Title:

Why don't people diagnosed with schizophrenia spectrum disorders (SSDs) get enough exercise?

Authors:

Bridget BASSILIOS^a
Fiona JUDD^b
Philippa PATTISON^c

Positions and Affiliations:

^a Research Fellow, Centre for Health Policy, Programs and Economics, Melbourne School of Population and Global Health, University of Melbourne, Victoria 3010, AUSTRALIA.

^b Professorial Fellow, Department of Psychiatry, University of Melbourne, Victoria 3010, AUSTRALIA

^c Professor of Psychology, Melbourne School of Psychological Sciences, University of Melbourne, Victoria 3010, AUSTRALIA.

Corresponding author:

Dr Bridget Bassilios
Centre for Health Policy, Programs and Economics
Melbourne School of Population and Global Health
University of Melbourne
Melbourne
Victoria 3010
AUSTRALIA

Telephone: +61 3 8344 0662; Facsimile: +61 3 9348 1174; E-mail: b.bassilios@unimelb.edu.au

Abstract

Objective: To assess physical activity, attitudes and future intentions among a sample of individuals with schizophrenia spectrum disorders (SSDs).

Methods: A cross-sectional interview was conducted with a convenience sample of 49 adults with SSDs and in receipt of community mental health services. Interview questions elicited information about exercise behaviour across time, including reasons for expressed preferences.

Results: Participants reported variable current physical activities. They were much more likely to report past than present, or intentions for future, exercise. Participants were more likely to report physical than psychological benefits as incentives for exercise. Social influence and the opportunity for social interaction also emerged as reasons for exercising. Conversely, physical health problems, disinterest and the psychiatric illness were reported as barriers to exercise.

Conclusions: Community mental health services should routinely integrate targeted interventions that promote exercise. Social support for exercise, strategies to increase self-efficacy and education about the multifaceted benefits of exercise are necessary considerations in the development of such interventions.

Key words:

schizophrenia; schizoaffective disorder; schizophrenia spectrum disorders; physical activity; exercise; sedentary lifestyle

It is well known that individuals diagnosed with SSDs experience significantly poorer physical health^{1,2} and a much higher rate of mortality than the general population.³ Poor physical health is compounded by multiple risk factors,¹ such as sedentariness, poor diet, substance abuse, psychiatric symptoms and side effects of antipsychotic medication, many of which are associated with poor fitness.² Promotion of physical exercise adoption and adherence on a routine basis in mental health service delivery is a feasible strategy for improving health outcomes for people with SSDs.⁴ This contention is strengthened by preliminary evidence that despite overall low activity levels in persons with SSDs, experimental participants had higher levels of physical activity than controls at 14-34 months follow-up post-intervention.⁵

A recent systematic review of three randomised controlled trials concluded that exercise programs are feasible for individuals with schizophrenia and that they may confer both mental and physical health benefits.⁶ However, several barriers to the uptake of physical activity persist in this population, including low self-efficacy, never learning how to exercise, lack of role models and social and motivational support, negative affect, fatigue, illness, and lack of confidence.^{7,8}

While mainstream media cardiovascular messages have been shown to be effective in the general population,⁹ the higher prevalence of sedentariness and cardiovascular disease risk factors among individuals diagnosed with SSDs demonstrate that such messages are not effective for the latter group. Therefore, this study aims to supplement existing evidence by examining exercise behaviour and attitudes in a sample of individuals diagnosed with SSDs using open-ended interview questions that may elucidate unique incentives and barriers to exercise. Findings of this study have implications for routine clinical practice and targeted exercise interventions among individuals with SSDs.

Method

The study involved a cross-sectional interview conducted by the first author, using a convenience sample. Individuals diagnosed with SSDs, aged 18 years or older and attending one of three community mental health services in Melbourne, Australia, were invited to take part in the study. Exclusion criteria were an inability to provide informed consent or to speak English, or being deemed too psychiatrically unwell by treating clinicians. Individuals were invited to participate by their treating clinicians or responded to an advertisement placed in clinic waiting areas. Approval was obtained from the appropriate ethics committees and informed consent of all participants was obtained. Interviews were conducted at the mental health service attended by participants for treatment, with the exception of one home-based interview. Interviews were part of a larger study,¹⁰ for which data collection (including psychiatric symptom assessment, correlates of physical health, and physical activity using validated measures yielding quantitative data) varied in duration from 1 to 3 hours. Participants were provided with a single visit free pass for a fitness centre.

Measures

Exercise behaviour interview

This interview (available on request) was constructed for the purpose of the present study to assess current and past exercise behaviour, as well as intention for near future exercise. The interview included six items from the Australian Risk Factor Prevalence Study,¹¹ which assess the type, context, intensity and frequency of physical activity, including activity related to housework and employment, over the previous two weeks. Reasons for exercising/not exercising were elicited in the interview. Similar questions were incorporated to assess past exercise behaviour and future intentions regarding exercise. Responses were recorded in writing by the researcher.

Demographic and illness characteristics

Demographic characteristics were elicited using items from the Australian National Health Survey.¹¹ Participants were asked about their psychiatric illness characteristics (e.g., diagnosis, illness duration and medication), which were confirmed via their case managers and medical files where possible.

Data analyses

Template analysis described by King¹² was utilised to code the themes and analyse the data. This was an iterative process and the themes, once finalised, formed a template that was applied across all interview responses. Data trustworthiness was optimised via triangulation of data collected through the larger study in which this study was embedded,[10](#) establishing inter-coder agreement and code-recode consistency using four interviews. The frequency of respondents generating each theme was determined.

Results

Sample characteristics

Eighty-six individuals were invited, and 49 participated in the study. Non-participation was mainly attributable to either not being contactable or being disinterested (53%). Forty-two participants (85.7%) had been diagnosed with schizophrenia and seven (14.3%) with schizoaffective disorder. The average age of participants was 39 years (range 21-69 years) and the majority were males (71%) of Australian origin (82%) who had never been married (70%). The average illness duration was 14 years (range 2-38 years), with 61% on atypical, 20% on typical, and 16% on a combination of atypical and typical antipsychotic medication. No significant differences were found between participants (N = 49) and non-participants (N = 37) in demographics, antipsychotic medication and illness duration.¹³

Exercise behaviour patterns

Table 1 shows the proportion of participants who reported engaging in any amount of past or present, and intending to engage in near future, physical activity. Although the interview enquired about 'exercise' or purposeful activity, respondents occasionally reported physical activities other than exercise and the information presented in Table 1 is

as reported in order to understand participants' conceptualisation of exercise. Mean durations of activity were not calculated given the diversity of responses. For example, although 41% reported vigorous physical activity, this ranged from 10 minutes (two five-minute sessions) of weight lifting to 10 hours (28 sessions of 15-30-minutes duration) of bike riding for transport across the fortnight. Similarly, light physical activity ranged from a single 15-minute walk to 90 hours (six days of 7.5 hours duration) of work-related physical activity across the fortnight.

Table 1

The types of physical activities, across the categories of intensity, in the previous two weeks are shown in Table 2. Gym/weights and walking are represented across both vigorous and light categories according to participant classification. Few participants regarded non-exercise physical activities (e.g., house- and handy-work and playing the guitar) as light exercise.

Table 2

The most common context for exercise was exercising alone (45-71%) for past, present and future exercise, followed by exercising at a gym (11-41%). Twenty-six percent (n = 10) of current light exercisers reported that they were, and 17% (n = 6) of participants intending to engage in future exercise indicated that they would be, accompanied by another during exercise. One person reported exercising lightly in the previous two weeks as part of a walking group at her treating clinic and this was classified as 'with another'. One person reported past gym exercise that was organised by his mobile support team.

Reasons for and against exercise

Reasons provided by participants for engaging or not engaging in exercise are illustrated in Tables 3 and 4, respectively. Three themes emerged from the reasons provided for exercising regularly including 'physical benefit', 'psychological benefit', and 'other', with participants often citing multiple reasons (Table 3). Only one person stated that exercise was part of a mental health rehabilitation plan. In the 'other' category for light exercise, each of the reasons 'for transport', 'to benefit others' and 'due to the influence of others' were mentioned by a minimum of three people. Similarly, 'influence of others' (e.g.,

friends, partner, probation officer and father) accounted for past exercise by several people.

Table 3

Four themes emerged from the reasons provided for not exercising regularly including 'physical health problems', 'disinterest', 'mental illness itself', and 'other' (Table 4).

'Disinterest' and the 'mental illness itself' consistently made substantial contributions to the lack of exercise among study participants.

Table 4

Participants who indicated that they either might (n = 9) or who had no intention (n = 10) of exercising regularly in the future (in addition to eight currently sedentary participants who responded affirmatively), were asked what would need to be different in their lives for them to exercise. Five themes emerged including 'medical/health change', 'relationship/social influence', 'change in affect/cognitive processes', 'disinterest', and

'other' (Table 5). These themes parallel the themes shown in Table 4, which were provided as reasons for not exercising. The main exception to this, however, was that the desire for 'relationships/social influence' was more salient when contemplating future exercise.

Table 5

Discussion

The present study sample was relatively representative of people with SSDs receiving treatment in the community as indicated by comparisons with those who refused to participate¹³ and a larger local community psychiatric sample.¹⁴ The interviews yielded significant variations in the type and durations of self-reported (and self-defined) physical activity. The larger study¹⁰ in which the present one was set also used a validated exercise measure, defining exercise as ‘any planned physical activity performed to increase physical fitness and performed 3-5 times per week for 20-60 minutes and performed at a level that increases breathing rate and causes sweat to break’.¹⁵ Based on this definition, 76% of the present sample was considered to be currently sedentary¹⁰ compared with 31% of people aged 15 years and over worldwide,¹⁶ confirming previous reports of sedentariness relative to the general population.^{8, 14}

The finding that participants were more likely to have engaged in regular past than present exercise may suggest that psychiatric illness onset is associated with a reduction in physical activity. While this suggestion cannot be confirmed because past exercise was not directly aligned against course of illness, the inference is a plausible one based on the

apathy, avolition and anhedonia that are characteristic of negative psychotic symptoms; the situation is worsened by depression, social anxiety, medication side effects and the unavailability of resources.

The most popular types of vigorous and light exercise indicated were gym work and walking, respectively. In support of previous explanations proposed,¹⁷ participants often reported that walking was their mode of transport and not necessarily a means to improve fitness. Consistent with this was the finding that physical benefit was the most frequent reason reported for current, past and future vigorous exercise, but not for light exercise. The prominence of awareness of the physical benefits relative to other potential benefits suggests that there is a need for education regarding the multifaceted benefits of exercise, including its potential role as a coping mechanism for dealing with psychiatric symptoms.¹⁸ Notwithstanding, awareness of the psychological benefits of exercise was noted as a reason to exercise by some participants. Only two participants indicated that exercise was related to their treatment plan; one female was involved in a walking group and one male had been given a free gym membership. This finding is consistent with

evidence indicating that physical health is viewed as secondary to the treatment of mental illness and that preventive health is often neglected within the mental health system.¹⁹

Consistent with previous findings,^{7,8} the potential social interaction conferred by exercise and social influence were reported as incentives for exercise activity. Therefore, if available, significant others are potentially valuable sources of support and motivation and may serve as role models for participation in exercise. Indeed, previous findings have shown that significant others may positively influence an individual attempting to change her/his exercise behaviour.²⁰ For individuals with SSDs who lack significant others, mental health professionals constitute the most important network and are in a position to influence health-promoting behaviours. The efficacy of exercise promotion may be enhanced via group interventions, offering the additional benefit of social interaction for those who want it.

Some of the barriers to exercise classified as 'disinterest' may reflect negative psychotic symptoms and/or low self-efficacy,^{7,8,10} both of which may be improved by using cognitive behavioural therapy.^{21,22} Circularly, exercise participation may ameliorate some

psychiatric symptoms,⁶ particularly if relevant intervention design and guidelines applicable to this population are implemented (e.g., accrual of moderate-intensity activity throughout the day rather than structured group programs for some).⁴ The barriers physical health problems and the mental illness itself, suggest that improving awareness of the multifaceted benefits of exercise among individuals with SSDs is warranted, coupled with interventions targeting other lifestyle factors that compromise physical health and adherence to psychiatric treatment.

This study was limited by the small sample size and its cross-sectional design. It was also limited by the biases inherent in the use of a convenience sample and retrospective self-reported exercise behaviour, although trustworthiness of the latter was ascertained through triangulation of the data collected from the larger study in which it was embedded. Data on physical health conditions were not collected; however, as reported elsewhere¹³ blood pressure and body mass index were obtained and were not significantly related to exercise behaviour, while self-rated health was. Longitudinal studies are needed to provide stronger evidence of the nature and direction of causal paths and the applicability of findings for inpatients.

Conclusions

It is concerning that only two people indicated that exercise was related to their treatment rehabilitation. Overall, our findings support previous appeals for the routine integration of physical activity interventions in mental health care⁴ and provide evidence of the significance of social support and strategies for enhancing self-efficacy to this end.^{7, 8, 10} Specifically, the present study demonstrates that people with SSDs are more aware of the physical health benefits of exercise than of other benefits. Therefore, the uptake of targeted exercise interventions may be improved if combined with strategies aimed at increasing motivation, such as improving awareness of the psychological benefits of exercise and harnessing social support (e.g., involving significant others or offering group interventions). Additionally, training and professional development for mental health professionals should include the necessary knowledge and skills required for facilitating exercise opportunities for people with SSDs.

Acknowledgments:

We thank the staff from Inner West Area Mental Health, North East Area Community Mental Health and North West Area Mental Health services for assistance with recruitment and the participants who provided the data for our analyses. We thank Professor Jane Pirkis and Dr Angela Nicholas for their invaluable encouragement in the preparation of the manuscript.

References

1. Galletly CA, Foley DL, Waterreus A, et al. Cardiometabolic risk factors in people with psychotic disorders: The second Australian national survey of psychosis. *Australian and New Zealand Journal of Psychiatry*. 2012; 46: 753-61.
2. Vancampfort D, Probst M, Scheewe T, et al. Relationships between physical fitness, physical activity, smoking and metabolic and mental health parameters in people with schizophrenia. *Psychiatry Research*. 2013; 207: 25-32.
3. Sukanta S, Chant D, McGrath JA. Systematic Review of Mortality in Schizophrenia: Is the Differential Mortality Gap Worsening Over Time? *Archives of General Psychiatry*. 2007; 64: 1123-31.
4. Richardson CR, Faulkner G, McDevitt J, Skrinar J, Hutchinson DS, Piette JD. Integrating physical activity into mental health services for persons with serious mental illness. *Psychiatric Services*. 2005; 56: 324-31.
5. Beebe LH, Smith KD, Roman MW, et al. A pilot study describing physical activity in persons with schizophrenia spectrum disorder (SSDS) after an exercise program. *Issues in Mental Health Nursing*. 2013; 34: 214-9.
6. Gorczynski P, Faulkner G. Exercise therapy for schizophrenia. *Cochrane Database of Systematic Reviews*. 2010; Issue 5: Art. No.: CD004412. DOI: 10.1002/14651858.CD004412.pub2.
7. Leas L, McCabe M. Health behaviors among individuals with schizophrenia and depression. *Journal of Health Psychology*. 2007; 12: 563-79.

8. Ussher M, Stanbury L, Cheesemean V, Faulkner G. Physical activity preferences and perceived barriers to activity among persons with severe mental illness in the United Kingdom. *Psychiatric Services*. 2007; 58: 405-8.
9. Lawrence D, Holman CDJ, Jablensky AV. *Preventable physical illness in people with mental illness* Perth: The University of Western Australia, 2001.
10. Bassilios B, Judd F, Pattison P, Nicholas A, Moeller-Saxone K. Predictors of exercise in individuals with schizophrenia: A test of the transtheoretical model of behaviour change. *Clinical Schizophrenia and Related Psychoses*. In press.
11. National Heart Foundation of Australia (NHF) and Australian Institute of Health (AIH). Risk factor prevalence study: Survey No. 3. Cities Analysis 1989. Canberra: NHF/AIH, 1991.
12. King N. Template analysis. In: Symon G and Cassell C, (eds.). *Qualitative Methods and Analysis in Organizational Research*. London: Sage Publications, 1998; 118-134.
13. Bassilios B. Physical Exercise Activity in Individuals with Schizophrenia. *Department of Psychology*. Melbourne: The University of Melbourne, 2005 [cited 2012 January 18]. Available from <http://repository.unimelb.edu.au/10187/11197>.
14. Davidson S, Judd F, Jolley D, Hocking B, Thompson S. The general health status of people with mental illness. *Australasian Psychiatry*. 2000; 8: 31-5.
15. Marcus BH, Rakowski W, Rossi JS. Assessing motivational readiness and decision making for exercise. *Health Psychology*. 1992; 11: 257-61.
16. Australian Bureau of Statistics (ABS). Australian Social Trends, June 2012 Canberra: ABS, 2012.

17. Judd F, Jolley D, Hocking B, Thompson S. Body and mind project: General health status of people with a mental illness. Melbourne: University of Melbourne, 1999.
18. Faulkner G, Biddle S. Exercise as an adjunct treatment for schizophrenia: A review of the literature. *Journal of Mental Health* 1999; 8: 441-57.
19. Hyland B, Judd F, Davidson S, Jolley D, Hocking B. Case managers' attitudes to the physical health of their patients. *Australian and New Zealand Journal of Psychiatry*. 2003; 37.
20. Zimmerman RS, Connor C. Health promotion in context: The effects of significant others on health behaviour change. *Health Education Quarterly*. 1989; 16: 57-75.
21. Klingberg S, Wittorf A, Herrlich J, et al. Cognitive behavioural treatment of negative symptoms in schizophrenia patients: study design of the TONES study, feasibility and safety of treatment. *European Archives of Psychiatry and Clinical Neuroscience*. 2009; 259: S149-54.
22. Biddle SJH, Mutrie N. *Psychology of physical activity: Determinants, well-being and interventions*. London: Routledge, 2001.

Table 1

Proportion of participants reporting past, present or intentions for future physical activity (N = 49)

Physical activity across time	%
Vigorous exercise in previous 2 weeks	40.8
Light exercise in previous 2 weeks	77.6
No exercise in previous 2 weeks	12.2
Walking in previous 2 weeks	73.5
Vigorous activity other than exercise in previous 2 weeks	30.6
Regular past exercise	89.8
Intention for regular (near) future exercise	61.2

N.B. Totals exceed 100% as multiple responses permitted.

Table 2

Proportion of participants in each category of activity intensity reporting various types of physical activities in the previous two weeks (N = 49)

Exercise intensity	Exercise type	% of row n
Vigorous exercise (n = 20)	Gym/weights	45
	Competitive sports (soccer, cricket, tennis, football)	20
	Brisk/uphill walk	20
	Jogging or running	10
	Cycling	10
	Other (swimming, skipping, dancing)	25
Light exercise (n = 38)	Walking	71
	Gym/weights	13
	Dancing	11
	Cycling	8
	Stretching	5
	Other (bowling, push-ups, hacky sack, handy work, housework, playing guitar)	21
Vigorous activity other than exercise (n = 14)	Carrying heavy loads	36
	Housework	21
	Gardening	21
	Mowing lawn	14
	Digging	14
	Other (moving house, painting, sex)	21

N.B. Totals exceed 100% as multiple responses permitted.

Table 3**Reasons provided for engaging in regular exercise according to three emergent themes (N = 49)**

	Reasons	% of row n
Vigorous exercise in previous 2 weeks (n = 20)	<i>Physical benefit</i> fitness, health, strength, appearance, tension release, energy, weight management, compensate for other health risk behaviours, protection from chronic illness	85
	<i>Psychological benefit</i> mental wellbeing, enjoyment, leisure, mastery, distraction, feel good, lift spirit, ego, balanced life	55
	<i>Other</i> transport, habit, obsessive, practice dancing, access to gym while hospitalised, part of rehabilitation, tangential response	40

Light exercise in previous 2 weeks (n = 38)	<i>Physical benefit</i>	37
	fitness (cardiovascular and respiratory) , health, appearance, tension release, energy, weight management, protection from chronic illness	
	<i>Psychological benefit</i>	39
	enjoyment, social/leisure, distraction, feel good, alleviate boredom, stress management, relaxation, cope with illness, like outdoors	
	<i>Other</i>	61
	transport, for benefit of others (dog, mother), influence of others, work, clean house, good weather, observe nature, opportunity arose, prefer light exercise, have more energy because stopped smoking marijuana	
Past regular exercise (n = 43)	<i>Physical benefit</i>	74
	fitness, health, tone/build muscle, weight management, appearance	
	<i>Psychological benefit</i>	44
	enjoyment, mastery, stress relief, challenge, feel good, mental health, improve life, concentration	
	<i>Other</i>	37
	influence of others, training/competition, self-defence, transport, lifestyle, socialise/part of team, lots of energy as youth, free Community Rehabilitation Service gym membership	

Intention for near future exercise (n = 37)	<i>Physical benefit</i>	84
	fitness, health, weight/fat management, energy, strength and flexibility, appearance, disease prevention, longevity, compensate for/reduce other health risk behaviours	
	<i>Psychological benefit</i>	27
	mastery, self-esteem, mental and emotional health, enjoyment, feel better, relaxation, self-satisfaction	
	<i>Other</i>	22
	transport, doctor recommendation, habit/obsessive, fresh air, social	

N.B. Totals exceed 100% as multiple responses permitted. If a person provided multiple reasons for exercising but these were captured under one theme, this was counted as one response. If a person provided multiple reasons that comprised different themes, the number of responses paralleled the number of themes. 'Weight management' included weight loss and prevention of weight gain; one person preferred light exercise to vigorous exercise for the prevention of weight loss.

Table 4**Reasons provided for not engaging in regular exercise (N = 49)**

	Reasons	% of row n
No vigorous exercise in previous 2 weeks (n = 29)	<i>Physical health problems</i>	21
	overweight, back problems, unfit, smoker, menstruating, recovering from pneumonia	
	<i>Disinterest</i>	55
	don't know, disinterest, dislike, no need, not a priority, prefer not to, didn't have to, no reason, lazy, no labour available	
	<i>Mental illness itself</i>	28
	amotivation, low mood, agoraphobia, not up to it, anergia	
		14
	<i>Other</i>	
	old age, disrupted routine	
No light exercise in previous 2 weeks (n = 11)	<i>Physical health problems</i>	27
	menstruating, asthma, unwell, overweight	
	<i>Disinterest</i>	55
	don't know, didn't have to, no reason, can't be bothered	
	<i>Other</i>	27
	old age, preferred to rest and relax, tangential response	

No past regular exercise (n = 5)	<i>Disinterest</i> don't know, lazy	40
	<i>Mental illness itself</i> amotivation, agoraphobia	40
	<i>Other</i> worked in jobs that kept fit	20
No intention for near future exercise (n = 15)	<i>Disinterest</i> don't know, not essential, no appeal, no urge	27
	<i>Mental illness itself</i> amotivation, agoraphobia, not up to it, anergia, enough to cope with, mind elsewhere	60
	<i>Other</i> can't afford, expiry of free gym membership, tangential response	20

N.B. Totals exceed 100% as multiple responses permitted. If a person provided multiple reasons for not exercising but these were captured under one theme, this was counted as one response. If a person provided multiple reasons that comprised different themes, the number of responses paralleled the number of themes.

Table 5**Factors that need to change for exercise to be seriously considered (n = 27)**

Change factor	%
<i>Medical/health change</i>	30
reduce antipsychotic medication, doctor recommendation, develop illness that requires exercise, increase weight, being unfit, choice between life and death	
<i>Relationships/social influence</i>	30
being in an intimate relationship, having an exercise partner and/or others to motivate	
<i>Change in affect/cognitive processes</i>	26
mood/affect, anxiety, restlessness, concentration, motivation, need to make the decision, boredom, fear of failure	
<i>Disinterest</i>	30
don't know, nothing, not interested, laziness	
<i>Other</i>	15
age, flatter ground in locality, gym at home, tangential response	

N.B. Totals exceed 100% as multiple responses permitted.