

DOES WOMEN'S ATTITUDINAL STATE BODY IMAGE IMPROVE AFTER ONE SESSION OF POSTURE CORRECTION EXERCISES?

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Physically active people are usually more satisfied with their bodies than are sedentary people (Davis, 2002), but the influences exerted by physical activity on body image (BI) are not clear. In the current study, the effects of a posture correction exercise (PCE) session on attitudinal state BI were examined. We wanted to know if a single PCE session could have an immediate and positive influence on attitudinal state BI in women. Participants (217 women) were randomized into 2 groups either taking part in a PCE (experimental condition) or a reading-a-newspaper (RN; control condition) session, in a cross-over design. Before and after PCE and RN sessions, participants completed the Body Image States Scale (Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002), indicating their attitudinal state BI at that time. Results showed an immediate increase in state BI scores after a 1-hour PCE session, suggesting that the acute effect of PCE causes an improvement in attitudinal state BI.

Keywords: body image, physical activity, posture correction exercises, women.

Body image (BI) can be considered a multifaceted construct that refers to the body's picture built by the individual and referring especially to his/her appearance (Cash & Pruzinsky, 2002). It is possible to distinguish two main components of this construct: perceptual and attitudinal. The first component refers essentially to an individual's estimation of his/her body size, whereas the second is related to the cognitions and emotions regarding one's body.

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The role of physical activity in BI development and modification is not quite clear (Cash & Pruzinsky, 2002). There are a limited number of studies on this topic and the nature of the relationship between physical exercise and BI has not been clearly explained (Martin & Lichtenberger, 2002).

In scientific literature it is possible to find a distinction between research focused on the long-term and short-term effects of exercise, based on the evidence that the construction of BI contains both a trait-like and a state-like aspect. There is currently a negligible amount of research in which the acute effect of physical activity on state BI was specifically investigated. In particular, we found only one study about the effects of a physical exercise session on state BI, that highlighted a decrease in state BI dissatisfaction in young adult women after an endurance training session lasting one hour (Vocks, Hechler, Rohrig, & Legenbauer, 2009).

People who practice posture correction exercises (PCEs) generally exhibit paramorphisms (e.g., spinal distortions) or back pain problems. These factors may compromise BI development in this type of population. *PCEs* can be defined as *specific physical exercises aimed at balancing the kinetic chains of the locomotor system*. They include a set of exercises and movements directed towards the improvement of posture and prevention of or compensation for possible postural alterations. With advancing age, postural alterations are accentuated and the control capacity of posture itself is significantly reduced. Generally, adults who follow PCE programs are driven by the desire to improve their health, reduce pain, and generally develop better functional posture. The problems that usually characterize this type of population, although mainly connected to physical health, may also affect psychological wellbeing. Postural alterations and imbalances can generate dissatisfaction with one's body (Briñol, Petty, & Wagner, 2009).

It seems reasonable to assume that physical activity, and in this case PCEs, can have a positive effect on one's BI (Williamson, White, York-Crowe, & Stewart, 2004). There is also evidence suggesting that being trained to perform an activity that includes careful attention to the body's positions and observation of how the body feels, can lead to a more positive view of one's body. Furthermore, the effects of exercise also benefit physical health and body competence, contributing to the development and maintenance of a positive BI (Whitbourne & Skultety, 2002).

Taking all these considerations into account, our aim in this study was to investigate the role played by a low-intensity physical activity session on short-term BI modification. In particular, we wanted to find out whether or not a single session of PCEs could have an immediate and positive influence on attitudinal state BI in women.

There are no previous studies in which it is demonstrated that a PCE session effectively increases state BI scores. We suggest that a low calorie-burning activity, focused on a careful attention to the body's positions and postures, may positively influence physical self-perception.

METHOD

PARTICIPANTS

Two hundred and forty women volunteered for the study, recruited via local postural reeducation centers. Participants were randomly assigned to one of two groups: 120 participants (mean age 59.62 ± 6.44) were assigned to the experimental group, while the other 120 participants (mean age 59.92 ± 6.45) were assigned to the control group. Written informed consent was obtained from all participants.

Women eligible for participation were aged between 50 and 70 years; had one or more posture alterations and alignment abnormalities (e.g., scoliosis, hyperlordosis, flat feet) assessed by observation of static posture from various angles; and were normal weight ($20 < \text{BMI} < 25$). Populations with different gender, age, or body mass index (BMI) may have different responses to BI, so we decided to engage a convenience sample in order to reduce the number of independent variables.

After data collection, 11 participants were excluded from the analyses because data were missing from their questionnaires, 5 did not complete the PCE session, and a further 7 did not complete the RN activity. Thus, 217 women (mean age = 59.11 ; $SD \pm 5.84$) participated in the whole experiment and were included for the statistical analyses. Of these women, 112 were in the experimental group (PCEs) and 105 in the control group (RN).

QUESTIONNAIRE MEASURES

The Body Image States Scale (BISS; Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002) is a 6-item questionnaire with a 9-point response format for each item. The components of the six items of the BISS are as follows: (a) overall satisfaction with one's appearance; (b) body size and shape satisfaction; (c) weight satisfaction; (d) feelings of physical attractiveness; (e) feelings about one's looks compared with how one usually feels; (f) appearance evaluation in comparison with how the average person looks. The measure of BI is obtained by the composite mean of the six items. Higher scores reflect a more positive BI state. The items have both positively and negatively worded questions (bipolar scales) in terms of how the respondent feels "right now at this moment". Items 2, 4, and 6 are reverse scored. The internal consistency of the original version of the BISS was acceptable (Cronbach's $\alpha = .77$) and the test-retest reliability

after two to three weeks demonstrated a moderate stability of the instrument ($r = .69, p < .001$).

PROCEDURE

The posture of participants was observed by two expert trainers in posture analysis and assessed before the completion of the questionnaires. The PCE teaching expert was a professional with a master's degree in adapted physical activity and was not a researcher in our study. The BISS was completed twice by the participants: firstly at the beginning (BISS-pre) and secondly at the end (BISS-post) of the experimental or control activity.

EXPERIMENTAL CONDITION

In the PCE condition, participants performed a one-hour training session focused on posture. The PCE session included a protocol of exercises and movements directed towards the static/dynamic control of the posture and symmetry of the main landmarks (e.g., malleoli, knees, hips, shoulders placed respectively at the same height), using a mirror in order to increase body self-awareness. The session was spread equally with regard to the work on the main body sectors (legs, pelvis, chest and arms, shoulders, and head) and the main starting points (i.e., lying on one's back, sitting, standing, or on all fours). Particular emphasis was placed on exercises aimed at achieving a morpho-functional improvement of the spine (Bricot, 1996; D'Arezzo, 2003). Under the supervision of an expert the exercises and techniques proposed were performed freestyle (that is individually, without the use of machinery, and without body contact). The only equipment used was: mattresses, stools, and wall bars. The PCE session included exercises for postural alignment, range of motion, stretching, coordination, balance, and strengthening. Participants performed exercises at their own level of expertise, supervised by two PCE teaching experts, with a participant to teacher ratio of 5:1. Teachers were told to create an atmosphere in class that was as neutral as possible so that the lesson was neither health- nor appearance-oriented.

CONTROL CONDITION

In the reading-a-newspaper control condition (RN), participants were asked to read a daily newspaper for an hour, sitting on a comfortable stool without moving. Reading a newspaper was chosen as the control condition as we needed an alternative activity to the PCEs that was standardized and ensured almost total absence of movement. It is worth noting that reading a newspaper for the control condition has already been used in previous studies (Vocks et al., 2009).

STATISTICAL ANALYSIS

The data were processed using SPSS version 18.0. One-way analysis

of variance (ANOVA) (group: experimental, control) was used to test for between-group differences in the baseline state BI scores and personal variables (age and BMI). One-way repeated measures ANOVA (test: BISS-pre, BISS-post) was used to test for within-group differences in state BI scores. Two-way ANOVA (group: experimental, control; test: BISS-pre, BISS-post) was used to test for between-group differences in state BI scores. Effect sizes (Cohen's d) were calculated for each variable.

RESULTS

For the sample in our study, Cronbach's alpha was .80 in the experimental group and .81 in the control group for the first survey, and .79 in the experimental group and .81 in the control group for the second survey.

Age and BMI did not significantly differ between the PCE and RN groups ($d = .05$ and $.15$, respectively). In the total sample, the composite mean of the initial BISS questionnaire was 5.24 ($SD = 1.03$). There were no significant differences concerning the baseline state BI between the PCE and RN groups, considering both the total score of the BISS-pre ($d = .15$) and each of the six items of the BISS-pre (d values from $.01$ to $.24$).

TABLE 1
MEANS, STANDARD DEVIATIONS, AND MEAN VARIATION % FOR THE BODY IMAGE STATES SCALE IN WOMEN

	Experimental group (PCE)				Control group (RN)			
	Pre		Post		Pre		Post	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Total score	5.32 (1.02)	5.77 (.98)	+7.8%***	5.16 (1.04)	5.05 (.97)	-2.2%**		
Item 1	5.32 (1.55)	5.93 (1.35)	+10%***	5.33 (1.50)	5.08 (1.38)	-4.9%**		
Item 2	5.34 (1.63)	5.73 (1.48)	+6.8%**	5.15 (1.64)	5.09 (1.55)	-1.2%		
Item 3	4.85 (1.89)	5.18 (1.83)	+6.4%***	4.83 (1.86)	4.55 (1.75)	-6.2%**		
Item 4	5.50 (1.27)	5.65 (1.16)	+2.3%*	5.20 (1.21)	5.16 (1.10)	-0.8%		
Item 5	5.17 (.98)	6.01 (1.20)	+14%***	4.97 (1.05)	4.99 (1.02)	+0.4%		
Item 6	5.76 (1.20)	6.16 (1.30)	+6.5%***	5.48 (1.19)	5.46 (1.23)	-0.4%		

Note: * $p < .05$, ** $p < .005$, *** $p < .001$; the reverse items are in their adapted form.

Two-way ANOVA (group: experimental, control; test: BISS-pre, BISS-post) showed between-group differences in state BI scores ($F(1, 214) = 29.80$, $p < .001$). The comparison between BISS-pre and BISS-post in both experimental and control groups is presented in Table 1. The PCE group participants showed a significant increase in BISS-post total score ($F(1, 110) = 35.04$, $p < .001$, Cohen's $d = .45$) and in each single item of the BISS-post ($p < .001$ for items 1, 3, 5, 6; $p < .005$ for item 2; $p < .05$ for item 4) compared with the baseline scores. RN

group participants showed a decrease in BISS-post total score ($F(1, 103) = 15.46$, $p = .035$, Cohen's $d = .11$) and in two single items of the BISS-post ($p < .05$ for items 1 and 3) compared with the baseline scores, while there were no significant differences for items 2, 4, 5, and 6 from pre- to posttest for the control group.

DISCUSSION

The results showed that a PCE session was effective in increasing state BI scores in the experimental group compared with those in the control group (whose scores decreased or did not change from baseline ones). These data highlight the positive effect of the PCE session through an improvement of attitudinal state BI and also seem to confirm the validity of the BI state construct as temporary perception changing with time and in different contexts (e.g., Rudiger, Cash, Roehrig, & Thompson, 2007). Moreover, the decrease of total state BI rates in the RN control group (who had a more negative attitude towards their bodies) seems to strengthen the fact that bodily movements can immediately improve state BI satisfaction whereas immobility increases state BI dissatisfaction.

It is noteworthy that the fifth item of the BISS (feelings about one's looks compared with how one usually feels) had the greatest enhancement in the experimental group after the PCE session. This item is the only one of the six items that takes into consideration a temporal dimension. This may explain the greater influence of a PCE session on item 5 of the BISS. A one-hour session of PCEs can improve feelings about one's appearance compared with how one typically feels. This item also explicitly refers only to one's appearance. This suggests that PCE work centered on the alignment and symmetry of the main body landmarks, can be effective in improving this parameter.

CONCLUSION

In our research we found that taking part in a physical activity that includes careful attention to the body's position and awareness of how the body feels, could lead to a more positive view of one's body, as indicated by the changes in the BISS. The positive, immediate effect of a PCE session on attitudinal state BI should be taken into consideration when promoting health interventions and physical activity programs. Our results suggest that a low calorie-burning activity, focused on careful attention to the body's positions and postures, positively influences one's physical self-perception. In further study it would be interesting to compare the acute and long-term effects of exercise on BI, in order to understand if the acute increase in BI is part of a wider process of building positive self-perception or the symptom of physical activity dependence. This could establish a vicious circle, especially in the population affected by eating disorders and BI disturbances.

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