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What role can accredited exercise physiologists play in the treatment of eating disorders? A descriptive study

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ABSTRACT

Including exercise alongside other therapeutic approaches may help to address dysfunctional exercise use and improve eating disorder treatment outcomes. However, traditional treatment teams often lack the expertise needed to safely prescribe exercise. The aims of this study were to explore the perceptions and experiences of Accredited Exercise Physiologists (AEPs) relating to working with clients diagnosed with eating disorders to identify the role they play in the treatment of eating disorders and identify future training needs. Individual semi-structured telephone interviews were conducted with 12 (n = 9 females) AEPs working in the eating disorders field. Thematic analysis was conducted to extract major themes from the interview transcripts. Five major themes were identified: (1) The role of AEPs in the treatment of individuals with eating disorders is comprehensive; (2) Treatment is more effective when all components are addressed; (3) *The absence of therapeutic exercise within standard treatment protocols reflects limitations of traditional scope of practice and knowledge about the role of AEPs*; (4) Methods of acquiring further knowledge are insufficient for those in current practice; and (5) Accredited comprehensive training is currently unavailable but needed. This qualitative study showed that AEPs believe they can play a major role in the treatment of eating disorders and that treatment outcomes for individuals are likely to be greatly enhanced when dysfunctional exercise is addressed. Multidisciplinary training is needed.

Clinical Implications

- Addressing dysfunctional exercise may help to prevent further physiological decline associated with experiencing an eating disorder, reverse symptoms and decrease the risk of relapse.
- Accredited Exercise Physiologists with further eating disorders training are well-equipped to support individuals to safely engage in exercise by

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 Supplemental data for this article can be accessed [here](#).

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providing ongoing comprehensive physiological and psychological assessments.

- Increased awareness among health professionals regarding the skills and expertise that Accredited Exercise Physiologists can contribute toward enhancing outcomes for people recovering from Eating Disorders is needed.

Introduction

Eating disorders (ED) are serious and complex mental illnesses, influenced by a range of biological, psychological and social factors (Erskine, Whiteford, & Pike, 2016; NEDC, 2010). Morbidity and mortality rates among individuals with EDs are high (Arcelus, Mitchell, Wales, & Nielsen, 2011; Erskine et al., 2016); specifically, the mortality rate for people with EDs is the highest of all psychiatric illnesses and 12 times higher compared to those without EDs (NEDC, 2010). Research shows that using exercise to control weight is one of the first signs of an ED, and often the last symptom to resolve (Beumont, Arthur, Russell, & Touyz, 1994; Davis et al., 1995; Meyer, Taranis, Goodwin, & Haycraft, 2011).

Despite this evidence, therapy for dysfunctional exercise engagement (e.g. excessive exercise) is not part of standard treatment protocols. Indeed, other researchers have highlighted that this is indicative of the lack of research focused on targeted interventions in the broader literature (Noetel, Dawson, Hay, & Touyz, 2017; Touyz, Hay, & Noetel, 2017). Rather, treatment usually involves a combination of nutritional and psychological support, sometimes with pharmacological treatments, often in both the in- and out-patient settings (Hay et al., 2014). In acute circumstances, banning or restricting exercise is prescribed in an effort to control calorie expenditure. However, this has been called unethical, unhelpful and potentially harmful (Cook et al., 2013), perhaps because revisiting exercise within the recovery phase is not common. This practice, which is not evidence-based, represents a lost opportunity to engage the individual with an ED in their own treatment.

Dysfunctional exercise can be categorised as excessive (Mond, Hay, Rodgers, & Owen, 2006), compulsive (Dalle Grave, Calugi, & Marchesini, 2008), or addictive (Berczik et al., 2012). These exercise patterns are associated with serious comorbid conditions like osteoporosis, endocrine and cardiac abnormalities (Katman, 2005), as well as mental health problems including anxiety (Swinbourne & Touyz, 2007), obsessive-compulsive disorders (Davis et al., 1995), and psychological stress (Sassaroli & Ruggiero, 2005).

The need to refine the conceptualisation of dysfunctional exercise patterns has been noted (Noetel et al., 2017). However, while exercise patterns may vary according to ED diagnosis, the appropriateness of an individual's exercise behaviour, clinical judgement may best be guided by ED symptomology and medical stability rather than presumptions based on ED diagnoses (Danielsen, Bjørnelv, Bratberg, & Rø, 2018). For example, an Australian

study ($n = 3,270$) of adolescents showed that excessive exercise (defined as 2+ hr to control weight at least 6 days per week for at least 3 months) was more prevalent in males with obesity than in females (Hughes et al., 2019). Contrasts may also be made between individuals with the same diagnoses at different stages of disease severity. For example, the compromised cardiac output, orthostatic intolerance, and bradycardia of a patient with severe AN would exclude this individual from exercise participation (Dobinson, Cooper, & Quesnel, 2019). At the other end of the spectrum, the person recovering from AN with a history of excessive compensatory exercise may benefit from the mindful restoration of enjoyment in movement. Exercise behaviour that is obligatory or punitive in nature has been shown to differentiate patients with eating disorders from those who are healthy, regardless of dose (Mond & Calogero, 2009). In addition, those who engage in dysfunctional exercise experience a higher frequency of hospital stays with longer duration (Arcelus et al., 2011; Davis et al., 1995; Erskine et al., 2016; Strober, Freeman, & Morrell, 1997). These serious outcomes may justify restricting or banning exercise completely in the short term; however, there may be several unintended negative consequences including: a failure to learn healthy and appropriate exercise habits (Calogero & Pedrotty, 2004); inability to gain the emotional, psychological and physical benefits associated with exercise (Holland, Brown, & Keel, 2014); and the inability of the individual to prevent secondary illness from their ED (i.e., osteoporosis and cardiac abnormalities) (Katman, 2005; Otis et al. 1997) through *appropriate* exercise engagement. It is important to note; however, that for those who are not adequately trained and skilled, exercise prescription may exacerbate complications, such as osteoporosis, postural tachycardia, and orthostatic hypotension. In Australia, entry-level practitioners are competent in the clinical identification of cardiac abnormalities that preclude safe participation in exercise, and the management of cardiac pathologies such as heart failure, a potentially reversible complication of AN (Dobinson et al., 2019; ESSA, 2014). As such, exercise during recovery may be used as a tool to aid in the reversal of complications of EDs.

While research has identified there are clear benefits to including exercise in the treatment of EDs within the right context (Catalan-Matamoros, Helvik-Skjaerven, Labajos-Manzanares, Martínez-de-Salazar-Arboleas, & Sánchez-Guerrero, 2011; Cook et al., 2013, 2014; Danielsen et al., 2018; Hausenblas, Cook, & Chittester, 2008; Noetel et al., 2017), the literature highlights that it is yet to become common practice (Noetel et al., 2017). Indeed, an editorial introducing a recent special journal series focused on eating disorders and exercise (Meyer, Touyz, & Hay, 2017) described exercise as the “neglected Cinderella” of eating disorder phenomenology but the important determinant of treatment outcomes. Moreover, there has been a lack of literature targeting evidence-based protocols to guide practices

involving the use of exercise in the treatment of EDs (Noetel et al., 2017; Quesnel et al., 2018; Touyz et al., 2017). Given that multidisciplinary teams managing the treatment of EDs have not traditionally included health professionals with the expertise required to safely prescribe exercise, these concerns are warranted.

There has recently been growing recognition in the literature of the expertise needed to address the gap in screening and treatment expertise (e.g., Danielsen et al., 2018; Dittmer, Jacobi, & Voderholzer, 2018; Dittmer et al., 2018), providing the impetus to explore the potential role that an exercise practitioner, such as an Accredited Exercise Physiologist (AEP) (allied health practitioners in the Australian medical system), may play to meet this critical need. In other countries, exercise physiologists may be referred to as clinical exercise physiologists, kinesiologists (this differs in Australia where kinesiology is a non-sport exercise science profession) and kinesiotherapists. Working within best practice guidelines (Cook et al., 2016; Hilbert, Hoek, & Schmidt, 2017), an AEP can support a healthy and safe engagement with exercise that is appropriate for the health of the individual (ESSA, 2014). Further, Australian-qualified AEPs are trained in the application of ethical, evidence-based behaviour change and exercise interventions for a range of mental health conditions (ESSA, 2015; Lederman et al., 2016). Target conditions within the AEP professional standards include anxiety, trauma and stress-related disorders, all of which are strongly linked with dysfunctional exercise (ESSA, 2015; Sassaroli & Ruggiero, 2005; Swinbourne & Touyz, 2007). Accredited Exercise Physiologists can deliver patient-centred care within the multidisciplinary mental health setting, including communication, capacity and monitoring considerations (ESSA, 2017). Importantly, the management of associated comorbidities, treatments, environmental and behavioural constituents of mental health are embedded within their scope of practice, professional standards, and criteria for accreditation (ESSA, 2015, 2017). Despite these significant advances in the field, AEPs largely remain absent from treatment teams. Hence, this qualitative study was conducted to explore AEPs' perceptions and experiences relating to working with clients diagnosed with eating disorders. Our qualitative study had two aims: 1) to clearly identify the role Accredited Exercise Physiologists can play in the treatment of individuals with eating disorders; and 2) to uncover the training needs that will support AEPs in this role.

Method

This study was approved by the Deakin University Human Research Ethics Committee (HEAG-H 117_2017) and reporting of the study was guided by the Consolidated Criteria for Reporting Qualitative research (COREQ) (Tong, Sainsbury, & Craig, 2007).

Researcher characteristics

The first three authors (HB, HM, NM) conducted interviews with the study participants. During the time of the study, HB and HM were research fellows, NM a university lecturer in exercise physiology and practising AEP, and HS a Professor. All authors had both training and experience in conducting qualitative research, with authors HB, HM, NM either completing or had completed their doctoral studies.

Recruitment

A purposive sampling method was used to recruit participants through Exercise and Sport Science Australia (ESSA). ESSA is a national organisation for tertiary qualified exercise and sports science professionals. ESSA has alliances with a number of international organisations, including The European College of Sports Science, and offers international accreditation pathways to applicants who meet qualification and professional standards criteria. ESSA has existing memorandums of understanding with Sports and Exercise Science New Zealand (SESNZ), The British Association of Sport and Exercise Sciences (BASES), Canadian Society for Exercise Physiology (CSEP) and Clinical Exercise Physiology Association (CEPA—USA). A flyer was emailed to all AEPs with a membership to ESSA via the national newsletter, and contact details were also posted on the ESSA members' Facebook page. ESSA had 4,626 members in 2017; at this time, 66 of these members were part of an ESSA eating disorders special interest group. In addition, the third author's (NM) personal exercise physiology contacts were sent the flyer. The total recruitment period was over 4 months, between August and November 2017. Those who registered their interest were provided with a plain language statement and consent form.

Participants

Fourteen AEPs with a special professional interest in EDs responded to the call for participants, and 12 AEPs (9 females) were interviewed. AEPs reported predominantly obtaining ED knowledge and skills through self-directed professional development activities and knowledge sharing with multidisciplinary colleagues. Two participants did not respond to repeated contact requests after consent was obtained and could not be interviewed. A cross-section of regional ($n = 2$) and metropolitan AEPs were interviewed, working in both private practice ($n = 9$) and inpatient programs ($n = 3$).

Data collection procedure

After the consent forms were received, mutually agreeable times were scheduled to conduct the individual 30-min interviews over the telephone. A semi-structured interview schedule (**Supplemental File 1**) guided the discussions and participants were encouraged to elaborate and provide examples where appropriate. No follow up interviews were conducted due to resourcing (i.e., time and financial) constraints. Audiotapes of the interviews were transcribed verbatim and saved in de-identified participant files. These transcripts were not returned to the participants for comment or correction. Regular reviews of transcripts were conducted to monitor for data saturation, where no new information is emerging (Saunders et al., 2018). By the final interview, no new themes were emerging.

Data analysis

Data were coded using thematic analysis methods described by Braun and Clarke (2006) (Braun & Clarke, 2006). Thematic analysis is a foundational methodology used by researchers who undertake qualitative research methods. The steps laid out by Braun and Clarke (2006) embed a rigor and process to thematic analysis and the following five steps were completed by each author: 1) Familiarising with the data; 2) Generating initial codes; 3) Developing themes; 4) Reviewing the themes; and 5) Naming the themes. The first two authors (HB and HM) individually coded all of the transcripts, ensuring that all transcripts were double coded. Open, axial and selective themes were developed during this process by all authors. The first author (HB) developed an initial set of codes from the interview schedule that guided the open coding process. On completion of open coding, a meeting was held to discuss the initial open codes. There was between 79% and 92% agreement on the open codes, depending on the transcript. Where there was disagreement—often about the perceived importance of a quote—it was resolved by discussion. Once 100% agreement of the open codes was determined, all authors developed their own axial themes which were then workshopped to construct mutually agreed selective themes. Participants did not provide feedback on these themes due to time and funding constraints.

Results

Two research questions were driving the data collection and analysis: 1) what is the role of AEPs in the care and ongoing recovery support of individuals with EDs; and 2) what training do AEPs require to safely provide ongoing recovery support to individuals with EDs. Five major themes emerged from the transcripts to answer these questions:

- (1) The role of AEPs in the treatment of individuals with eating disorders is comprehensive
- (2) Treatment is more effective when all components are addressed

The absence of therapeutic exercise within standard treatment protocols *reflects limitations of the traditional scope of practice and knowledge about the role of AEPs.*

- (3) Methods of acquiring further knowledge are insufficient for those in current practice
- (4) Accredited comprehensive training is currently unavailable but needed

1. The role of AEPs in the treatment of individuals with Eating Disorders is comprehensive

During the interviews, the AEPs provided specific examples of ways in which they incorporated comprehensive assessments during all stages of treatment. Assessments may involve ‘*eating disorder and medical history*’, ‘*medications*’ and ‘*cardiac or metabolic*’ factors. Psychological assessments are also performed, either through verified measures or by asking ‘*how their eating disorder interacts with their exercise*’. All AEPs acknowledged that clients’ distorted beliefs relating to exercise were typically due to the mental illness aspect of the eating disorder. As such, their responses emphasised that the client’s concept of exercise and their experience with it needed to be challenged and positively reframed:

“We introduce people to different types of thinking or actions regarding their exercise and challenge some of their disordered beliefs.” [AEP04]

Further, AEPs who are part of a multi-disciplinary treatment team, liaise with a psychologist or mental health specialist, to ensure that exercise is not an overlooked aspect of recovery.

Interviews also revealed that AEPs largely describe ongoing monitoring activities, designed to ensure client safety, as being fundamental for supporting treatment teams and the patient in their recovery. While predominant monitoring activities are around cardiac complications, such as ‘*blood pressure*’, ‘*heart rate*’ and ‘*long QT syndrome*’, markers of ‘*muscle breakdown*’, ‘*liver function*’, and ‘*thyroid function*’ are also examined.

In addition, the majority AEPs talked about comorbid conditions that can commonly present in individuals with an ED, such as ‘*low blood pressure*’ and ‘*orthostatic intolerance*’, and highlighted that ‘*staying very still can actually exacerbate those conditions*’:

In my experience, the musculo-skeletal side of things and the blood pressure management would be really relevant to have some exercise prescription ... to avoid complications.” [AEP06]

As illustrated by the quote above, overall responses indicated an AEP perceives that they are able to develop an exercise plan to help avoid further complications or concomitant conditions, while considering the patient as a whole. In order for exercise to be safe and appropriate, an AEP can ‘*really try to set the boundaries to make sure that they are safe in doing small amounts.*’ This constant monitoring of safety while maintaining movement that is supportive to recovery demonstrates how an AEP may be an essential member of a treatment team. However, it was also evident that there were occasions (e.g., detriment to the whole person) when AEPs did not consider it safe to use or recommend exercise. Equipped with knowledge and skills to support their clinical judgement, one of their roles is to know when to ‘refer on’. Moreover, the experiences described above reflect the AEP’s scope of practice in Australia. Graduates are required to meet clinical competencies to determine safe and effective exercise prescription (such as electrocardiographic trace analysis, measure blood pressure, blood glucose, heart rate, and oxygen saturation levels). AEP’s are also trained to detect and identify clinical risks and contraindications (e.g. hypoglycaemia, abnormal cardiac signs, symptoms and exercise responses and the interaction of prescription medications with exercise) and to identify and act on the need for onward referral (ESSA, 2014). Multidisciplinary team care is encouraged for optimising patient outcomes, and the AEP frequently works within a multi or interdisciplinary team (ESSA, 2014).

2. Treatment is more effective when all components are addressed

Discussions revealed that AEPs believed that viewing treatment as a holistic concept rather than symptomatically responding to conditions as they arise means that all aspects of a disorder need to be acknowledged. One AEP conceptualised a holistic model of treatment for an individual with an ED in the shape of a triangle:

“The omitted part of the eating disorder triangle is exercise. There’s psychology, there’s dietetics and then there’s the exercise.” [AEP 04]

The quote above reinforces AEPs’ notion that exercise, in the right context, needs to be included in a treatment plan if there is to be a full and complete recovery. Furthermore, as exercise can be a risk factor for those with an eating disorder, avoiding it may mitigate immediate risk, but for those who continue exercising in secret, it completely undermines their recovery. AEPs’ believed that their inclusion as part of a treatment team

may benefit all health professionals involved as well as the client because they can help to:

“... minimise risk and harm, improve safety of the entire treatment team, liability, legal side, client’s recovery, wellbeing and prognosis.” [AEP04]

Two subthemes emerged relating to the inclusion of AEPs in the treatment of individuals with an ED in order to strengthen treatment outcomes: 2.1 A shared understanding of AEPs is needed among health professionals; and 2.2 Treatment plans foster transparency and recovery.

2.1 A shared understanding of AEPs is needed among health professionals

Interviews revealed that AEPs believed that developing a shared understanding about the role they could play in the treatment of eating disorders is part ‘myth busting’, part advocacy and part education. Most held the view that increasing understanding about their role could be difficult when negative preconceived notions of an AEPs practice precedes their involvement: “[*Health professionals*] often think that we are just prescribing exercise’ [AEP06]. As such, there is a need to have ‘a discussion with all of the health practitioners to tell them what I do’ and do some myth-busting, for example, telling practitioners ‘that I am not running the patients around the block and exhausting them.’ Through these discussions, AEPs largely believed that they could advocate for the holistic treatment of an individual by their inclusion on the treatment team. Fostering that understanding “about the therapeutic benefit of exercise, education and creating that mind-body awareness, all helps the treatment team get on board.” [AEP07]

2.2 Treatment plans foster transparency and recovery

A common statement made by AEPs was that treatment plans that include appropriate and accurate consideration of exercise help to avoid potential unintended adverse outcomes that could result when well-meaning health professions ban exercise altogether. As such an AEP can develop a treatment plan, in consultation with the whole team that is: “built around exercise being a component that is not hidden because often, clients can hide or sneak in exercise.” [AEP07]

The above quote illustrates that AEPs felt strongly about including exercise in the conversation with the treatment team and the client, “just like we are putting food and thoughts around body weight and shape out in the open.” [AEP07] In addition, some of the AEPs highlighted that a treatment plan that uses exercise in an appropriate way can empower a client to engage in their own recovery. This involves “identifying acceptable goals of treatment, that both clinician and patient agree upon to begin with, so the exercises can actually be targeted towards those”. [AEP01]

3. The absence of therapeutic exercise within standard treatment protocols reflects limitations of traditional scope of practice and knowledge about the role of AEPs

Despite the potential benefits of implementing therapeutic exercise as described in this study (see Themes 1 and 2), many of the interviewees expressed the perception that AEPs were typically excluded from multidisciplinary treatment approaches for two reasons. The first is that recovering ED individuals with a history of dysfunctional exercise practices have been discouraged from exercising, leading to the emergence of first subtheme: 3.1 Scope of practice may limit treatment. Secondly, AEPs also held the common belief that health professionals are unaware of how AEPs can support individuals to exercise with rigorous safeguards, as emphasised in the second subtheme 3.2: Exercise physiology is either unknown or misunderstood.

3.1 Scope of practice may limit treatment efficacy

In acute circumstances when individuals with eating disorders are being treated, exercise is often banned and not revisited as an issue. While this “may be deemed as appropriate” in acute circumstances, it may, in fact, be due to health professionals lacking exercise experience that leads to this practice:

“I’ve heard them say, ‘I am a psychiatrist and I have no idea what to do when my client is exercising too much and it is something I get stuck with every time.’”
[AEP04]

However, as the following quotes illustrate, AEPs identified consequences to banning exercise that “*can cause dangerous exercise engagement and cardio metabolic issues*” [AEP04], because “*once they are discharged they go back to their previous behaviours because they never had a chance to practice what a healthy, normal exercise routine would be like*”. [AEP07]

These serious consequences highlight the fact that a healthy engagement with exercise needs to be established with a skilled exercise professional working in consultation with the treatment team. This means that if “*someone is going to exercise anyway, then we can provide them with information about what is safe exercise*”. [AEP06]

3.2 Exercise Physiology is either unknown or misunderstood

Most AEPs identified that exercise physiology is either unknown as a profession, misunderstood within the medical field or perceived as inappropriate for individuals with an ED. While this perception may be overturned with education and advocacy, it remains a significant barrier for AEPs who are trying to engage with health professionals because “*a lot of GPs, psychologists, psychiatrists and specialists in various fields don’t know that we exist, or don’t know how we are different from a physiotherapist or a gym instructor*.” [AEP01]. For those who are aware of AEPs, there is a preconceived view about the types of conditions an AEP can treat, with

EDs being outside of this view: *“We are not really thought of at all [for eating disorders]. A lot of the time AEPs are viewed for acute rehabilitation of muscular issues or for people that don’t do enough exercise, and people of large sizes with cardiovascular disease or diabetes.”* [AEP05]

4. Current methods of acquiring knowledge are insufficient for those in current practice

AEPs reported that they had not received formal ED training as part of their tertiary education: *“[EDs] was not covered at all in our course ... it is not actually covered as part of our clinical competences.”* [AEP12]. They believed its inclusion in the curriculum was warranted given that it was a health condition they were likely to encounter:

“An eating disorder is no different to someone that has diabetes or cardiovascular disease. We get specific training for those conditions when we go through university, and when we are accredited we do professional development on those areas. There should be no difference for this health condition.” [AEP07]

All AEPs were asked how they obtained their knowledge about eating disorders and how to treat it within their professional practice. As shown in Supplemental File 4, there were 10 different ways that they acquired their knowledge. One AEP admitted the first-hand experience of an ED, and two others had friends with lived experience of an ED.

However, the most common way that AEPs reported that they acquired their knowledge was through other health professionals, particularly psychologists and dietitians, with self-directed learning as the second most common. Four AEPs had completed the same webinar compiled by ESSA. Two AEPs specifically identified a course they had participated in: Cognitive Behavioural Theory (CBT) and the Clinical Management of Compulsive Exercise and Eating Disorders. All AEPs interviewed had a strong desire to better understand EDs, which drove them to acquire their clinical knowledge.

5. Accredited comprehensive training is currently unavailable but is needed

All AEPs had no knowledge of an accredited comprehensive training course about the treatment and support of individuals with EDs in Australia or internationally. When invited to share topics of training that would be most useful to them, a number were identified. These were categorised into five themes: 1) Eating disorder topics; 2) Physiological topics; 3) Psychological topics; 4) Exercises Physiology topics; 5) Additional Topics/Supplemental Skills. As shown in Supplemental File 2, there are very specific aspects that AEP’s need and want to learn about, in order to provide the best care possible to their clients. Each topic was identified by one or more AEP

during the interviews. A comprehensive training course is needed to support AEPs in their professional practice.

Discussion

To our knowledge, this was the first qualitative study to explore the perceptions and experiences of AEPs working in the eating disorders field, with a specific focus on gaining an understanding of the role they may have in the treatment of eating disorders. Our first major finding indicates that AEPs believe that they can play a fundamental role in the treatment of individuals with eating disorders, alongside pharmacological, psychotherapy and nutritional care (ESSA, 2017; Quesnel et al., 2018). While few recent studies have investigated the effects of including exercise as part of ED treatment, overall all, this research shows there are clear wide-ranging benefits in doing so (Moola, Gairdner, & Amara, 2013; Ng, Ng, & Wong, 2013; Noetel et al., 2017; Vancampfort et al., 2014; Zunker, Mitchell, & Wonderlich, 2011). However, despite this evidence, our findings also align with Quesnel et al.'s (2018) recent study showing there is a gap in research knowledge and practice concerning the use of exercise in the treatment of individuals with EDs; hence the inclusion of exercise has not been widely perceived as an essential aspect of care in Australia. However, our results have expanded this literature by highlighting that the discipline-specific support that an AEP perceives they can have both within the treatment team, and also for the client's recovery, is unique and may address this gap in clinical expertise (Cook et al., 2016; Quesnel et al., 2018).

The second major finding indicates that treatment is likely to be more effective when all parts of ED symptomology are addressed: mental health, nutrition, and exercise. To effectively do this may require an AEP on the treatment team to help clients establish a healthier relationship with exercise, which can reverse the impact of some co-morbidities and prevent further physical decline. While AEPs at the time of this study were working without any peer-reviewed ED guidelines to follow, it is interesting to note that of the 11 guidelines (see Supplemental File 3) proposed by Cook et al. (2013), all but one (number 4) were identified by participants as practices they routinely undertake. Existing compliance with these proposed best practice guidelines has strong implications for the treatment acumen that AEPs have as health professionals. Further, it demonstrates a professional capacity to treat this population within a treatment team. It should also be noted that during the time the current study was being conducted, a group of researchers and practitioners in the eating disorder field were developing a guideline for addressing and safely managing dysfunctional exercise during the treatment of an eating

disorder, which has been presented in research forums but is yet to be peer-reviewed (Cooper, Dobinson, & Quesnel, 2019; SEES, 2018).

Our third major finding, reasons why exercise is absent from treatment plans, speaks to a number of coalescing limitations that prevent exercise or exercise experts from being involved in ED treatment. Firstly, medical professionals unskilled in exercise physiology may ban exercise because they are unaware of the possibility of safe engagement (Quesnel et al., 2018). The lack of quantitative, clinical research about exercise in this population has effectively prevented any evidence-based practice guidelines for medical practitioners to be developed. This may be in part, due to the fact that research has largely focused on the use of exercise in the development and maintenance of EDs and not its implementation in recovery (Cook et al., 2016). Further, EDs have been omitted from other research into mental health conditions. For example, Way, Kannis-Dymand, Lastella, and Lovell (2018) (Way et al., 2018) study investigating mental health practitioners' perceived barriers for prescribing physical activity in the treatment of mental health conditions, did not include the views of those treating ED patients. Another contributing factor is the relatively new development of Exercise Physiology as a field of study. As the role of AEPs is generally either unknown or misunderstood, their engagement within the treatment teams needs to be justified. Our findings indicate that AEPs perceive that their role, as well as an exercise in ED treatment, is not broadly understood within the health sector. Increased knowledge among health professionals is likely to: 1) dissuade negative perceptions of their role for ED patients; and 2) promote the notion that positive and safe engagement with exercise is possible, and beneficial when done in partnership with a treatment team that includes an AEP. Taken together, the AEPs perceive that their comprehensive skillset coupled with appropriate guidelines (Cook et al., 2016; SEES, 20182019) may help to alleviate other health professionals' concerns identified in the literature regarding the lack of understanding on how to safely embed exercise as part of the ED treatment plan (Quesnel et al., 2018).

The second aim of our study was to uncover the training needs of AEPs working in this area. Our findings indicate that the AEPs specialising in the treatment of EDs appear to have extensive knowledge of the specific biological, psychological and social factors that need to be considered when working with individuals; however, their acquisition of knowledge has largely been self-guided. Further, it appears that their most in-depth knowledge has been obtained while working alongside other health professionals in the ED field. The results also emphasized that there is currently limited ED-specific training for AEPs available in Australia. These findings highlight a significant gap in the delivery of education about EDs to AEPs. However, it must be acknowledged that this gap in education is not specific to the Exercise Physiology field, with health professionals typically obtaining ED knowledge

and skills through ongoing specialist training (RACGP, 2019). Nevertheless, our qualitative results indicate that multidisciplinary training is needed to up skill AEPs adequately, as the variety of knowledge and skills needed, reflect the complexity of the ED treatment environment. Training for AEPs is needed which enables their engagement with health professionals and supports the safe use of exercise for their clients. Evidence-based practice guidelines and a larger, more robust evidence base will only strengthen this training—all of which are urgently needed now.

Limitations

This research is not without its limitations. The use of purposeful sampling to recruit participants may pose challenges to the generalisability of findings. However, given we were seeking to explore a topic that had yet to be examined in-depth, the use this sampling method was warranted. Indeed, one of the participants reported having previous first-hand experience of an ED; as recognised in current health and medical research policies (e.g., Canadian Institutes for Health Research [CIHR], April, 2019; National Health Medical Research Council [NHMRC], 2016; National Institute for Health Research [NIHR], 2012; Patient-Outcomes Centered Research Institute [PCORI], 2019), including the voice of people with lived experience in research has the potential to increase relevance of generated knowledge for translation (Staniszewska, Denegri, Matthews, & Minogue, 2018) and as such is viewed as strength of this study. While participant response rates to our emailed flyer may be considered low, given the focus of qualitative research is to gather in-depth, rich data, rather than quantitative, and interviews reached saturation, participant numbers seem appropriate for the purpose of this study. While Australian-qualified AEPs are exercise behaviour change experts (ESSA, 2014; Lederman et al., 2016), it is possible that tertiary EP training requirements may vary across countries; therefore, results should be interpreted with caution. However, given that barriers to the inclusion of exercise as part for ED treatment may not be unique to Australia and indeed have been identified as a cross-cultural problem (Cook et al., 2016), the in-depth exploration of the comprehensive training and skillset of AEPs may help to inform strategies aiming to address this problem in other countries. Finally, data were collected by telephone, which may be considered a limitation due to the reduced quality of interpersonal communication and the inability to observe non-verbal expression observation compared to the rapport development that occurs during a face-to-face interview (Nunkoosing, 2005). Although it must be acknowledged that, research comparing the efficacy of telephone to face-to-face interviews does not suggest that the quality or interpretation of findings is compromised when collected over the telephone (Novick, 2008; Opdenakker, 2006).

Conclusion

The findings of this study revealed the roles AEP's believe they can play in ED treatment, and how they can support a treatment team to enable holistic care. Currently, knowledge among health professionals about the potential benefits a highly skilled AEP may add to treatment outcomes is lacking. With time, research and practice guidelines, this is likely to change; however, further research focusing on quantifying the benefits of implementing therapeutic exercise as part of a multidisciplinary ED treatment approach is needed.

Conflict of interest

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