day <sup>-1</sup> )	-22	± 19	-30	± 18	0.468	<b>0.014</b>	†††	-	-
<b>MVEE<sup>a</sup></b>	(kcal.day <sup>-1</sup> )	35	± 26	79	± 26	0.497	0.234	-	†, ‡‡	
<b>NetMVEE<sup>a</sup></b>	(kcal.day <sup>-1</sup> )	17	± 22	50	± 22	0.427	0.674	-	‡	-
<b>SedTime</b>	(min.day <sup>-1</sup> )	-59.72	± 99.61	-76.54	± 79.00	<b>0.001</b>	<b>0.037</b>			

<b>SedTime<sup>a</sup></b>	<i>(min.day<sup>-1</sup>)</i>	-62.64 ± 13.47	-73.61 ± 13.47	0.506	0.569	††	*	
<b>LightPA</b>	<i>(min.day<sup>-1</sup>)</i>	49.65 ± 59.74	53.58 ± 57.97	<b>0.001</b>	<b><u>0.011</u></b>			
<b>LightPA<sup>a</sup></b>	<i>(min.day<sup>-1</sup>)</i>	51.09 ± 9.13	52.14 ± 9.13	0.166	<b><u>0.016</u></b>	†††	-	-
<b>ModPA</b>	<i>(min.day<sup>-1</sup>)</i>	13.77 ± 30.13	23.09 ± 29.61	<b>0.001</b>	0.152			
<b>ModPA<sup>a</sup></b>	<i>(min.day<sup>-1</sup>)</i>	14.74 ± 4.42	22.12 ± 4.42	0.589	0.246	-	‡‡	
<b>MVPA</b>	<i>(min.day<sup>-1</sup>)</i>	14.72 ± 32.22	24.61 ± 30.43	<b>0.001</b>	0.147			
<b>MVPA<sup>a</sup></b>	<i>(min.day<sup>-1</sup>)</i>	15.88 ± 4.62	23.45 ± 4.62	0.519	0.254	-	‡‡	
<b>TDPA</b>	<i>(min.day<sup>-1</sup>)</i>	64.33 ± 79.70	78.09 ± 72.39	<b>0.0001</b>	0.824			
<b>TDPA<sup>a</sup></b>	<i>(min.day<sup>-1</sup>)</i>	66.92 ± 11.58	75.50 ± 11.58	<b>0.0001</b>	<b><u>0.018</u></b>	††	‡‡	
<b>Steps</b>	<i>(steps.day<sup>-1</sup>)</i>	951 ± 2,428	954 ± 1,802	<b>0.001</b>	0.994			
<b>Steps<sup>a</sup></b>	<i>(steps.day<sup>-1</sup>)</i>	979 ± 306	925 ± 306	0.542	0.844	-	††, ‡‡	
<b>Wear Time</b>	<i>(hours.day<sup>-1</sup>)</i>	0.107 ± 0.158	0.085 ± 0.084	0.274	0.904			

FFM, fat free mass; FM, fat mass; RMR, resting metabolic rate; TDEE, total daily energy expenditure; PAEE, physical activity energy expenditure; Sed, sedentary; EE, energy expenditure; MVVEE, moderate and vigorous physical activity energy expenditure; PA, physical activity; Mod, moderate; Vig, vigorous; TDPA, total daily physical activity.

Δ, indicate changes; group, interaction between change and groups in de repeated measured analysis; Cov., effect of covariables (a, b, c, d) in GLM; Δ x Cov., within-subject interaction between change and covariables; Δ x Cov.xG, within-subject interaction among change, covariables and group.

Values of variables without uppercase letter are means and standard deviation. Values with uppercase letter are Least squares means and standard error of mean

a, Repeated measured analysis (intervention x group) adjusted to weight at pre Surgery, randomization time and age.

b, Repeated measured analysis (intervention x group) adjusted to difference POST-PRE for moderate-vigorous PA.

c, Repeated measured analysis (intervention x group) adjusted to RMR estimated at baseline from body composition and ethnicity (RMR = 2.24 x FM + 26.77 x FFM - 5.45 x Age -1.74 x Race + 449) and randomization time.

d, Repeated measured analysis (intervention x group) adjusted to TDEE estimated at baseline from FFM and sex (TDEE = 199.71 + 44.588 x FFM (kg) + 152.46 x (F = 1, M = 0)).

Underlined numbers indicate between-subjects differences (group effect but not interaction with intervention).

\*\*\*, \*\*, \*, P<0.001, P<0.01 and P<0.05 respectively for age.

†††, ††, †; P<0.001, P<0.01 and P<0.05 respectively for pre surgery weight.

‡‡‡, ‡‡, ‡; P<0.001, P<0.01 and P<0.05 respectively for randomization time.