

Changes in body image satisfaction during pregnancy: A comparison of high exercising and low exercising women

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Abstract

Objective: This study aimed to compare ratings of body image satisfaction (BIS) from 6 months prepregnancy to 23–30 weeks' gestation for high exercising and low exercising pregnant women. The authors also aimed to assess and compare expectations of BIS for the post-partum period in high and low exercising women.

Design: A partial prospective approach was implemented.

Sample: A total of 71 healthy pregnant women (40 high exercisers and 31 low exercisers) participated.

Methods: Participants completed a series of questionnaires at 15–22 weeks' gestation and 23–30 weeks' gestation.

Main outcome measures: There were two main outcome measures. At 15–22 weeks' gestation there was an exercise inventory and two versions of the Body Cathexis Scale (BCS) (retrospective prepregnancy BIS and current BIS). At 23–30 weeks' gestation there was an exercise inventory and two versions of the BCS (current BIS and projected post-partum BIS).

Results: At 15–22 weeks' gestation, high exercisers demonstrated significantly higher levels of BIS compared to low exercisers. There were no other significant differences between groups. Within groups, high exercisers were significantly more satisfied with their bodies at 15–22 weeks' gestation compared to 6 months prepregnancy, and expected to be less satisfied with their bodies at 6 weeks' post-partum than they were during pregnancy. Low exercisers demonstrated no significant changes over time.

Conclusions: The findings suggest that women are able to assimilate the bodily changes of pregnancy without a negative shift in BIS. However, women who exercise during pregnancy may respond more favourably to changes in their bodies at early pregnancy compared to women who remain sedentary.

Key words: body image satisfaction, exercise, post-partum, pregnancy.

Introduction

During pregnancy women experience substantial changes in their body shape and weight that result in significant alterations of their body image.^{1–3} It has been hypothesised that during pregnancy, because of the body changes that occur, women's appraisals of their bodies are activated.⁴ These appraisals draw upon extant body image attitudes and ideals. In drawing upon these ideals, the differences between how women 'perceive' their appearance and their 'ideals' of appearance are highlighted.⁴ Given the current western ideals about body shape, which suggest that thin women are more beautiful,⁵ during pregnancy women find themselves falling further from the cultural ideal of beauty. Thus body image satisfaction may decline. Indeed, Goodwin *et al.* reported a significant decline in body image satisfaction (BIS) from prepregnancy to early pregnancy (14–19 weeks).⁶ In contrast, Richardson found that women viewed the bodily changes of pregnancy as transient and

'unique to the childbearing endeavor', and reported that women were able to assimilate these changes without distress.⁷ Thus, there may be conditions under which a decrease in body satisfaction does not occur during pregnancy.

Changes in BIS have also been found to extend to the post-partum period; however, evidence as to the nature of these changes is equivocal. While Mercer reported that body image dissatisfaction intensified post-partally, Strang and Sullivan found that women were more satisfied with their bodies 6 weeks post-partum compared to during late pregnancy.^{3,8}

The consequences of a negative body image may include behaviours such as dieting, starving, and purging. Therefore,

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Table 1 Age, prepregnancy BMI, prepregnancy exercise (mins per week), and weeks' gestation at recruitment for high and low exercise groups

Characteristic	High exercisers	Low exercisers	Total
	(<i>n</i> = 40) Mean (SD)	(<i>n</i> = 31) Mean (SD)	(<i>n</i> = 71) Mean (SD)
Age	32.78 (4.11)	31.06 (3.49)	32.03 (3.92)
Prepregnancy BMI	24.03 (3.47)	23.53 (3.23)	23.81 (3.35)
Prepregnancy exercise (min per week)	238.63 (174.86)	166.94 (146.38)	207.32 (165.83)
Weeks' gestation at recruitment	18.48 (2.62)	18.35 (2.55)	18.42 (2.57)

BMI, body mass index; SD, standard deviation.

the implications of a negative body image during pregnancy are of concern, because such behaviours have been linked to inadequate weight gain, premature delivery, low birthweight, delayed development of the child and, in some cases, maternal and fetal death.^{9,10} Concerns about residual weight gain during the post-partum period have been linked to feelings of disappointment and surprise, reduced self-esteem, depressive symptoms, and the precipitation of eating disorders.^{11,12} In light of these reports, exploring behaviours that are linked to a more positive body image during pregnancy and the post-partum period is important for researchers and health practitioners.

While exercise has been associated with a more positive body image in the general population,^{13–15} few studies have examined the association between exercise and body image in pregnant women.^{6,16} According to Cash, exercise works to counteract body dissatisfaction and promote body acceptance.⁴ Specific to pregnant women, Walker posits that exercise may help to avoid excessive weight gain, and thus reduce weight distress and body dissatisfaction (during pregnancy and the post-partum period).¹⁷ Indeed, Marquez-Sterling *et al.* found that nine pregnant women who participated in an exercise program reported more improvements in body image than six non-exercising controls, and that these benefits of exercise extended to the later stages of pregnancy.¹⁶ Additionally, in a study by Goodwin *et al.* the BIS ratings of 25 exercising and 18 non-exercising pregnant women were compared at various time points during the pregnancy.⁶ For both the exercise and non-exercise groups, prepregnancy BIS ratings were more positive than early pregnancy ratings. No differences were found between the exercise and non-exercise groups' overall scores at prepregnancy, 17 weeks', and 30 weeks' gestation. However, the exercise group had more positive ratings compared to the non-exercise group on the combined waist, hips, bust, and abdomen subscales of the Body Cathexis Scale (BCS) at 30 weeks' gestation. As pregnancy progressed, there was a non-significant tendency for the exercise group's body cathexis scores to become more positive and non-exercise group's scores less positive.

Clearly, further research on the relationship between exercise and body image during pregnancy is needed. Small sample sizes in the few studies on this topic have impeded the likelihood of detecting an effect. The primary aim of the present study was to examine differences in BIS between pregnant women who undertook regular, moderate intensity

exercise (high exercisers) during pregnancy and pregnant women who performed little or no exercise (low exercisers). Body image satisfaction was assessed at prepregnancy (retrospectively), at 15–22 weeks' gestation, and again at 23–30 weeks' gestation. In addition, a projected post-partum measure of BIS was attained at 23–30 weeks' gestation. The aim of this measure was to assess women's expectations of their body image after the birth of their baby.

Materials and methods

Participants

A total of 71 healthy pregnant women (31 low and 40 high exercisers) participated. Participants were generally of high socioeconomic status, and most (90%) were in paid employment. Additional demographic and anthropometric information is summarised in Table 1.

High exercise group

The criterion for assignment to the high exercise group was at least 90 min per week of moderate intensity activity. This criterion was based on the recommendations of the Australian Sports Medicine Foundation (cited in Kirkby and Birmingham¹⁸), who state that three to four weekly sessions of 30–35 min of moderate intensity exercise (70–75% heart rate maximum) is safe during pregnancy. Given that heart rate may be an inappropriate measure of exercise intensity during pregnancy¹⁹ the 'type of activity' was used to indicate exercise intensity. The categories of exercise levels used in the present study reflect levels set in other studies.¹⁵

Thirty-two of the 40 high exercisers attended at least two 60-minute physiotherapy-based prenatal exercise classes per week. The remaining eight high exercisers reported exercising for at least 180 min per week, of which at least 90 min was moderate intensity (including aerobics, prenatal aqua-aerobics, cycling, gym circuit, swimming, team sports, tennis, power walking, or weights; but not walking, golf, or yoga). Mean weekly exercise duration for the high exercise group was 251.25 min (SD = 114.18) on entering the study, and 250.88 min (SD = 108.25) at follow-up. At follow-up, all high exercisers were well above the minimum criterion of moderate intensity activity.

Low exercise group

Women reporting no or minimal amounts of exercise were considered low exercisers. The mean duration of weekly exercise was 39.03 min (SD = 47.28) on entering the study, and 33.39 (SD = 44.85) at follow-up. Seventeen of the 31 low exercisers reported not participating in any exercise, while 14 women reported participating in low intensity activities such as walking (13 women), and yoga (three women). At follow-up, all low exercisers reported less than the 90 min criterion of moderate intensity activity.

Materials

Participants self-reported current and prepregnancy exercise participation, current and prepregnancy weight, height, age, parity status, current health status, and annual household income. The 10-item version of the BCS assessed satisfaction with various body parts.²⁰ Ratings ranged from 1 (have negative feelings and wish change could somehow be made) to 5 (have positive feelings and consider myself fortunate). Test-retest reliability for the BCS = 0.71; Cronbach's $\alpha = 0.85-0.88$.³

Procedure

After obtaining university ethics approval, participants were recruited from prenatal exercise classes, or through advertisements in university newsletters, doctors' waiting rooms, and child-care centres, which invited participants 'to be part of a study that examines well-being and feelings about one's body during pregnancy.' Participants' active informed consent was obtained. To reduce bias, participants were not informed that BIS scores of high and low exercise groups would be compared.

Initial assessment (15–22 weeks' gestation)

Each participant completed the demographics questions, and two versions of the BCS, one asking retrospectively about the period 6 months prior to pregnancy, and a second asking for ratings of their current BIS.

Follow-up assessment (23–30 weeks' gestation)

Eight weeks later, participants reported their exercise levels over the previous 8 weeks and again completed a current version of the BCS and also a version assessing projected ratings of BIS for 6 weeks post-partum.

Results

Preliminary analyses

Analyses were performed using SPSS for Windows (Version 10.05). A series of two-tailed *t*-tests ($\alpha = 0.05$) indicated that the groups did not differ on prepregnancy body mass index

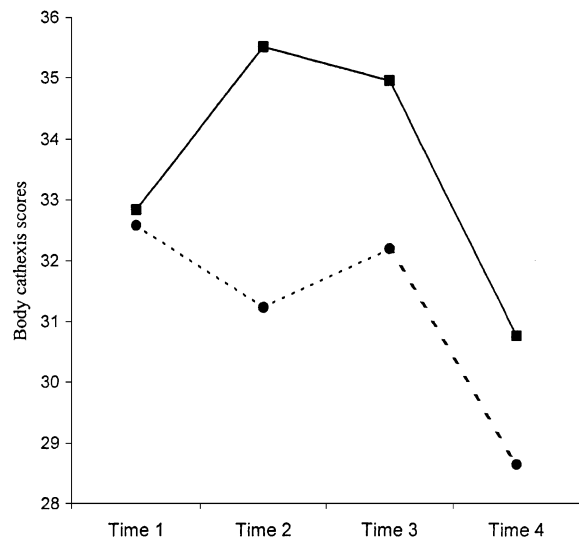


Figure 1 Mean body cathexis scores for high exercisers and low exercisers across time. (—●—), low exercisers; (—■—), high exercisers. Note: Time 1 = 6 months' retrospective prepregnancy, time 2 = 15–22 weeks' gestation, time 3 = 23–30 weeks' gestation, time 4 = 6 weeks' projected post-partum.

(BMI), weight gained from prepregnancy to 15–22 weeks' gestation, number of weeks' gestation, prepregnancy exercise, and age. However, the groups differed on parity status, with more low exercisers being multiparous, $\chi^2(1) = 4.85$, $P = 0.03$.

Main analyses

A two (groups) \times two (parity status) \times four (time) mixed ANOVA was conducted on body cathexis scores with group as the between subjects independent variable, parity status as the blocking independent variable, and time as the within subjects independent variable. Given that there were no significant interactions involving the blocking variable, parity status, it was assumed that the interpretation of the independent variables of interest (time and group) was reliable. The ANOVA yielded a significant interaction between time and group, $F(2.59, 173.33) = 2.99$, $MSE = 21.29$, $P = 0.040$, which indicated that changes in BIS across the four time points were different for the high and low exercise groups (Fig. 1).

Simple main effects analyses were carried out using *t*-tests ($\alpha = 0.01$ to reduce Type I errors). Four two-tailed *t*-tests assessed between group differences; effect sizes (Cohen's d^{21}) were also calculated (small, medium, and large effects = 0.20, 0.50, and 0.80, respectively). At 15–22 weeks' gestation, the high exercisers were significantly more satisfied with their bodies compared to the low exercisers, $t(69) = -2.89$, $P = 0.005$, $d = 0.69$. No other significant differences were found.

Within each group, differences were assessed using 12 paired samples, two-tailed *t*-tests and effect sizes. For the

high exercisers, women were more satisfied with their bodies at 15–22 weeks' gestation compared to 6 months pre-pregnancy, $t(39) = -4.33$, $P < 0.001$, $d = 0.43$; and were also more satisfied at both time points during pregnancy compared to their BIS expectations for the post-partum period ($P < 0.001$ and $d > 0.60$ for both comparisons). In addition, the comparison of BIS from 6 months retrospective pre-pregnancy to 23–30 weeks' gestation approached significance ($P = 0.18$), whereby the high exercisers were more satisfied with their bodies at 23–30 weeks' gestation compared to pre-pregnancy.

For the low exercise group, there were no significant differences in BIS across the four time points. However, three comparisons approached significance ($P < 0.02$ and $d > 0.30$ for all three comparisons). That is, the low exercisers' 6 weeks projected post-partum BIS rating tended to be lower than BIS ratings at the other three time points.

Discussion

High exercising pregnant women were found to be significantly more satisfied with their bodies at 15–22 weeks' gestation compared to low exercising pregnant women. Relative to their pre-pregnancy BIS levels, high exercising women were significantly more satisfied with their bodies at 15–22 weeks' gestation, and tended to be more satisfied at 23–30 weeks' gestation. This pattern was not found for low exercising women whose BIS remained relatively stable from pre-pregnancy to later pregnancy. These findings suggest a benefit of moderate levels of exercise, particularly in the early phases of pregnancy.

It has been argued that women who exercise regularly throughout pregnancy retain a positive attitude towards body parts that increase in size as pregnancy progresses.⁶ In the present study, exercise may have functioned as an adjustive strategy, such that any potential body dissatisfaction due to weight gain was counteracted by generally positive feelings about the body due to exercise.⁴ Furthermore, 32 of the 40 high exercising women were participating in at least 120 min per week of group prenatal exercise classes. Factors associated with group participation (i.e. reinforcement from others, achievement of goals, and socialisation) may be associated with positive evaluations of one's self.²² In addition, the opportunity for social comparison with other pregnant women in the group classes may have contributed to differences in BIS between high and low exercisers. Women who attended these groups were able to use other pregnant women as their objects of social comparison. Perhaps this exposure to appropriate comparison targets contributed greater BIS in the high exercisers during early pregnancy. Further research is required to elucidate the specific effects of group exercise during pregnancy.

Despite the fact that the women in this study gained an average of 4.41 kg from pre-pregnancy to 15–22 weeks' gestation, they did not become more negative in their evaluations of their bodies. Rather, the high exercise group became significantly more positive and the low exercise group

remained relatively stable. This absence of a negative shift in BIS following weight gain may be due to a reduction in pressure to conform to thinness ideals during pregnancy.²³ Post-hoc analyses of the changes in BIS as pregnancy progressed revealed no significant differences from 15 to 22 weeks' to 23–30 weeks' gestation for both the high and low exercise groups; this finding echoes that of Goodwin *et al.*⁶

The present findings also revealed a tendency ($P < 0.05$) for both groups to predict that they would be less satisfied at 6 weeks post-partum compared to 6 months pre-pregnancy. This tendency corresponds with findings of Strang and Sullivan who found women were more dissatisfied at 6 weeks post-partum compared to pre-pregnancy.³ They argued that this pattern could be attributed to the still pregnant appearance of the post-partum body. Following childbirth, it takes up to 6 weeks for the uterus to shrink back to its normal size, and up to 6 months for a woman's body to revert completely to its non-pregnant appearance. This still pregnant appearance can result in disappointment and anxiety during the post-partum period.²⁴ The fact that post-partum measures of BIS in this study were projected suggests that the women anticipated some degree of dissatisfaction following pregnancy.

Finally, women in the high exercise group predicted that they would be significantly less satisfied at 6 weeks' post-partum compared to during pregnancy; and a similar non-significant tendency emerged in the low exercise group. Davies and Wardle posit that women may perceive the pressure to achieve and maintain a thin figure as reduced during pregnancy; yet, during the post-partum period this pressure is reinstated.^{8,23} These findings might suggest that the women in the present study anticipated this reinstatement of pressure.

Methodological issues

The fact that the women in the present study self-selected their level of exercise (rather being randomly assigned to a condition) prevents concluding that exercise was the cause of group differences in BIS. However, selection bias was unavoidable, and has been noted as a general methodological limitation of work in this research area.²⁵

Conclusions

The presented evidence suggests that while women are able to assimilate the bodily changes of pregnancy without a negative shift in BIS, women who exercise during pregnancy may respond more favourably to these changes at early pregnancy compared to women who remain sedentary. Women's projected decline in BIS for the post-partum period indicates that health practitioners may need to consider women's body image concerns following childbirth.

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