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Physical activity in severely obese working pregnant women in Scotland

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In a recent survey, 24.1% of Scottish women were obese and 3.5% severely obese[1]. Although physical activity is an important part of weight management, data about physical activity carried out by severely obese women during pregnancy are limited. We aimed at assessing physical activity in severely obese (BMI >40 kg/m^2) and normal weight (BMI 20–25 kg/m^2) pregnant women.

Forty-two severely obese and fifty-eight lean (BMI 44.1 (0.7) *v.* 22.6 (0.2) kg/m^2, $P<0.001$) working pregnant women were recruited from a cohort study of severe obesity in pregnancy at Royal Infirmary, Edinburgh, UK. Ethical approval and written informed consent were obtained. Physical activity was assessed using a validated Pregnancy Physical Activity Questionnaire (PPAQ)[2] during early (12–20 weeks gestation) and late (28–36 weeks) pregnancy. Time spent in each activity was multiplied by its intensity to calculate average daily energy expenditure in metabolic equivalent (MET) hours per day. Activities were classified according to intensity and activities of light intensity and greater were added to derive total activity[2]. Accelerometers (Actical, Mini-mitter Inc.) were worn on the non-dominant wrist for 2 week days and 1 weekend day by a subgroup (*n* 14/group in both early and late pregnancy). Data were analysed using SPSS 14.0. Data are mean (SEM).

From PPAQ (refer table), obese women reported doing significantly more total, light and moderate activity than lean in early pregnancy but less vigorous and sports/exercise activities, with similar patterns in late pregnancy. Total activity levels were similar in early and late pregnancy in both groups.

	Physical activity in early pregnancy (MET-h/d)					Physical activity in late pregnancy (MET-h/d)				
	Obese (*n* 42)		Lean (*n* 58)			Obese (*n* 36)		Lean (*n* 32)		
	Mean	SEM	Mean	SEM	*P*	Mean	SEM	Mean	SEM	*P*
Total activity	32.6	3.1	22.4	1.8	**	33.5	2.9	23.4	11.5	**
Sedentary activity	10.9	0.8	11.5	0.6	*NS*	10.9	0.7	10.7	0.7	*NS*
Light activity	15.0	1.2	10.9	0.9	**	16.1	1.2	11.5	1.0	**
Moderate activity	17.4	2.2	10.7	1.1	**	17.2	2.4	11.3	1.3	**
Vigorous activity	0.2	0.1	0.7	0.1	**	0.2	0.1	0.4	0.1	*NS*
Sports/exercise activity	1.9	0.4	3.2	0.4	**	1.7	0.3	3.1	0.5	**

**$P<0.05$.

In contrast, total activity count and total steps taken per day by accelerometer were lower in obese compared with lean (268683 (22334) *v.* 360161 (35092) activity count/d, $P<0.05$; 10627 (1288) *v.* 12829 (1348) steps/d, $P<0.05$). Energy expenditure (corrected for fat-free mass) was significantly higher in obese than lean for light activities during both early (13.1 (0.5) *v.* 9.4 (0.4), $P<0.05$) and late (13.8 (0.6) and 10.4 (0.4), $P<0.05$) pregnancy, but no different for moderate and vigorous activities (P = NS). Sedentary activity reported in PPAQ was significantly positively correlated with total steps ($r=0.71$, $P<0.01$) and total activity ($r=0.67$, $P<0.01$) in obese, but was significantly inversely associated in lean (total steps, $r=-0.584$, $P<0.05$ and total activity $r=-0.767$, $P<0.01$).

In summary, severely obese working pregnant women reported doing more total physical activity than lean during both early and late pregnancy. This was not supported by the more objective accelerometry data. Obese group expended more energy during light activities which may have influenced reporting. The positive correlation of self-reported sedentary activity with accelerometry total steps and activity in obese group suggests self-reported questionnaires may be an unreliable method to assess physical activity in severely obese pregnancy.

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1. Gray L & Leyland A (2009) *Scottish Health Survey*. The Scottish Government.
2. Chasan-Taber L, Schmidt MD, Roberts DE *et al.* (2004) *Med Sci Sports Exer* **3610**, 1750–1760.