Study protocol

Fitforlife; Peer–mentor driven physical exercise for persons affected by psychosis.
1.6.2019

Administrative details: See separate information

Project summary: See separate information

Background

Psychosis

Psychosis is a severe mental disorder with the main and common symptom being loss of reality testing due to misinterpretation of perception. The disorder is often accompanied by more or less life-long social impairment and decreased level of functioning. No biological correlates are available so the diagnosis is based on the presence of symptoms. The most serious form of psychosis, schizophrenia, has a lifetime prevalence of 5.5(SD 4.5) in 1000 persons and the incidence is 23.7(SD 30.3) in 100 000 persons. Mean age of onset is 18 years in men and 25 in women. Schizophrenia is associated with elevated suicide rates and an increased risk of premature death related to a wide range of somatic conditions, mainly depending on increased metabolic risk factors. The median standardized mortality ratio is 2.6 for all-cause mortality and this differential gap has increased over the recent decades. Several modifiable unhealthy life style factors are more prominent in individuals with schizophrenia, such as smoking, unhealthy dietary habits and decreased physical activity. Tobacco use and weight gain/obesity has also been shown to be associated with increased severity of symptoms and decreased level of functioning.

Cognitive impairment represents a core feature in schizophrenia with individuals experiencing various degrees of decline from expected level of cognitive functioning. The majority (70 %) function at a level at least one standard deviation below that of healthy controls, with impairment already present in first-episode psychosis, and enduring after pharmacological treatment. Impairments are found in the domains of attention, verbal learning, memory, working memory, processing speed, problem solving/executive functioning and social cognition, in addition to a global cognitive deficit. The presence of cognitive impairments is further associated with a more severe course of illness and a higher rate of use of health services. Cognitive impairment is a prominent predictor of functional outcome in psychotic disorders and may strongly affect the level of independence the affected persons can achieve in their lives. Intact cognition is essential for occupational performance and academic functioning, hence cognitive deficits are frequently associated with unemployment and curtailed level of education.

Depression is a common comorbidity in schizophrenia with reported rates of 25-81%. Persons affected by comorbidity have lower levels of medication adherence, more substance related problems, poorer social and family relationships and poorer quality of life.

Another problem in schizophrenia is the tendency of relapses. Many individuals with schizophrenia have several relapses resulting in multiple hospital stays, making it a leading cause of disability worldwide.

The stress-diathesis model suggests that lowering biological vulnerability or reducing stress can prevent relapses. Most of the used strategies, such as antipsychotic medication and avoiding substance abuse, focus on biological vulnerability. During the past three decades' psychosocial interventions have emerged focusing on increasing resilience to stress and building social support. These strategies often involve support for life style changes targeting smoking cessation, dietary habits and physical exercise. Advice on physical exercise are however often general and only very rarely organized exercise sessions are offered.

In summary there are three areas of suboptimal management of people with schizophrenia; 1) lack of effective treatments for negative symptoms and cognitive dysfunction, 2) only partially effective treatment for positive symptoms 3) high rates of physical health problems, particularly cardiovascular disease.

Recovery
The non-linear process of recovery needs to be consumers led. This means that the traditional medical and psychosocial rehabilitation model needs to be abandoned. The care system need to provide the tools and support when needed but the responsibility should lie on the affected person. In other care disciplines the patients' autonomy is well respected but psychiatry lags behind.

Stigma
All persons develop conception of mental illness early in life and form expectations of rejection. If affected this fear of rejection will have serious negative consequences. Such consequences are decreased self-esteem, self-efficacy and recovery orientation. Another consequence is social phobia, which is a very common comorbid disorder in schizophrenia. Stigma is an important factor in the decreased social capability, hindering studies and employment.

Physical exercise
Aside from the effects on the cardiovascular and muscular system, physical activity also has several neurobiological effects. It is reported to modulate the Hypothalamic-pituitary-renal (HPA) axis, which is a part of the stress-response system. It also affects the serotonergic drive thus acting like an antidepressant. The neural growth factor expression is increased by physical exercise affecting the neurogenesis in the brain. This effect can be seen in studies showing enhanced cognition (learning and memory) in healthy persons. There are numerous psychological effects such as increased wellbeing and heightened motivation and diversion from negative thoughts. However, physical activity is a complex behavior, including exercise (high-intensity, short-term bouts of physical activity, often structured), everyday physical activity (including those from daily chores, traveling, work and leisure time), as well as sedentary behaviors. In addition, physical fitness (primarily aerobic fitness) is a consequence of those behaviors and may well have it´s own independent relation and effect on cognition, sleep and mood.

Physical exercise as a treatment in psychosis
A recently reported pilot study in young persons at high risk for psychosis showed improvement in positive and negative symptoms, social and role functioning, performance on neurocognitive tests and cardiovascular fitness.

Thus far, only few studies have examined physical exercise in psychosis and differences in methodology makes them difficult to compare. A Cochrane Review from 2010 concluded that regular exercise programs are possible and may potentially have beneficial effects on both physical and mental health as well as overall wellbeing. However, only 3 studies fulfilled the inclusion criteria with small sample sizes and the exercise conditions and outcome measures differed. A systematic review and meta-analysis from 2014 including 8 studies showed only a modest increase in levels of exercise activity and no changes in symptoms or Body Mass Index (BMI). However, the included studies varied in exercise programs, age groups, sample size and outcome measures.
Cognitive functioning after exercise has only rarely been the focus with only one small study reporting a 34% improvement in short-term memory.
The treatment potential is large since individuals affected with serious mental illness are more likely to be sedentary than the general population.

Preliminary results Fitforlife pilot study
During 2015-2016, 99 participants were included. A majority were males (60 persons) and the mean age was 28.2 years. The study was originially designed as a waiting list study but due to

problems with the open care units this turned out to be impossible. Of the 99 persons 39 did not attend any sessions, the rest attended between 1-52 sessions, mean 13.1(SD 12.1). Trailmaking A test time (visual attention) improved 8.5 seconds (SD 20.4) in those that attended >1 session and 5.4 (SD 6.5) in those that did not attend. Trailmaking B, (visual attention and task shifting), improved 10.4 seconds (SD 42.8) in attenders versus 4.6 (SD 31.7) in non-attenders.
Camberwell assessment of need showed that at the initial examination 33 persons reported difficulties with social contacts while at the end of the intervention 17 of those reported no problems. Likewise, 24 persons reported problems with close relations at baseline while 11 of them reported no problem at the end. In the proposed study this will be measured in a more extensive way. During an open house for participants and relatives there were reports about improvment in daily life such as ”started to care about his looks”, ”cleans his room”. During spring 2017 the cognitive tests will be analysed and linked with inflammatory markers. The study has given us experience on how to organise exercise for persons with psychosis.
After the first wave four participants were educated as peer mentors. At least one peer-mentor was present in all sessions in wave two and three. The peer mentors were responsible for organizing parts of the sessions under supervision of educated trainers. Since the study finished the mentors have worked as peer mentor trainers, offering sessions to patients at an open care unit for FEP. The staff promote the sessions during their meetings with their patients and discussion about physical activity levels is a part of all patients' individual care programme.

Study objectives: See separate information

Methodology

Study design: Non randomized open trial.
Study population: Patients affected by psychosis at open care psychiatric units who are responsible for taking care of psychosis in Sweden.
Sample size: Our aim is to recruit 300 patients including mentors at each unit.

Variables list including data collection tools:

1. From the medical records: age, gender, diagnosis, time of first contact with psychiatry, medication
- App questions on overall function using WHODAS 2.0
- App question on social network: qualitative and quantitative
- App questions: smoking, alcohol consumption and illicit drug use
- Cognitive tests: Cogstate (performed at a computer) and Trail making A and B
- Submaximal fitness test: Åstrand
- Physical activity pattern, including sedentary time, low-intensity physical activity and exercise, assessed by a simple accelerometer on a subsample.
- Body measurements: length, weight, hip-waist measure, blood pressure.
- Blood samples: Blood lipids, HBA1C, TNFalfa, CRP, Il-6

Plan of analyses: See separate information

Intervention including time plan

A team consisting of one of the mentors from Fitforlife, a health pedagogic, and one or two from the research group will come to each included open care unit.
Day 1; Upstart meeting led by a research group member.

Day 1-4; Education of the new mentors led by the health pedagogic assisted by mentor(s) from Fitforlife pilot study.
Day 1-5; Baseline examinations (see above for data collection tools) of all the potential participants by the local contact person(s).
Day 5-14; Start of the training. Initially supported by the health pedagogic and the mentor(s) from Fitforlife pilot study.

Day 14-70: Training sessions led by the local mentors. Supported by phone and online by the health pedagogics and the mentors from Fitforlife. During this time 1-3 visit(s) from the health pedagogic to each mentor during a training session.

Day 70-75: Follow up assessments by the local contact person.

Measurements during the intervention
Compliance will be measured by the local coordinators. In a subgroup objective measures of physical activity using simple accelerometers will be performed.
Before and after each training session the participant will be asked to answer simple App based questions - “How do you feel” (happy, tired etc).

Long term follow-up- 12 months
The participants will be followed using medical records.

Strengths and limitations
Largest study of physical exercise in psychosis. Using an entirely new concept, patients lead phsycial exercise.
Not randomized due to practical issues. Impossible to randomize patients within a unit, many ongoing group activities. Differences between units in care programme large making cluster randomizatiion difficult.

Ethical permission: See separate information