



Application number/Title: 22125 - How can physical activity and fitness improve brain health in people with serious mental illness?

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Keywords provided by the Applicant PI to describe the research project:

Exercise, cognition, fitness, neurology, psychosis, bipolar

Application Lay Summary:

1a: The aim of this research is to explore how different types of physical activity and exercise are associated with brain structure, connectivity, and functioning in people with serious mental disorders (including schizophrenia and related psychotic disorders, major depression and / or bipolar disorder). This will help to determine the optimal frequency, intensity and modalities of exercise interventions for improving functional outcomes in people with mental illness.

1b: Serious mental illness (SMI) is associated with various neurocognitive impairments, which are predictive of poor social and occupational functioning. Research in healthy samples has shown physical activity can improve various aspects of neurocognition. However, the optimal types of activity and exercise for improving cognition in SMI has yet to be established. This research will determine what frequencies, modalities and intensities of exercise are most associated with greater cognitive functioning among people with SMI, to inform future physical activity interventions for improving their neurocognition and quality of life.

1c: Physical exercise has been shown to improve neurocognition in the general population. In this project, we will use self-reported physical activity, accelerometry and cardiorespiratory fitness data from people with SMI, in order

to examine how different types and intensities of exercise are correlated with brain structure and functioning.

1d: Full cohort

The aim of this research is to explore how different types of physical activity, exercise and diets are associated with brain structure, connectivity, and functioning in people with serious mental disorders (including schizophrenia and related psychotic disorders, major depression and / or bipolar disorder). This will help to determine the optimal types of exercise and diet interventions for improving functional outcomes in people with mental illness.

We wish to expand the scope in two ways:

1) Look beyond just brain/cognitive outcomes, to also include examination of how exercise/diet relates to mental health (e.g. recent depression, manic episodes, etc etc) and also social functioning (family relationships, financial situation, friendships, loneliness, and isolation) in people with mental illness.

2) Investigate further into the key underlying variables which affect these relationships, in terms of exploring (i) moderators (e.g. how third-factor constructs like individual's Age, Gender, etc. affect these outcomes) and then (ii) the mediating mechanisms - specifically through requesting access to the blood C-reactive protein data when this is available.