

A pilot study on the effect of Basic Body Awareness Therapy in patients with eating disorders: a randomized controlled trial

Daniel Catalan-Matamoros¹, Liv Helvik-Skjaerven²,
M Teresa Labajos-Manzanares³,
Alma Martínez-de-Salazar-Arboleas⁴
and Eduardo Sánchez-Guerrero³

Abstract

Objective: To analyse the feasibility of Basic Body Awareness Therapy in people with eating disorders.

Design: A randomized controlled trial; the assessors were not blinded to the group allocation.

Setting: The eating disorders department within a hospital setting.

Subjects: Twenty-eight outpatients with eating disorders for less than five years.

Intervention: All patients received standard outpatient treatment. The intervention group ($n = 14$) also received Basic Body Awareness Therapy for seven weeks.

Main measures: Eating Disorder Inventory, Eating Attitude Test, Body Attitude Test and Quality of Life Scale SF-36.

Results: Analysing the differences between both groups, significant differences were found in Eating Disorder Inventory (mean difference: 26.3; $P = 0.015$) and in its subscales 'drive to thinness' ($P = 0.003$), 'body dissatisfaction' ($P = 0.025$) and 'ineffectiveness' ($P = 0.014$). Also in Body Attitude Test (mean difference: 33.0; $P = 0.012$), Eating Attitude Test-40 (mean difference: 17.7; $P = 0.039$) and SF-36 in the section 'mental health' (mean difference: 13.0; $P = 0.002$).

Conclusions: This study has shown some effectiveness of Basic Body Awareness Therapy in improving some symptoms in outpatients with eating disorders. Further studies should include larger samples, double-blinded and placebo methodologies, and should focus on questions such as which eating disorder diagnoses benefit most from physical therapy.

Keywords

Rehabilitation interventions, psychiatric rehabilitation, physiotherapy, eating disorders

Received: 14 September 2010; accepted: 20 November 2010

¹Department of Nursing and Physiotherapy, University of Almería, Spain

²Department of Physiotherapy, Bergen University College, Norway

³Department of Psychiatry and Physiotherapy, University of Málaga, Spain

⁴Mental Health Public Services of Almería, Spain

Corresponding author:

Daniel Catalan-Matamoros, Department of Nursing and Physiotherapy, University of Almería, Crta. Sacramento s/n, 04120 Almería, Spain
Email: dcatalan@ual.es

Introduction

Patients with eating disorders have had a long reputation as being difficult for clinicians to treat.¹ A greater understanding of the factors that contribute to these difficulties and which lead to patients being treatment resistant could help improve treatment outcome and reduce morbidity and mortality in these disorders. The benefits of an increased understanding of such factors, especially the multidetermined pathophysiology of these conditions requiring different treatment approaches, are evident from the past two decades, during which time treatments have become more effective.²

There is a poverty of evidence-based randomized controlled trials on the basis of which we can recommend the key components of a comprehensive service for eating disorders.³ Gowers et al.⁴ analysed the treatments applied in eating disorders departments in European countries and found that body-oriented interventions were applied only in the 66% of the countries. However, body-oriented interventions are perceived as a useful application in the management of distorted body image in programmes to control excessive exercise and in anxiety reduction.⁵⁻⁷

The body is a key element in eating disorders. It is well known that people with eating disorders are characterized by disturbed body image.^{6,7} A distorted and negative perception of one's body with regard to weight, size and shape,⁸ an intense fear of gaining weight, even when severely underweight, drives and tensions^{9,10} indicate how patients with eating disorders experience their bodies. The ability to perceive sensations from the body and to integrate them consciously in a realistic way is often damaged¹¹ and generates lack of communication between body and mind, and also negative body experiences.⁵ Body image disturbances are also one of the four main criteria necessary to diagnose to patients suffering from anorexia nervosa according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).¹² Changing the way eating disorders patients

experience their bodies should be considered a priority in the treatment of this disorder.⁵

Adequate body awareness has been shown to be of great importance to the ability to get well, especially in preventing relapses.¹¹ Some studies have shown the improvement of body-mind interrelation through increasing body awareness in patients with eating disorders.¹³

Different approaches using body-oriented therapies have been applied to patients suffering from eating disorders. A systematic review¹⁴ that looked at the different types of body-oriented therapies that had been applied to patients with eating disorders found evidence in the following ones: bright light therapy, climate therapy, electrotherapy, phytotherapy, massage therapy, thermotherapy, body awareness therapy and physical activity. However, the review highlighted the need for randomized clinical trials studies on the effectiveness of the physical therapy in these patients in order to show a solid recommendation and to identify which methodologies were more effective.

Basic Body Awareness Therapy is a technique with its origins in the work of the French psychoanalyst and movement teacher Dropsy,¹⁵⁻¹⁷ who synthesized the method inspired both by western movement traditions and the eastern practice of T'ai-chi Ch'uan (t'ai chi). The basic Body Attitude Test was established in Scandinavia by Roxendal,¹⁸ inspired by Feldenkrais pedagogy and Dropsy's movement system. It has been further developed by Scandinavian physiotherapists¹⁹⁻²¹ and is now practised in rehabilitation departments in many countries.

Today, Basic Body Awareness Therapy is used in multiple clinical settings, most commonly in primary care, multidisciplinary pain rehabilitation and mental health.²¹ With its roots in the humanistic and holistic tradition, Basic Body Awareness Therapy aims to bring health and human resources to the fore. It focuses on self-exploration and self-experience of movement quality, on the interplay between conscious being, doing and relating.²² These explorations and experiences are built on three

main elements of dynamic balance: postural stability, free breathing and mental awareness.^{20,23} The Basic Body Attitude Test can be used both as an individual and as a group treatment. There have been some preliminary studies on the use of Basic Body Awareness Therapy in patients with eating disorders.^{7,11,13,24}

The hypothesis of this study was that Basic Body Awareness Therapy produces a positive effect in patients with eating disorders comparing with a control condition. Thus the primary objective was to analyse the feasibility of Basic Body Awareness Therapy in people suffering from eating disorders. The secondary objective was to explore the effect of Basic Body Awareness Therapy on some of the typical symptoms in eating disorders such as body dissatisfaction, drives, mental health, etc.

Methods

Individuals with eating disorders who were registered in the Mental Health District of Almeria (Spain) at the Hospital of Torrecárdenas (Andalusian Health Services) were invited to participate. The inclusion criteria were:

- registered with any of the diagnoses of eating disorders;
- in outpatient treatment;
- diagnosed less than 5 years ago;
- enough physical skills in order to stay in different positions (laying, sitting and standing);
- over 18 years old.

One hundred and two patients met the above inclusion criteria and were contacted first by a letter and second by phone to provide relevant information about the study. After this preliminary contact, they were invited to an information meeting with the therapeutic team which was composed by one physiotherapist, one psychiatrist, one psychologist and one occupational therapist.

Twenty-eight patients accepted the invitation to attend the information meeting and all of them also accepted participation in the study.

We believe that many of the 74 patients who decided not to join the trial were influenced by the fact that this intervention is still unknown in the Spanish National System and it was the first time it was going to be delivered.

After screening by the study coordinator, participants were randomly assigned by the sealed envelope method into two groups: an experimental group ($n=14$) and a control group ($n=14$). All patients received standard outpatient treatment which consisted of psychotherapy and psychiatry. The assessors were not blinded to the group allocation.

This was an open trial in three phases:

- Pre-test: participants from both groups were assessed.
- Intervention: participants in the experimental group received Basic Body Awareness Therapy for seven weeks. In the first two weeks, the patients received one individual session of 1 hour each per week. In the following five weeks, the patients received two group sessions of 1.5 hours each per week. In total, each patient received 12 sessions.
- Post-test: participants from both groups were assessed at the end.

The interventions were based on Basic Body Awareness Therapy^{19,20,23} and were applied by a certified physical therapist specialist in Basic Body Awareness Methodology by an official postgraduate university programme.²⁵ A Basic Body Attitude Test programme was designed (Table 1). The aim of the training programme

Table 1. Basic Body Awareness Therapy programme

Duration: approximately 1–1.5 hour
1) Encounter between the patient and the physiotherapist
2) Exercises in lying position
3) Exercises in sitting position
4) Exercises in standing position
5) Push-hands and walking exercises
6) Session ending

was to increase body awareness and to achieve positive experiences from the body. All sessions started with a short warm-up, followed by specific exercises and ended with a 15-minute verbal reflection and a summary of individual experiences. To avoid feelings of stress and anxiety during the training session, none of the movements included direct body touch from the physical therapist during the first individual sessions. Instead, a plastic ball was used for indirect touching.⁷ During the group sessions, when the participants were more confident, direct body contact was promoted among the participants. The programme consisted of basic, simple movements to experience postural balance, grounding, co-ordination and to free the breathing.^{17,26} The movements were performed in supine, sitting, standing and walking positions. The programme also included special massage techniques performed by the subjects on each other during pair exercises. Mental awareness was integrated during the whole training process, which means that turning the attention both to the doing of the exercises and to what was experienced in the movements was central.²⁷

Different types of material commonly used in Basic Body Awareness Therapy were used, such as mattress, pillows, chairs, etc. The use of small plastic balls was added for body touch in order to avoid direct contact between the physiotherapist and the patient.⁷

All the participants were tested twice, before the intervention and just after the end of the intervention. The following assessment tools were used.

- SF-36²⁸ using its short-form version with 36 items. This is a well-documented, self-administered quality of life scoring system that consists of eight quality of life domains and two summary measures: the physical component summary and the mental component summary. The SF-36 includes one transition question and 35 questions on quality of life. The transition question asks patients to rate the amount of general health change they have experienced during the past year. The remaining 35 questions are organized into eight subscales. The survey addresses limitations in physical functions and role activities due to health problems, bodily pain, general health perceptions, vitality (energy and fatigue), social limitations as a consequence of physical or emotional concerns, limitations in role activity due to emotional problems, and mental health.
- The Eating Disorder Inventory²⁹ to assess the psychological and behavioural common traits in anorexia nervosa and bulimia. This survey comprises 64 questions, divided into eight subscales rated on a 0–6 point scoring system. The eight subscale scores on the Eating Disorder Inventory are:
 - Drive for thinness: an excessive concern with dieting, preoccupation with weight, and fear of weight gain
 - Bulimia: episodes of binge eating and purging
 - Body dissatisfaction: not being satisfied with one's physical appearance
 - Ineffectiveness: assesses feelings of inadequacy, insecurity, worthlessness and having no control over one's life
 - Perfectionism: not being satisfied with anything less than perfect
 - Interpersonal distrust: reluctance to form close relationships
 - Interoceptive awareness: 'measures the ability of an individual to discriminate between sensations and feelings, and between the sensations of hunger and satiety'
 - Maturity fears: the fear of facing the demands of adult life.
- Eating Attitude Test-40³⁰ to measure symptoms and concerns characteristic of eating disorders. The Eating Attitude Test-40 is a self-report format questionnaire with 40 items presented in a 6-point forced choice. Severity is measured on a 0–3 scale, where 'sometimes', 'rarely' and 'never' responses were each scored as 0, and 'often', 'very

often' and 'always' were scored as 1, 2, 3, respectively.

- Body Attitude Test³¹ to measure the subjective body experience and attitudes toward one's body. It differentiates between clinical and non-clinical subjects and between anorexics and bulimics. It is composed of 20 items which yield four factors: negative appreciation of body size, lack of familiarity with one's own body and general body dissatisfaction

This study was approved by the Clinical Research and Ethical Committee of the University Hospital 'Torrecárdenas' of Almería (Spain). It also complies and follows the Helsinki Declaration for clinical trials. All patients were given verbal and written information and signed an informed consent paper where with information related to their rights when participating in a clinical trial.

Statistical analyses

The software SPSS version 14.0 (SPSS Inc., Chicago, IL, USA) was used for the statistical analyses. First, descriptive statistical analyses were performed to describe the participants' profile. Baseline differences demographic and illness characteristics between participants from both groups were investigated by independent *t*-tests and chi-square tests.

Second, the comparison between the effects produced in the experimental group and in the control group were analysed for each dependent variable. This measure represents the amount of change in the value of the questionnaires (dependent variables) that can be attributed to the effect of the physical therapy intervention (independent variable). The analyses of the effects between both groups as intersubject factors were done through Kolmogorov-Smirnov to test normality of the distribution, and through parametric (Student's *t*-test) or non-parametric (Mann-Whitney) tests to obtain whether there were any differences between the experimental and control groups. The confidence interval

was 95% and the level of significance was 0.05 in all analyses.

Results

Six patients from the control group did not attend the post test, therefore this group was finally made up of 8 patients. The main dropout reasons were lack of time ($n=2$) or lack of transportation ($n=2$) to attend the post test. All participants from the experimental group attended the post test (Figure 1). No significant differences in relation to the descriptive items were found between the groups. During the study, 12 (54.5%) participants were receiving pharmacotherapy which was adjusted according to the needs of each participant during the study (Table 2).

Second, the effect of the physical therapy intervention was assessed. The changes produced in each group were analysed for each dependent variable. Significant differences between the participants from the experimental group and the participants from the control group (Table 3) were found in the Eating Disorder Inventory ($P=0.015$) and in its subscales 'drive to thinness' ($P=0.003$), 'body dissatisfaction' ($P=0.025$) and 'ineffectiveness' ($P=0.014$); also in the Body Attitude Test ($P=0.012$) and its subscale 'negative appreciation of body size' which almost shows significant differences ($P=0.051$). Differences were also found in the Eating Attitude Test-40 ($P=0.039$) and in the SF-36 in the 'mental health' section ($P=0.002$).

Discussion

This study has shown the feasibility of Basic Body Awareness Therapy for people with eating disorders. Drives, body dissatisfaction, quality of life and the level of eating disorder have been significantly improved, which could encourage further good-quality research.

Drives are a common characteristic in patients with bulimia, in whom physical activity seems to be effective, such as in 'drives

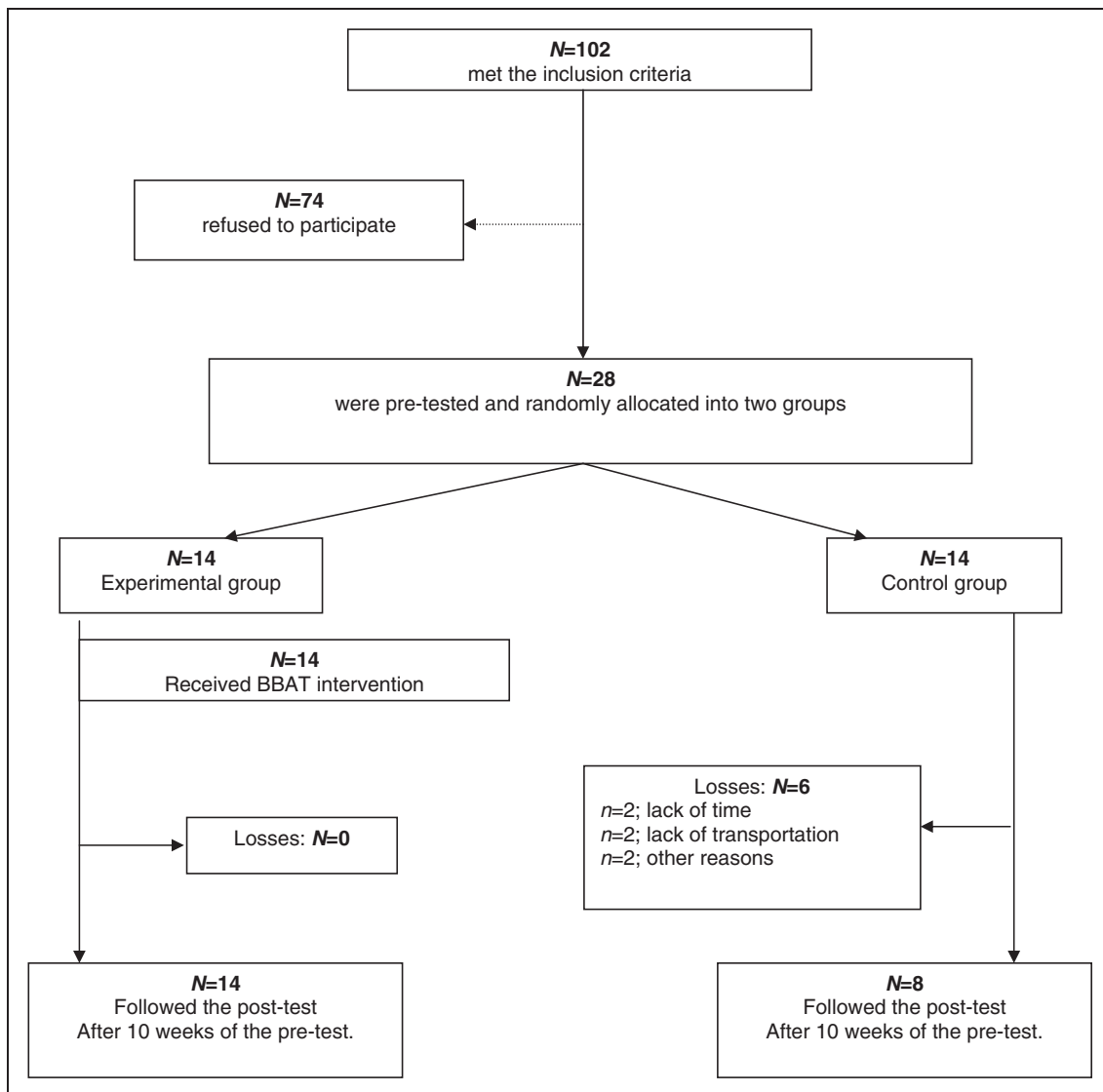


Figure 1. Study procedures and design. BBAT, Basic Body Awareness Therapy.

towards eating or thinness'.¹⁰ The aim of body-oriented therapies in patients with eating disorders is to regulate hyperactivity, drives and tensions.³¹ In our study, Basic Body Awareness Therapy was shown to have a positive effect on drives.

High levels of body dissatisfaction exist in patients with eating disorders.³² Body dissatisfaction improves through body-oriented

therapies.^{5,6} In our study, significant differences were found in the Eating Disorder Inventory 'body dissatisfaction' and in the Body Attitude Test, which is supported by previous research.^{28,33} In addition, the improvement of body dissatisfaction is related to body image which, under the construct of 'body experience'⁵ is an important diagnostic element in patients with eating disorders.

Table 2. Participants' profile at baseline

	Overall (n = 22)	Experimental group (N = 14)	Control group (N = 8)	P-value between control and experimental groups
Mean age	28.0	29.5	25.2	0.21
Gender (N, %)				
Women	20, 90.9	13, 92.9	7, 87.5	0.67
Men	2, 9.1	1, 7.1	1, 12.5	
Diagnosis (N, %)				
Anorexia nervosa	8, 36.4	5, 35.7	3, 37.5	0.58
Atypical anorexia nervosa	3, 13.6	1, 7.1	2, 25.0	
Bulimia nervosa	10, 45.5	7, 50.0	3, 37.5	
Atypical bulimia nervosa	1, 4.5	1, 7.1	0, 0	
Mean period with diagnoses (average \pm SD)	3.6 \pm 1.6	3.5 \pm 1.5	3.6 \pm 1.4	0.93
Currently with drug therapy (N, %)	12, 54.5	9, 64.3	3, 37.5	0.22

A relevant finding was with regard to the level of the eating disorder. Significant differences were found in the Eating Disorder Inventory and Eating Attitude Test-40. Both tests are widely used to assess specific typical characteristics and symptoms in patients with eating disorders.³⁴ The Eating Attitude Test establishes a cut-off point of '30 or over' to identify individuals with eating disorders. In the pretest, the control group and the experimental group scored 41.0 and 37.5, respectively, scores within the range of 'eating disorder'. Significant differences were found in the post-test scores, where the experimental group scored 26.2 and the control 36.2. It shows that the experimental group had a significantly improved level of eating disorder accordingly to the Eating Attitude Test. This might be based on the indirect result of the influence that Basic Body Awareness Therapy made on symptoms such as drives to thinness and body dissatisfaction.

A main objective of mental health rehabilitation is to improve patients' quality of life.^{35,36} The SF-36 quality of life scale has shown significant differences in the area of mental health, which is an interesting aspect that reflects how body/physical-oriented approaches might produce an effect in patients with mental disorders.

These results therefore support the hypothesis that body-oriented therapies have an influence on mental health.^{7,11,13,24,37}

Previous studies have found highly distorted body perceptions in eating disturbances.⁴⁻⁷ An interesting finding was that in our study, significance was almost found in the improvement of 'negative appreciation of body size' as assessed by the Body Attitude Test. This may support the possible link of eating disorders to distorted body perception.

Despite the encouraging preliminary data presented here, there were some limitations in the study. First, the sample size of the study was low. It was therefore not possible to analyse differential effects between subgroups of participants, such as different diagnoses (anorexia vs. bulimia). To overcome this limitation, further studies with larger sample sizes should be conducted and analyse differences among the diagnosis groups which exists in eating disorders according to the ICD-10 Classification of Mental and Behavioural Disorders. Considering an eating disorders prevalence of 0.8% for anorexia and 2% for bulimia we could estimate a sample of 13 patients with anorexia and 31 patients with bulimia with the maximum error of 5% (epsilon=0.05) and a confidence level of 5% (alpha=0.05).

Table 3. Post-test statistical analyses of changes between the experimental and control groups

	Experimental group		Control group		P-value	Confidence interval Min/max
	Min/max	Mean (SD)	Min/max	Mean (SD)		
EDI – Drive to thinness	0/18	7.5 (6.4)	-2/5	0.8 (2.1)	0.003*	-10.5/-2.6
EDI – Bulimia	-3/12	4.7 (4.8)	-1/14	1.7 (4.9)	0.17	-7.7/1.6
EDI – Body dissatisfaction	-8/23	6.8 (11.5)	-4/3	-1.1 (2.1)	0.025*	-14.7/-1.1
EDI – Ineffectiveness	-2/20	6.9 (7.5)	-1/5	1.0 (1.9)	0.014*	-10.4/-1.4
EDI – Perfectionism	-7/5	0.5 (3.1)	-4/6	0.5 (3.3)	1.00	-3.1/3.1
EDI – Interpersonal distrust	-3/9	1.2 (3.4)	0/5	1.1 (1.6)	0.90	-2.4/2.1
EDI – Interoceptive awareness	-3/17	4.4 (5.8)	0/8	2.1 (2.8)	0.31	-6.2/1.6
EDI – Maturity fears	-8/7	1.3 (3.7)	-2/6	1.1 (2.7)	0.88	-3.1/2.6
EDI – Total score	-6/83	33.6 (32.0)	-7/28	7.3 (13.7)	0.015*	-46.9/5.6
BAT – Negative appreciation of body size	-27/10	-7.2 (10.5)	-7-30	2.7 (11.3)	0.051	-0.5/20.4
BAT – Lack of familiarity with one's own body	-18/1	-7.7 (7.0)	-28/24	.7 (14.1)	0.07	-0.8/17.7
BAT – General body dissatisfaction	-16/4	-4.2 (5.7)	-13/15	.2 (7.5)	0.13	-1.4/10.3
BAT – total score	-8/76	24.7 (26.4)	-77/12	-8.3 (28.4)	0.012*	-58.2/8.0
EAT-40	-33/42	14.8 (21.8)	-5/7	1.2 (4.1)	0.039*	-26.4/-7
SF-36 – Physical functioning	-25/25	-1.4 (11.1)	-30/30	1.2 (16.4)	0.65	-9.5/14.9
SF-36 – Physical role functioning	-50/100	14.2 (48.7)	0/25	3.1 (8.8)	0.74	NA
SF-36 – Emotional role functioning	-100/66.7	-34.5 (54.0)	-33.3/66.7	4.1 (27.8)	0.08	NA
SF-36 – Vitality	-60/40	-12.8 (28.3)	-10/5	-2.5 (4.6)	0.20	-6.2/26.9
SF-36 – Mental health	-80/-5	-31.4 (23.6)	-25/7	-4.5 (10.6)	0.002*	11.5/42.2
SF-36 – Social role functioning	-75/12.5	-21.4 (25.2)	-25/12.5	-3.1 (14.5)	0.07	-2/38
SF-36 – Bodily pain	-57.5/32.5	-10.1 (23.4)	-32.5/20	-6.8 (11.5)	0.71	-15.2/21.8
SF-36 – General health perceptions	-65/10	-13.3 (20.0)	-15/10	-2.5 (9.2)	0.16	-4.9/26.6
SF-36 – Physical health (dimension)	-41.5/7.5	-11.9 (13.5)	-28/-5	-12.5 (8.7)	0.92	-11.7/10.6
SF-36 – Mental health (dimension)	-50.8/14.9	-19.6 (20.4)	-40.7/15.2	-5.8 (15.9)	0.11	-3.7/37.3

*Significant differences.

CI, intervals at 95% of confidence.

BAT, Body Attitude Test; EAT, Eating Attitude Test; EDI, Eating Disorders Inventory; SF-36, Medical Outcomes Study 36-Item Short-Form Health Survey.

We would need this sample size in order to be able to generalize the results.

Another major limitation was that 6 out of the 14 patients in the control group failed to attend the post test. It could create a huge risk of a biased drop-out. This may well explain the differences

found in the study between both groups. We would suggest decreasing this high drop-out in further studies by including some kind of placebo intervention. This placebo would also decrease the existing Hawthorne effect which could have influenced the results of this study.

The outcome assessor was not blinded as to the group of the patient. Consequently there could be a large bias in favour of the experimental treatment. However, it should be taking into account that the assessment consisted of self-reported questionnaires thus future studies should also include other measurement methodologies such as observation, objective measures, personality tests, etc., and also follow-up analyses to assess the length of the effect.

Another issue of concern is the generalizability of the present study findings. The study did not include inpatients. Whether we can generalize to other individuals with eating disorders remains to be established.

It is also important to acknowledge that Basic Body Awareness Therapy may not be equally suitable for all patients. It is reasonable to assume that there is no one best treatment for every patient and that some patients may benefit more from group-based sessions, while others may benefit more from individualized face-to-face contact. Therefore it could be important that future research focuses on questions such as which individuals benefit from which type of treatment.

Clinical messages

- This study has shown the feasibility of Basic Body Awareness Therapy in outpatients with eating disorders through improving some symptoms such as drives, body dissatisfaction, body attitude and quality of life.
- Further studies should include a placebo control, blinding systems, larger samples and put effort into decreasing the high participant drop-out.

Acknowledgements

We would like to thank all the participants in the trial and the following institutions who also contributed to the study by providing human and technical resources: Mental Health Public Services of

Almería, the Association of Almería against Anorexia and Bulimia (ASACAB), Foundation for Bio-Health Research in Eastern Andalusia (FIBAO), the University of Almería, the University of Málaga, the Bergen University College and the Research Council of Norway.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

References

1. Kaplan AS and Garfinkel PE. Difficulties in treating patients with eating disorders: a review of patient and clinician variables. *Can J Psychiatry* 1999; 44: 665–670.
2. Kaplan AS and Garfinkel PE. General principles of outpatient treatment. In: Gabbard GO (ed.) *Treatments of psychiatric disorders*. Washington DC: American Psychiatric Press, 1995, pp.2085–2102.
3. Fichter MM. Management of eating disorders: optimal vs. minimum treatment. *World Psychiatry* 2009; 8: 165.
4. Gowers SG, Edwards VJ, Fleminger S, et al. Treatment aims and philosophy in the treatment of adolescent anorexia nervosa in Europe. *Eur Eat Disord Rev* 2002; 10: 271–280.
5. Probst M, Van Coppenolle H and Vandereycken W. Further experience with the Body Attitude Test. *Eat Weight Disord* 1997; 2: 100–104.
6. Mandy A and Broadbridge A. The role of physiotherapy in anorexia nervosa management. *Int J Ther Rehabil* 1998; 5: 284–290.
7. Majewski M. Touching, clinical work and eating disorders [in Swedish]. *Nord Fysioter* 2000; 4: 122–127.
8. Farrell C, Lee M and Shafran R. Assessment of body size estimation: a review. *Eur Eat Disord Rev* 2005; 13: 75–88.
9. Probst M, Van Coppenolle H and Vandereycken W. Body experience in anorexia nervosa patients: an overview of therapeutic approaches. *Eat Disord J Treatment Prev* 1995; 3: 145–157.
10. Sundgot-Borgen J, Rosenvinge JH, Bahr R and Schneider LS. The effect of exercise, cognitive therapy, and nutritional counseling in treating bulimia nervosa. *Med Sci Sports Exerc* 2002; 34: 190–195.
11. Wallin U, Kronovall P and Majewski ML. Body awareness therapy in teenage anorexia nervosa: outcome after 2 years. *Eur Eat Disord Rev* 2000; 8: 19–30.
12. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders (DSM-IV)*. Arlington, VA: American Psychiatric Association, 1994.
13. Nilsen M, Danielsen M, Gronlund GE. Physiotherapy and eating disorders. In *First International Conference of*

- Physiotherapy in Psychiatry and Mental Health. Leuven, Belgium; 15–17 February 2006.* Leuven: Catholic University of Leuven, 2006.
14. Catalan Matamoros D. Searching for evidence in the effectiveness of physiotherapy in eating disorders. In *III International Conference of Physiotherapy in Psychiatry and Mental Health. Lund, Sweden; 3–5 February 2010.* Lund: University of Lund, 2010.
 15. Dropsy J. *Den harmoniska kroppen. [The harmonious body]*. Stockholm: Natur och Kultur, 1988.
 16. Dropsy J. *Leva i sin kropp. [Living in your body]*. Lund: Aldus, 1975.
 17. Lundvik-Gyllensten A, Hansson L and Ekdahl C. Patient experiences of basic body awareness therapy and the relationship with the physiotherapist. *J Bodywork Movement Ther* 2003; 7: 173–183.
 18. Roxendal G. Body Awareness Therapy and the Body Awareness Scale, treatment and evaluation in psychiatric physiotherapy. Doctoral thesis, Department of Psychiatry, University of Gothenburg, 1985.
 19. Skjaerven LH. *Basic Body Awareness Therapy. Exercises, verbal guidance, observation and assessment of Quality of Movement. A first introduction.* Bergen: Skjaerven LH, 2002.
 20. Skatteboe UB. *Basic Body Awareness Therapy and movement harmony.* Oslo: Oslo University College, 2005.
 21. Lundvik-Gyllensten A, Ekdahl C and Hansson L. Validity of the Body Awareness Scale – Health (BAS-H). *Scand J Caring Sci* 1999; 13: 217–226.
 22. Skjaerven LH. *Basic Body Awareness Therapy. A guide to understanding, therapy and growth.* Bergen: Skjaerven LH, 2003.
 23. Skjaerven LH. Being yourself more fully and completely. Movement quality – an approach. Msc thesis, Bergen University, 1999.
 24. Majewski ML. Working with children and adolescents with eating disorders. In *First International Conference of Physiotherapy in Psychiatry and Mental Health. Leuven, Belgium; 15–17 February 2006.* Leuven: Catholic University of Leuven; 2006.
 25. Bergen University College. Postgraduate programme for physical therapists: Basic Body Awareness Methodology. Accessed 12 July 2010, from <http://student.hib.no/fagplaner/ahs/fagplan.asp?kode=V60BBAM>.
 26. Fjellman-Wiklund A, Grip H, Andersson H, Stefan Karlsson J and Sundelin G. EMG trapezius muscle activity pattern in string players: Part II – Influences of basic body awareness therapy on the violin playing technique. *Int J Ind Ergon* 2004; 33: 357–367.
 27. Gard G. Body awareness therapy for patients with fibromyalgia and chronic pain. *Disabil Rehabil* 2005; 27: 725–728.
 28. Ware JE and Sherbourne CD. The MOS 36-item Short-Form Health-Survey (SF-36): I. Conceptual framework and item selection. *Med Care* 1992; 30: 473–483.
 29. Garner M, Olmster M and Polivy I. Development a validation of a multidimensional Eating Disorders Inventory for anorexia nervosa and bulimia. *Int J Eat Disord* 1983; 2: 15–34.
 30. Garner DM and Garfinkel PE. The Eating Attitude Test. *Psychol Med* 1979; 9: 273–279.
 31. Probst M, Vandereycken W, Van Coppenolle H and Vanderlinden J. The Body Attitude Test for patients with an eating disorder: psychometric characteristics of a new questionnaire. *Eat Disord J Treatment Prev* 1995; 3: 133–145.
 32. Råstam M. Personality and Eating Disorders II Congress A.E.T.C.A. *Rev Psiquiatria Fac Med Barna* 1999; 26: 107–108.
 33. Hart S, Field T, Hernandez-Reif M, et al. Anorexia nervosa symptoms are reduced by massage therapy. *Eat Disord* 2001; 9: 289–299.
 34. Iñárritu Pérez C, Cruz Licea V, Morán Álvarez IC. Instrumentos de evaluación para los trastornos de la conducta alimentaria. *Rev Salud Públ Nutr* 2004; 5.
 35. Skjaerven LH. Physiotherapy in mental health – a Scandinavian approach. In *First International Conference of Physiotherapy in Psychiatry and Mental Health. Leuven, Belgium; 15–17 February 2006.* Leuven: Catholic University of Leuven, 2006.
 36. Donaghy M, Durward B. *A report on the clinical effectiveness of physiotherapy in mental health.* London: Chartered Society of Physiotherapy, 2000.
 37. Danielsen M, Nilsen M. Physiotherapy and eating disorders. In *Second International Conference of Physiotherapy in Psychiatry and Mental Health. Bergen, Norway; 27–29 February 2008.* Bergen: Bergen University College, 2008.