National Eating Disorder Information Centre

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A Brief Review of Exercise in Eating Disorders Treatment

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HISTORY OF EXERCISE IN EATING DISORDERS TREATMENT

Initial depictions of anorexia nervosa (AN) included observations of exercise patterns that were deemed "obsessive hyperactivity" (Bruch, 1973) and were considered a maintenance factors of eating disorders (ED). Terms such as 'compulsive', 'obligatory', and 'driven' have also been used to describe exercise in ED (Meyer & Taranis, 2011). However, there is little objective definitional quantification of exercise that would clarify the meaning of such adjectives. Such broad conceptualizations may limit our understanding of potential positive effects of exercise in the treatment of ED. As a result, the historical association of exercise in ED has been largely assumed to be psychopathological in nature.

Risks related to exercise in severely ill ED patients, such as serious cardiac complications and death, cannot be overlooked and tacitly suggest that exercise may be inappropriate for anyone with an ED. Accordingly, restricting exercise seems logical. Consequentially, most treatment units have approached exercise problems by restricting activity of ED inpatients. This strategy does not address the need to understand the functional role of exercise in ED. Thus, investigating how to clinically address pathological exercise remains a priority in ED treatment. Early attempts to manage exercise focused on changing pathological exercise patterns to healthier amounts and intensities (Andersen et al., 1985). Specifically, Andersen (1985) describes the inclusion of a graduated exercise program beginning within the first two weeks of admission to an AN treatment program. This program began with stretching and light activity, then slowly progressed with an emphasis on avoiding compulsive exercise. By the mid-1990s, a growing body of research and clinical case reports suggested that therapeutic exercise might be possible. For example, a review of case studies found that most ED patients exercise in response to family, peer, and media pressures linked to self-worth and happiness, and that interventions should target maladaptive beliefs that exercise is more important than interpersonal, social, educational, and vocational activities (Beaumont et al., 1985). The authors also concluded that the aim of any therapy should be to return the patient to a normal and healthy lifestyle and that it is important to emphasize healthy exercise as part of this goal.

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LIMITATIONS IN THE SCIENTIFIC STUDY OF EXERCISE IN ED RESEARCH

Cross-sectional studies have found that exercise is associated with earlier ED onset, lower body mass index, higher perfectionism, more severe ED symptoms, higher obsessionality and compulsivity, and elevated levels of

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negative affect, anxiety, and depression (Shroff et al., 2006). Similarly, participation in athletics (i.e. populations that engage in large amounts of physical activity) is also correlated with ED attitudes (Holm-Denoma et al., 2009). These studies have been interpreted in ways that focus on amounts of exercise in ED development and maintenance. Accordingly, clinicians have generally restricted patients from exercising for fear that exercise will exacerbate their ED.

Oversimplifying all patterns of exercise, or overstating similarities in various populations, overlooks the complex intricacies of exercise behaviours and how they interact with ED and healthy living. Defining "exercise" simply as a number of minutes or calories expended fails to capture the complexity of this construct. Furthermore, and somewhat paradoxically, many studies and case reports relied on operational definitions of "excessive exercise" that fail to meet even the minimum amount of exercise recommended by major health organizations (e.g. American College of Sports Medicine, United States Department of Health and Human Services). This oversight may be misleading and misrepresent the true nature of both the pathological role of exercise in ED and the utility of exercise as an adjunct to ED treatment.

Much of the research on this focus employed biased sampling methods in retrospective, cross-sectional, or case history designs using unvalidated self-report measures that lack a clear, concise, and consistent definition of how much exercise is excessive or what aspects of "exercise" actually contribute to pathology in EDs (Hausenblas, et al., 2008). Simply examining exercise *amounts* contributing to the development of ED ignores *psychological variables* that may mediate the exercise-ED relationship. When psychological variables have been included, obligatory exercise attitudes, but not time spent exercising, are positive predictors of negative eating attitudes and behaviours [see Cook et al., 2016 for review]. Similarly, pathological motivations to exercise, but not exercise amount, is associated with ED specific health-related quality of life detriments (Cook et al., 2014). The most thorough review of the exercise in ED literature concluded that the term *compulsive* best describes patterns of exercise specific to ED (Meyer & Taranis, 2011). Thus, psychological factors, but not exercise behaviour per se, may best explain the nature of the exercise-ED relationship.

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THE CLINICAL RELEVANCE OF DEFINITIONS OF PHYSICAL ACTIVITY AND EXERCISE

Much as ED variants have similarities, but are distinct complex disorders, exercise is an equally dynamic heterogeneous set of behaviours that are influenced by various attitudes, beliefs, expectations of outcomes, and cultural aspects. Clinical and research discussions about patterns of movement in ED are often guided by implied meanings of words such as "activity" and "exercise". To be clear, terminology used to describe body movement must reflect the following standard definitions (Garber et al., 2011):

- **Physical activity:** any body movement produced by skeletal muscles resulting in a substantial increase over resting energy expenditure.
- **Exercise:** physical activity undertaken with a specific objective such as the improvement of fitness, health, or physical performance.

The potential to use exercise as an adjunct to ED treatment reflects the functional intent of body movement to positively influence physical and mental health. Simply stated, the word "exercise" does not imply nor specifically suggest high levels or amounts of athletic behaviour, involvement in strenuous activities or sports, or vigorous/high-intensity/hard exercise. In fact, it implies the exact opposite. The general goals of an exercise program as an adjunct to ED treatment should be developed "from the ground up" by re-educating patients about proper methods to perform exercise, attitudes related to motivation, and transparency about the health benefits and potential detriments as a result of increased exercise. This approach begins with very low-intensity exercise (e.g., walking at a slow pace, stretching) for a short period of time. Progression to increased intensity and amounts of exercise must occur only when the individual understands the bodily sensations, psychological motivations, and health

outcomes related to exercise at low levels. This approach may empower the individual with exercise as a tool for healthy living (Beaumont et al., 1985).

RATIONALE FOR THE PROPOSED INCLUSION OF EXERCISE IN ED TREATMENT

Several qualitative reviews and meta-analyses have demonstrated that exercise may impart positive improvements in psychopathology factors associated with ED such as anxiety, depression, stress reactivity, and poor self-esteem [see Biddle et al., 2003 for review]. It is possible that the physiological benefits conveyed by exercise may also help to counteract the negative consequences of ED. For example, cardiovascular benefits such as increased cardiac mass, increased stroke volume and cardiac output at rest and during exercise, and a decreased tendency for blood clotting are pertinent to ED because cardiac damage can occur early during ED development. Moreover, exercise may play a role in reversing cardiac abnormalities related to ED (Mont et al., 2003). The metabolic benefits of exercise include decreased triglycerides and increased high-density cholesterol, increased insulin-mediated glucose uptake, and possible increase in resting metabolism (Biddle et al., 2003). Finally, exercise increases skeletal muscle mass and bone density and is related to the retention of bone mineral density. This has implications in the development of osteoporosis, a common consequence of prolonged ED behaviours. Specifically, high bone-loading exercise is related to increased bone mass density in recovered AN individuals (Waugh et al., 2011).

Encouraging appropriate types and amounts of exercise in ED treatment follows recommendations that emphasize comprehensive approaches to enhancing the ability to combat negative influences of risk and potentiating factors while also enhancing protective factors. Moreover, the overall endorsement and acceptance of exercise shows that it is socially acceptable, and therefore would likely avoid any social stigma and foster a norm of healthy living.

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PREVIOUS STUDIES OF EXERCISE AS AN ADJUNCT TO ED TREATMENT

The multidimensional etiology of ED suggests that optimal interventions must also be multifaceted. Simply said, it may be more parsimonious to identify treatment strategies that impact both psychological and physiological processes, and therefore provide a greater impact on the progression of multiple ED factors. Accordingly, the comprehensive benefits provided by exercise have led researchers to consider exercise as an ED treatment. Several literature reviews of studies that used exercise in ED treatment have concluded that exercise is a potentially effective adjunct to ED treatment [see Cook et al., 2016]. Specifically, aerobic and/or resistance-type exercises have resulted in psychological improvements in body satisfaction, mood, quality of life, and physiological improvements. A recent meta-analysis also concluded that exercise training in AN patients resulted in decreases in depression, distorted feelings about food and exercise, and concerns about body shape and weight; at the same time, there was evidence of improvements in cardiovascular fitness (Ng et al., 2013). It is important to note that none of these reviews reported adverse effects of including exercise with ED therapy. In fact, several reviews have explicated that when nutritional needs are satisfied, exercise appears to be a safe option [see Cook et al., 2016]. These preliminary results are encouraging and suggest that under close supervision and in the absence of medical contraindications, exercise may be an efficacious adjunct to standard ED treatments.

GUIDELINES FOR THE USE OF EXERCISE AS PART OF ED TREATMENT.

In short, exercise may be appropriate for *some* people with ED. The key to reversing exercise from being a compensatory behaviour to that of a healthy behaviour is to change a person's pathological attitudes and thoughts about exercise itself. Once a person relearns what healthy exercise is, how their body feels when they engage in healthy amounts and types of exercise, and (most importantly) recognize the need to properly support exercise with adequate nutrition, exercise may be introduced at low intensity and in amounts to support physiological and psychological healing.

Several recent studies have provided evidence that closely-monitored, nutritionally-supported exercise is

safe and may convey multiple benefits in individuals with ED. A recent study published in *Medicine & Science in Sports & Exercise* consolidated various techniques and considerations that influence how exercise may be used as part of ED treatment programs (Cook et al., 2016). This literature review identified 11 elements that have been successful in using exercise in ED treatment. From these elements, the following 11 guidelines were proposed:

1. Adopt a team approach with experts in ED treatment from a variety of relevant disciplines such as psychology, medicine, athletic training, and dietetics.
2. Continuously monitor medical status and safety concerns.
3. Screen for exercise related psychopathology or pathological attitudes, cognitions, or expectations for exercise.
4. Create a written contract stipulating how and when exercise will be used in treatment.
5. Include a psycho-educational component that addresses: how to do exercise; the appropriate use of exercise for health benefits; how to recognize when exercise is becoming problematic; development of healthy attitudes and exercise behaviours; body awareness (i.e. understanding physiological states, injury, and pain); exercising for enjoyment rather than as a behaviour that may serve a functional role in maintaining an ED; exercise identity; and identification of factors related to overtraining or burnout.
6. Focus on positive reinforcement.
7. Create a graded exercise program that begins with extremely small amounts of low-intensity exercise and slowly increases intensity, duration, and frequency over an extended period of time.
8. Start with mild intensity exercise and build slowly to allow more time spent at each intensity level than is required for physiological conditioning so that the individual may learn to: process and understand biofeedback and bodily states; distinguish appropriate feelings of muscular exertion from pain and/or injury; recognize safe heart and breathing rates; and appreciate recovery, rest, and body acceptance.
9. Tailor the mode of exercise to the psychological and physical health needs of the individual.
10. Include a nutritional component to account for the physiological needs during exercise.
11. Debrief after each exercise sessions to ensure that faulty attitudes, cognitions, beliefs, or expectations are addressed in a timely manner and do not develop further.

The therapeutic use of exercise in ED treatment remains controversial, misunderstood, and understudied. However, initial trials have returned extremely encouraging results that suggest the proper use of exercise in combination with psychotherapy offers therapeutic benefits that may have been previously overlooked. The recommendations above are based on the published research that identifies strategies for successful integration of exercise in ED treatment. Using exercise in the treatment of any ED is nuanced and requires further research on the dose response, specific outcomes, potential for recidivism, exercise physiology, nutrition, and medical complications or risks that may arise throughout the course of treatment. Thus, the recommendations presented above represent a logical set of guidelines, based on initial successes, that may be empirically tested and refined. Further details on these exercise guidelines can be found in Cook, B., Wonderlich, S.A., Mitchell, J.E., Thompson, R., Sherman, R., & McCallum, K. (2016). Exercise in Eating Disorders Treatment: Systematic Review and Proposal of Guidelines. *Medicine & Science in Sport & Exercise*, *48*(7), 1408–1414.

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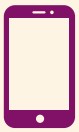

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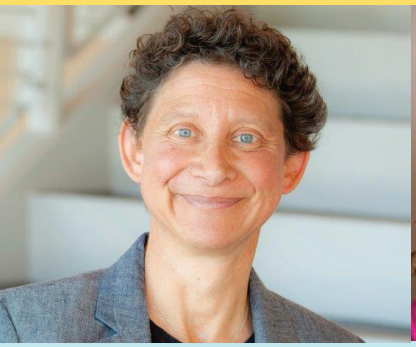

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