



Challenges in implementing an exercise intervention within residential psychiatric care: A mixed methods study



Joseph Firth^{a,*}, Rebekah Carney^a, Michelle Pownall^b, Paul French^{c,d}, Rebecca Elliott^{a,e}, Jack Cotter^a, Alison R. Yung^{a,c}

^a Division of Psychology and Mental Health, University of Manchester, UK

^b Five Boroughs Partnership NHS Foundation Trust, Greater Manchester, UK

^c Greater Manchester West NHS Mental Health Foundation Trust, UK

^d Department of Psychological Sciences, The University of Liverpool, UK

^e Division of Neuroscience and Experimental Psychology, University of Manchester, UK

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ABSTRACT

Physical exercise is increasingly recognized as an important component of psychiatric care, although the feasibility of implementing exercise in residential care settings is not well understood. We evaluated the feasibility of a 10-week intervention of weekly fitness classes (delivered by a personal trainer) and other exercise activities using a mixed-methods approach. This was offered to across four residential care services, to all 51 residents who had severe mental illness (SMI). Of these, 27.5% consented to the exercise intervention. Participants averaged 87.6 min of moderate-to-vigorous exercise per-week, although fitness classes were poorly attended, and 35.7% dropped-out over 10 weeks. Of those who completed the intervention, increased physical activity was associated with significantly reduced negative symptoms. In conclusion, implementing exercise interventions in residential psychiatric care is challenging; given that supervised exercise classes may not be appealing to many residents, while unsupervised exercise is poorly adhered to. Future interventions should consider that better tailored exercise programs are required to adequately confront motivational issues, and to account for participant preference in order to increase engagement.

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1. Introduction

Severe mental illnesses (SMI), such as schizophrenia, are associated with a reduced life expectancy of around 15–20 years, which is largely attributed to physical health conditions, such as cardiovascular disease (Laursen, Munk-Olsen, & Vestergaard, 2012). Along with metabolic side-effects of antipsychotic medication, people with SMI also have high rates of smoking, poor diet, and reduced physical activity (Osborn, Nazareth, & King, 2007; Stubbs, Williams, Gaughran, & Craig, 2016; Vancampfort, Firth, et al., 2016). All of these factors are potentially modifiable. For example, small increases in cardiorespiratory fitness can substantially reduce cardiometabolic risk and associated mortality (Kodama et al., 2009).

Moderate-to-vigorous exercise can improve mental health through reducing positive and negative symptoms (Firth, Cotter, Elliott, French, & Yung, 2015) and improving cognition (Mrcpuk & Mrcpuk, 2017).

Despite increasing evidence that physical activity improves physical and mental health, the challenge is engaging people with SMI in regular exercise (Vancampfort & Faulkner, 2014). Adherence is often poor and there is high attrition in clinical trials of exercise interventions for SMI (Vancampfort, Rosenbaum, et al., 2016), diminishing their clinical applicability. Optimal methods for delivering exercise in mental health settings have yet to be established (Faulker & Taylor, 2009).

This study aimed to evaluate the feasibility of providing on-site fitness classes and professional exercise support within residential care centers for people with SMI. We used a mixed-methods design, combining quantitative and qualitative methods.

* Corresponding author. Division of Psychology and Mental Health, University of Manchester, Room 3.306, Jean McFarlane Building, Oxford Road, Manchester M13 9PL, UK.

E-mail address: joseph.firth@postgrad.manchester.ac.uk (J. Firth).

2. Methods

2.1. Setting and participants

The study was approved by the North West Research Ethics Committee on 02/06/2015 (REC# 13/NW/0784). Participants were recruited from four residential psychiatric care centers managed by 'Alternative Futures Group' (AFG) around Greater Manchester (UK). Inclusion criteria for the study were: (i) aged 18–65, (ii) receiving treatment for an SMI within an AFG center. Exclusion criteria were the inability to provide informed consent, pregnancy, insufficient English language to complete assessments, or physical health issues which contraindicated exercise (including poorly controlled asthma, diagnosed heart conditions and untreated hypertension) as determined by the referring clinician and general practitioner if required.

2.2. Intervention

Participants were asked to engage in 90 min of structured exercise per week for 10 weeks, as this amount has previously been found to improve mental health in SMI (Firth et al., 2015). This was achieved over two weekly sessions; once in an 'AFG Exercise Class' held on-site at the rehabilitation center, and once in a further weekly activity of their own choosing.

Exercise classes were conducted by a Personal Trainer (UK Level 4 Qualification) who was familiar with mental health, having worked as an SMI support worker prior to this role. Each session consisted of: 10 min warm up, 45 min circuit training, 5 min cool down. Circuits consisted of 8–16 different stations of aerobic/resistance exercises selected to improve cardiovascular fitness, muscular strength and functional capacity. Stations were varied each week, but typically included exercises such as press-ups, star jumps, lunges, shoulder press, kettle-bell training and abdominal crunches. Each exercise was performed for 1-min, followed by 30 s of rest. The number of repetitions expected of each participant at each of the training stations of the exercise circuit, and the amount of weight used, was tailored to match their physical capabilities; while aiming to maintain a vigorous intensity of exercise throughout. Attendance was encouraged through posters around the AFG centers advertising the weekly classes, entitled 'Alternative Futures Exercise Classes' and displaying the day and time of the sessions, along with graphical cartoon images of people exercising. Furthermore, all residents were made personally aware of the classes at the beginning of the intervention, through notification from their clinicians in the form of an invitation letter providing information about the study (see Supplement 1).

For their second weekly session, participants were supported to engage in an activity of their choice by their care team. No behavioral change techniques were systematically applied within this support (Michie et al., 2011), although carers were involved in helping participants to select a preferred activity (such as community walks, on-site gardening, gym training with other service users or cycling with support staff), and providing verbal reminders/encouragement to the participants to attend their scheduled sessions on the given day. Participants were also offered an 'exercise log book' to record their weekly exercise. Where participants were not able or interested in using this, AFG staff also recorded exercise attendance for the participant.

2.3. Outcome assessment

The primary outcome of this study was feasibility; including recruitment rate, retention, and amount of exercise achieved. Recruitment rate was calculated as the number of service users

consented over the 4-week recruitment period, divided by total number of service users at the four centers. Retention was the percentage of enrolled participants who completed follow-up assessments. Amount of exercise was measured using logbooks and the 'IPAQ' International Physical Activity Questionnaire (IPAQ Committee, 2005), administered at baseline and follow-up. The IPAQ was used to calculate total change in 'metabolic equivalent task minutes' (METs). This score represents the total time and intensity of physical activity engaged in during the last week, indexed as multiples of the resting metabolic rate. For example, walking is scored as 3.3 METs per-minute (IPAQ Committee, 2005) and thus 10 min per-day would yield a weekly score of 231 METs, whereas 1 h of circuit training (which scores 8 METs per-minute) would be 480 METs.

2.4. Participant centered outcomes

Participants completed a 10-item 'tick box' survey assessing their desired outcomes of exercise when entering the study. Additionally, motivation towards exercise was examined in the context of Self Determination Theory using the 'Behavioural Regulation in Exercise Questionnaire 2' (BREQ-2) (Markland & Tobin, 2004) at the end of the study. In line with a previous validation study of the BREQ-2 in SMI populations (Vancampfort et al., 2015), the items for 'identified regulation' (personal identification with the reasons for being physically active) were combined with items for 'intrinsic regulation' (enjoyment of exercise for its own sake), to calculate a single 'autonomous motivation' score which has previously been shown to predict physical activity levels in SMI (Vancampfort et al., 2015). A qualitative sub-study was also used to capture detailed information on participants' experiences of undertaking exercise.

2.5. Secondary outcomes

Validated measures of psychiatric symptoms, functioning, and physical health were administered pre- and post-intervention to investigate which areas could feasibly show significant improvement from 10 weeks of exercise. The specific measures used were selected to match those of a recent study of an exercise intervention in community psychiatric care (Firth, Carney, Elliott et al., 2016). The principal change outcome was psychiatric symptoms. This was assessed using the Positive and Negative Syndrome Scale (PANSS) (Kay, Fiszbein, & Opfer, 1987). Psychosocial functioning was measured using the Social and Occupational Functioning Assessment Scale (SOFAS) (Morosini, Magliano, Brambilla, Ugolini, & Pioli, 2000). Neurocognitive functioning was assessed on a computerized system, using various tasks available on the default PEBL battery (Mueller & Piper, 2014). Tasks were selected to test multiple cognitive domains including; processing speed (Trail Making Test-A and Letter-Digit Coding), short term verbal memory (12-word immediate free recall), executive functioning (Trail Making Test-B), and visuo-spatial memory (Corsi Tapping Blocks) and motor speed (Finger Tapping). Bodyweight was measured using digital scales, with participants fully clothed although with no footwear.

2.6. Procedure

Recruitment took place over a 4-week period in June/July 2015 prior to commencing the intervention. Recruitment was conducted by the AFG nurses and support staff at the four sites, who advertised the exercise classes using flyers and posters and personally informed service users of the study. No monetary incentive was used. Any service users who expressed an interest were provided with a study information sheet. They then met with the research

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