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Structured physical exercise and recovery from first episode psychosis in young adults, the FitForLife study

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ABSTRACT

Optimising autonomy is increasingly important in recovery from psychosis. To date, physical exercise has shown promise in the treatment of severe, enduring mental illnesses including psychosis - when used as an adjunct treatment. To assess the association between physical exercise and autonomy in young adults, a simple pre-post experimental design was utilised. Individuals aged 18–35 years, treated at one of three specialist outpatient units for first-episode psychosis in Stockholm, Sweden were invited to participate in a 12-week programme of structured group exercise. Autonomy was measured using four questions from the Camberwell Assessment of Needs questionnaire (physical health, social and close relationship and daily tasks). Comparisons were made between: 'no attendance' and 'any attendance'. The latter group was bisected into higher and lower categories. Ninety-four participants enrolled with a post-intervention response rate of 61%. Significant reductions were seen in self-rated needs for care, though there was no significant change in total scores or evidence of a dose response association. The results suggest a plausible association between physical exercise and autonomy which may represent the recovery process following the first episode of psychosis. Further randomised control trials are needed to explore the potential causality and robustness of this change.

1. Introduction

Psychosis is associated with impaired cognition which can limit independent function, increasing dependence on external support (Mueser and Mcgurk, 2004). Recovery prioritises the maintenance of the individual's independence rather than the abatement of medical symptoms (American Psychiatric Association, 2005; Davidson et al., 2008). Early intervention is thought to maximise and preserve function and has led to increased attention towards interventions for first episode of psychosis[1] (FEP) (Mueser and Mcgurk, 2004; Penttila et al., 2014).

Recent meta-analysis of FEP shows that the recovery rate at 7 years (defined as multidimensional improvement for more than 2 years) was 37.9%. For those with schizophrenia, this figure was 30% (Lally et al., 2017). Though greater than expected, this emphasises that the majority of those affected by psychosis remained impaired for prolonged periods. Importantly, the American Psychiatrists Association issued a position statement with four pivotal goals of recovery, where the first tenet is the maximisation of the individuals' autonomy amongst: self-respect, integration into full community life, and resumption of normal development (American Psychiatric Association, 2005).

Though difficult to conceptualise and measure, autonomy is considered to be 'perceiving oneself as the volitional source of one's actions' (Breitborde et al., 2012), or simply 'self-directed action' (Sass, 2011). Lower self-rated autonomy has been reported following FEP whilst deficits are present from the prodrome to psychosis (Breitborde et al., 2012; Hansson et al., 2002; Sass, 2011).

Autonomy has been extensively linked with motivation and participation with the macro theory of Self-determination (Deci and Ryan, 1985). In this theoretical framework, motivation is seen on a continuum increasing from a state of amotivation. Factors associated with this can be broadly categorised as intrinsic, engaging in activities for joy or self-fulfilment, and extrinsic, where others encourage participation and the individual seeks to avoid punishment or obtain promised rewards (Ryan and Deci, 2000). External motivation can be internalised to promote autonomous participation by supportive feedback as perceived competence increases (Ryan and Deci, 2000; Vancampfort et al., 2015).

Higher levels of intrinsic motivation have been associated with greater participation in physical activity (Teixeira et al., 2012;

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Vancampfort et al., 2015, 2013). However, those with chronic schizophrenia report the lowest motivation comparatively (Firth et al., 2016). Poignantly, synthesis of existing studies has shown that, for those with serious mental illness, external professional support as seen as one of the largest motivating factors for exercise. Also, attending such activities increases internal motivation from both the exercise and the routine, suggesting a potential mechanism for change, which if implemented early could promote greater benefits (Firth et al., 2016; Hodgson et al., 2011).

Whilst over 90% of individuals with psychosis appreciate the health benefits of physical exercise the group as a whole are markedly inactive, being sedentary for 11–12 h of their waking day, 3 hours more than the general population (Firth et al., 2016; Stubbs et al., 2016). Such inactivity is a major contributor to the 10–20 year inequalities in life expectancy, attributed to respiratory and adverse cardio-metabolic disease (Wahlbeck et al., 2011). Those with schizophrenia alone, have 50% greater odds of cardiovascular disease and double the odds of cerebrovascular disease compared to controls (Correll et al., 2017). Further compounding this risk, meta-analysis has shown an approximate rate of 32.5% of metabolic syndrome, worsened by antipsychotics (Mitchell et al., 2013).

Primary prevention through physical activity has potential to combat this, though tackling both the adverse risk profile and sedentary behaviour is complex, and few are offered appropriate interventions in practice (Himelhoch and Daumit, 2003; Mitchell et al., 2017; Mitchell and De Hert, 2015). Accordingly, the American College of Sports Medicine (ACSM) has developed an evidence-based protocol for prescribing exercise (8). Offering such interventions as early as possible provides better outcomes for the individual (Mitchell and De Hert, 2015; Moore et al., 2015).

The physical implications of exercise include significant improvements in complex composite measures such as VO_2 max (the maximum rate of oxygen consumption per unit mass), which is a composite measure of cardiovascular, respiratory and metabolic functions and inversely correlates with mortality (Kodama, 2009; Vancampfort et al., 2017). Furthermore, physical exercise has been shown to increase the global cognition of those affected by schizophrenia, and this effect is more marked with greater attendance and if the sessions are supervised by professionals (Firth et al., 2017). Working memory, social cognition and attention were all shown to be enhanced by physical exercise. To such ends, physical exercise is considered an intervention in itself and there is growing need to explore the potential of physical exercise as an adjunct to pharmacological treatment in psychosis (Gorczynski and Faulkner, 2010; Malchow et al., 2013; Pearsall et al., 2014).

In the context of recovery, qualitative data from the United Kingdom suggests that individuals with serious mental health conditions, express greater autonomy over their lives when participating in regular physical exercise. Participants in the British study reported changes associated with autonomy including improved capacity for decision-making, improved organisational abilities (Hodgson et al., 2011). A randomised controlled trial of 63 patients with schizophrenia, conducted in the Netherlands, has shown that a threshold attendance of 50% of structured exercise sessions reduces unmet needs in daily life when compared to occupational therapy, again suggestive of increased autonomous function (Scheewe et al., 2013).

Though several studies have sought to explore the associations between physical exercise and psychosis, very few have explored autonomy, or the association between exercise and recovery (Firth et al., 2015; Gorczynski and Faulkner, 2010; Malchow et al., 2013). Those that have been conducted typically utilised relatively small sample sizes (Malchow et al., 2013).

With such considerations in mind, the FitForlife study was designed to assess associated changes in physical, mental and social wellbeing when young adults with FEP were asked to attend a programme of structured physical exercise. Using data from this study, the aim was to assess the association between physical exercise and autonomy following FEP in young adults.

2. Methods

2.1. Study design and recruitment

The study from which the results are taken, FitForLife, was prospective to assess the physical, psychological and social changes associated with physical exercise in young adults with FEP. The study was initially performed at one centre between September and December 2015, with a further two centres added to bolster recruitment between March and August 2016.

Participants were recruited from three community psychiatric clinics specialising in the treatment of FEP in young adults (18–45 years of age) in distinct regions of Stockholm County, Sweden. The centres deliver need adapted care to maximize the autonomy of patients by providing various interventions such as support, psychotherapy, medication and education. All staff are specialised in psychiatry. Around 200 patients are registered in each clinic, the majority of whom have a primary diagnosis of schizophrenia.

Posters were placed in communal areas of the three centres participating. Those who wished to join the study were asked to notify a staff member, who in-turn discussed with the responsible psychiatrist their suitability to participate. A list of willing, suitable participants was then passed to the research team. No data was collected for patients screened by staff prior to formal enrolment, so the total number of eligible patients cannot be calculated.

The study overarching FitForLife study received ethical approval from the regional ethical committee, number 2015/808-31/2. The study was prospectively registered on the German Clinical Trials Register, DRKS00008991. All participants provided their informed consent and their participation was in accordance to the declaration of Helsinki.

Though initially planned as a randomised control trial, organisational difficulties and patient preference stipulated a change to a single arm pre-post design and prevent the termination of the study.

2.2. Participants

To participate in the study, individuals had to be diagnosed with a psychotic disorder and must be receiving specialist care for FEP with at least one documented episode within in the preceding five years (Breitborde et al., 2012). At the time of referral to the specialist centre they must also have been under 40 years of age. Volunteers were only excluded if they were deemed too ill or unsuitable to participate by the treating psychiatrist. No explicit exclusion criteria were set for somatic conditions in view of the relative young age of participants and the prerequisite that participation had been agreed by the overseeing clinician.

2.3. Exercise intervention

Each individual was asked to attend three of the five sessions per week for the duration of the 12-week programme. Each session consisted of brief warm-up lasting 5–10 min before an intensive 30 min workout focusing on cardiovascular fitness, followed by stretching, with a total duration of approximately 1 h. The intervention was conducted in small group sessions that were unisex and tailored to the capability and fitness of the participants. Sessions were individualised to accommodate participant requirements. The exercise regime was designed to adhere to the American College of Sports Medicine consort agreement on the prescription of exercise as an effective intervention (Garber et al., 2011)

All sessions were conducted by trained instructors at the Swedish School of Health and Sports Medicine (GIH). The trainers were all final semester students of the health coaching bachelor programme