



Promoting physical activity for mental health: an updated evidence review and practical guide

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Purpose of review

The aim of this study was to provide psychiatrists with the knowledge, tools and guidance to support physical activity promotion in clinical practice. The review also aims to provide an up-to-date summary of the evidence regarding physical activity in the prevention and treatment of mental disorders in adults.

Recent findings

There is emerging evidence demonstrating that physical activity can protect against incident anxiety and depression. There is robust evidence showing that physical activity is an effective adjunct treatment strategy for depressive disorders and anxiety and stress-related disorders, with emerging evidence for schizophrenia and bipolar disorders. Translation of this evidence into practice is in general ad hoc, and large physical health disparities for people with mental disorders persist. The reasons for this are multifactorial, and include the intersection of social, economic and personal barriers to physical activity. Evidence-based approaches include regular screening of physical activity levels, staff culture change within mental health services and established referral pathways.

Summary

Translation of evidence regarding physical activity for mental health into routine programmes is critical. Efforts to move beyond solely targeting individual-level barriers to physical activity and address systemic barriers include lack of access to appropriate exercise services. This requires consideration of training needs, service structure and culture change.

Keywords

exercise, mental health, mental illness, physical activity

INTRODUCTION

Physical inactivity is a significant contributor to the global burden of disease and a leading risk factor for premature mortality [1,2]. Worldwide, more than 7% of all-cause and cardiovascular disease deaths are attributable to physical inactivity [1].

The 2020 WHO guidelines on physical activity and sedentary behaviour recommend that adults undertake 150–300 min of moderate-intensity, or 75–150 min of vigorous-intensity physical activity, or some equivalent combination, per week [3^{••}]. Nonetheless, bouts of physical activity of any duration can improve health, including reducing risk of all-cause mortality [4,5[•]]. In addition, the guidelines recommend muscle strengthening exercise on two or more days per week. Meeting these guidelines significantly reduces the risk of all-cause mortality (hazard ratio: 0.60), compared with not meeting these recommendations [6], and therefore, targeting physical inactivity is a health priority [7].

Globally, 28% of adults are insufficiently active, defined as those failing to meet the WHO weekly physical activity guidelines [8]. Mental illness is an established risk factor for physical inactivity [9]. People with severe mental illness are 50% less likely than matched healthy controls to meet the physical activity guidelines [10].

Mental disorders are also associated with an increased risk of subsequent medical conditions,

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Curr Opin Psychiatry 2022, 35:270–276

DOI:10.1097/YCO.0000000000000796

KEY POINTS

- Physical activity is a transdiagnostic intervention that can improve physical and mental health.
- There are individual and systemic barriers to physical activity faced by people with mental illness, which need to be considered.
- Physical activity should be regularly assessed and promoted among people with mental illness.

which further prevent participation in physical activity. For example, Danish population-based cohort data revealed that within 15 years of diagnosis of a mood disorder, the absolute risk of cardiovascular conditions was 41% [11[•]].

There is strong evidence that physical activity can confer protection from the development of mental disorders and be an effective adjunctive treatment [12[•]]. However, symptoms of mental health can paradoxically be both a barrier and a facilitator to physical activity engagement [13]. Therefore, although physical activity can be an effective transdiagnostic mental health intervention, addressing the personal, social and economic barriers that prevent people with mental illness from engaging in health enhancing physical activity is critical [13,14].

The aim of this review is to provide mental health practitioners with practical guidance to assess and promote physical activity considering the contextual and systemic barriers, and provide an up-to-date review of the evidence regarding physical activity in the prevention and treatment of mental disorders in adults.

RECOMMENDED FREQUENCY, INTENSITY AND TYPE OF PHYSICAL ACTIVITY FOR PEOPLE WITH MENTAL ILLNESS

The physical activity-mental health relationship is apparent even at low volumes of activity, or those considered ‘insufficient’ by the guidelines [15^{••}]. This is an important clinical consideration given that those experiencing the most severe mental ill-health are the least likely to be physically active or have access to resources to support engagement in health enhancing physical activity programmes [9]. Importantly, the mental health benefits of physical activity are *domain dependent* [16]. The domains of physical activity are leisure time, occupational, transport and household, with growing evidence that leisure time activity is the most strongly associated with improved mental health symptoms, followed by transport physical activity [17].

Both resistance training (i.e. muscle building or strengthening exercises) [18] and aerobic exercise (e.g. ‘heart and lung exercise’) [19] can improve mental health symptoms. Meta-analyses comparing aerobic exercise only, with muscle strengthening exercise only, revealed no significant difference between modalities in reducing depressive symptoms [18]. An emerging evidence base has also demonstrated the efficacy of mind-body interventions such as yoga and Tai Chi [20,21]. High-intensity interval training (HIIT), defined by short bouts of high-intensity physical activity alternated with low-intensity recovery periods, has also been shown to be effective in reducing depressive symptoms in people with mental illness [standardized mean difference, SMD = -1.36, 95% confidence interval (95% CI) = -1.63 to -1.1] [22].

Mental health informed physical activity recommendations suggest that participation in some physical activity during leisure-time or in active travel, where possible prioritizing enjoyment and personal preference; and even small bouts of physical activity confer physical and mental health benefits [15^{••}].

BARRIERS AND CHALLENGES TO PHYSICAL ACTIVITY PARTICIPATION IN PEOPLE WITH MENTAL ILLNESS

Individual-level barriers to physical activity participation include poor physical health, fatigue, high levels of stress, depression and a lack of motivation [23]. Systemic and contextual barriers include a lack of social support, cultural barriers, high costs and a lack of access to appropriate exercise facilities [24].

Intersectional disadvantage can describe the relationship between these barriers, which may prevent a person with mental illness from accessing appropriate physical healthcare including physical activity programmes [25–27]. Providing supportive and accessible environments and helping to identify social support for physical activity is essential for effective behaviour change and establishing peer-based community programmes can help facilitate engagement [28,29]. Mental health professionals may also benefit from greater support and infrastructure to assist in identifying suitable referral programs and recourses [30].

HOW TO ASSESS AND PROMOTE PHYSICAL ACTIVITY IN CLINICAL PRACTICE?

Psychiatrists should assess and promote physical activity as a part of routine clinical care [31–33]. Evidence suggests that receiving a recommendation

from a physician or other healthcare professionals is associated with greater exercise engagement [34].

Physical activity assessment is an important component of a broader physical health screen [7,35]. People who are meeting the physical activity guidelines of 150 min of moderate to vigorous physical activity per week are considered ‘physically active’. A step-by-step guide for assessing physical activity levels is shown in Fig. 1 and two validated tools of varying lengths are listed as follows.

Assessing physical activity in less than 1 min

- (1) The Physical Activity Vital Sign (PAVS) [36] assesses weekly levels of moderate to vigorous physical activity and takes less than 1 min to complete. It is a two-item questionnaire:
 - (a) On average, how many days per week do you engage in moderate to vigorous physical activity (like a brisk walk)?
 - (b) On average, how many minutes do you engage in physical activity at this level?

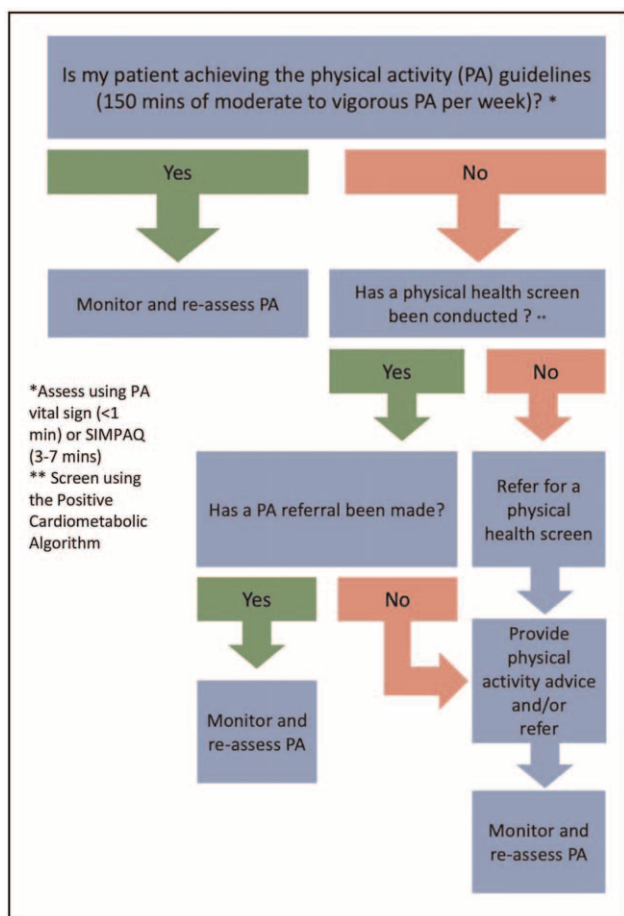


FIGURE 1. A step-by-step guide for psychiatrists: assessing and promoting physical activity.

Responses are multiplied to calculate minutes of self-reported moderate to vigorous activity per week. The PAVS has strong psychometric properties [37] and is sensitive as a screening tool in schizophrenia [38] and bipolar disorder [39].

Assessing physical activity in more than 1 min

The Simple Physical Activity Questionnaire (SIMPAQ) is a five-item self-report interview questionnaire that estimates overall physical activity, including sedentary time, moderate to vigorous physical activity levels and incidental activity [40]. This tool is freely available in 17 languages (including English, Mandarin and Spanish) from www.simpaq.org. The interview takes between 3 and 7 min to complete.

Providing physical activity advice and referral

Multiple contacts of brief physical activity education and counselling in primary care can improve patient levels of physical activity [41]. In addition, supervised and tailored exercise programmes delivered by qualified health professionals have significantly better physical and psychological outcomes and are associated with lower drop-out [42,43]. Community physical activity referral schemes should also be considered. A 2022 review of exercise referral schemes for mental health found that schemes that involved face-to-face consultations and telephone calls had the highest rates of mean uptake [44], for example referrals to local leisure centres. Referrals should be tailored to individual patient preferences and consider the unique individual and contextual barriers. For example, the type of service delivery may be group-based, in person or online. Awareness of government subsidies (e.g. Medicare in Australia [45]) and developing strong partnerships with community services to encourage shared care with mental-health services will help improve access.

Evidence-based approaches to achieving system-level change

improving staff culture

Identifying physical health ‘champions’ within mental health services is important to support patients to be physically active. Exposing mental health staff to lifestyle interventions prior to targeting patients has shown to be effective for changing staff culture and improving patient outcomes [46]. For example, an Australian study in $N = 212$ mental

health staff found that participation in a lifestyle intervention improved staff barriers, attitudes, knowledge and confidence regarding screening, promoting and intervening to improve physical health outcomes of patients [46]. Such programmes should be considered alongside didactic or traditional training programmes.

Embedding physical health professionals into mental health

Where possible, the integration of physical health professionals, for example exercise professionals, nurses, dietitians and peer workers into standard mental health teams is recommended to manage physical health [9,47].

Student-led clinics

Student-led clinics and interventions can help increase capacity among the expanding mental health workforce [48]. A pilot study employing this model with exercise physiology and dietetic students on practicum placements found it to be feasible, acceptable and well tolerated, and led to significant improvements in mental health symptoms [49].

AN UPDATED OVERVIEW OF THE EXERCISE AND MENTAL HEALTH LITERATURE

A 2020 meta-review of 16 individual meta-analyses provided a detailed overview of how physical activity, sleep, dietary patterns and tobacco smoking impact on the risk and treatment outcomes across a range of mental disorders [12^{*}]. Results from 29 meta-analyses of prospective/cohort studies, 12 Mendelian randomization studies, two meta-reviews and two meta-analyses of randomized controlled trials were synthesized covering a broad range of conditions, including depression, anxiety and stress-related disorders, schizophrenia and bipolar disorder. Physical activity was identified as the most widely researched lifestyle factor and a promising target for intervention.

Physical activity and the prevention of mental disorders

Depression

A meta-analysis of 49 prospective comparisons ($N=266\,939$) followed for 1 837 794 person-years found that higher levels of physical activity had a 17% lower risk of incident depression than those with lower levels of physical activity [odds ratio (OR) = 0.83, 95% CI = 0.79–0.88], with low heterogeneity between included studies ($I^2=0\%$) [50].

Anxiety disorders

The relationship between physical activity and incident anxiety was examined in a systematic review across 14 cohorts of 13 unique prospective studies ($N=75\,831$) followed for 357 424 person-years [51]. People with high self-reported physical activity were at reduced odds of developing anxiety (adjusted OR = 0.74, 95% CI = 0.62–0.88) compared with low self-reported physical activity.

Schizophrenia and bipolar disorder

Evidence for physical activity in the prevention of schizophrenia and bipolar disorder is less clear. One meta-analysis examined prospective associations of physical activity with schizophrenia and related psychotic disorders [52] and found that across five prospective comparisons, with between 4 and 32 years of follow-up, higher levels of physical activity significantly reduced the risk of incident psychosis (OR = 0.73, 95% CI = 0.53–1.0). However, in the two studies ($N=10\,583$) that adjusted for confounding factors, overall reductions in psychosis incidence from physical activity were nonsignificant.

A mendelian randomization study examined the risk of schizophrenia and bipolar disorder in relation to physical activity and found that physical activity has a causal protective effect against bipolar disorders (OR = 0.49, 95% CI = 0.31–0.77) [53]. However, one previous prospective study found that higher levels of physical activity were associated with a greater likelihood of incident bipolar disorder at follow-up [54].

Physical activity in the treatment of mental disorders

A 2020 meta-review of 16 meta-analyses reporting data from 152 unique RCTs summarized the evidence for physical activity interventions in the treatment of mental disorders [55^{**}]. Strong evidence in support of the beneficial effects of physical activity and exercise in people with a range of mental disorders was found. Benefits identified extended beyond the core diagnostic symptoms and include improvements in quality of life, physical health and cognitive symptoms across a range of mental health diagnoses.

Depressive disorders

Of all mental disorders, the strongest evidence for physical activity exists for major depression and depressive symptoms. A meta-review of 11 meta-analyses of studies evaluating the effect of exercise for depression found moderate effects on depression severity in adults [56]. All of the included studies

evaluated supervised exercise on several days per week for a range of weeks in patients with clinical depression or depressive symptoms. This evidence is reflected in international treatment guidelines for mood disorders [31].

Anxiety and stress-related disorders

A systematic review and meta-analysis of 13 RCTs investigating the anxiolytic effects of exercise for people with anxiety and related disorders found that exercise had a small, statistically significant effect on decreasing anxiety symptoms compared with control condition (SMD = -0.43, 95% CI = -0.67 to -0.17) [57]. A separate review of 11 studies looking specifically at post traumatic stress disorder (PTSD) identified a positive effect of exercise on PTSD symptom severity compared with nonactive treatment (SMD = 0.46, 95% CI = 0.18–0.74) [58], with evidence of a stronger effect with greater volumes of exercise. Proven strategies to reduce drop out include sessions delivered by an exercise professional and applying autonomous motivation strategies ($P < 0.001$) [59].

Schizophrenia

A systematic review of eight RCTs showed that exercise did not significantly reduce total symptoms [55[■]]. However, RCTs of exercise interventions that used at least 90 min of moderate-to-vigorous activity per week did significantly reduce total symptoms (SMD = -0.72, 95% CI = -1.14 to -0.29), positive symptoms (SMD = -0.54, 95% CI = -0.95 to -0.13) and negative symptoms (SMD = -0.44, 95% CI = -0.78 to -0.09) more than control conditions.

A meta-analysis of RCTs specifically examining the effectiveness of exercise intervention in improving the negative symptoms of schizophrenia found a significant beneficial effect of physical exercise compared with control conditions, but with a small effect size (SMD = -0.24, 95% CI = -0.43 to -0.06) [60]. A subgroup analysis found a significant beneficial effect of aerobic exercise on negative symptoms (SMD = -0.31, 95% CI = -0.54 to -0.09) and no significant effect for nonaerobic interventions (SMD = -0.12, 95% CI = -0.46 to +0.23). Exercise has also been shown to significantly improve global cognition in people with schizophrenia [61].

Bipolar disorder

Evidence for bipolar disorder is limited with no RCTs conducted [12[■]]. There is however some evidence from nonrandomized studies that exercise might effectively reduce depressive symptoms in people with bipolar disorders, but limited research reporting the effects of exercise on manic or hypomanic

symptoms [62]. Given the promise of these emerging findings, there is a need for greater research, including RCTs in this area [63].

THE ROLE OF PHYSICAL ACTIVITY IN THE PREVENTION AND TREATMENT OF PHYSICAL HEALTH COMORBIDITIES

Mental disorders are associated with 1.4 to two-fold increased risk for obesity, diabetes and cardiovascular diseases, compared with the general population [9,64]. There are large disparities in the screening and treatment of physical health comorbidities, including cardiovascular disease in people with mental illness [65[■]]. Physical activity is a highly effective nonpharmacological intervention to reduce cardiovascular and metabolic risk in people with mental illness [9]. Bridging the gap between mental and physical health services [66] and ensuring routine promotion of physical activity is critical to addressing the mortality gap [67].

CONCLUSION

Physical activity can help protect and promote mental and physical health. To support patients to increase physical activity levels, individual level and systematic barriers need to be considered in translation efforts. Evidence-based approaches include regular screening of physical activity levels, modified service structure, staff culture change and established referral pathways.

Acknowledgements

None.

Financial support and sponsorship

None.

Conflicts of interest

There are no conflicts of interest.

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- of special interest
- of outstanding interest

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