

Considering the role of physical therapists within the treatment and rehabilitation of individuals with eating disorders: a survey of expert clinicians

Soundy, Andrew; Stubbs, Brendon; Probst, Michel; Lundvik Gyllensten, Amanda; Helvik Skjaerve, Liv; Catalán-Matamoros, Daniel; Vancampfort, Davy

DOI:
[10.1002/pri.1637](https://doi.org/10.1002/pri.1637)

License:
None: All rights reserved

Document Version
Early version, also known as pre-print

Citation for published version (Harvard):
Soundy, A, Stubbs, B, Probst, M, Lundvik Gyllensten, A, Helvik Skjaerve, L, Catalán-Matamoros, D & Vancampfort, D 2015, 'Considering the role of physical therapists within the treatment and rehabilitation of individuals with eating disorders: a survey of expert clinicians', *Physiotherapy Research International*.
<https://doi.org/10.1002/pri.1637>

[Link to publication on Research at Birmingham portal](#)

Publisher Rights Statement:

This is the pre-peer reviewed version of the following article: Soundy, A., Stubbs, B., Probst, M., Gyllensten, A. L., Skjaerven, L. H., Catalan-Matamoros, D., and Vancampfort, D. (2015) Considering the Role of Physical Therapists Within the Treatment and Rehabilitation of Individuals With Eating Disorders: An International Survey of Expert Clinicians. *Physiother. Res. Int.*, which has been published in final form at <http://dx.doi.org/10.1002/pri.1637>. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Self-Archiving.

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.

Considering the role of physical therapists within the treatment and rehabilitation of individuals with eating disorders: an International survey of expert clinicians

Journal:	<i>Physiotherapy Research International</i>
Manuscript ID:	PRI-Nov-2014-RA-0059.R1
Wiley - Manuscript type:	Research Article
Keywords:	Mental health, Physiotherapy, Exercise, Rehabilitation services
Abstract:	<p>Purpose Recent research has demonstrated that physical therapy may benefit the physical and mental health of people with eating disorders (EDs). Since this is a new and developing field, this study aimed to investigate the experience, practices and knowledge of International physical therapy experts to inform clinical practice, education and research.</p> <p>Methods An International cross-sectional survey design was undertaken with experienced physical therapists within the field of EDs. Physical therapist responses were analysed with descriptive statistics and thematic analysis as appropriate.</p> <p>Results Twenty-eight International physical therapists participated. On average participants had 6.9 years (95% CI: 3.1-10.7, n=27) of clinical experience working in eating disorder settings and devoted approximately 39.3% (95%CI: 23.8-54.8, n=27) of their time to treating individuals with EDs. Participants reported that physical therapy interventions have a diverse range of benefits on the physical, mental and disease specific factors (e.g. binges) in people with EDs. The key role of physical therapists includes improving body awareness, especially during physical activity combined with psycho-education about healthy doses of physical activity. Physical therapists were able to identify a range of barriers and facilitators to physical activity in people with EDs.</p> <p>Discussion This article provides a first step towards understanding the role and value of physical therapists working with individuals with EDs.</p>

Title

Considering the role of physical therapists within the treatment and rehabilitation of individuals with eating disorders: [an International](#) survey of expert clinicians

Abstract

Purpose Recent research has demonstrated that [physical](#) therapy may benefit the physical and mental health of people with eating disorders (EDs). Since this is a new and developing field, this study aimed to investigate the experience, practices and knowledge of International [physical](#) therapy experts to inform clinical practice, education and research.

Methods An International cross-sectional survey design was undertaken with experienced physical therapists within the field of EDs. Physical therapist responses were analysed with descriptive statistics and thematic analysis as appropriate.

Results Twenty-eight International physical therapists participated. On average participants had 6.9 years (95% CI: 3.1-10.7, n=27) of clinical experience working in eating disorder settings and devoted approximately 39.3% (95%CI: 23.8-54.8, n=27) of their time to treating individuals with EDs.

[Participants reported that](#) physical therapy interventions have a diverse range of benefits on the physical, mental and disease specific factors (e.g. binges) in people with EDs. The key role of physical therapists includes improving body awareness, especially during physical activity combined with psycho-education about healthy doses of physical activity. Physical therapists were able to identify a range of barriers and facilitators to physical activity in people with EDs.

Discussion

This article provides a first step towards understanding the role and value of physical therapists working with individuals [with EDs](#).

Introduction

Eating disorders (EDs), such as anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED), constitute a group of disorders involving disturbed body image coupled with eating and/or weight loss behaviours (American Psychiatric Association; APA, 2013) that cause severe distress and impairment to quality of life (Winkler, Christiansen et al., 2014). In the general population, eating disorders have a lifetime prevalence of roughly 0.6% for [AN](#), 1% for [BN](#), and 3% for [BED](#) (Jacobi, Wittchen et al., 2004; Hudson, Hiripi et al., 2007).

While [AN](#) is characterised by excessive dieting and hyperactivity that leads to severe weight loss with a pathological fear of [excessive weight gain](#), the core feature of [BN](#) and [BED](#) is loss of control over the eating behaviour resulting in binge eating (APA, 2013). Binge eating involves taking in an abnormally large quantity of food in a discrete time period and feeling a lack of control during the episode (APA, 2013). [BN differs from BED by](#) compensatory behaviors [that](#) occur after a binge and might include vomiting, laxative or other diet medication use, fasting, or excessive exercise (APA, 2013).

All EDs are associated with significant impairment of physical health and psychosocial functioning and carry increased risk of death (Treasure, Claudino et al., 2010). Physical abnormalities seen in AN seem to be largely secondary to the disturbed eating habits and their compromised nutritional state and include decreased bone integrity (osteopenia leading to osteoporosis), weak proximal muscles, bradycardia, gastrointestinal symptoms, dizziness and syncope and amenorrhea (Treasure, Claudino et al., 2010). The physical abnormalities seen in BN are usually minor unless vomiting, or laxative or diuretic misuse are frequent, in which case there is risk of electrolyte disturbance. The physical consequences of BED are largely, however not solely (Hudson, Lalonde et al., 2010), due to a co-morbid obesity and a sedentary lifestyle (Vancampfort, Vanderlinden et al., 2014). All EDs also present with psychiatric co-morbidity in a number of important areas, including depression, bipolar

1
2
3 disorder, anxiety disorders (obsessive-compulsive disorder, panic disorder, social anxiety disorder,
4 other phobias, and post-traumatic stress disorder) and substance abuse (Fairburn, 2003; O'Brien and
5 Vincent, 2003; Javaras, Pope et al., 2008).
6
7

8
9 Because of co-morbid physical and psychiatric conditions, ED have been characterised as one of the
10 most difficult psychiatric conditions to treat (Crow and Peterson, 2009). A small body of evidence
11 currently exists for the efficacy of cognitive behavioral therapy as an effective form of psychotherapy
12 (Hay, Bacaltchuk et al., 2009; Vocks, Tuschen-Caffier et al., 2010; Hartmann, Weber et al., 2011).
13 Evidence from pharmacological trials are identified as being in early stages of development (Reas
14 and Grilo, 2014) and remains limited (Mitchell, Roerig et al., 2013). However some preliminary
15 evidence supports the use of selective serotonin reuptake inhibitors in adults with [BN](#) (Greetfeld,
16 Cuntz et al., 2012). In general, it might be stated that current treatments are only moderately
17 successful, indicating that an advancement of psychological and physical treatments are urgently
18 needed.
19
20
21
22
23
24
25
26
27
28
29
30
31
32

33 Since a distorted body image (identified as negative perceptions of one's weight, size or shape and
34 the inability to integrate and perceive realistic bodily sensations (Catala'n-Matamoros, Helvik-
35 Skjaerven et al., 2011)) and unregulated or unhealthy physical activity (identified as any bodily
36 movement generated by the skeletal muscles that requires energy expenditure (Caspersen, Powell
37 et al. 1985)) behavior are central in the course of all EDs, and patients perceive improving self-
38 esteem and body experience as core constructs which influence their treatment (Vanderlinden, Buis
39 et al., 2007), physical therapy (focusing on physical activity behavior and body experience and
40 insight) might be a treatment modality that has great potential. A recent systematic review including
41 8 randomised controlled trials (RCTs) and involving 213 patients (age-range: 16-36 years)
42 (Vancampfort, Vanderlinden et al., 2013) concluded that aerobic and resistance training result in
43 significantly increased muscle strength, body mass index (BMI) and body fat percentage in patients
44 with AN. In addition, aerobic exercise, yoga, massage and Basic Body Awareness Therapy (BBAT), the
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3 latter focusing on movement experiences and insight (Hedlund and Gyllensten, 2010; Thörnborg and
4
5 Mattsson, 2010), significantly lowered scores of eating pathology and depressive symptoms in
6
7 [patients with AN and BN](#). To date, the evidence on physical therapy in persons with BED is limited to
8
9 3 RCTs involving 211 female community patients (age-range: 25-63years) (Vancampfort,
10
11 Vanderlinden et al., 2014). The limited literature on physical therapy in persons with BED however
12
13 clearly demonstrates that aerobic, or yoga exercises reduce the number of binges and body mass
14
15 index (BMI) of BED patients. [Aerobic exercise, combined with CBT appears to be more effective in](#)
16
17 [reducing BMI and depressive symptoms, than CBT alone](#). A pilot RCT also found that BBAT may
18
19 improve eating attitude and consequently help reduce the severity level of the EDs (Catalã-
20
21 Matamoros, Helvik-Skjaerven et al., 2011).
22
23
24
25
26

27 The current body of evidence indicates that physical therapy interventions in [EDs](#) demonstrate great
28
29 promise as a strategy to [reduce depressive symptoms](#) and [improve the](#) physical health of those
30
31 affected. However, the implementation of physical therapy interventions in the multidisciplinary
32
33 treatment of EDs is still in its infancy as demonstrated by the recent review papers (Probst,
34
35 Majeweskib et al., 2013; Vancampfort, Vanderlinden et al., 2013; Vancampfort, Vanderlinden et al.,
36
37 2014). Given the need for the development of non-pharmacological interventions and the promising
38
39 nature of physical therapy in [EDs](#), an investigation of the practice of International experts is required
40
41 to inform clinical practice for the care of those with EDs. Thus, this study aimed to investigate the
42
43 current practices and perceived benefits of physical therapy among International experts in the field
44
45 of EDs.
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Methods

Design

We employed a cross-sectional online [pilot](#) survey to ascertain the clinical experiences of physical therapy experts in the treatment of people with EDs.

Participants

In order to locate physical therapists working with individuals with mental illness we contacted all members of the International Organization of Physical Therapists in Mental Health (IOPTMH) a subgroup of the World Confederation for Physical Therapy (approximately n=480). This included a range of countries (39 countries across 6 continents) and include practitioners, educators and researchers in the field of mental health (Probst, 2012). We specifically sought the experiences of mental health physical therapists working with EDs patients (exact eligible n=unknown). Ethical approval was gained from the primary author's institution (REF: RG_14-012).

The questionnaire

The questions for the cross-sectional survey were developed by experts (all authors) in physical activity prescription in EDs and with reference to the literature (Vanderlinden, Adriaensen et al., 2012; Probst, Majeweskib et al., 2013; Vancampfort, Vanderlinden et al., 2013; Vancampfort and Probst, 2014; Vancampfort, Vanderlinden et al., 2014). The survey considered demographic information (nationality, age, experience, training and number of patients seen each month) along with 4 questions (4 open ended, 1 with an added Likert scale response) which included: (1) what interventions the physical therapists currently used, (2) what outcome measures were used for assessment (3) should physical activity have a role in treatment, considered as a Likert scale response and open ended response, and (4) what the barriers or facilitators to physical activity and exercise were for each condition.

A small pilot study with a number (n=3) of physical therapists to assess face validity and ease of use was performed. No changes in the questionnaire were needed.

Protocol

The survey was sent out in English, as this is the official language of the WCPT. Three emails (initial invitation and reminder emails) were sent to all members of the IOPTMH between the 5th and 29th of April 2013. The emails contained a link to a secure online survey tool (Qualtrics available at <http://www.qualtrics.com/>). Participants were informed about the purposes of the study and were told that filling in a questionnaire represented informed consent.

Analysis

Descriptive statistics, including frequencies were used. Verbatim quotes from participants were entered into excel and thematically analysed (Soundy, Stubbs et al., 2014). Questions 1, ~~and 2~~ and 3 ([open ended question](#)) were undertaken using a quantitative content analysis (numbers used to qualify the interventions or outcome measures used), whilst questions 3 ([closed ended question](#)), 4 and 5 were undertaken using a traditional qualitative analysis. An audit trail is available from the corresponding author upon request. Indicative verbatim quotations were used to illustrate the themes and subsequent categories, and on each occasion, the physical therapists study number (P), age, gender and country are also reported.

Results

Respondent's demographics

Twenty eight physical therapists (42.0±12.6 years, 19 male) from 3 continents (Europe n=23, Africa n = 4, North America n = 1) completed the survey. The educational status of individuals included 16 with BSc level qualifications, 6 with Masters level qualifications and 6 with PhD level qualifications.

Sixteen participants primarily described their role as clinicians, 4 were researchers ([all researchers had previous clinical experience in ED or were currently engaged in clinical practice](#)), 2 were clinical educators, and 6 had a combination of these roles.

Clinical experience of respondents

Overall, the physical therapists had over 10 years on average experience in mental health settings (11.4±8.4 years, 95% CI: 8.3-14.6, n=27) and 6.9 years (95% CI: 3.1-10.7, n=27) experience working in [ED](#) settings. The mean percentage of time estimated working in different settings was as follows: inpatients (46.3%, 95% CI: 30.8-61.8, n=23), outpatients (37.8%, 95% CI:23.1-52.6, n=27) and community (4.1%, 95%CI:-0.1-8.3, n=22). Within their job role, the mean percentage of time working with patients who have an [ED](#) was 39.3% (95% CI: 23.8-54.8, n=27). Physical therapists most often worked with individuals with AN identified by (73.9% n=17 out of n=23), followed by BED (26.0% n=6 out of 23). On average the therapist treated 5.6 (n=17, 95% CI:3.2-8.1) patients per month with AN, 3.2 (n=14, 95% CI: 1.5-5.0) patients per month with BN and 2.9 (n=12, 95% CI: 1.0-4.8) patients per month with BED.

What interventions do mental health physical therapists use with people with suffering from eating disorders?

Eight physical therapists provided details regarding the interventions that they use when working with people with EDs. Broadly, the interventions were split into four types of intervention:

1
2
3 (1) Physical, functional and manual interventions and the use of movement or exercise (exercise
4 differs from movement in being a more planned and structured form of physical activity (Caspersen,
5 Powell et al. 1985)) therapy. Physical therapists also identified the need for other interventions
6 which could assist in pain management (n=2) or exercises to support or aid breathing more freely
7 (n=1). Finally, traditional manual techniques ([e.g., massage, mobilisations or manipulations](#)) were
8 identified when BMI was very low included working with joints, heart and breathing.

9
10
11
12
13
14
15 (2) Psychotherapeutic-related interventions including relaxation techniques (n=3) as well as
16 mindfulness (bringing an individual's attention into the present moment in a non-judgemental way)
17 (n=1) and rational-emotive therapy (an action orientated approach based on CBT which considers
18 events which lead to behaviour or emotional disturbance or upset) (n=1).

19
20
21
22
23 (3) Education provided included information about how physical activity should be adjusted (n=2) (4)
24 Supporting the person to become more aware of and re-interpreting body awareness (greater
25 insight and/or becoming more aware of bodily signals), exercise and movement experience.

26
27
28
29
30 (4) Seven physical therapists specifically identified the use of BBAT as a specific physical therapy
31 intervention. Other informants provided explanations of why this orientation was important which
32 included *changing the experience of exercise and movement*. For instance, one physical therapist
33 stated:

34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

"To start a contact that for some people can continue also in day care and more of body awareness to find new ways of respecting oneself and to find ways of finding joy in moving and exercising and not as a way of keeping bodyweight down or reducing anxiety level." (P3 F 53 EU).

51
52
53
54
55
56
57
58
59
60

What outcome measures are used by mental health physical therapists with people with eating disorders?

A total of 8 physical therapists provided details of the outcome measures they used and only two outcome measures specifically related to [EDs](#) were identified by more than one physical therapist.

1
2
3 Overall, 5 physical therapists utilised the Body Awareness Rating Scale (Friis, Skatteboe et al., 1989)
4
5 and two physical therapists identified the Body Attitude Test (Probst, Vandereycken et al., 1995).
6
7 Finally, three further scales were identified by one physical therapist. These included; the Eating
8
9 Disorders Inventory (Garner, Olmstead et al., 2006), the Eating Attitudes Test (Pelaez-Fernandez,
10
11 Ruiz-Lazaro et al., 2014), and the Binge Eating Scale (Gormally, Black et al., 1982).
12
13

14
15
16 *Is it important that physical therapists are involved in delivering physical activity?*
17

18 Twenty three physical therapists responded to question that asked if physical therapists have a role
19
20 in promoting physical activity. Of these responses most (73.3%, 17 out of 23) strongly agreed
21
22 physical therapists should have a central role in delivering physical activity in persons suffering from
23
24 EDs whilst the remainder agreed (21.7%, 5 out of 23).
25
26

27
28
29 *What is the role and value of physical activity in for persons suffering from eating disorders?*
30

31 Eight physical therapists provided information on the role and value of physical activity in EDs and
32
33 multiple benefits across a broad range of domains of health were identified. This is exemplified by
34
35 one physical therapist who stated physical therapy has a role in:
36

37
38 *“improving quality of life, reducing risk for physical co-morbidities, coping with binges,*
39
40 *working around body experiences and self-esteem, increasing physical activity in daily life.”*
41

42 (P2 M 35 EU).
43

44 Overall, the benefits reported were developed in 2 major themes. The first was the psychological
45
46 and behavioural benefits of engaging in physical activity within physical therapy. Within this theme,
47
48 5 sub-themes became apparent including: (1) increased quality of life and a decreased psychological
49
50 morbidity. Specifically, participants stated that an increased quality of life, with improved mental
51
52 health (e.g., greater body image, less body dissatisfaction and improved self-esteem) was an
53
54 essential benefit. For example one physical therapist stated that physical activity had a role in:
55

56
57 *“Strengthening the self-esteem through a bodily approach”* (P4 F 41 EU) and another stated that
58
59
60

1
2
3 physical activity *“improves body image and body dissatisfaction.”* (P7 M 34 EU). Within the second
4
5 subtheme (2) participants stated the importance of valuing movement, in that individuals were able
6
7 to develop enjoyment from engaging/involving in the movement experiences . For instance one
8
9 physical therapist stated patients with EDs often *“find joy and pleasure in moving”* (meaning, by
10
11 being in it, exploring and experiencing the movement) (P3 F 53 EU). Across the third subtheme (3)
12
13 participants identified a decrease in illness symptoms and normalising eating behaviour and hunger
14
15 as a result of engaging in physical activity. For instance one physical therapist stated that health
16
17 physical activity or exercise engagement can actually result in *“decreasing binge behaviour”* (P7 M
18
19 34 EU). (4) The fourth subtheme identified an improved sense of body awareness and greater
20
21 control and understanding of healthy exercise behaviour. One physical therapist summarised that
22
23 physical therapy can help:
24
25

26
27 *“To find a balanced way to be in physical activity, rather than letting the activity be driven*
28
29 *by the eating disorder.”* (P4 F 41 EU).
30

31
32 Thus, two key aspects to this sub-theme existed: first, individuals with [EDs](#) require a degree of re-
33
34 education about healthy engagement in physical activity and exercise. This point is exemplified by
35
36 one physical therapist who stated that:

37
38 *“We guide the patients in monitoring their exercise, guide, / and /or join them when trying*
39
40 *out healthy exercise, evaluate the experiences, and learn whether the exercise has an impact*
41
42 *on the eating disorder”* (P5 F 36 EU).
43

44
45 The second key aspect was that participants stated individuals with [EDs](#) were required to change the
46
47 view they had of their body or have an increased body awareness, which in turn meant
48
49 understanding who they were (re-establishing a positive identity) and how they should feel when
50
51 exercising/ moving in a more healthy way. For instance one physical therapist stated that through a
52
53 physical therapy based interventions:

54
55 *“We help the patients get a sense of who they are, what they need and what they feel”* (P1 F
56
57 63 EU).
58
59
60

1
2
3 Within the final subtheme (5) therapists identified specific improvement in an individual's
4 physiological condition and markers as a benefit from engaging in physical activity. For instance one
5 physical therapist stated physical activity results in:
6
7
8

9 *"Increased muscle mass, increased BDNF, increased serotonin, increased endorphins, less*
10 *hyperactivity"* (P9 F 26 A).
11

12
13
14 In summary, [it is clear that participants view physical therapy and physical activity as valuable in](#)
15 [improving body awareness and psychological well-being in individuals with EDs.](#)
16
17

18
19
20 *What are the barriers and facilitators to physical activity in people with eating disorders?*
21

22 Again eight physical therapists ([same individuals as above](#)) identified a range barriers and facilitators
23 to physical activity. A full table of barriers and facilitators within each ED is provided in Table 1. The
24 general facilitators included: (1) the experience of physical activity enabling a sense of control for the
25 individual and their eating and exercise behaviour, (2) improving cognitions and thoughts concerning
26 the body, and improving education of the individual. The general barriers included: (1) disease
27 symptoms like compulsivity to exercise and the disease controlling behaviour, (2) a negative body
28 attitude or feelings and emotions related to this, (3) a low self-esteem, (4) feelings of shame, as well
29 as (5) a lack of self-acceptance.
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Discussion

This [research represents](#) ~~is~~ the first international survey of its kind, capturing the views and experiences of expert [clinicians](#) within the field of physical therapy in EDs. Physical therapists were able to identify multiple benefits of engaging in physical therapy for individuals with EDs across biopsychosocial domains. The current results have identified that currently few specialist mental health physical therapists are working with patients who have EDs. Thus, it is essential that a better understanding of the role of physical therapists within the multidisciplinary treatment is developed before it can be further promoted to the wider community. International guidelines (National Institute for Clinical and Healthcare Excellence, 2004) recommend that people with [EDs](#) should first be offered community and outpatient-treatment and that inpatient care be used for those who do not respond or who present with high risk. [In line with NICE guidelines, our current results demonstrate that there is a need to promote physical therapy as part of an early intervention and to shift the role of physical therapists to community settings rather than inpatient settings.](#) **Moreover,** our participants identified that physical therapy can have a range of beneficial effects on the mental and physical health of people with EDs and identified two key objectives for physical therapy. Firstly, physical therapists should consider and work with bodily experiences on different levels including behaviour, perception, awareness and attitudes. For instance, awareness raising of the current physical condition of the patient's body, acknowledgement and acceptance of changes in body weight and the associated feelings and needs of patients should all be considered. Further, increases in coping with daily demands, greater contact with the body, daily movement and functions, and related feelings and an ability to gain confidence in relationships were pointed out. Physical therapists also identified associated outcome measures, in particular the Body Awareness Rating Scale and the Body Attitude Test. Second, the participating physical therapists reported that it is essential that they assist patients with EDs in changing unhealthy physical activity behaviours. Participants identified the importance of empowering individuals to regulate a healthier lifestyle and also recognise the potential of physical activity to provide broader benefits such as improved social

1
2
3 identities, belonging and connectedness, as well as increase social confidence (Soundy, Freeman et
4 al., 2014).

5
6
7 Clear guidance regarding the type of physical therapy intervention (aerobic exercise, resistance
8 training, breathing exercises or body-related interventions) and the optimal dose was however not
9 provided by any of the included participants. This is not surprising since only a limited number of
10 rigorous studies on physical therapy in [EDs](#) are available. Further currently recommendations from
11 the American College of Sport Medicine (Skrinar and Hutchinson, 2009) focus on severe mental
12 illness in general, rather than defined categories like [AN](#). Until more evidence is available physical
13 therapists should preferably assess the types of exercises or techniques that would best fit a
14 person's preferences. Further to this, the use of objective measurements to assess and document
15 physical activity (e.g., pedometers, accelerometers) may help clinicians in guiding patients to
16 engaging in healthy levels of behaviour. Probably more important for the daily clinical practice is the
17 awareness of facilitators and barriers for physical therapy. Our survey identified that disease
18 symptoms like compulsivity to exercise, a negative body attitude or feelings and emotions related to
19 this, a low self-esteem, feelings of shame, as well as a lack of self-acceptance are considered as
20 important barriers. Future research is needed to guide physical therapists in how to assist patients in
21 coping with these barriers. A very recent study in individuals with [BED](#) (Vancampfort, Probst et al.,
22 2014) showed that the principles of the self-determination theory (Deci and Ryan, 2000) might
23 facilitate adherence towards physical therapy. It might be hypothesized that supporting and
24 stimulating feelings of competence (i.e., feeling effective to attain desired outcomes) will be
25 facilitated by the nature of the physical therapy program. Feelings of competence may be facilitated
26 through the promotion of environments in which self-referenced standards and indicators of
27 improvement are adopted as opposed to competitive situations in which evaluated outcomes are
28 dependent upon the performance or bodily appearance of others (Springer, Lamborn et al., 2013).

29
30
31 By providing individual, concrete and realistic weekly schemes, patients with [EDs](#) will likely
32 experience individual successes. Feelings of control might be facilitated as well by providing
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3 autonomy (i.e., experiencing a sense of psychological freedom when engaging in physical therapy).
4
5 In practice, autonomy might be achieved by providing choices to patients, supporting their
6
7 initiatives, offering relevant personal information for changing behavior and using autonomy
8
9 supportive language (e.g. “may” and “could” rather than “should” and “must”) which might be
10
11 facilitated by using the motivational interviewing techniques (Miller and Rollnick, 2002). In
12
13 agreement with reports from the participating physical therapists in the current study, also Probst
14
15 Majeweskib et al. (2013) very recently stated that psycho-education regarding bodily functions
16
17 might be an important issue. For example, it is important to explain the functions of the respiratory
18
19 system during breathing exercises. The therapist’s role should consist of thoroughly explaining that
20
21 weight gain is not synonymous with feeling fat, but with health, attractiveness, and expressiveness.
22
23 Other topics for psycho-education are basic anatomy/physiology, the risk of osteoporosis, the
24
25 negative impact of stress and anxiety on the body, stress and anxiety coping strategies, and the
26
27 influences of the media on socio-cultural ideals. In addition, education could include more
28
29 traditional self management techniques and exercises. Whenever possible, physical therapists should
30
31 design their exercises in such a way that patients can also try these exercises outside the therapy-
32
33 sessions in daily life situations, on their own, or with a partner. This can be successfully done with
34
35 breathing exercises, relaxation training, body awareness exercises and stress coping strategies. It is
36
37 important that patients assume responsibility for their therapy. Finally, future research should
38
39 explore the role of interpersonal relatedness (e.g., being socially connected and feeling a sense of
40
41 belonging with others) in facilitating physical therapy interventions (Soundy, et al., 2014). This can
42
43 be achieved by stimulating the participants to involve meaningful others in the therapy. It may also
44
45 be suggested that physical therapy sessions in a group setting provide a venue for social support
46
47 from other patients, thereby increasing participation. Being able to test out new skills with trusted
48
49 others is also an important part of building competence (Deci and Ryan, 2000; Deci and Ryan, 2002).
50
51
52
53

54 The current findings should be considered in the light of some methodological limitations.

55
56
57 For example, there was a small response rate (in the open ended questions partly due to not giving a
58
59
60

1
2
3 [written response](#)) and the physical therapists that answered the open ended questions may have
4
5 [had greater training than most physical therapists working in mental health settings.](#) [Moreover, only](#)
6
7 members of the IOPTMH [were invited to take part \(who are more likely to be experts\)](#) but some
8
9 [physical therapists may have expertise in ED but may not be part of the IOPTMH.](#) [For these reasons](#)
10
11 [and the relatively small numbers of respondents, the current results should be considered as a](#)
12
13 [preliminary.](#) [In addition, the results may be biased because physical therapists within particular](#)
14
15 [countries, which advocate particular approaches \(e.g., body awareness therapy\) or outcome](#)
16
17 [measures may have been over represented.](#) [Because data from particular clinics or countries are not](#)
18
19 [available it is hard to identify to what extent this occurred.](#) [The results also may be biased by](#)
20
21 [participant demographics \(e.g., greater males in the sample\) or by the structure of the survey.](#)
22
23

24 However, as mentioned, this might be representative for the limited number of physical therapists
25
26 currently involved in this field. [A higher response rate would require a funded study that can access](#)
27
28 [mental health departments directly, identify all related professional groups \(physiologist, nurses](#)
29
30 [exercise specialists or physiotherapists\) within individual countries.](#) Secondly, the thematic analysis
31
32 may have been influenced by the primary author previous [experience of coding specialist mental](#)
33
34 [health physical therapists responses \(e.g., Soundy et al., 2014\) or affected by the open coding](#)
35
36 [strategy used \(as opposed to using a framework or a-priori approach\).](#)
37
38

39
40 Although with limitations, the current study clearly demonstrates that physical therapy can
41
42 have a wide and diverse range of benefits on the health of people with EDs. In addition, physical
43
44 therapists are well placed to deliver and facilitate a diverse range of physical therapy interventions in
45
46 EDs given the projected role and insight into the barriers and facilitators. Finally, this study does also
47
48 illustrate that few physical therapists are currently working in this relatively new area therefore
49
50 rehabilitation clinicians will benefit from the findings of this research.
51

52
53
54
55 [Summary](#)
56
57
58
59
60

1
2
3 Physical therapists in the current study identified three main functions of physiotherapeutic
4 treatment: (1) to provide movement or physical activity, which they considered a primary role, (2) to
5 provide psychotherapeutic intervention, and (3) to provide educational advice to help promote
6 healthy behaviours. The most common outcome measures included the body awareness rating
7 scale and the Body Attitude Test but we suspect this may be because of a particularly strong
8 response rate from Scandinavia where the BBAT approach is particularly prominent. Physical
9 therapists identified psychological benefits from therapy, the main benefits included an increase in
10 self-esteem and body image. They also identified the importance of helping patients change the
11 view they had about physical activity and their body image.
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

For Review Only

References

- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition 2013. Arlington, VA, American Psychiatric Association.
- Skatteboe, U. –B., Friis, S., Hope, M. K., and Vaglum, P. Body Awareness Group Therapy for Patients with Personality Disorders. 1. Description of the therapeutic method. *Psychotherapy and Psychosomatics* 1989 **51**: 11-17.
- Caspersen, C. J., Powell, K. E., and Christenson, G. M. Physical activity, exercise, and physical fitness: Definitions and distinctions for health related research. *Public Health Reports* 1985 **100**: 126-131.
- Catalán-Matamoros, D., Helvik-Skjaerven, L., Labajos-Manzanares, M. T., Maartinez-de-Salazar-Arboleas, A., and Sanchez-Guerrero, E. A pilot study on the effect of basic body awareness therapy in patients with eating disorders: a randomised controlled trial. *Clinical Rehabilitation* 2011 **25**: 617.
- Crow, S. and Peterson, C. B. Refining treatments for eating disorders. *American Journal of Psychiatry* 2009 **166**: 266-267.
- Deci, E. L. and Ryan, R. M. The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry* 2000 **11**: 227-268.
- Deci, E. L. and Ryan, R. M. Self-determination research: Reflections and future directions. In E. L. Deci and R. M. Ryan (Eds.). *Handbook of Self-Determination Research* 2002. Rochester, NY, University of Rochester Press: 431-441.
- Fairburn, C. G. Eating disorders. *Lancet* 2003 **361**: 407-416.
- Friis, S., Skatteboe, U. B., Hope M. K. and Vaglum, P. Body Awareness Group Therapy for Patients with Personality Disorders. 2. Evaluation of the Body Awareness Rating Scale." *Psychotherapy and Psychosomatics* 1989 **51**: 18-24.
- Garner, D. M., Olmstead, M. P., and Polivy, J. Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders* 2006 **2**: 15-34.
- Gormally, J., Black, S., Daston, S., and Rardin D. "The assessment of binge eating severity among obese persons." *Addictive Behaviour* 1982 **7**: 47-55.
- Greetfeld, M., Cuntz, U., and Voderholzer, U. Pharmacotherapy for anorexia nervosa and bulimia nervosa. *Fortschritte der Neurologie Psychiatrie* 2012 **80**: 9-16.
- Hartmann, A., Weber, S., Herpertz, S., Zeeck, A., and the German Treatment Guideline Group for Anorexia Nervosa. Psychological treatment for anorexia nervosa: a meta-analysis of standardized mean change. *Psychotherapy and Psychosomatics* 2011 **80**: 216-226.
- Hay, P. P., Bacaltchuk, J., Stefano, S., and Kashyap, P. Psychological treatments for bulimia nervosa and bingeing. *Cochrane Database Systematic Reviews* 2009 4 Article No.: CD000562.
- Hedlund, L. and Gyllensten, A. L. The experiences of basic body awareness therapy in patients with schizophrenia. *Journal of Bodywork and Movement Therapies* 2010 **14**: 245-254.
- Hudson, J. I., Hiripi, E., Pope, H. G. J., and Kessler, R. C. The prevalence and correlates of eating disorders in the national comorbidity survey replication. *Biological Psychiatry* 2007 **61**: 348-358.
- Hudson, J. I., Lalonde, J. K., Coit, C. E., Tsuang, M. T., McElroy, S. L., Crow, S. J., Bulik, C. M., Hudson, M. S., Yanovski, J. A., Rosenthal, N. R., and Pope H. G. J. Longitudinal study of the diagnosis of components of the metabolic syndrome in individuals with binge-eating disorder. *American Journal of Clinical Nutrition* 2010 **91**: 1568-1573.
- Jacobi, F., Wittchen, H. U., Holting, C., Hofler, M., Pfister, H. Müller, N., and Lieb R. Prevalence, comorbidity and correlates of mental disorders in the general population: Results from the (GHS) German Health Interview and Examination Survey. *Psychological Medicine* 2004 **34**: 597-611.
- Javaras, K. N., Pope, H. G., Lalonde, J. K., Roberts, J. L., Nillni, Y. I., Bulik, C. M., Crow, S. J., McElroy, S. L., Walsh, B. T., Tsyang, M. T., Rosenthal, N. R., and Hudson, J. I. Co-occurrence of binge eating disorder with psychiatric and medical disorders. *Journal of Clinical Psychiatry* 2008 **69**: 266-273.
- Miller, W. R. and Rollnick, S. *Motivational interviewing. Preparing people for change* 2002. New York, USA, The Guilford Press.

- 1
2
3 Mitchell, J. E., Roerig, J., and Steffen, K. Biological therapies for eating disorders. *International*
4 *Journal of Eating Disorders* 2013 **46**: 470-477.
- 5 National Institute for Clinical Excellence. National Clinical Practice Guideline: eating disorders: core
6 interventions in the treatment and management of anorexia nervosa, bulimia nervosa, and related
7 eating disorders 2004. London, National Institute for Clinical Excellence.
- 8 O'Brien, K. M. and Vincent, N. K. Psychiatric comorbidity in anorexia and bulimia nervosa: nature,
9 prevalence, and causal relationships. *Clinical Psychology Review* 2003 **23**: 57-74.
- 10 Pelaez-Fernandez, M., Ruiz-Lazaro, P. M., Labrador, F. J., and Raich, R. M. Validation of the Eating
11 Attitudes Test as a screening instrument for eating disorders in general population. *Medicina Clinica*
12 2014 **142**: 153-165.
- 13 Probst, M. (2012). The International Organization of Physical Therapists working in Mental Health.
14 *Mental Health and Physical Activity* 2012 **5**: 20-21.
- 15 Probst, M., Majeweskib, M. L., Albertsenc, M. N., Catalan-Matamoros, D., Danielsen, M., De Herdt,
16 A., Duskova Zakova, H., Fabricius, S., Joern, C., Kjölstad, G., Patovirta, M., Philip-Rafferty, S., Tyyskä,
17 E., and Vancampfort, E. Physiotherapy for patients with anorexia nervosa. *Advances in Eating*
18 *Disorders: Theory, Research and Practice* 2013 **early online**: 1-15.
- 19 Probst, M., Vandereycken, W., Van Coppenolle, H. V., and Vanderlinden, J. The Body Attitude Test
20 for Patients with an Eating Disorder: Psychometric Characteristics of a New Questionnaire." *Eating*
21 *Disorders: The Journal of Treatment and Prevention* 1995 **3**: 133-144.
- 22 Reas, D. L. and Grilo, C. M. Current and emerging drug treatments for binge eating disorder." *Expert*
23 *Opinion on Emerging Drugs* 2014 **19**: 99-142.
- 24 Skrinar, G. S. and Hutchinson, D. S. Chapter 49 Mental Illness. *ACSM's Exercise Management for*
25 *Persons with Chronic Diseases and Disabilities* 2009. J. L. Durstine, G. E. Moore, P. L. Painter and S. O.
26 Roberts. Champaign, IL, Human Kinetics.
- 27 Soundy, A., Freeman, P., Stubbs, B., Probst, M., Coffee, P., and Vancampfort, D. The transcending
28 benefits of physical activity for individuals with schizophrenia: a systematic review and meta-
29 ethnography. *Psychiatry Research* 2014 **in press**.
- 30 Soundy, A., Stubbs, B., Probst, M., Hemmings, L., Vancampfort, D. Barriers to and facilitators of
31 physical activity among persons with schizophrenia: A survey of physical therapists." *Psychiatric*
32 *Services* 2014 **65**: 693-696.
- 33 Springer, J. B., Lamborn, S. D., and Pollard, D. M. Maintaining physical activity over time: the
34 importance of basic psychological need satisfaction in developing the physically active self. ." *American*
35 *Journal of Health Promotion* 2013 **27**: 284-293.
- 36 Thörnberg, U. and Mattsson, M. Rating body awareness in persons suffering from eating disorders –
37 A cross-sectional study. *Advances in Physiotherapy* 2010 **12**: 24-34.
- 38 Treasure, J., Claudino, A. M., and Zucker, N., Eating disorders. *Lancet* 2010 **375**: 583-593.
- 39 Vancampfort, D. and Probst, M. The importance of physiotherapy within the multidisciplinary
40 treatment of eating disorders. *Fisioterpia* 2014 **36**: 55-57.
- 41 Vancampfort, D., Probst, M., Adriaens, A., Pieters, G., De Hert, M., Stubbs, B., Soundy, A., and
42 Vanderlinden, J. Changes in physical activity, physical fitness, self-perception and quality of life
43 following a 6-month physical activity counseling and cognitive behavioral therapy program in
44 outpatients with binge eating disorder. *Psychiatry Research* 2014 **30**: 361-366.
- 45 Vancampfort, D., Vanderlinden, J., De Hert, M., Adámkova, M., Skjaerven, L. H., Matamoros, D. C.,
46 Lundvik Gyllensten, A., Gomez-Conesa, A., Ijntema, R., and Probst, M., A systematic review on
47 physical therapy interventions for patients with binge eating disorder. *Disability and Rehabilitation*
48 2013 **35**: 2191-2196.
- 49 Vancampfort, D., Vanderlinden, J., De Hert, M., Soundy, A., Adámkova, M., Skjaerven, L. H., Catalán
50 Matamoros, D., Lundvik Gyllensten, A., Gomez-Conesa, A., and Probst, M. A systematic review of
51 physical therapy interventions for patients with anorexia and bulemia nervosa." *Disability and*
52 *Rehabilitation* 2014 **36**: 628-634.
- 53
54
55
56
57
58
59
60

- Vancampfort, D., Vanderlinden, J., Stubbs, B., Soundy, A., Pieters, G., De Hert, M., and Probst, M. Physical activity correlates in persons with binge eating disorder: a systematic review. *Eating Disorders Review* 2014 **22**: 1-8.
- Vanderlinden, J., Adriaensen, A., Vancampfort, D., Pieters, G., Probst, M., and Vansteelandt, K. A cognitive- behavioral therapeutic program for patients with obesity and binge eating disorder: short- and long- term follow-up data of a prospective study. *Behavioural Modification* 2012 **36**: 670-686.
- Vanderlinden, J., Buis, H., Pieters, G., and Probst, M. Which elements in the treatment of eating disorders are necessary 'ingredients' in the recovery process? A comparison between the patient's and therapist's view. *European Eating Disorders Review* 2007 **15**: 357-365.
- Vocks, S., Tuschen-Caffier, B., Pietrowsky, R., Rustenbach, S. J., Kersting, A., and Herpertz, S. Meta-analysis of the effectiveness of psychological and pharmacological treatments for binge eating disorder. *International Journal of Eating Disorders* 2010 **43**: 205-217.
- Winkler, L. A., Christiansen, E., Lichtenstein, M. B., Hansen, N. B., Bilenberg, N., and Støving, R. K. Quality of life in eating disorders: A meta-analysis. *Psychiatry Research* 2014 **219**: 1-9.

Table 1 The barriers and facilitators to physical activity across eating disorders identified by physical therapists

Disorder	Facilitators	Barriers
Anorexia Nervosa	<p>Psychosocial: Change cognitions demonstrating greater or improved awareness of the body. Autonomy, competence or self-efficacy and connectedness with others.</p> <p>Behavioural and environmental: Participation in guided activity from professionals. Facilitated by psycho-education, improved bodily experiences, exploration and reflection on experiences.</p>	<p>Psychosocial: Compulsiveness of behaviours, poorly developed functional affect regulating strategies, a negative body attitude, low self-acceptance and need for perfectionism.</p> <p>Behavioural and environmental: Activities that are undertaken with no contact to emotions or association with the will to get better.</p>
Bulimia	<p>Psychosocial: Autonomy, competence or self-efficacy and connectedness with others. Awareness concerning body, emotions and thoughts.</p> <p>Behavioural and environmental: Psycho-education and positive experiences. Participation in guided/graded physical activity from professionals.</p>	<p>Physical: Co-morbidities and poor physical condition.</p> <p>Psychosocial: Low self-acceptance and compulsivity. Not being able to regulate behaviour internally.</p> <p>Behavioural and environmental: not identified.</p>
Binge Eating Disorder	<p>Psychosocial: being able to control drives and binges. Awareness of the body, thoughts and emotions. Competence or self-efficacy, connectedness and autonomy.</p>	<p>Physical: Co-morbidities</p> <p>Psychosocial: Shame, low self-esteem, low self-acceptance and low levels of social support.</p>

	Behavioural and environmental: graded activity from professionals.	Behavioural and environmental: No experience of positive behaviour.
--	--	---

For Review Only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60