Article:
Casanova, N, Beaulieu, K orcid.org/0000-0001-8926-6953, Oustric, P orcid.org/0000-0003-2004-4222 et al. (7 more authors) (2021) Body Fatness Influences Associations of Body Composition and Energy Expenditure with Energy Intake in Healthy Women. Obesity, 29 (1). pp. 125-132. ISSN 1930-7381

https://doi.org/10.1002/oby.23034

Body fatness influences the associations between body composition and energy expenditure with energy intake

Casanova et al.

Supplementary Material

Table 1 – Descriptive characteristics of participants separated by body mass index category.

	Lean (n = 45)		Overweight (n = 32)		Obesity (n = 16)	
	Mean	SD	Mean	SD	Mean	SD
Age (y)	35	10	33	10	39	9
Height (cm)	164.6	6.3	164.4	7.2	166.7	9.7
Body mass (kg)	59.0	5.9	74.6	8.3	89.1	11.8
BMI (kg/m^2)	21.8	1.5	27.5	1.3	31.9	1.3
Fat mass (kg)	16.3	3.6	29.0	5.2	40.9	8.0
FMI (kg/m^2)	6.0	1.3	10.7	1.6	14.6	1.8
Fat-free mass (kg)	42.8	4.0	45.7	5.7	48.2	5.9
FFMI (kg/m^2)	15.8	1.0	16.8	1.1	17.3	1.2
Body fat (%)	27.3	4.6	38.7	4.7	45.6	4.2

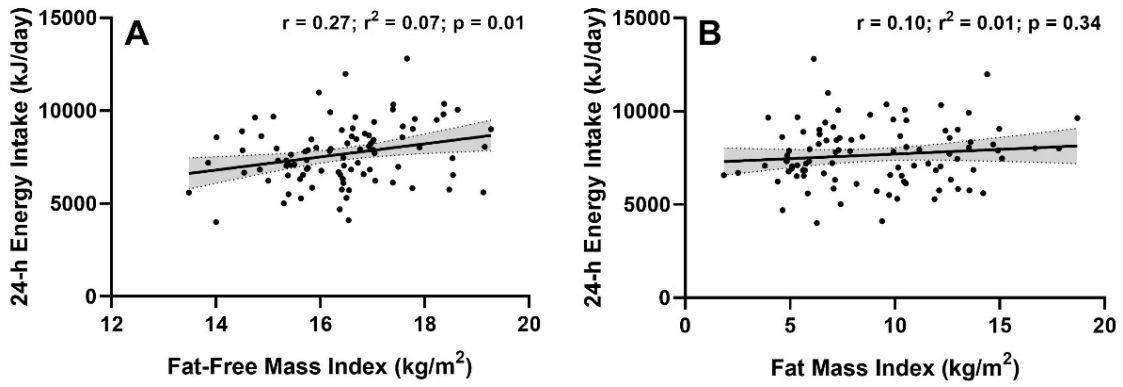

Figure 1 - Scatter plots illustrating the associations between A) fat-free mass index; and B) fat mass index with mean 24-hour energy intake (n = 93).

Table 2 - Multiple linear regression to examine the independent effects of fat mass index, fat-free mass index, resting metabolic rate and total daily energy expenditure on mean 24-hour energy intake.

	β	t	p-value
Model 1 - [$F(2, 90)=3.5$, $r^2=0.05$, $p=0.04$]			
Intercept		0.86	0.40
FMI	0.01	0.11	0.91
FFMI	0.26	2.44	0.02
Model 2 - [$F(3, 89)=6.6$, $r^2=0.15$, $p<0.001$]			
Intercept		0.15	0.88
FMI	-0.01	-0.10	0.93
FFMI	0.14	1.28	0.21
RMR	0.36	3.45	0.001
Model 3 - [$F(3, 88)=6.4$, $r^2=0.15$, $p=0.001$]			
Intercept		0.23	0.82
FMI	-0.12	-1.06	0.29
FFMI	0.17	1.54	0.13
TDEE	0.38	3.34	0.001

FMI, fat mass index; FFMI, fat-free mass index; RMR, resting metabolic rate; TDEE, total daily energy expenditure.

Table 3 – Correlations between fat mass index and fat-free mass index with 24-hour energy intake and test meal energy intake in the group of participants that are lean and in the ones that have overweight and obesity.

		24-hour Energy Intake	Test Meal Energy Intake
Lean (n = 45)			
Fat Mass Index	r	0.12	**-0.42**
	p	0.42	**0.005**
Fat-free Mass Index	r	**0.36**	0.17
	p	**0.02**	0.28
Overweight and Obesity (n = 48)			
Fat Mass Index	r	0.10	0.26
	p	0.52	0.07
Fat-free Mass Index	r	0.22	0.20
	p	0.14	0.17

Table 4 – Multiple linear regression to examine the independent effects of fat mass index, fat-free mass index and resting metabolic rate on mean 24-hour energy intake in the participants with overweight and obesity and in those that are lean.

Overweight and Obesity (n = 48)			
	β	t	p-value
Model 1 - [$F(2, 45)=1.7$, $r^2=0.03$, $p=0.20$]			
Intercept		0.01	0.99
FMI	0.16	1.06	0.29
FFMI	0.26	1.72	0.09
Model 2 - [$F(3, 44)=1.9$, $r^2=0.06$, $p=0.14$]			
Intercept		0.22	0.83
FMI	0.08	0.53	0.60
FFMI	0.13	0.79	0.43
RMR	0.25	1.53	0.13

Lean (n = 45)			
	β	t	p-value
Model 1 - [$F(2, 42)=3.8$, $r^2=0.11$, $p=0.03$]			
Intercept		-0.79	0.44
FMI	0.15	1.10	0.29
FFMI	**0.37**	**2.63**	**0.01**
Model 2 - [$F(3, 41)=7.0$, $r^2=0.29$, $p=0.001$]			
Intercept		-1.48	0.15
FMI	0.07	0.55	0.59
FFMI	0.22	1.66	0.11
RMR	**0.46**	**3.40**	**0.002**

FMI, fat mass index; FFMI, fat-free mass index; RMR, resting metabolic rate.

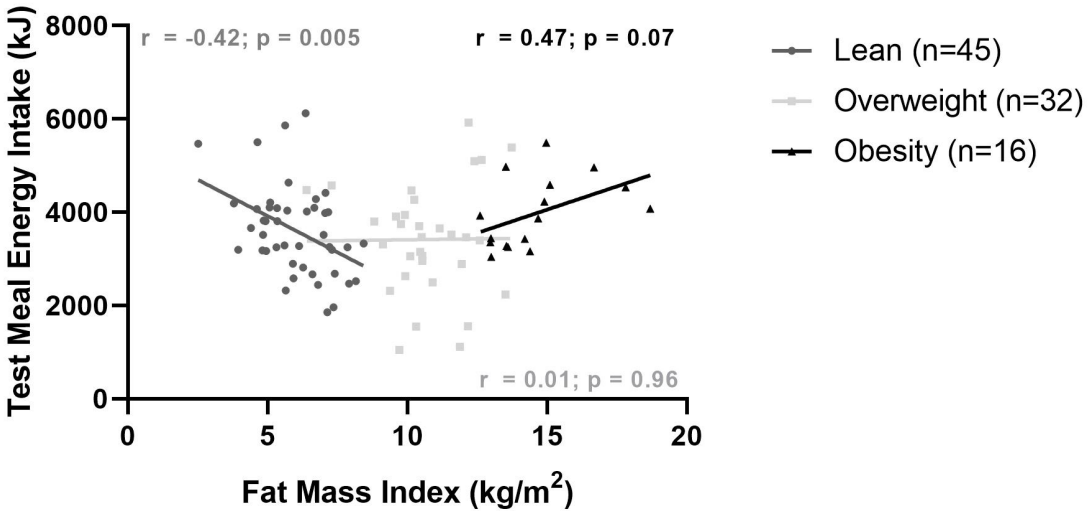

Figure 2 - Scatter plots illustrating the association between fat mass index and test meal energy intake by body mass index category.

Table 5 – Multiple regression to assess the non-linear associations between body fat percentage and fat mass index with test meal energy intake.

	β	t	p-value
Body Fat Percentage - [F(3, 88)=4.2, r^2=0.10, p=0.008]			
Intercept		4.72	< 0.001
BFP	-2.45	-3.46	0.001
FFM	0.08	0.77	0.45
BFP^2	**2.40**	**3.39**	**0.001**
Fat Mass Index - [F(3, 88)=4.4, r^2=0.13, p=0.006]			
Intercept		4.84	<0.001
FMI	-1.81	-3.46	0.001
FFM	0.08	0.75	0.46
FMI^2	**1.85**	**3.55**	**0.001**

BFP, body fat percentage; FFM, fat-free mass; FMI, fat mass index.

Table 6 – Moderation analyses using body mass index, fat mass index and total fat mass as moderators of the associations between resting metabolic rate and total daily energy expenditure with mean 24-hour energy intake.

Body mass index as the moderator

	β	t	p-value
RMR - [F(3, 89)=9.2, r^2=0.24, p<0.0001]			
Intercept		-2.44	0.02
BMI	1.96	2.86	0.005
RMR	1.99	3.44	0.001
BMI x RMR	-2.80	-2.80	0.006
TDEE - [F(3, 88)=6.8, r^2=0.19, p<0.0001]			
Intercept		-1.46	0.15
BMI	1.33	1.94	0.06
TDEE	1.64	2.61	0.01
BMI x TDEE	-2.25	-2.00	0.04

Fat mass index as the moderator

	β	t	p-value
RMR - [F(3, 89)=8.9, r^2=0.23, p<0.0001]			
Intercept		-1.73	0.09
FMI	-2.45	2.75	0.007
RMR	0.08	4.09	< 0.001
FMI x RMR	2.40	-2.73	0.008
TDEE - [F(3, 88)=7.3, r^2=0.20, p<0.0001]			
Intercept		-0.88	0.38
FMI	-1.81	2.05	0.04
TDEE	0.08	3.61	0.001
FMI x TDEE	1.85	-2.20	0.03

Total fat mass as the moderator

	β	t	p-value
RMR - [F(3, 89)=9.4, r^2=0.24, p<0.0001]			
Intercept		-1.75	0.08
FM	1.86	2.96	0.004
RMR	1.00	4.38	< 0.001
FM x RMR	-2.12	-2.93	0.004
TDEE - [F(3, 88)=7.3, r^2=0.20, p<0.0001]			
Intercept		-0.76	0.45
FM	1.31	2.05	0.04
TDEE	0.89	3.72	< 0.001
FM x TDEE	-1.70	-2.21	0.03