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The Meaning of Compulsive Exercise in Women with Anorexia Nervosa: An Interpretative Phenomenological Analysis

1. Introduction

Compulsive exercise is a key feature among some individuals with anorexia nervosaⁱ (Brewerton, Stelfox, Hibbs, Hodges, & Cochrane, 1995; Davis et al., 1997; Thien, Thomas, Markin, & Birmingham, 2000), particularly the restrictive type (Carmen V. Bewell-Weiss & Jacqueline C. Carter, 2010; Dalle Grave, Calugi, & Marchesini, 2008; Davis, Katzman, & Kirsh, 1999). Anorexia nervosa is multidimensional in character and has frequently been associated with psychological difficulties (e.g., anxiety, depression, obsessive-compulsive symptoms), struggles in social functioning and medical complications such as bradycardia, hypotension, amenorrhoea, and most commonly, low bone mineral density (Mehler & Brown, 2015; K. K. Miller et al., 2005). Anorexia nervosa may be described as a disorder of self- and affect regulation, in which symptoms may serve to maintain cohesion and stability of a fragile sense of self (Bruch, 1978; Skarderud, 2007). Due to the focus on weight gain, and the emotional and social challenges typically addressed in treatment programmes, patients with anorexia nervosa tend to experience treatment as extremely demanding. They often feel strong ambivalence towards addressing their symptoms, and this reluctance to recover seems to be associated with higher levels of dropout and relapse (Geller, Williams, & Srikameswaran, 2001; Nordbo et al., 2012). Also, there is a general agreement that working with anorexia nervosa can be challenging, due in particular to difficulties in understanding the nature of the disorder and to the lack of empirical agreement regarding methods of treatment (Skarderud, 2007). Along with reduction in psychological stress and changes in self-concept, increased insight into the function of the disorder is assumed to produce long-lasting and meaningful change for the individual (Geller, 2006). There is, however, a lack of knowledge regarding functional aspects of exercise and physical activity in individuals with anorexia nervosa. How these patients understand and make sense of their experiences in terms of

their relatedness to, and their engagement with compulsive exercise has received sparse attention in the literature.

1.1. Compulsive exercise and anorexia nervosa

Despite well-described associations between compulsive exercise and anorexia nervosa, researchers do not agree regarding how to understand excessive versus compulsive exercise in this context. Excessive exercise may be explained as a continuum characterised by increasing prioritisation of exercise routines over other activities in parallel with increasing exercise tolerance, which may gradually become more noticeable and progress into compulsive exercise (Le Grange & Eisler, 1993). Studies have shown that the compulsiveness of exercise is significantly associated with increasingly disordered eating-related attitudes and behaviours in both clinical and non-clinical settings (Meyer & Taranis, 2011). The tendency for exercise routines to gradually become more obsessive bears similarity to findings in non-clinical situations (Elbourne & Chen, 2007; Johnston, Reilly, & Kremer, 2011). In the context of sport and exercise psychology, research has shown similar associations between compulsive exercise and disordered eating behaviour among athletes (Johnston, Reilly, & Kremer, 2011). Yet, excessive and/or compulsive exercise in individuals with anorexia nervosa is considered particularly risky, since large amounts of exercise are accompanied by an increased risk of medical complications (Shroff et al., 2006), longer length of hospitalization (Solenberger, 2001), modest clinical results (Casper & Jabine, 1996), and an increased prospect of relapse after recovery (Carter, Blackmore, Sutandar-Pinnock, & Woodside, 2004; Strober, Freeman, & Morrell, 1997).

While preoccupation with exercise in the eating disorders has in the main been associated with weight- and body shape concerns (Brewerton et al., 1995; Shroff et al., 2006; Solenberger, 2001), studies have shown that the regulation of negative emotions makes an important contribution to compulsive exercise in patients with anorexia nervosa (Boyd, Abraham, & Luscombe, 2007; Bratland-Sanda et al., 2011; Bratland-Sanda et al., 2010a; Lawson, Waller, & Lockwood, 2007;

Meyer & Taranis, 2011). Conventional biomedical approaches assume that women with anorexia have difficulty identifying and regulating their emotions (Gilboa-Schechtman, Avnon, Zubery, & Jeczmiem, 2006; Oldershaw et al., 2011; Oldershaw, Hambrook, Tchanturia, Treasure, & Schmidt, 2010), particularly in the restricting type (Harrison, Sullivan, Tchanturia, & Treasure, 2010). Qualitative studies support the notion of difficulty in managing emotions in individuals with anorexia nervosa (J. R. E. Fox, 2009; Pemberton & Fox, 2013). This difficulty may result in the individual engaging in activities that soothe the emotions and reduce awareness of the associated thoughts and cognitions (Fairburn, Cooper, & Shafran, 2003; Vansteelandt, Rijmen, Pieters, Probst, & Vanderlinden, 2007). As a result, high levels of exercise may serve a regulatory function similar to that of energy restriction and bulimic behaviours in anorexia nervosa, subsequently turning into the habitual or primary method through which emotions are regulated.

The aim of this study is to explore the meaning of exercise for patients with anorexia nervosa engaging in compulsive exercise; for the purpose of recruiting participants, such exercise is defined as ‘moderate to vigorous exercising for more than six hours per week for a minimum of one month before hospitalisation’ (Davis et al., 1997). This definition is narrow and does not capture the qualitative dimensions of exercise, yet it is widely utilized in the literature (Bratland-Sanda et al., 2010b). It also takes into consideration evidence that exercise for more than six hours weekly may have harmful effects (e.g., overuse injuries, decreased bone density, stress fractures) for patients with anorexia nervosa who are severely underweight (Grinspoon et al., 2000).

1.2. Is all exercise in individuals with anorexia nervosa compulsive?

Although the purpose of this study is to investigate experiences and meanings connected with compulsive exercise in anorexia nervosa, this does not imply that *all* exercise in this domain is believed to be compulsive or undesirable. Assuming a detailed structure and progression to

prevent exercise from becoming compulsive, carefully chosen and prescribed moderate exercise interventions may have positive aspects for medically stable patients, such as increased psychological well-being, reduced anxiety and increased compliance with treatment (Beumont, Arthur, Russell, & Touyz, 1994; Thien et al., 2000; Vandereycken, Depreitere, & Probst, 1987; Ziemer & Ross, 1970). In addition, light resistance training combined with increased food intake has positive effects on muscular strength in hospitalized patients (Chantler, Szabo, & Green, 2006). Furthermore, provided that patients are somatically stable and adhering to their meal plans and treatment programmes, healthy exercise combined with an opportunity to discuss feelings and thoughts before, during and after exercise, may help women change their unhealthy exercise behaviours (Calogero & Pedrotty, 2004). Finally, research has shown that supervised exercise has no adverse effects on body weight and weight gain (Calogero & Pedrotty, 2004; Moola, Gairdner, & Amara, 2013; Ng, Ng, & Wong, 2013). Researchers do not endorse the use of exercise as a reward for gaining weight, as this may increase patients' disordered attitudes towards exercise (Calogero & Pedrotty, 2004). The literature emphasizes that exercise interventions for patients with anorexia nervosa should only commence once adequate food and weight restoration has been achieved (Chantler et al., 2006). It is also stressed that large amounts of moderate loading exercise are negatively associated with bone mineral density in patients with anorexia nervosa (Waugh, Woodside, Beaton, Cote, & Hawker, 2011). Further, researchers emphasize that exercise interventions must be individually tailored to patients and undertaken by health care professionals with extensive knowledge of the illness and the necessary skills, such as physical therapists (Probst et al., 2013; Scott & Van Blyderveen, 2014). While exercise programmes for individuals with anorexia nervosa appear 'healthy' in their attempts to regenerate the body, increase mind-body connection and reduce mental and physical stress, research has to this point provided little insight into how individuals with anorexia nervosa make sense of their engagement with exercise after it has become compulsive, and the underlying concerns.

1.3. Qualitative studies of exercise and anorexia nervosa.

Previous quantitative studies of compulsive exercise in anorexia nervosa have often relied on data derived from self-report questionnaires and surveys (C. V. Bewell-Weiss & J. C. Carter, 2010; Bratland-Sanda et al., 2011; Keyes et al., 2015) leading to possible limitations in capturing the complexities and nuances in how people with anorexia nervosa make sense of exercise. Some qualitative studies have explored the personal experience of anorexia nervosa *per se*, demonstrating how disordered eating behaviours provide a sense of identity, control, predictability and emotion regulation (Dignon, Beardsmore, Spain, & Kuan, 2006; Espeset, Gulliksen, Nordbo, Skarderud, & Holte, 2012; A. P. Fox, Larkin, & Leung, 2011; J. R. E. Fox, 2009; Kyriacou, Easter, & Tchanturia, 2009; Nordbo, Espeset, Gulliksen, Skarderud, & Holte, 2006). In addition, studies have described how some participants take part in a continuous battle between their ‘anorectic self’ and their ‘normal self’, and how this may limit social relationships and participation in the social world (J. R. Fox & Diab, 2015; Williams & Reid, 2012). Yet, few qualitative studies have explored how patients with anorexia nervosa experience and understand their engagement in compulsive exercise. In an auto ethnographic study, one compulsion was replaced with another in the process of a partial recovering from anorexia nervosa to becoming a devoted triathlete (Axelsen, 2009). The author maintains that the engagement in triathlon was a journey to some sense of recovery and that the new compulsion was more healthful than the former, whilst also representing a sense of belonging and a positive lifestyle. Employing a thematic analysis, Moola, Gairdner and Amara (2015) recently described experiences of physical activity over the course of a long illness journey in Canadian women with anorexia nervosa. Moola et al. (2015) debate the consequences of activity restriction and how this may limit the participants’ sense of autonomy while attending treatment. Participants in their study describe how their activity appeared to be compulsive in nature and how it was motivated by weight loss and anxiety reduction (Moola et al., 2015).

Despite the convincing associations between anorexia nervosa and compulsive exercise, with the exception of Moola et al. (2015), little attention has been given to the personal meaning of compulsive exercise for individuals with anorexia nervosa. As detailed in Moola et al.'s (2015) study, patients' engagement in physical activity is habitually considered to compromise treatment goals, and current approaches to dealing with problematic exercise during hospital treatment are often characterised by exercise restriction and a confusion about what can be considered 'physical activity' and what represents 'eating disorder symptoms'. Given the assumption of compulsive exercise as a major emotion regulation strategy in individuals with anorexia nervosa, and the challenges connected with management of compulsive exercise during treatment, there is a need for increased qualitative knowledge about patients' experiences of compulsive exercise and the sense they make of those experiences.

2. Methodology and method

In order to expand our understanding of compulsive exercise in anorexia nervosa, this paper examines the way in which six women with anorexia nervosa experience and make sense of compulsive exercise in the context of their daily lives and treatment programme. Interpretative phenomenological analysis (IPA) has been employed, given that this approach is particularly suited to exploring how specific individuals deal with and make sense of specific situations or experiences in their lives (Larkin, Watts, & Clifton, 2006). Developed and articulated by Jonathan A. Smith, IPA has been informed by three main theoretical underpinnings: Phenomenology, hermeneutics and ideography (Smith, 1996; Smith, Larkin, & Flowers, 2009).

2.1. Philosophical underpinnings of IPA

Phenomenology is a philosophical approach rooted in early 20th century European philosophy. It includes the use of rich description and close analysis of concrete lived experience to understand how meaning is created through embodied perception (Sokolowski, 2000). Phenomenologists share a common interest in thinking about what the experience of being human is like, particularly in terms of the things which matter to us, and which constitute our lived world. To be phenomenological, we need to take a step aside from our taken-for-granted assumptions of objects in the world in order to be able to examine lived experience. By adopting a phenomenological attitude, we direct our observations towards people's perception of those objects. In phenomenology, our being in the world is always considered contextual and a function of our various involvements with that world (Larkin et al., 2006). Phenomenologists comprehend the world through embodied experience and acknowledge the body as fundamental in understanding personal lived experience and that we access the world through our bodies. We can observe and have empathy for another, but we can never share entirely the other's experience as their experience belongs to their own embodied relation to the world (Merleau-Ponty, 2012). For qualitative researchers, and in particular for IPA researchers, the view of Merleau-Ponty that the body not only connects us to the world, but also offers us the means to understand and relate to that world, is fundamental (Finlay, 2006). In psychological research, phenomenological philosophy is valuable as it offers a rich source of beliefs about how to examine and understand lived experience which are unique to the person's embodied and situated relationship to the world (Smith et al., 2009). Hermeneutics, originally used for the interpretation of historical documents and literary works, offers important theoretical insights for IPA. Heidegger (1962) articulated a hermeneutic phenomenology claiming that phenomenology is an explicitly interpretative activity. He observed that phenomena have certain visible meanings for us, but also that they may have concealed or hidden meanings. Accordingly, phenomenology is concerned with examining something that may be latent or disguised as it emerges into the light (Smith et al., 2009).

Ideography is concerned with the particular and focuses on grasping the meaning of something for a given person. It is committed to the understanding of particular experiential phenomena from the perspective of particular people in a particular context.

IPA is inspired by phenomenology as it is concerned with trying to understand the participant's world and aiming to conduct this examination in a way which - as far as possible - enables that experience to be expressed in its own terms, rather than according to predefined categories (Smith et al., 2009). Moreover, IPA is concerned with understanding the person-in-context and exploring the person's relatedness to the world. IPA connects with Heidegger in that phenomenological examination is an interpretative process. In the examination of how a phenomenon appears, the analyst offers an interpretative account of what it means for the participant to have such concerns (Larkin et al., 2006). As such, IPA acknowledges a 'double hermeneutic', in that the researcher interprets the participants' sense making of their experiences (Smith & Osborn, 2003). IPA also links up with an ideographic commitment, 'situating participants in their particular contexts, exploring their personal perspectives, and starting with a detailed examination of each case before moving to more general claims' (Smith et al., 2009, p. 32). Therefore, IPA is committed to the in-depth analysis of individual personal experience, while also examining people's sense-making process. Thus, IPA studies typically involve a small number of participants, as the aim is to reveal something of the experience of each of those individuals. Health and social care professionals use IPA increasingly as it allows for an in-depth exploration and a nuanced account of individuals with a health condition, whilst paying attention to explicit content, implied meanings and to experiences that can be difficult to articulate. A qualitative approach to the examination of the experience of compulsive exercise in patients with anorexia nervosa may provide a nuanced presentation of participants' perspectives. The current study aims to contribute to the understanding of women's subjective experience of compulsive exercise and the meaning it has for them in relation to their anorexia nervosa.

2.2. Participants

Six women at different stages in their current treatment programme for anorexia nervosa at hospital units providing residential and day treatment for eating disorders in Norway were recruited and interviewed. To achieve depth and richness of data, it is essential that the sample of interviewees is homogeneous and that all participants fulfil particular criteria related to the research question (Smith & Osborn, 2003). Participants selected were over the age of 18, they had a clinical diagnosis of *anorexia nervosa restricting subtype* provided by their consultant psychiatrist or psychologist using ICD 10 (World Health, 2004) and were considered *compulsive exercisers* (as defined in the introduction). The restricting subtype of anorexia nervosa typically involves behaviours such as energy restriction, increased energy expenditure and fasting. Initial interviews included eight women; however, we excluded two interviewees due to issues regarding a potential primary diagnosis other than anorexia nervosa. Four of the participants were involved in competitive sports in their teens, prior to the development of an eating disorder. The sample consists only of women, as there were no men admitted to the unit during the recruitment period meeting the inclusion criteria. The participants' ages, duration of illness and length of treatment are listed in appendix 1. Their body mass index (BMI) was between 15.2 and 19.2 at the time of the interview. Lowest BMI had been between 12.6 and 14.5. The participants were asked by their physician or psychotherapists to take part in the study. One woman, still fulfilling the inclusion criteria but recently withdrawn from treatment, was asked to participate by the first author. The participants had attended treatment for between six months and five years. Hence, there is a possibility that they are influenced by and have adopted terms and phrases from therapy. The Regional Ethics Committee (REK) of Southern Norway granted ethical approval for the study and hospital units involved granted administrative consent. Participants received written information about the research and were informed of the possibility of withdrawing at any time. Informed consent was gathered from all participants. To protect participants' anonymity and safeguard confidentiality, names and identifying features have been changed.

2.3. The interview schedule

The interview schedule consisted of open-ended questions. At the beginning of the interview, participants were encouraged to recount the history and status of their eating disorder and exercising history. In the second part, participants were asked to elaborate on their thoughts and feelings associated with exercise, the functions and meanings it has for them, and how physical activity may influence other aspects of their lives (e.g., Can you describe your exercise during a day and week? What are your thoughts and feelings about why you exercise? How do you feel after training? Does your exercise influence other aspects of your life and in what way?). The interview process was flexible to enable follow up of interesting possibilities emerging during the interview. The first author conducted the interviews between June 2013 - January 2014 in a quiet single room at the hospital unit or at the author's workplace. The interviews lasted for 50 – 90 minutes; they were audiotaped and subsequently transcribed verbatim by the first author.

2.4. Data Analysis

The analysis closely followed the four-stage process described in detail by Smith et al. (2009). The first step consisted of reading the primary transcript a number of times in order to become fully familiar with the data, and making a note of any significant or interesting initial comments. During the second stage, initial notes were transformed into emerging themes or concepts whilst paying attention not to overstate connections between the participants' own words and the researcher's interpretations. The third stage involved examining the emergent themes for patterns and connections, and clustering them according to conceptual similarities. These clusters were labelled according to the conceptual nature of the themes in each cluster. Subsequently, a table of themes was produced within which subthemes were nested with supporting quotes from the participant. These quotes were coded (e.g., A: Agnes/ 3: page number/ C: quote 3 on page) to ensure the possibility of returning to the transcript and checking the extract context. Transcripts

for the other five participants were then read and subjected to the same analytic procedure. When considering individual cases during data analysis in an IPA study, we are inescapably influenced by what has been found in the other cases. To allow new themes to emerge within each case, it is crucial to maintain the rigour of systematically following the steps outlined by IPA for each case (Smith et al., 2009). Thus, individual cases were treated on their own terms, allowing new themes to emerge within each case. After analysis of all cases, cross-case patterns were established and documented in a table of themes for the group. This information was transformed into a narrative account supported by verbatim extracts from the participants. To ascertain validity, the second author, an experienced IPA-researcher, reviewed and audited the analytic journey to ensure that it had a firm grounding in, and robust representation of, the transcripts.

2.5. Issues of quality and validity

Underpinning the adoption of a qualitative research approach is the recognition that our knowledge and experience of the world cannot consist of an objective consideration of some external reality, but is profoundly shaped by our subjective and cultural perspectives. Therefore, 'truth', 'knowledge' and 'reality' are created by the shared construction and negotiation of meaning (Yardley, 2000). Thus, there are no fixed, universal criteria for establishing truth and knowledge, as in traditional quantitative research. When judging the validity and quality of qualitative research, it is important to evaluate it in relation to criteria recognized as meaningful for that particular research situation and purpose. A number of criteria for assessing quality in qualitative research have been produced. To ensure a high standard within IPA, Smith et al. (2009) consider the criteria outlined by Yardley (2000) for assessing validity and quality in qualitative psychology to be useful. These criteria are sensitivity to context, commitment and rigour, coherence and transparency, and impact and importance. How these principles apply to this study is detailed in appendix 3. Smith has also developed specific criteria to help assess IPA research output. To be

considered an acceptable IPA work, the paper must clearly subscribe to the theoretical principles of IPA, it should be sufficiently transparent for the reader to see what was done, the analysis needs to be coherent, plausible and interesting, and the sampling must be sufficient to show density for each theme (Smith, 2011). For instance, in a study involving six participants, extracts for at least three are advocated for each theme (Smith, 2011).

2.6. Reflexivity

In keeping with the principles of IPA, reflexivity involves the need for the researcher to acknowledge that he/she always brings his/her own horizons of experience and fore-conceptions to the encounter and that phenomena are always interpreted in the light of these. Presumptions may hinder the process of allowing the new (e.g., person, text) to speak in its own voice, but they might also represent a way in to the new. To acknowledge one's preconceptions up front before making an interpretation is challenging, since we are generally not aware of all our preconceptions in advance of the reading (Gadamer, 1975). While we can sometimes identify our preconceptions in advance, at other times they emerge during the research process. This requires a spirit of openness such that our fore-understandings can be continually revised once interpretation is underway. Therefore, the bracketing of preconceptions can be seen as a cyclical process and as something that can only be partially achieved (Smith et al., 2009).

The first author of this study holds a doctoral degree in sport sciences. She is a physiotherapist specialist in Norwegian psychomotor physiotherapy (NPMP), and has a number of years of experience of working with patients with anorexia nervosa. The second author has a PhD in psychology. Her research focuses on emotional experiences and the use of qualitative research. The authors acknowledge that their past experience colours their perceptions, but also that their previous understanding and experiences can be helpful in the interpretation process by allowing them to empathise and understand the participants' voices and 'to sound out the meaning of key events and processes' (Smith et al., 2009, p. 89).

3. Findings

Two overarching themes were identified in the analysis: ‘Paradoxical functions of exercise’ and ‘diverging experiences of exercise’. This paper reports on the first superordinate theme due to its nuanced examination of participants’ paradoxical and challenging relationship with exercise. The subthemes in all participants are illustrated in appendix 2.ⁱⁱ

3.1. *Paradoxical functions of exercise*

Key issues in this theme are participants’ involvement with high levels of exercise as a means of regulating emotions and to establish a sense of identity. Firstly, we offer an account of how the participants feel about their engagement with compulsive exercise as a means of emotion regulation. Secondly, we examine how the participants experience the embodiment of particular emotional states and the way in which they make sense of their engagement with exercise as a way of easing bodily manifestations of distress. Thirdly, we look at how emotion regulation through exercise influences the experience of time. Finally, we explore how the participants experience the meaning of exercise in relation to their sense of identity and belonging.

3.1.1. *‘It really helps to get rid of something one cannot say in words’: Emotion regulation, distraction and escape*

This theme illustrates how the participants exercise rigorously as a way to control and regulate their feelings. The analysis is introduced by a quotation illustrating several of the main features of the participants’ accounts:ⁱⁱⁱ

Hedda: In a way, it has been a bit like regulating feelings. If I am annoyed at someone or something, instead of somehow confronting them, or if I am sorry, or someone has said something... So in a way, it disappears as soon as I get out and start running. I think that the world is very miserable when I go out. Then I run, and when I come back, the problem is either less than it was or it is in a way alright. (..) It really helps to get rid of something one cannot say in words... In a way, when I really should have stood up and said one thing or another to defend myself or say that I disagree or something like that, instead of doing that, it is easier to go for a

run and get it out through that. I then, in a way, have been spared from having taken up any space.

Hedda uses exercise to lessen feelings of sadness and anger, and to avoid conflicts with others. She exercises to process feelings instead of articulating and confronting issues head on. The quote illustrates how part of her dilemma is about communication and expressing feelings verbally. A core issue for Hedda is to avoid 'taking up space'. By suppressing feelings and going for a run, she manages to avoid displaying her thoughts and a subsequent focus on herself in a social or relational setting. As such, the escape into exercise seems to relate strongly to difficulties in relating to others. The withholding of thoughts and feelings may be understood in light of negative experiences during her teenage years. In the first part of the interview, she spoke of an emotional backdrop fostering insecurity and an atmosphere not offering opportunities to share feelings and opinions:

Hedda: I was afraid of saying things the wrong way, and of doing things wrong. It was a lot about that (..) In a way, it was important to do things right. (..) There was not much of an opportunity to make mistakes. (..) There were a lot of rules which made me insecure.

Hedda began to exercise excessively and to subsequently display restrictive eating behaviour when she was in her teens. These are still key strategies that she uses for emotion regulation instead of expressing herself to others. Accordingly, she also misses out on aspects of the social and relational world. Likewise, Hilde illuminates the dilemma of expressing herself verbally:

Hilde: My way of dealing with everything that is problematic is restricted eating and exercise. (..) Like feeling sadness or that something bad happens, (..) it is automatic, because that is how I used to react and manage emotions. Eating less and exercising more soothes all feelings. (..) That was the solution I chose then, for one reason or another that was probably necessary for me, when I became ill... This has become my only solution. Now I do not know of any other strategies.

Hilde's difficulties in expressing herself also seem to be associated with a limitation in expressing feelings verbally. Instead of articulating feelings, excessive exercise and restrictive eating have become her main solutions for dealing with all issues that trigger difficult feelings. As with Hedda, notions of the past seem relevant in order to understand Hilde's present way of

dealing with her feelings. When stating ‘that was the solution I chose then’ and ‘that was probably necessary for me then’, she is not only speaking of the early stage of the illness, but also of challenging events that took place in her teens, incidents she has not been able to articulate until recently. She subsequently needed a way to deal with these experiences and restrictive eating and excessive exercise became effective coping mechanisms. These have endured as her primary emotion regulation strategies, as she has seemingly not acquired alternative ways of dealing with negative emotions. Since she is severely underweight, exercise is tightly restricted during treatment and her emotional strain is accordingly intensified. While the possibility of ‘escapes’ through exercise seems to facilitate Hilde’s engagement with treatment, she is frightened about the prospect of losing the sense of control provided by her eating disorder project and feels anger about being squeezed into a treatment structure that prevents her from carrying on with her usual exercise routines:

Hilde: Right now in this project, there are two main issues. It is terribly frightening that someone will take this (anorexia nervosa) from me, so there is a great anger. It is very provocative to be placed in a compulsory situation, I think... I mean, I am talking about these meals that are so extremely structured, and this imposed resting time. I have been so provoked that I have wanted to slap someone.

Agnes and Rebecca describe similar experiences with exercise, in terms of emotion distraction and to ‘freeze out’ problematic thoughts. At the same time, exercising gives some sense of balance in their lives by providing steadiness and routines that they can master, and which are easily accessible:

Agnes: It is just that I think that, or I have come to believe that if I do not exercise, then everything will collapse... Then I do not quite know how to live, really. What should I do if I do not follow the routines I have taught myself? Therefore, it becomes a way to avoid thinking, or a period where I do not think, and I just do it.

Rebecca: I have always been afraid that my parents would split up. (..) However, I am very good at freezing things out. (..) I could not bear to deal with it. I got extremely sad with it all. I did not take a position on it. Therefore, I simply froze it all out... I somehow tried to raise myself above it... and take it out on other areas such as exercising and not eating. That helps.

Although not always conscious of the particular feelings from which they need to flee, the participants describe experiences of anger, sadness and guilt being modulated through excessive exercise. Likewise, exercise appears to play a role in regulating their selves, offering structure and stability to compensate for a sense of inner instability, vulnerability and insecurity.

3.1.2. *'Like a painful knot in my stomach': Embodiment of feelings*

Participants' accounts show embodiment of feelings producing psychological pain, whilst also triggering their compulsive behaviour. Here, embodiment conceptualizes the body as a dynamic site of meaningful experience rather than as a physical object distinct from the self or mind (Baron, 1985). To be embodied involves a sense of being in contact with or feeling the body and bodily sensations in relation to a situated context. How feelings resonate as bodily sensations and the way the women use exercise in order to curtail embodied distress are described very powerfully in this extract from Agnes:

Agnes: I am a bit unsure, it is as if I feel I do not have anywhere to situate myself, if I cannot exercise or run. I somehow do not know where to place the feelings that I have... I am a little unsure of how to explain it. It is in a way a kind of uneasiness, that it tingles in the body, it's an uneasy feeling... a bit like a painful knot in my stomach... that just gets bigger and bigger and bigger until I try to run it off or walk it off or train it off...

Agnes is aware of her bodily sensations, whilst finding it difficult to understand what they are about. Despite the vagueness of her emotional perception, the 'something' that she feels is clearly a significant physical sensation of a qualitative character. While not comprehending the meaning of her embodied feelings, the awareness of bodily sensations seems to offer her some sense of connecting with her feelings. Nora similarly illustrates how walking and running relieve pain and tension connected with embodied feelings:

Nora: It is so difficult I get so uneasy. It becomes so painful that I must escape into activity. (..) It feels like tension in my chest and in the stomach region... I can feel it in the chest and in the stomach... I often feel like there is an inner motion or something like that. In addition, I feel chilly, I freeze a little. (..) Then I usually relax afterwards. It is soothing to move about.

Agnes and Nora both seem to associate emotional strain with sensations in the *stomach*. Nora further refers to having tension in her *chest*, a part of the body strongly connected with breathing. Thoracic tension, along with difficulties in managing negative feelings, may indicate that Nora's breathing is affected. The experience of achieving relaxation after escaping into physical activity seems therefore plausible, as her breathing is facilitated by the bodily activity, habitually involving a deeper and more rhythmic breathing that subsequently allows her to relax.

These quotes from Rebecca and Hedda illustrate how they use exercise to reduce specific feelings such as guilt and anger:

Rebecca: I have a very guilty conscience for not exercising (running). I try to think that the weight is within what I can tolerate, then it is in a way okay. (..) However, if I walk a lot, then my conscience is clear. Then I become calm inside myself.

Hedda: When I get back (from running), I have the feeling that it has helped, because then I somehow feel a lot calmer inside. I then feel it is a lot easier to deal with the food, or deal with other persons at which I was angry.

Exercise enables the participants to feel calm 'inside', while they perceive feelings related to guilt and anger to have adverse effects on the body. Rebecca demonstrates a sense of tolerance by currently refraining from exercising (i.e., running); instead she walks extensively to calm herself. For Hedda, running has a quietening effect making it easier to manage meals and engage within her social world. Accordingly, in order to moderate her negative feelings, she embarks on running or rigorous walking after every single meal. In the next quote, Hilde illustrates how difficulties with tolerating bodily sensations make it challenging to relax:

Hilde: I feel I am enlarging in sizes when I sit still. It is such an inner restlessness... Like now, we are supposed to have resting time after the meals. I cannot handle it; I get so provoked by it. I get angry if someone forces me to sit still. (..) Although, I am often very tired. Even then it is difficult, in a way, to allow myself to relax... I do not know why really, but there is an aspect of that I do not deserve to.

Clearly, Hilde struggles with tolerating her body during the mandatory thirty-minute resting time after meals. She has difficulty sitting still, as it triggers a feeling of the body increasing in

size. This possibly suggests that when she sits still or relaxes, she becomes more aware of the body and perceives it to be more present. Hilde's life story, along with accompanying and unresolved feelings, appear to be embedded in her body and may explain her present uneasiness and why she struggles to tolerate it. During the interview, she described experiences of sexual abuse that she could not relate to, nor fully understand at the time. At first she minimized the assaults, stating that they were very innocent, before she described the time afterwards:

Hilde: I knew it was wrong. But, hum, I never told anybody, not until 20 years had passed. But shortly after it happened... It actually started at school, that I stopped bringing food to school because I could not bear eating when anyone watched me eat. At the time, I did not really see where that came from. And then I could not stand to shower with the others after the gym. Hum... yes, so there were quite a few things like that, when I look back. But I never connected them to this (the assaults).

This quote captures how feelings of shame and a need to conceal her body affected Hilde in powerful ways. While still being concerned about not taking up bodily space, she currently seems particularly preoccupied with avoiding the sensing of the body, thus also avoiding awareness of emotions, limiting her opportunity to attune to and manage such feelings.

Participants further describe a variety of difficulties with embodied feelings related to the recovery process. This quote from Nora demonstrates her fear associated with weight gain:

Nora: I do *want to* increase weight, but I am very scared of how I will gain weight. I fear that I will have a spider-like shape and that I will get a big tummy, big in the middle here and identically thin legs and arms and I will be deformed. Nevertheless, I do want to increase weight. If I could gain it evenly and look like I did four years ago, I would not even hesitate. The body I had before was decent enough. Not perfect, but decent enough.

Nora feels trapped in a struggle between her wish to recover and a fear of the consequences this may entail for her body. Her concern about the unpredictability of weight gain and whether her body will be radically transformed may mirror a strong ambivalence towards change. She clearly finds it difficult to anticipate what it will be like to gain weight at the same time as she reduces exercise. The need to exercise to control her body weight and shape may perhaps also be related to her age (fifty years old).

Agnes experiences a similar struggle, albeit in a slightly different manner, given her further progress in the treatment process. She has increased her weight and recently commenced strength training as part of the recovery process. A physiotherapist has carefully tailored a training programme with the aim of improving body awareness, stability and muscular strength. Agnes is also concerned with reducing unpleasant bodily sensations through exercise, similarly acknowledging the transitory quality of emotion regulation associated with exercise. Nevertheless, when speaking of her new training programme, she mentions how it provides her with 'breathing space' compared to her previous exercising routines, which were primarily connected with burning off as many calories as possible:

Agnes: Lately, I somehow sense that in some way, I have managed to relax more when I train. It gives me a little breathing space... I manage more often to think okay, now it is the training and I, and I can lower my shoulders... That helps a bit, as opposed to how it used to be a year or two ago when I had to run to burn as much as possible... There are still times when I stretch it and have periods where I only want to run and I run more than I am supposed to. However, from time to time, I manage to sense that feeling of becoming a bit calmer. Because I feel that by doing strength training, for instance, I somehow get the yucky feeling or rage or whatever you call it, out. That I feel stronger, that this feeling lasts a bit longer then.

There are several points of interest in this quote. In the first instance, a transition is taking place where Agnes is participating in a new type of training different from her previous endeavours (i.e., running to burn calories). This new style of exercise offers her 'breathing space' and moments of relief, entailing an opportunity to incorporate a more relaxed approach to exercise into her daily life. At the same time, she struggles with relinquishing her old training style, and admits to running more than she should. Additionally, she perceives the new form of training to be helpful with respect to emotion regulation, and that it enables her to banish anger, in contrast to her former irrational and compulsive exercise. The extract also demonstrates how the current strength training provides Agnes with a sense of increased strength, suggesting improved access to positive emotional experiences compared to her former obsessive training regimes.

The women in our study describe in great depth how they are able to recognise some feelings as bodily sensations and how they utilise exercise to blur or escape embodied feelings. This is a

paradoxical finding since awareness of the body may offer a sense of connecting with our emotions as we typically interact with and grasp the world through our bodies. Thus, the participants' escape of distressing bodily sensations may reduce their likelihood of understanding what goes on with themselves and the social world.

3.1.3. *'It is a short-lived sensation of something else': Exercise as time-out*

Another dimension of participants' emotion regulation through exercise is that its ability to offer a break from conflicting thoughts and feelings is merely short-lived. Although all participants described their experience of exercise as a means of time-out from difficult feelings, extracts are presented from three participants who presented this subtheme very vividly. In the following extract, Agnes reflects on her experience with the temporary disruption of time connected with escaping feelings:

Agnes: Perhaps I have become more conscious of the fact that it is impossible to run away from feelings. Though there are many times I still forget, I understand that they are going to be there when I come back. Thus, I can get a break, but I cannot run it away, every day.

Agnes is well aware that her exercising is not particularly helpful, as problematic feelings do not disappear by training. Nevertheless, running gives her respite that she appears to need in order to feel able to undergo treatment. The short-term function of exercise in modifying the intensity and duration of feelings is also illustrated in a quote from Hedwig. She was asked whether exercise helps her to take a break from her thoughts:

Hedwig: Yes. When I leave the training session, then yes, I have not been thinking for an hour. You are thinking about other things. I think that I sort of break free from my own thoughts, from negativity, sort of... It is only while one is exercising...

Hedwig manages to lessen emotional arousal and postpone problematic thoughts through allowing herself a time-out. Hilde also describes how exercise may help shift mental focus, enabling her to reflect on issues in a more nuanced and flexible way:

Hilde: You can see things differently when you have trained (..), like everybody who has experienced that it is difficult to take a stance or decide things or something like that. So after I have exercised, I can return to it.

I: Do you see it in another way?

Hilde: Control-alt-delete, yes! (..) You get to clean up a bit, sort of... Anyhow, it helps in the short term. I think I am feeling a lot now, because I am digging into all of this... So I feel so much more, and it is not so easy to lessen it any longer, because it constantly comes back. (..) At least, it is a short-lived sensation of something else.

The metaphor 'control-alt-delete' captures Hilde's engagement with exercise as a manner of erasing thoughts, feelings and shifting perspectives, offering her the possibility to return to what she has escaped and look at it with fresh eyes. Through exercise, Hilde obtains short episodes of relief, which are increasingly important for her given that she is currently 'digging into' painful past experiences in therapy (as discussed in more detail in the previous subtheme). Despite having conflicting feelings and even anger about the treatment programme, she seems to be reconciled to the fact that her thoughts and feelings connected with her past need to be addressed. Hilde seems to be undergoing a continuous internal battle in terms of enduring embodied distress, whilst at the same time complying with a treatment structure over which she lacks control. In order to remain in treatment, she exercises not only to escape feelings and distress, but also to achieve brief moments of 'something else'.

3.1.4. 'I'm sporty Hedda': Self and identity

This theme explores the participants' experience of exercise in relation to their sense of self and identity. In their teens, four participants (Hedda, Hedwig, Hilde and Rebecca) were engaged in individual competitive sports on an intermediate or elite level. Engaging with sport and exercise is intertwined with their social and relational world and plays an essential role in their self-understanding. The following extract from Hedda captures much of this:

Hedda: I kind of put effort into presenting myself as sporty Hedda who cares about her body. (..) Our whole group of friends somehow revolves around training and that one should be exercising and take part in competitions. There is a lot of talking about training. Thus, in a way, it is one thing that I am good at..., or it makes you feel good, because you are good at something. (..) In a way, since I also enjoy competing, it is also about a feeling of mastering an

activity... Besides, it is about the societal, that one can get some recognition and have something to speak about. In a way, I have built some of my identity around that I am doing sports. My partner is involved in sports too. In a way, it is 'we' then. So it is hard to let go of.

The engagement with exercise has multiple meanings for Hedda's sense of self and identity.

Taking part in training and sport is deeply embedded in the way she understands and defines herself as a sporty individual who 'cares about her body'. She seems to be concerned about maintaining a well-trained physical appearance and connects her self-esteem with physical competence. Her present engagement in training provides her with a feeling of mastery and of being good at something. This experience of self-confidence is reinforced by the recognition she gains from family and friends. Her partner and friends are immersed in sports demanding a degree of training. Thus, sports comprise an essential part of her social and relational world, focused extensively on performance. While engagement in sport may engender social and relational expectations about performing, it also offers a sense of belonging. This is particularly apparent in the relationship with her partner, in which she considers their mutual interest in sport and training to be important for their connection. Hedda is afraid that a change in her exercise routine will affect the relationship with her partner negatively:

Hedda: Part of the reason that I find it hard to let go of, is that working out is something that really connects my partner and me. Therefore, I am afraid that if I change anything about it, it can change part of our relationship. Hum, yes, when it comes to trying to change my exercising, I think a lot about this... since much of what we do involves activity.

Similarly, these quotes from Hedwig and Hilde convey how exercise relates to their identities and understanding of themselves as sporty individuals:

Hedwig: I think it is fun. I enjoy it, kind of. I enjoy sweating, I enjoy moving about and to simply be at one with nature. (..) That is what I am thinking, kind of. If I could eat more and still exercise, that is more important in a way. (..) I do not know why really. Training has always been important to me. I enjoy it. I do not know. I just like it, sort of... Because earlier, I have felt, such as at work, I did not feel that I coped, I did not feel that I fitted in there, it was not my place, it was wrong. However, in the gym, I feel right, I fit in, kind of. There I am among the best and the fittest... there I perform... there I am good. It is probably about that, it is *my* arena for being clever, sort of. (..) Therefore, the pleasure from exercising becomes even more important as it remains my only source of pleasure.

Hilde: I need to exercise, or it gets chaotic. I have been training since I was seven. Not being able to exercise would sort of be like giving up on your whole project, to give up the eating disorder. (..) That is definitely not for me, that is not who I am.

Hedwig and Hilde have been engrossed in sports since they were children. They both define themselves according to a physical competence and base their self-esteem on sport and exercising. They seem to rely on exercise as a means of maintaining a stable self and of overcoming feelings related to a low self-esteem. Hedwig conveys a clear passion for sport, and strongly connects her self-confidence with being bodily fit and well trained. Having experienced feelings of not fitting in at work, she describes training as important in order to experience feelings of coping and competence, and of happiness. The understanding of oneself in relation to training and athletic performance is equally reflected in this quote from Rebecca:

Rebecca: With identity then, it is a bit that I have based my self-esteem on obtaining good performances in sport. That is why when at first, if I had a bad competition I was completely crushed, because I felt that 'what else do I have'. (..) It was the training, kind of, I felt good then and if I performed well in competitions. I do not feel I have anything else. I feel that I need something concrete, that it will be black and white how good you are in sports and things like that. In a way, I do not consider being a good friend to be a... I feel that I cannot take it in and base my self-esteem on that, sort of. But if I am an active person or perform well in sports or something like that, that gives me self-confidence. That kind of defines me in several ways. (..) It has just turned out to be like that. (..) I did not have any joy in anything else. Rather, I had to obtain all my confidence from performing well. And when I performed well, life was all fantastic. When I performed badly, then it was incredibly awful. Then the world might as well have come to an end.

Here, Rebecca explicitly connects her self-esteem with being a physically competent person who performs well in sports. She feels exercise defines her in several ways. Referring to her time as an athlete, her psychological well-being depended on whether she had a good training session or performed well in competitions. She roots feelings about her entire self on possessing skills in sport, declaring this the only way of measuring her self-esteem. For her, it is necessary to see her sporting outcomes as 'black and white' in order to find coherence and meaning in her world and to grasp a sense of who she is. The statement that she cannot base her self-esteem on friendship supports this interpretation, since these relationships are usually emotional and Rebecca is

concerned about avoiding such feelings. As previously conveyed, if she is exposed to situations that trigger difficult feelings, she uses a strategy of 'freezing things out' through exercise. By avoiding negative feelings, she avoids placing herself in a vulnerable position and protects her seemingly fragile self-worth, possibly associated with her reliance on her identification of herself as an athlete. This is a paradoxical feature, since connecting with peers and developing close relationships is an important dimension of the adolescent years.

In this subtheme, it has been shown how engagement in exercise has significant meaning for participants' sense of self and identity, including feelings of connection and belonging. This is particularly the case for participants who have a history of involvement in competitive sport.

4. Discussion

This study illustrates paradoxical functions of exercise in individuals attending treatment for anorexia nervosa, restrictive type. Firstly, the participants demonstrate how compulsive exercise is an essential part of distracting themselves from and managing their emotions in order to cope with their illness. They are exceedingly concerned with evading negative feelings (i.e., anger, anxiety, guilt, shame, sadness) and engage habitually in high levels of exercise to suppress or escape such feelings. The compulsion to exercise appears to be connected with avoidance of potential conflict. Instead of expressing feelings and thoughts to others, and engaging in emotional and relational talk, the women turn to compulsive exercise. By exercising, they avoid 'taking up space' and putting themselves in a vulnerable position. By 'taking up space', they seem to be referring to the suppression of thoughts and feelings to escape any emotional focus in a relational or social setting, and yet also to embodying a physical space. Thus, the silencing of feelings and thoughts and participants' concern about not 'taking up space' in order to avoid being emotional, relational and vulnerable, confine and narrow their involvement in the social world and may mirror an existential dimension of their lived experiences and their being-in-the-world.

The meanings the participants in this research assign to their engagement in exercise to evade negative feelings may enrich and complement previous reports on how patients with anorexia nervosa manage negative emotions predominantly via food restriction strategies. For example, Dignon (2006), Fox (2009) and Fox et al (2011) describe how patients with anorexia nervosa (particularly the restrictive type) perceive food restraint to be helpful in avoiding, distracting themselves from, and coping with, distressing feelings. The findings are consistent with Geller et al.'s (2000) research illustrating how women with anorexia nervosa tend to expend considerable energy on silencing negative thoughts and feelings to avoid conflict, particularly in their relationships with significant others. The women's difficulties in giving voice to their emotions and their propensity to avoid conflict also resonate with historical and cultural theories emphasizing differences in the evaluation of ways of expressing oneself, whereby assertiveness and 'taking up space' are associated with acting masculine and emotionality and indifference with acting feminine (Butler, 1993).

Secondly, and contrary to previous observations of impaired emotion recognition and lack of bodily responses to emotional distress in patients with anorexia nervosa, participants in this study vividly described their sensing of feelings such as anger, anxiety, guilt and shame as bodily sensations. Expressions such as 'it feels like tension in my chest and stomach region' and 'like a painful knot in my stomach' show how feelings resonate as physical sensations of tension and discomfort. These accounts suggest that they recognize emotions in the self and grasp occurrences within and around themselves through their bodies. Nevertheless, the women experience difficulties in managing their emotional awareness and yearn to avoid 'feeling emotions' by using exercise to ease bodily discomfort, thus finding relief from difficult emotions. Given the phenomenological account that our subjectivity is merely conceivable as an embodied relation to the world (Fuchs & Schlimme, 2009) and given that the awareness of the body and bodily sensations fosters a connecting with and an understanding of emotions (Gyllensten, Skar, Miller,

& Gard, 2010), the tendency to avoid relating to their embodied emotions appears paradoxical as it may limit their understanding of what goes on within them and their relation to the outer world.

These results diverge from literature on emotion recognition and management in individuals with anorexia nervosa. Research suggests that these individuals have impaired recognition of emotions in others and in the self (Oldershaw et al., 2011). Incongruence between detecting an emotion and its corresponding bodily arousal has been demonstrated, showing that patients with higher levels of distress and anxiety (S. P. Miller, Redlich, & Steiner, 2003) and tension and depression (Zonneville-Bender et al., 2005) display reduced physiological responses compared to healthy controls. It could, however, be suggested that the lack of identified bodily responses to high levels of anxiety is a consequence of the research procedures used and the measuring of physiological response via heart rate and cortisol levels, rather than through personal accounts of bodily sensations. Employing IPA and grounded theory techniques, Pemberton and Fox (2013) described how patients with anorexia nervosa have difficulties in recognizing and naming their feelings. Yet, it is assumed that these findings relate to a lack of validation of the clients' feelings by staff members, subsequently leading to increased frustration and hostility associated with a build-up of suppressed feelings (Pemberton & Fox, 2013).

The finding that participants experience emotions through the body and that bodily sensations may generate meanings that can enable emotional understanding, is significant in light of assertions in body awareness literature and in Norwegian psychomotor physiotherapy (NPMP) (Bunkan & Thornquist, 1990; Ekerholt, Schau, Mathismoen, & Bergland, 2014; Gyllensten et al., 2010; Kolnes, 2012; Roxendal, 1990). These therapies comprise physiotherapeutic approaches based on the understanding that personal lived experience (i.e., physical, psychological and relational) is embedded in and reflected in our bodies through respiration, posture, muscle tension, and bodily awareness and flexibility. Such therapies are aimed at helping clients become more attuned to their bodies by reducing muscular tension and respiratory constriction, and facilitating

new experiences in posture and motion. Breathing and the emotions are assumed to be intertwined since respiration is thought to mirror emotional states and to offer useful information about our concerns. For instance, being emotionally upset or holding back feelings over time increases muscular tension and constrains the breathing pattern (Ekerholt & Bergland, 2008; Øien, Iversen, & Stensland, 2007). Thus, in our study, participants' experiences of tension in the chest and stomach region might be related to long-lasting negative feelings and withheld breathing, since the chest and abdomen are closely connected to respiratory function (Chaitow, Bradley, & Gilbert, 2014).^{iv} Challenging relational experiences and the associated silencing of emotions are most likely embedded in the participants' bodies, thus explaining some of their current struggles in relating to their bodies, notably their *relaxed* bodies, which appear challenging to endure as the body seems to have a stronger presence when resting.

Thirdly, participants' wording such as 'It is a short-lived sensation of something else' and 'I sort of break free from my own thoughts, from negativity', illustrates how the escape into exercise may change their experience of time as it represents a break or distraction from embodied emotions, yet also that this relief is episodic and temporary. While exercise represents moments of 'something else' and relief from difficult feelings and embodied distress, this strategy seems to be of modest benefit beyond the 'here and now'. Nevertheless, while striving to tolerate embodied feelings and not always making sense of them, these feelings seem to offer the participants some sense of connecting with their emotions and illustrate that not understanding the meaning of one's emotions should not be equated with lacking emotion recognition. Having some sense of connection with one's emotions through bodily attention represents an increased opportunity to identify and tolerate negative emotions. Improved emotion recognition and tolerance is considered essential in the recovery process as it gives individuals with anorexia nervosa a greater sense of control over intense and difficult feelings (Federici & Kaplan, 2008). It may be hypothesized that the sense of emotional connection offered by increased awareness of embodied feelings represents a potential path into increased mentalization in individuals with anorexia nervosa, in terms of

increased ability to understand and discriminate not merely feelings, but also cognitions and meanings both in the self and in others (Bateman & Fonagy, 2006). This may increase the ability to understand and take care of oneself, and, just as importantly, improve interaction with others.

Despite its temporary dimension, exercise seems to offer some sense of structure, control and stability, facilitated by mental flexibility, in terms of relaxation and other coping mechanisms after training. Therapeutic effects of physical activity, including physiological and psychological aspects, are of relevance as they may engender bodily stability and influence the participants' sense of being bodily and mentally relaxed (Wolff et al., 2011). However, as illustrated by Hilde who is physically active most of the time and only experiences moments of relaxation while required to sit still after meals, these effects are short lived. This continuous return to compulsive exercise and restrictive eating to reduce negative feelings and calm the body may contribute to an ongoing cycle of emotion regulation, which is detrimental as progress in the recovery process is limited and negative emotions are not addressed. Since emotional strain tends to increase when undergoing treatment, commitment to the treatment process and simultaneous restrictions in physical activity represent tremendous challenges for the participants. Whilst meals in the ward are fixed in terms of kilocalories, content and structure, exercise is an aspect they feel they have some control over. Although paradoxical, the sense of exerting control over feelings through exercise appears to enable sustained commitment to treatment and to facilitate the accomplishment of eating meals and the obligatory weight gain. These observations resonate with other qualitative studies reporting on how individuals with anorexia nervosa are caught up in a vicious cycle that keeps them locked in their illness (Dignon et al., 2006; J. R. Fox & Diab, 2015; Moola et al., 2015). Participants with anorexia nervosa in Dignon et al. (2006) reported increased anxiety when confronted with the meal structure in treatment and associated feelings of losing control over the single aspect over which they used to remain in control. The sense of control offered by anorexia over food and their bodies has been discussed as a 'functional tool' that offers a feeling of being in greater control and helps with building a sense of self (e.g., Dignon et al., 2006; Espindola & Blay,

2009; Nordbo et al., 2006; Williams & Reid, 2012). Nordbo et al. (2006) contend that anorectic behaviours help patients organize and structure their everyday life, by providing a sense of predictability, mastery and self-control in order to counteract feelings of confusion and disorganization. However, as demonstrated in our study, the sense of control offered by exercise is merely transitory and may lead to a loss of control and a descending spiral of further food restriction and increased exercise if underlying or avoided emotions are not dealt with. These emotions need to be addressed in order to counteract participants' feelings of being increasingly controlled by anorectic behaviours, which may subsequently reinforce their initial low self-esteem.

Lastly, findings from this study demonstrate how exercise embodies genuine significance for participants' self-understanding and belonging. The identification with exercise is particularly apparent in the accounts of the four women who have been involved in training and sports since they were children. The means by which exercise provides a sense of belonging is most explicit in Hedda's account, as she feels that her engagement with training is imperative for her to connect and belong to a meaningful social and relational world. For all four athletes, the engagement in exercise appears fundamental to their self-concept and for maintaining a sports-related identity established before the onset of their illness. Currently, they take part in a struggle where the expectation about abstaining from exercise while in treatment is a challenge that threatens the sense of self that was essential to their becoming successful in sport. These results correspond to reports illustrating how running and long-distance activities in females with anorexia nervosa may provide an experience of being 'something' and how the prospect of giving up such activities can be perceived as a threat to their identity as athletes and also to their social life (Geller, 2006; Sviland, Raheim, & Martinsen, 2012).

The strong adherence to exercise in the participants in this study may in part be understood in light of symbolic interactionist identity theory, which emphasizes how engagement in sport can be a unique way of experiencing identity reinforcement through social recognition and feelings of

belonging, aspects assumed to further the fostering and confirmation of the self (Weiss, 2001). According to developmental theory, engagement in high-level sport may also complicate identity formation, particularly with respect to developing independence and mature relationships with peers, and the acceptance of one's physical appearance while establishing a career during adolescence, a time in life considered significant for the pursuit of a self (Warriner & Lavallo, 2008). Giving up training if one is overcommitted to sport is particularly difficult if self-identity primarily is drawn from the role of the athlete (Brewer, Van Raalte, & Linder, 1993). While such identification with the athletic role can provide functional benefits in terms of motivation, performance and a focus on achieving goals (Horton & Mack, 2000), it may also have potential negative consequences. Being overly dedicated to an athletic role may prevent the individual from engaging in the exploration of diverse roles and behaviours associated with identity formation (Brewer et al., 1993). Accordingly, it may be hypothesized that one explanation for the strong identification with exercise in participants in this study relates to the assumption that their athletic identity formation in the main took place during adolescence and that this early identification has interfered with developmental aspects such as creating sound relationships with peers, accepting one's body and physical appearance, and the establishing of a confident self and independence (Gilligan, 1982). Such early engagement in sport may have reinforced an identity that connects the self with physical competence and a trained body in these women. The prospect of losing the means (i.e., exercise) by which physical competence and appearance is maintained, combined with the obligatory weight increase, may therefore emphasize the loss of their athletic identity. While identities may change with time and context, some are solid and long-lasting, particularly if identities from different spheres accompany each other (Weiss, 2001) as seen in this study, where participants' anorectic identity merges with an athletic identity. Thus, the participants' sense of self appears entwined with both an anorectic and an athletic identity, a complementary identification adding further meaning to the reluctance and ambivalence towards change and recovery apparent in some of these women.

5. Conclusion

This study presents an in-depth look at experiences of compulsive exercise in women with anorexia nervosa restrictive type, engaging in a course of in- or outpatient treatment. Although exploratory, with the use of IPA as a methodological approach, this qualitative study enhances our understanding of the complexities inherent in the functions and meanings of compulsive exercise for individuals with anorexia nervosa. Paradoxical functions of compulsive exercise are illustrated. Firstly, the participants exercise compulsively to moderate and manage difficult feelings. Secondly, and contrary to previous observations of impaired emotion recognition and lack of bodily responses to emotional stress in patients with anorexia nervosa, our study illustrates the way in which feelings are echoed in the participants' bodies and how the awareness of embodied problematic feelings is significant, as it gives participants some sense of connecting with their emotions. Thirdly, our study demonstrates how the time outs offered by exercise provide a sense of structure, control and stability for the participants, enabling them to endure and consign themselves to the treatment situation. However, it is also clear that this sense of control and stability is short-lived and may lead to a loss of control if underlying concerns and emotions are not addressed. Finally, the meaning and value of exercising for participants' identity and sense of belonging are discussed.

Interventions that increase recognition and tolerance of negative feelings to enable a greater sense of management of such feelings seem beneficial (Federici & Kaplan, 2008). Fresh ways of addressing emotions may be through body-oriented therapies, such as NPMP, body awareness, or physical therapy interventions tailored to individuals with anorexia nervosa (e.g., Fisher & Schenkman, 2012; Probst et al., 2013; Scott & Van Blyderveen, 2014; Vancampfort et al., 2014). It is essential that instructors in body-oriented approaches have specialized training and experience in this specific field. This also applies to yoga, which should be carefully introduced and modified in order to fit the individual's physical and psychological status (Douglass, 2009; Neumark-

Sztainer, 2014). Introducing deep relaxation too fast in any therapies may have adverse effects for clients with anxiety and depression (Boudette, 2006; Sviland et al., 2012). Body-oriented therapies may be complementary to other therapies as they not only improve body awareness, coping and vitality, but also have the potential to connect the individual to the present, foster awareness of feelings and help patients to attune themselves to their feelings. Moreover, such therapies may help clients experience their body in a more differentiated way, helping them integrate the body into the self and construct a sense of self less associated with anorexia nervosa and exercise.

There may be a number of reasons for the scarcity of literature regarding aspects such as embodiment of emotions and the meaning ascribed to them in persons with anorexia nervosa. Since research in this field mostly deals with emotions through methodologies like surveys and self-report scales, these may not fully capture how participants make sense of their unique experiences. Many informants have difficulties in producing verbal labels for their feelings, thus tending to fall short when attempting to express these. Epistemological horizons from which emotions in individuals with a psychological illness are explored are thus of great importance to seek understanding and to give voice to the claims and concerns of the subjects.

The findings of this study are from a small sample of participants, limiting their generalizability. Nevertheless, our findings of how individuals with anorexia nervosa understand and make sense of exercise may inform and benefit clinical and therapeutic interventions. Having attended therapy for some time, the participants appeared reflective and experienced in articulating their experiences, providing our study with rich and valuable data. Given the challenging nature of exercise within the context of anorexia nervosa, further research is needed to expand our knowledge regarding diverse aspects of compulsive exercise, such as how, for example, men with anorexia nervosa understand and make sense of their engagement with exercise.

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Appendix 1: Participants

Pseudonym	Age	Duration of Eating disorder, years	Time in treatment
Agnes	26	13	1 year
Hedda	30	15	2 years
Hedwig	27	12	6 months
Hilde	39	23	2 years
Rebecca	23	6	5 years
Nora	50	4	3 years

Appendix 2: Superordinate theme 1: Paradoxical functions of exercise and subthemes

	Agnes	Hedda	Hedwig	Hilde	Rebecca	Nora
<u>Subtheme 1</u> : Emotion regulation, distraction and escape	x	x	x	x	x	x
<u>Subtheme 2</u> : Embodiment of feelings	x	x	-	x	x	x
<u>Subtheme 3</u> : Exercise as time-out	x	x	x	x	x	x
<u>Subtheme 4</u> : Self and identity	-	x	x	x	x	-

Appendix 3: Quality and validity

Sensitivity to context: A good piece of qualitative research will demonstrate sensitivity to context in a number of ways, such as showing sensitivity to the context of a theory, by clarifying what is already known and then formulating a specific research question that has not been addressed (Yardley, 2000). The discussion of the findings should also be related to relevant literature in the context of IPA (Smith et al., 2009). In the present study, the formulation of the research question was based on relevant theoretical and research literature and the observation that qualitative research exploring compulsive exercise in individuals with anorexia nervosa is sparse. Relevant IPA literature and literature not referenced in the introduction is included in the discussion. Further, sensitivity to context requires sensitivity to the perspective and socio-cultural context of participants, and conducting a good IPA interview requires skill, awareness, dedication and a close awareness of the interview process (Smith et al., 2009). In our study, sensitivity to the participants' perspectives is demonstrated by the use of open-ended questions that allowed the participants to enunciate what was important for them. Using a quiet room, allowing the participants to feel at ease and the researcher to skilfully manage the interview process may have enhanced the quality of the interviews. Finally, it is essential that the analysis is sensitive to the participants' perspectives, that is, to the data itself (Yardley, 2000). In this study, we use a number of verbatim citations from the participants to give the participants a voice, support the analysis and allow the reader to examine the interpretations being made.

Commitment and rigour: *Commitment* involves lengthy engagement with the topic as a researcher (or carer or sufferer), development of competence and skill in the methods used, and engagement with the relevant data (Yardley, 2000). The first author conducted the interviews in this study. She has employed qualitative interviews when completing her doctoral thesis and attended IPA training to strengthen her skills in conducting an IPA study, while the second author has a PhD in psychology and a special interest in the use of experiential qualitative research (i.e., IPA). The first author also has lengthy clinical experience as a physiotherapist for patients with anorexia nervosa. *Rigour* covers the appropriateness of the sample, the thoroughness of the data collection and completeness of the analysis undertaken (Smith et al., 2009). An IPA analysis must move beyond simple descriptions of what the participants articulate, to an interpretation of what it means (Smith et al., 2009). The sample in this study was selected to match the research question and was quite homogenous. In conducting the interviews, the interviewer made efforts to pick up on important themes, and to be consistent in questioning. The transcription of the interviews provided useful insights into how to improve subsequent interviewing. In following the steps outlined in

IPA, the authors made efforts to represent and interpret the data in a balanced way, with the intention of providing valuable insights into the themes that emerged.

Coherence and transparency: *Coherence* refers to the extent to which the presentation of a study makes sense as a consistent whole (Yardley, 2000). Here, a thorough analysis of the interviews was conducted and considerable drafting and re-drafting was undertaken to produce a coherent text. *Transparency* signifies how clearly the stages of the research process are described and how easily the reader can see what was done (Yardley, 2000). In this study, transparency is demonstrated in the presenting of a detailed description of the steps taken in the analysis and the presentation of quotations and text excerpts that show the reader what the analytic interpretations are based on.

Impact and importance: Yardley has made the final point that it is not sufficient to develop a sensitive, thorough and plausible analysis; the real validity of one's research lies in whether it tells the reader something interesting, important and useful (Yardley, 2000). Increased knowledge of how individuals with anorexia nervosa make sense of compulsive exercise may improve understanding of the phenomenon and allow the theme to be addressed in a more meaningful way during treatment. Based on the literature and the data obtained from this study, an initial conceptual framework could be developed to help guide further investigations of compulsive exercise in individuals with anorexia nervosa.

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ⁱ The DSM-5 diagnostic criteria for anorexia nervosa include: 1) Restriction of energy intake relative to requirements leading to a significantly low body weight in the context of age, sex, developmental trajectory and physical health. 2) Intense fear of gaining weight or becoming fat despite underweight. 3) Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight (American Psychiatric, 2013).

ⁱⁱ While control of weight and body shape has been shown to be a lead rationale for exercising in patients with anorexia nervosa in previous research (Moola et al., 2015; Shroff et al., 2006; Solenberger, 2001), in this study, weight and shape concerns are integrated into the accounts of the participants presented in 'the embodiment of feelings' section.

ⁱⁱⁱ ... Illustrate a pause in speech.

(..) Illustrate that words not adding meaning are omitted.

Parentheses within quotes (e.g., (anorexia nervosa)) are explanations to provide context added by the authors.

^{iv} In a free and functional breathing, the descending and relaxation movements of the diaphragm muscle have an indirect effect on the stomach. Constrained breathing is assumed to affect both the diaphragm and the stomach region, which in turn may be sites for anchoring of emotions in the body (Bunkan & Thornquist, 1990).