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Effects of an exercise programme on anxiety in adults with intellectual disabilities

Attilio Carraro *, Erica Gobbi

Department of Philosophy, Sociology, Education and Applied Psychology (FISPPA), University of Padua, Italy

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ABSTRACT

Although high anxiety is common in people with intellectual disabilities (ID) and the anxiolytic effects of exercise have been systematically recognised in clinical and non-clinical populations, research is scant concerning the role played by exercise on anxiety in people with ID. The purpose of this study was to investigate the effects of a 12-week exercise programme on anxiety states in a group of adults with ID. Twenty-seven individuals with mild to moderate ID were randomly assigned to an exercise group or a control group. The Zung Self-Rating Anxiety Scale adapted for individuals with ID and the State-Trait Anxiety Inventory form Y were used to assess trait and state anxiety. In comparison with the control group, the anxiety scores of people in the exercise group decreased significantly over time.

1. Introduction

People with intellectual disabilities (ID) are often reported as having high levels of anxiety (Esbensen, Rojahn, Aman, & Ruedrich, 2003; Sravakaki & Lunsky, 2007). Anxiety is characterised by the experience of excessive worry in a number of life domains which appears difficult to control. It is typically accompanied by agitation, feelings of tension and the activation of the automatic nervous system and can have detrimental effects on the skills, performance and daily living functions of ID people (Sravakaki, 1999). Despite the prevalence rate of ID that has been estimated at approximately 1% (American Psychiatric Association, 2000) and the well-recognised risk of high anxiety in this population, research on the assessment and treatment of anxiety in ID individuals has lagged behind that related to the general population (Hagopian & Jennet, 2008).

Physical activity has been widely recognised as an effective strategy in the prevention and treatment of anxiety; regular physical activity and participation in exercise programmes have been shown to reduce both state and trait anxiety and to protect individuals against the onset of anxiety disorders and symptoms (O'Connor, Raglin, & Martinsen, 2000; Physical Activity Guidelines Advisory Committee, 2008). Wipfli, Rethorst, and Landers (2008) conducted a meta-analysis on the anxiolytic effect of exercise mainly in trials involving non-clinical participants, highlighting that exercise is slightly better at reducing anxiety compared to other treatments (effect size = −0.19). Exercise was more effective than stress management education, slightly more effective than stretching and yoga, group therapy, relaxation and meditation, and as effective as cognitive behavioural therapy. Only pharmacological therapy had a small greater effect than exercise. Wipfli et al. (2008), by analysing the role of the duration of the exercise intervention as a moderating variable, found significance for both acute bouts of exercise and exercise interventions lasting 4–15 weeks (effect sizes varied from −0.39 to −0.59). Exercise was also seen to significantly decrease anxiety in different clinically defined populations; positive results have been reported in

* Corresponding author at: Department of Philosophy, Sociology, Education and Applied Psychology (FISPPA), University of Padua, via Beato Pellegrino 28, 35137 Padova, Italy. Tel.: +39 049 8271702; fax: +39 049 8271751.
E-mail address: attilio.carraro@unipd.it (A. Carraro).

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people with cardiovascular diseases (Duarte Freitas et al., 2011), cancer patients (Mehnert et al., 2011), schizophrenic patients (Vancampfort, Probst, et al., 2011) and people with anxiety disorders (Strohle, 2009; Taylor, 2000).

Physical activity is extensively seen to have beneficial effects on mental health in the general population (Penedo & Dahan, 2005), while in individuals with ID it is more likely that physical activity patterns go unnoticed or are not studied because these people are generally not included in large-scale population studies (Temple, Frey, & Stanish, 2006). Nevertheless, published literature suggests that the majority of people with ID are unfit, engage in low levels of daily physical activity and adopt sedentary behaviours (Fernhall & Pitetti, 2001; Graham & Reid, 2000; Rimmer, 2000). The consequence is that high rates of morbidity and mortality related to hypoactive-associated diseases are quoted in this population (Sutherland, Couch, & Iacono, 2002).

Despite the low rate of people with ID regularly engaging in physical activity, the positive effects of participating in physical activity, exercise programmes and sport have been reported in this population (Bartlo & Klein, 2011; Frey, Stanish, & Temple, 2008; Guidetti, Franciosi, Gallotta, Emerenziani, & Baldari, 2010; Rimmer, Chen, McCubbin, Drum, & Peterson, 2010). Physiological, psychological and relational positive outcomes have been described. Functional and musculoskeletal health, such as walking capacity, muscular endurance and strength, flexibility, cardiorespiratory health and functional independence, are the most commonly targeted outcomes (Rimmer et al., 2010). Improvements in quality of life, increased well-being, reduction of maladaptive behaviour, improved cognitive aspects, and amelioration in mental health were noted in different studies (Carmeli, Zinger-Vaknin, Morad, & Merrick, 2005; Elliot, Dobbin, Rose, & Soper, 1994). Improved social relationships and increased self-esteem are reported in studies on sport participation (Guidetti, Franciosi, Emerenziani, Gallotta, & Baldari, 2009).

To the best of our knowledge, only one previous study on the effectiveness of exercise programmes on reducing anxiety in adults with ID has been carried out (Carmeli, Barak, Morad, & Kodesh, 2009). The authors randomly assigned 24 individuals suffering from mild ID and anxiety to one of three groups (aerobic training, physical leisure activity and control). After a 6-month period the participants in the aerobic and leisure groups reported a significant reduction in anxiety.

Starting from this evidence and considering the fact that anxious responses represent a serious problem for individuals with ID, the purpose of this study was to evaluate the effects of a short-term (12 weeks) exercise programme on anxiety states in a group of adults with ID.

2. Method

2.1. Participants

The participants were a group of adults who attended a day centre for people with intellectual and relational disabilities situated in the north-east of Italy. The inclusion criterion was having been diagnosed with mild to moderate mental retardation. The exclusion criteria were having an autism spectrum disorder, presenting diagnosed anxiety or depressive disorders, and the presence of contraindications to moderate intensity exercise.

Twenty-seven people (16 men and 11 women) volunteered to participate in the study. All of the subjects lived at home, and none were institutionalised. The participants' ages ranged from 31 to 49 years ($M = 40.1$, $SD = 6.2$). Eighteen (66.7%) were classified with mild ID and 9 (33.3%) with moderate ID. They were randomly assigned, by means of a random numbers table, to two groups: 13 were in the control group, 14 in the exercise group.

The study was conducted in accordance with the guidelines of the Ethical Committee of the University of Padua, and written informed consent was obtained from all of the participants or from their parents or legal guardians.

2.2. Measures

Each of the participants filled in two self-report anxiety scales: the Italian version of the State-Trait Anxiety Inventory form Y (STAI-Y; Spielberger, 1989) and the Zung Self-Rating Anxiety Scale (SAS; Zung, 1971) adapted for individuals with ID (SAS-ID; Lindsay & Michie, 1988). STAI-Y is a widely used questionnaire developed to measure self-reported trait anxiety (TRAIT-A) and state anxiety (STATE-A), and it is suitable for people with an elementary cultural level, young people, adults and older adults (Potvin et al., 2011). Both scales contain 20 items: the trait anxiety items are rated on a 4-point frequency scale (from 1 for "almost never" to 4 for "almost always"); the state anxiety items are rated on a 4-point intensity scale (from "not at all" to "very"). The range of scores is 20–80 for both the trait scale and the state scale. The participants were asked to respond to each item based on how they felt "at that time" in STATE-A and on how they "generally feel" in TRAIT-A. The SAS-ID is a 20-item scale used with a "yes/no" response format that is more reliable than the original 4-point format (Lindsay, Michie, Baty, Smith, & Miller, 1994; Ramirez & Lukenbill, 2008) because it is easily understandable. The responses were then scored using 1 or 2 as a "no/yes" presentation. The range of scores is 20–40, in which higher scores correspond to a greater perception of generalised anxiety. To reduce the effect of a response bias, five items are reversed.

2.3. Procedure

The intervention lasted 12 consecutive weeks. Individuals in the exercise group participated in a physical exercise programme, while those in the control group participated in a painting activity programme. Painting activities were chosen