

Physical self-concept, trait depression and readiness for physical activity of obese patients

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Summary

Study aim: To assess the physical self-concept, trait depression and readiness for physical activity in relation to the degree of obesity.

Material and methods: Obese (Grade I and II; n = 59) and morbidly obese (Grade III; n = 42) patients aged 30 – 66 years, as well as 83 non-obese college students aged 30 ± 7.3 years were studied. Physical self-concept, trait depression and readiness for physical activity were determined apart from anthropometric measurements including body fat content.

Results: Physical self-concept was inversely associated with the degree of obesity. Morbidly obese (Grade III) who were more satisfied with their body were also more ready for physical activity ($r = 0.394$; $p < 0.01$). Trait depression and physical self-concept were negatively correlated in both groups.

Conclusion: Body satisfaction may play an important role in the protection against depression and enhance the readiness for physical activity of obese patients.

Key words: Physical self-concept – Morbid obesity – Readiness for physical activity – Trait depression – Obesity

Introduction

Since the sixties, the prevalence of obesity has been dramatically increasing [6]. Among obese females, a 10% loss of body mass was shown to decrease the mortality rate by 20% [17]. Regular physical activity plays an important role in the prevention and treatment of obesity and obesity-related diseases [1]. Individuals who seek weight loss treatment, consistently demonstrate higher prevalence of distress than those who do not engage in such treatment. The most common obesity-related psycho-emotional disorders are depression, binge eating, body-image distress [4,15]. Stigmatisation of obesity is frequent and may lead to severe stress responses having a high impact on affective self-defence strategies in everyday life [8]. The prevalence of affective disorders is 1.35-fold higher in obesity than in degenerative arthritis and 1.23-fold higher in obesity than in the non-toxic goitre. The prevalence of alcohol, drug abuse and affective disorders is greater in obese than in non-obese populations [13]. Moreover, depression and self-esteem depend on the degree of obesity and the relationship be-

tween body mass and depression is partially mediated by body image [3,16]. Thus, the aim of the present study was to assess the physical self-concept, trait depression and readiness for physical activity in relation to the degree of obesity.

Material and Methods

Three groups of subjects were studied: obese subjects who applied for obesity treatment, aged 30 – 66 years, classified as obese (Grade I and II; n = 59) or morbidly obese (Grade III; n = 42) and non-obese college students (17 male and 66 female). Their somatic characteristics are presented in Table 1. All subjects were requested to complete anonymously 3 standardised questionnaires: Trait Personality Inventory (STPI-Y; Hungarian version) [12] for determining trait depression, Physical Self-Concept subscale of the Tennessee Self-Concept Scale [2] for assessing the perceived physical self-worth (18 items, 5-point extent of agreement/disagreement response format, Cronbach's $\alpha = 0.83$) and the Readiness for Physical Activity scale [11] (12 items,

7-point extent of agreement/disagreement response format, Cronbach's alpha = 0.97).

Anthropometric parameters (body height and mass, BMI, waist circumference, body fat percentage) were measured on the first day of the treatment programme. Body fat was determined by the multiphasic bioimpedance method [7] (InBody 720, Biospace, USA).

The questionnaire data were subjected to one-way ANOVA followed by *post-hoc* Newman-Keuls' test. Pearson's coefficients of correlation were computed for some variables. The level of $p \leq 0.05$ was considered significant.

Results and Discussion

The results (means \pm SD) of anthropometric and questionnaire measurements conducted in obese and non-obese subjects are presented in Table 1 with the exception of body fat content and waist circumference in non-obese subjects for whom those data were not available. Since the subjects were categorised by the degree of obesity, no statistical tests for somatic measurements were performed as those measurements characterised obesity.

Table 1. Mean values (\pm SD) of studied variables in non-obese and obese subjects

Variable	Group Non-obese (n = 83)	Obese, I - II (n = 59)	Obese, III (n = 42)
Age (years)	30.0 \pm 7.3	42.1 \pm 13.3	42.1 \pm 10.6
Body mass (kg)	66.5 \pm 14.9	96.6 \pm 13.4	130.3 \pm 22.9
BMI	22.6 \pm 4.4	35.0 \pm 2.8	46.7 \pm 6.3
Body fat (%)	ND	40.9 \pm 5.4	47.5 \pm 5.1
Waist C. (cm)	ND	108.9 \pm 12.0	131.6 \pm 14.0
PhSC	66.5 \pm 11.0***	49.3 \pm 10.5	42.9 \pm 9.3 ^{##}
Trait depression	19.4 \pm 4.2	20.4 \pm 5.4	19.7 \pm 4.7
RPA	58.9 \pm 15.5	41.3 \pm 21.8 ^{oo}	48.7 \pm 22.9 ^o

Significances were computed for non-somatic variables only
Legend: Waist C. – Waist circumference; PhSC – Physical self-concept; RPA – Readiness for physical activity; ND – No data; *** Significantly ($p < 0.001$) different from other groups; ^{##} Significantly ($p < 0.01$) different from the Obese I-II group; Significantly different from non-obese subjects: ^o $p < 0.05$; ^{oo} $p < 0.001$

The physical self-concept was strongly, negatively correlated with the degree of obesity (expressed by BMI) which was reflected in significant between-group differences for that variable (see Table 1), the correlation coefficient for all groups combined amounting to -0.334 ($p < 0.001$). As to the within-group correlations, a sig-

nificant one between BMI and physical self-concept was found only in Grade I-obese subjects ($r = -0.372$; $p < 0.05$) and in the non-obese control group ($r = -0.283$; $p < 0.01$).

Those morbidly obese (Grade III) who were more satisfied with their body were also more ready for physical activity ($r = 0.394$; $p < 0.01$) and the same was true for Grade I-obese subjects ($n = 29$; $r = 0.363$; $p < 0.05$) and for the non-obese ($r = 0.400$; $p < 0.001$) but not for the Grade II-obese ones ($n = 30$; $r = 0.219$).

The readiness for physical activity correlated weakly but significantly with BMI in the control group ($r = -0.198$; $p < 0.05$) but not in the obese subjects. Interestingly, lowest readiness for physical activity was noted in obese subjects (see Table 1). A high readiness was natural in the non-obese students, while the morbidly obese subjects might have been more aware of the necessity to undertake physical activities for health reasons than the less obese ones, hence mean RPA values for those two groups tended to differ ($p < 0.10$).

No between-group differences in trait depression were noted. However, that variable negatively correlated with the physical self-concept as shown by the linear regression model: $R = -0.497$ ($p < 0.001$) and -0.356 ($p < 0.05$) for morbidly obese and other obese patients, respectively.

The presented results point to the importance of rapid weight loss as the first step of the complex weight loss programme, especially in morbid obesity [17]. In the non-morbid obesity, lower body fat percentage may increase physical self-concept level [14]. Body satisfaction may play an important role in the readiness for physical activity and in the protection against depression amongst obese patients [5,9,10].

Positive physical self-concept may bring about a greater psycho-emotional balance and stability which, in turn, may affect the manifestation of trait depression. Monitoring the physical self-concept may thus be of importance in improving body satisfaction of obese patients. Since in the metabolically healthy obese the maintenance of actual body mass may be more beneficial than weight loss, especially a massive one, giving adequate examples may lead to improvement of body satisfaction..

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