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Exercise and People with Serious, Persistent Mental Illness

A group walking program may be an effective way to lower the risk of comorbidities.

Psychiatric illnesses such as schizophrenia, bipolar disorder, major depression, obsessive–compulsive disorder, or panic disorder, when coupled with a functional disability such as an inability to maintain employment or live independently, are categorized as "serious and persistent" mental illnesses.[1]

Although estimates vary, serious and persistent mental illness (hereafter called simply "serious mental illness") is known to affect millions of U.S. adults and is a leading cause of disability.[2] According to the National Institute of Mental Health, in a given year major depressive disorder affects 14.8 million adults, panic disorder affects 6 million, bipolar disorder 5.7 million, schizophrenia 2.4 million, and obsessive–compulsive disorder 2.2 million, with many people having more than one mental disorder.[2]

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People with serious mental illness are at increased risk for medical conditions such as hypertension, diabetes, heart problems, and obesity.[3,4] Reasons for this increase are related to lifestyle—for example, patients with serious mental illness are more likely to smoke and less likely to engage in light or vigorous physical activity[5]—and the adverse effects of some psychotropic medications. Many newer, commonly prescribed psychotropic agents, including clozapine (Clozaril, FazaClo), olanzapine (Zyprexa), quetiapine (Seroquel), and risperidone (Risperdal), can cause significant weight gain, lipid abnormalities, and glucose dysregulation. Exercise may help such patients to modify their risk of these and other conditions.

The research on the outcomes of exercise in people with serious mental illness has been limited, mainly consisting of case reports and small group studies. Reviews of these studies suggest that although exercise has little effect on the underlying mental illness, it may help to improve mood, decrease common symptoms such as lack of energy and psychosocial withdrawal, and relieve comorbid depression and anxiety.[6-9] It also appears to improve brain and cognitive function in sedentary older adults, particularly when they're engaged in tasks involving executive functions,[10,11] which are prominently impaired in schizophrenia.[12] There are no known serious complications to the combination of exercise and psychotropic medication.[13]

In 2003 we conducted a pilot study with colleagues that was designed with two goals: to determine whether a regular walking program would specifically benefit people with serious mental illness and to test whether it could help them to exercise regularly.[14] The study involved 15 outpatients with serious mental illness; diagnoses included schizophrenia or schizoaffective disorder (10 patients), bipolar illness (four patients), and major depression (one patient). The 12-week group walking program included educational workshops to increase motivation and provide support, and all walks were led by the principal investigator (one of the authors of this article, McDevitt) and a psychosocial case manager. Participants demonstrated high adherence both to walking (76% average attendance at the walking sessions) and to the 12-week program (87% completed the study). After the study ended, several participants formed a group in order to continue walking together. The following is a case study of one of the participants.

CASE STUDY

Sharon Galena (a pseudonym), a 47-year-old woman, had been living with a schizoaffective disorder

Artist Charles Kaiman, MSN, NP, RN, CS, a clinical nurse specialist in psychiatric–mental health nursing, provided two paintings for this article that depict exercise programs at the New Mexico Veterans Affairs Health Center in Albuquerque, New Mexico. The watercolor above shows a weekly walk with patients with serious mental illness, mainly bipolar disorder or schizophrenia. "It's a social outlet and helps in weight control and diabetes management," Kaiman says of the supervised walks. "Some of the newer antipsychotics can cause weight gain, and the walks help minimize or eliminate these problems."

for more than 25 years. Her symptoms were controlled with olanzapine and lithium (Eskalith and others), and she was doing well in her rehabilitation program. Although not a smoker, she had been gaining weight in recent years, and her family history included an early heart attack (her father, at age 50) and type 2 diabetes (an older sister). Her only regular form of physical activity was walking short distances to and from bus stops.

On physical examination, blood pressure was 116/70 mmHg; pulse, 88 beats per minute; and body mass index (BMI) 37.8, which the National Heart, Lung, and Blood Institute categorizes as class II obesity. Her fasting triglycerides level was 140 mg/dL, within the normal range. Her high-density lipoprotein (HDL) cholesterol level, 51 mg/dL, was within the recommended range; her low-density lipoprotein (LDL) cholesterol level, 132 mg/dL, was slightly above the recommended range. No other abnormalities were noted.

On exercise testing using the standardized treadmill test (also known as the Bruce protocol) modified for sedentary subjects, Ms. Galena attained a heart rate of 165 beats per minute without having any significant ST segment shifts on electrocardiography. This result was satisfactory for ruling out occult heart disease, since her heart rate was 98.8% of the maximum age-predicted heart rate for her age and sex. However, her heart rate reached 165 beats per minute in just 9.5 minutes, indicating poor cardiovascular fitness. Because not all of the program participants were at the same level of fitness, exercise prescriptions were tailored somewhat to the individual, especially as they entered the program. Accordingly, Ms. Galena's exercise prescription included an initial four-week conditioning period, during which time she walked twice a week, gradually increasing walk duration from 10 minutes to 20 minutes and effort intensity from "very light" to "fairly light." During weeks 5 through 12, she walked three times a week, with duration gradually increasing

from 20 minutes to 30 minutes and effort intensity increasing from "fairly light" to "somewhat hard to hard" (brisk walking). Each session also included stretching and five-minute warm-up and cool-down periods.

Ms. Galena's family history of heart disease and type 2 diabetes and her class II obesity placed her at very high risk for type 2 diabetes, hypertension, and cardiovascular disease.[15] However, she found that she enjoyed walking and walked both with the group three times a week and additionally on her own. After 12 weeks in the program, she was walking briskly for 30 minutes each time, had lost 6 lbs., and had lowered her BMI from 37.8 to 36.7. With continued walking and gradual weight loss, it's likely she will further lower her disease risk.

THE BENEFITS OF EXERCISE

The U.S. Department of Health and Human Services' *Healthy People 2010: Objectives for Improving Health* endorses physical activity as an evidence-based way to prevent or reduce the impact of cardiovascular disease and promote health; either vigorous or moderate levels of physical activity "can have significant health benefits."[16] A metaanalysis of randomized, controlled intervention trials concluded that moderate exercise can lower systolic and diastolic blood pressure.[17] A literature review considered the effects of moderate-to-vigorous exercise on blood lipids; although results were inconsistent, "the most commonly observed change was an increase in HDL cholesterol [the type that can lower risk of cardiovascular disease], with reductions in total cholesterol, LDL cholesterol, and triglycerides less frequently observed."[18]

Exercise can also help in the prevention and treatment of type 2 diabetes. Two large studies testing the impact of modifications to both diet and exercise each demonstrated a 58% reduction in the incidence of diabetes over three-year periods[19,20]; another study found that an intervention involving exercise alone led to a 46% reduction in diabetes risk over six years.[21] A literature review concluded that moderate exercise improves glucose metabolism, insulin sensitivity, and glycemic control in people with type 2 diabetes, although more research was necessary to identify the mechanisms and dose-response threshold.[22]

The growing body of evidence supporting the benefits of exercise is considered so compelling that the Centers for Disease Control and Prevention, the American College of Sports Medicine (ACSM), and the American Heart Association concur in recommending that all adults "should accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week."[23] Interestingly, walking is the most frequently reported activity among adults meeting these recommendations.[24]

PLANNING A WALKING PROGRAM

Some conditions can be exacerbated by even moderate activity such as walking, especially in people with serious mental illness, who are at heightened risk for comorbidities such as hypertension and heart disease.[3,4] The Physical Activity Readiness Questionnaire (www.csep.ca/pdfs/par-q.pdf) is a simple, validated tool that can be used to screen for a risk of such conditions. The ACSM recommends that people with "risk factors and/or symptoms of various cardiovascular, pulmonary, and metabolic diseases, as well as conditions . . . that may be aggravated by exercise,"[25] as well as men age 45 or older and women age 55 or older, get medical clearance and possibly a stress test before participating in an exercise program.[25]

For cardiorespiratory benefit, the ACSM guidelines suggest a minimum of three to five 20-to-60-minute moderate-to-vigorous walking sessions each week.[25] Alternatively, the goal might be to accumulate at least 30 minutes of moderate-intensity exercise per day by incorporating "short bouts of activity" such as walking short distances instead of driving and using stairs instead of elevators—an approach that favors lifestyle changes rather than a formal exercise regimen.[23]

Although adherence among healthy adults has been shown to be higher with home-based exercise programs,[26] people with serious mental illness may benefit more from a group-based program. Group programs can provide consistent support and help build initial motivation by helping participants understand how exercise will benefit them.[27] As participants become more physically active, such programs can help them address barriers that may arise. Structure, feedback, and encouragement are essential in walking programs for people with serious mental illness, who may experience avolition (defined in *The Diagnostic and Statistical Manual of Mental Disorders,* fourth edition, text revision, as "an inability to initiate and persist in goal-directed activities") or amotivation (the belief that actions have no control over outcomes) or have difficulty

learning new skills.

The support of a group can be particularly helpful in this population, by providing modeling, assistance with problem solving, and socialization opportunities. Modeling by peers can encourage those who have difficulty working toward new goals. Bandura has theorized that modeling is one of four modes through which self-efficacy develops.[28] Problem solving by the group can help individuals overcome barriers and counter beliefs that one's actions have no influence. Socialization around a common purpose such as exercising facilitates social persuasion (affirmation by others that one has the capability to succeed), another mode through which self-efficacy develops[28]; this can be especially important for people with serious mental illness, who tend to have small social networks.[29]

Knowing how to exercise safely is also important, and a group exercise program can assist people with serious mental illness in this regard as well. It's important for participants to understand the difference between normal changes induced by moderate exercise (for example, feeling warm and slightly out of breath, noticing a faster heart rate) and symptoms of potentially serious conditions (such as chest pain). Participants should also know how to respond to minor aches and pains that may arise as they become more active. Gradually increasing walking pace and duration, knowing how to warm up and cool down, and wearing proper footwear can help prevent problems.[25] Although the evidence regarding whether stretching prevents injuries is inconclusive, according to a literature review,[30] stretching gently after walking is a relaxing way to complete a session and may help increase awareness of the favorable effects of regular exercise.

Because of obesity, amotivation, or avolition, some participants may not be able to walk briskly.[14] However, although a relationship between greater exercise intensity and improved cholesterol profiles has been observed in many studies,[31] there is also evidence that it may be the amount of exercise that has the clearest effects. Kraus and colleagues found that jogging at a moderate pace to obtain the caloric equivalent of 17 to 18 miles per week had a greater beneficial effect on lipoprotein levels than did either walking or jogging 11 miles per week; however, all three regimens studied were more beneficial than was being sedentary.[32] Nurses can reassure patients that engaging in any level of activity from "very light" to "somewhat hard" is better than remaining sedentary.

In our experience, the most common reason sedentary people have for beginning to exercise—whether they have serious mental illness or not—is the desire to lose weight. But they may have unrealistically high expectations of a program that involves moderate activity (such as walking), resulting in disappointment and their dropping out of the program. At the start of a walking regimen, nurses should explain that weight loss through exercise alone will be modest, but that it will confer many other benefits such as improved cardiovascular fitness, increased energy, and better cholesterol profiles.

Feedback that includes evidence of any improvements can be a powerful motivator in helping participants to change behavior successfully.[33] In our study, participants used a simple weekly log to record their walks.[14] One metaanalysis concluded that using objective measurement in addition to self-reporting—for example, using a pedometer to measure and record distance walked (in steps counted)—correlated with greater increases in physical activity than the use of self-reporting alone, although few studies employed both methods.[34] Pedometers are inexpensive, reliable, easy to use, and can be worn throughout the day, and the feedback they provide may help motivate the user. In one 18-week walking program involving people with serious mental illness, most participants were able to use pedometers to

Group programs can provide consistent support and help build initial motivation.

track their daily step counts, although their step counts didn't increase as a result.[35]

In part because weight gain is a frequent adverse effect seen with antipsychotic medications, many psychosocial rehabilitation programs are beginning to offer exercise programs for their patients, whose participation in developing them is often encouraged. Nurses can talk individually with their patients about increasing physical activity as well. Although much is known about factors that influence exercise adherence in the general population, more research is needed among people with serious mental illness, in order to establish how best to assist them in beginning and maintaining a program of regular physical activity. ▼

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