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The use of digital technologies to promote physical activity in mental healthcare settings: A scoping review

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Abstract

Introduction: Over the past decade, there has been an increase in the number of digital technologies available for mental health purposes. At the same time, engaging in regular physical activity has been shown to promote mental health and well-being, but activity levels are still low in people with mental illness due to several factors.

Material and methods: The aim of this study is to identify and better understand what digital technologies are available for physical activity promotion in mental healthcare contexts. A scoping review was conducted in accordance with the Arksey and O'Malley scoping review framework and the PRISMA-ScR guidelines. Systematic literature searches of PsycINFO, Academic Search Complete, Web of Science, and PubMed was performed with a focus on the last ten years.

Results: Overall, 11 papers were included. Data was charted and synthesized, and a narrative synthesis was conducted. This scoping review provides a broad overview of the digital tools or technologies that are being used, such virtual reality, wearable devices and mobile applications, and the health benefits or barriers associated with their use for people with mental illness in clinical settings. The results also show that digital technologies could promote willingness to engage in physical activity.

Conclusions: These findings could guide further research on how digital technologies for physical activity promotion can be effectively integrated into psychosocial rehabilitation settings and support mental health and recovery.

Keywords: mental health, mobile apps, physical activity, wearables, virtual reality

Introduction

Physical activity (PA), which can be defined as "any bodily movement produced by skeletal muscles that results in energy expenditure" [1], is important for our physical and mental health. Evidence shows that physical activity plays an important role both in promoting mental health and in preventing and treating mental illness [2–4]. Some studies demonstrate that physical exercise (defined as "a subset of physical activity that is planned, structured, and repetitive and has as a final or an intermediate objective the improvement or maintenance of physical fitness" [1]) is not only beneficial in terms of improving muscle strength and cardiac function [5–7], but also promotes important lifestyle changes and even clinical improvements in people with severe mental illness [8]. Physical benefits such as improvements in cardiac function interact with improvements

in the person's mental health. Thus, by increasing blood circulation in the brain induced by physical activity, there will be a greater influence on the limbic system that mediates motivation and mood, as well as on the amygdala which is responsible for the stress response and, finally, the hippocampus, which governs memory formation, mood and motivation [9,10].

However, people with severe mental illness are generally less physically active than the general population [11]. Research indicates that there are several obstacles that prevent people with mental illness from exercising, including a lack of desire, anxiety about being seen in public, exhaustion, a lack of support, and other coexisting medical conditions like obesity that directly affect mobility [8]. Procrastination, lack of enjoyment, and physical or mental discomfort are the most frequent reasons people avoid PA [12]. In addition to these factors, there may be other barriers specific to inpatient mental health services, such as scarce resources, particular risks and responsibilities in these situations (since patients are sometimes in phases of greater clinical decompensation or on higher doses of medication), lack of support and minimal emphasis placed on exercise [13].

One of the solutions that has been used to increase levels of physical activity is digital technology. Nowadays, digital technologies play a pivotal role in promoting physical activity by seamlessly integrating fitness into individuals' daily lives. Mobile apps, fitness trackers, and wearable devices provide real-time data on physical activity levels, offering personalized insights and motivation [14,15]. These technologies enable users to set and track fitness goals, monitor progress, and receive instant feedback, fostering a sense of achievement and accountability [16]. Another strategy to exploit digital gadgets to encourage and enhance physical exercise is the use of exergames. This method combines physical activity with video games, where the player's body movement serves as the main means of communication with the game. Research indicates that even older persons with serious mental illness can benefit from using exergames as part of an intervention [17]. Additionally, the gamification of fitness through interactive apps and virtual challenges turns exercise into an engaging and enjoyable experience, making it more likely that individuals will adhere to regular physical activity routines [18,19]. Social connectivity through digital platforms allows users to share achievements, join virtual fitness communities, and engage in friendly competitions, creating a supportive environment that encourages sustained physical activity [20]. Overall, digital technologies can empower individuals to take control of their health and well-being, making the pursuit of an active lifestyle more accessible, enjoyable, and sustainable.

One of the many benefits of technology is its availability, as devices such as wearables, or simply the smartphone, become personal tools for a wide range of applications. Through interactivity and flexibility, they can be used to empower people to achieve their lifestyle end goals in an engaging way [21]. The associated changes thus represent the path to a healthier lifestyle and an improved quality of life, especially in terms of mental health [9]. Since these devices are commercially available to the entire community at affordable prices, it becomes easier to access the monitoring and promotion of physical and psychological health, thus making it possible to create applications with concrete objectives directed at the target population. Moreover, these devices can also be easily purchased for use in psychiatric hospitals or psychosocial rehabilitation centres. Thus, this study aims to identify and better understand what digital technologies are available for physical activity promotion in mental healthcare contexts. Our research questions are:

(1) What digital technologies have been utilized to promote physical activity within mental healthcare contexts as an alternative to traditional practices over the past decade?
(2) How have digital technologies been integrated into mental healthcare settings to encourage physical activity engagement among individuals with mental illness?
(3) What types of physical activity interventions or programs involving digital technologies have been implemented for people with mental illness in clinical settings?
(4) What are the reported health benefits associated with the use of digital technologies to promote physical activity among individuals with mental illness?
(5) What barriers or challenges are encountered when utilizing digital tools for physical activity promotion within mental healthcare contexts?

Materials and methods

Search sources and strategies

Systematic searches of PubMed, Academic Search Complete, PsycINFO and Web of Science were used to identify references published or available online in the last 10 years. A model search strategy included the following terms: ("mental health" OR "mental illness" OR "psychiatric disorder") AND ("physical activity" OR "exercise" OR "physical exercise") AND ("digital technology" OR "digital intervention" OR "mobile app" OR "wearable device" OR "virtual reality") AND ("intervention" OR "promotion" OR "intervention study"). The authors chose these terms according to the literature and research objectives.

Eligibility criteria

In order to develop the research, the participants (a), intervention (b), comparisons (c), and outcomes (d) (PICO) method was applied based on the defined objective, giving the following parameters:

a) Individuals diagnosed with a mental illness (e.g., psychotic disorders, anxiety disorders, mood disorders, autism spectrum disorders).
b) Digital technology-based interventions designed to promote physical activity, including mobile apps, wearable devices, online platforms, or virtual reality programs.
c) Standard care interventions versus technology-enabled interventions.
d) Changes in physical activity levels, mental health outcomes (e.g., reduction in symptom severity, improvement in mood, quality of life), adherence to interventions, acceptability, and feasibility of digital interventions.

The following question arises: "In individuals diagnosed with mental illness (P), what is the effectiveness of digital technology-based interventions (I), compared to usual care or non-digital interventions (C), in promoting physical activity and improving mental health outcomes (O)?"

For the selection of studies, authors considered those that involved technological interventions alone or technology in combination with other interventions. It was intended that these interventions be compared with at least one control group (no technological intervention or another conventional intervention). The authors excluded articles from popular media, textbooks, monographs, other reviews, and articles that were not fully accessible. As outcomes, studies were defined as assessing at least one of the parameters stipulated according to the PICO method [22].

Selection of studies

Firstly, with the support of the defined queries, the above databases were consulted. In a pre-selection, the title and abstract of each article were individually analysed and the eligibility criteria were applied by two reviewers (both blinded to the other's assessment) in order to remove irrelevant documents. Subsequently, the full text of all the remaining publications was reviewed for inclusion by the same authors. Any disagreements about the inclusion or exclusion of a publication were discussed until an agreement could be reached. In accordance with the PRISMA-ScR guidelines and Arksey and O'Malley's framework, no quality assessment was performed [23].

Data extraction

Data from eligible papers were extracted by one author (APS) and checked for accuracy by the other author (RSA). The data items that were extracted from each included study were author names, country of origin, year of publication, study design and purpose, and type of engagement strategy.

Results

From the four search platforms, 142 titles were identified. Most of the studies were excluded for not meeting the eligibility criteria, either for not including technologies to promote physical activity or for not applying them in the area of mental health. After analysing the titles and abstracts, 15 papers were assessed for eligibility and had their full text screened. Overall, 11 papers published between 2015 and 2023 were eligible for inclusion. A flow chart illustrating the selection of studies is presented in Figure 1.

The publications were from a variety of locations, including the USA (n = 2), with collaboration from the UK (n = 1), Lebanon (n = 1) and Nigeria and Dominica (n = 1). The rest of the articles were from Asia (Lebanon, Japan, and South Korea in collaboration with Canada) and Europe (Poland, Germany in collaboration with Norway, and the United Kingdom). The methods used ranged from experimental (n = 5) to observational (n = 4), with one study that was exploratory in nature and another that was a pilot study. As a result, the sample size varied widely, ranging from 2 to 4,612 participants. However, the average number of participants was 636 participants. The duration of the studies (which in this article means the time spent using or testing the application) varied from instantaneous for those studies employing questionnaires to between 4 and 20 weeks for those featuring interventions.

The technologies used vary in their aim and purpose. More than half of the collected studies (ten of them) focus on monitoring [24–30], and one of these studies only uses questionnaires to collect subjective opinions, which may include recall bias [31,32]. These data collection studies use wearable devices and mobile applications to collect data. As far as the three articles that include training in their study are concerned, what they have in common is the type of training as well as the method. For example, the participant does balance training, and other types of training, alone. However, while two of the studies focus on aerobic training [33,34], the study by Jo et al. [35] focuses on strength training, showing positive changes in upper body strength and in the flexibility of the upper and lower body. The study by Lee at al. [25] also found improvements in upper body strength, upper and lower body flexibility, cardiovascular endurance, and agility/dynamic balance.

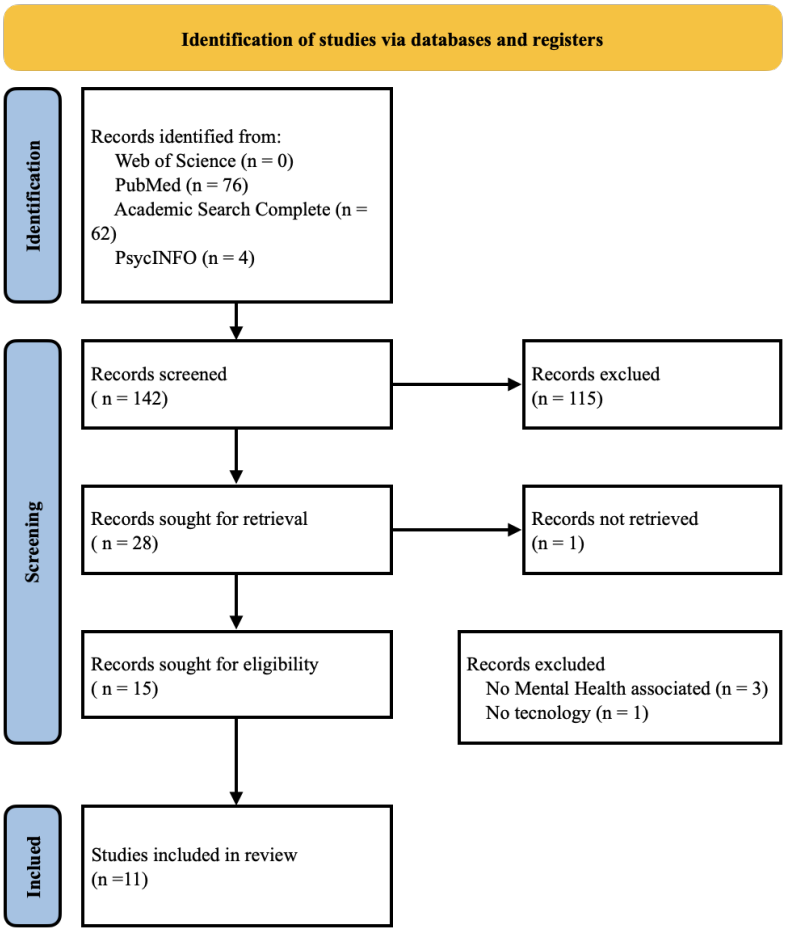

Fig. 1. Selection of studies – PRISMA flowchart

Of the eleven studies in the review, five involved wearable devices, two involved mobile applications and two used online platforms. The remaining two studies utilized virtual reality. Digital technologies were integrated into mental healthcare settings as specific activities to include in the patient's routine and as tools to monitor and alert patients to the need for greater levels of physical activity on a daily basis.

Regarding outcomes and specific benefits, the most notable is the increased willingness of participants to engage in physical activity. Although the practical trials provide quantitative data on the strength and balance of the participants, the qualitative data collected is of greater significance. It demonstrates a sense of achievement in simply completing the recommended number of steps, as well as being able to see this in graphs and charts. The experience is already very positive due to the possibility of sharing and achieving social relationships with other participants. In general, achieving the suggested goals seems to be common. Given the limitations mentioned, the researchers suggest that encouraging friendly competition between participants would also have benefits.

Almost all the applications and methods used do not focus directly on active encouragement. However, they do mention the various factors that contribute to it, mostly through the application itself and its interactivity. The personalisation of some methods, such as the online platform used (Facebook) [27], allows for interactivity and includes the social factor. This differs from other mobile applications, which do not allow this dimension. Another strategy based on the results and graphs obtained, i.e. motivating the participant through the perception of the results, is common to all studies [24–27,32–36]. As this is a qualitative survey, based on the subjective opinion of the participant, it may be subject to bias [32]. Real-time data monitoring and passive monitoring can be beneficial for long-term participation. Peer-to-peer communication [32], reliability of content [24,32] and quality of feedback received [24] were also important factors contributing to the improvement of user participation in the included studies.

However, some barriers were identified. These include the difficulty of maintaining technology use over time and the willingness of professionals and patients to use digital health technologies for this purpose. Detailed results are shown in Table 1.

Tab. 1. Characteristics of included studies

Authors/ Year	Country	N	Study	Aim	Tool Used	Study Characteristics	Outcomes	Barriers and Challenges
Haller et al. [30] 2018	Germany; Norway	20	Randomized Controlled Trial	Assess whether a monitored, personalized, web-based exercise intervention for patients with moderate to severe depression is feasible, acceptable and effective.	Online Platform	Patients with unipolar depression 2 groups: IG, n=14 CG, n=6 Resistance and strength training once a week for 8 weeks	Outcomes assessed after 6-12 days, 8 weeks, after another 8 weeks. After 8 weeks in IG: - intensity of the depression was significantly reduced - performance diagnostics showed a significant increase in maximum performance (in watts) - favorable effect on the SF-36 items „emotional well-being" and „social functioning", as well as on GSE and HPA scores.	Limitations: small sample size, short duration of eight weeks, insufficient exercise time, lack of follow-up data, and unstudied long-term effects
Jo et al. [35] 2018	Korea and Canada	2	Single-subject research design	Assess the effects of VRE via Nintendo Wii on the physical functioning of adults with schizophrenia living in a psychiatric hospital.	Virtual Reality	Particpants with schizophrenia Intervention using the Nintendo Wii-Fit during 18 weeks, consisted of 35-min sessions, 3 times per week.	Positive changes in SFT upper body strength, upper/ lower body flexibility, cardiovascular endurance, and agility/dynamic balance.	Limitations: generalization not possible as there were only two participants, limiting the view to a specific context.
Kiper et al. [33] 2022	Poland	60	Randomized controlled trial	Assess the effectiveness of immersive virtual reality on both functional activity and depressive symptoms in stroke survivors during a 6-week period.	Virtual Reality	Participants with stroke and depression IG, n=30 CG, n=30 Participants in the IG received treatment in an immersive VR therapeutic garden. The CG received SAT (psychotherapy and upper limb training).	Significant reduction in depressive symptoms in the IG compared with the CG. VR therapy significantly increased self-efficacy and illness acceptance, but this effect was like the standard intervention.	Limitations: high percentage of patients dropped out; the study only included people who had depressive symptoms on the basis of the GDS scores, but did not have a diagnosis of major depressive disorder.

Authors/ Year	Country	N	Study	Aim	Tool Used	Study Characteristics	Outcomes	Barriers and Challenges
Lambert et al. [29] 2018	United Kingdom	62	Randomized controlled trial	Assess the feasibility and acceptability of delivering a Web-based intervention (eMotion) to people with symptoms of depression and to explore outcomes on depression and physical activity.	Online platform (eMotion)	Participants with elevated depressive symptoms IG, n=32 CG, n=30 eMotion - a weekly modular program (8 weeks) that helps people use key behavior change techniques to re-engage in routine, pleasurable, and necessary activities, with a focus on physical activities.	Modest reductions in depression and anxiety. Only half of the people who used eMotion were mostly or very satisfied with their experience.	Limitations: sample is not representative of the wider UK population due to a lack of diversity; possible bias since there was no blinding.
Lee et al. [25] 2022	United States	24	Randomized controlled trial	Compare the effectiveness of a mobile application, PuzzleWalk, based on gamification and behavior change techniques, with Google Fit, in increasing PA and reducing sedentary time as an adjunct to anxiety.	Mobile application	Participants with ASD PuzzleWalk group, n=12 Google Fit group, n=12 Intervention for 5 weeks	Triaxial accelerometery and the Beck Anxiety Inventory. More steps with PuzzleWalk. For both groups reduced anxiety from moderate to mild; sedentary time decreased, and PA increased over time.	Limitations: time spent using the application, potential underestimation of PA as accelerometry.
Macias et al. [28] 2015	United States	10	Pilot study	Assess the acceptability and usability of a prototype app (WellWave).	Mobile application	Participants with schizophrenia spectrum disorder, bipolar disorder, or major depressive disorder Intervention with app WellWave designed to promote the physical well-being throughout the 4-week study.	Satisfaction with the app; both feelings of well-being and practical benefits; moderate to high level of motivation to exercise; high daily usage rate.	Limitations: several technical problems were identified but were remedied early in the study.

Authors/ Year	Country	N	Study	Aim	Tool Used	Study Characteristics	Outcomes	Barriers and Challenges
Naslund et al. [24] 2016	Lebanon	11	Exploratory study	Explore perspectives and assess the acceptability of the intervention.	Wearable devices and smartphones for activity tracking	Participants with schizophrenia spectrum disorders, mood disorders, and obesity Intervention with Fitbit Zip wearable activity trackers for 6 months.	High level of satisfaction; motivation; sense of achievement; more awareness of being physically active; meeting daily step recommendations.	Limitations: malfunctioning, losing data because the battery did not last long enough or because participants forgot to put on the wearable device; digital iliteracy.
Naslund et al. [27] 2018	United States; Lebanon	25	Exploratory study	Explore the relation with engagement in Facebook Group with weight loss.	Online Platform	Participants with schizophrenia spectrum disorders, mood disorders, and obesity Intervention with a 6-month group lifestyle program in a Facebook group to support their weight loss and physical activity goals.	Those that reduced their cardiovascular risk, defined as ≥5% weight loss or improvement in fitness, appeared to interact more with the Facebook group than those that failed to reduce their risk.	Limitations: small sample; results may not be representative of people with severe mental illness who are not in treatment or other settings, as all participants received mental health services in community settings.
Okobi et al. [32] 2023	United States; Dominica; Nigeria	2,026	Cross-sectional design study	Assess the relationship between WD use and PA levels among US adults with self-reported depression and anxiety.	Wearable Devices	Participants who self-reported depression and anxiety The outcomes were weekly PA levels and resistance strength training.	Approximately 33% of adults with self-reported depression/ anxiety reported using WD. Meeting recommended weekly levels of physical activity and resistance exercise was reported by 32.5% and 34.2% of the population, respectively.	Limitations: causal relationships between WD use and physical activity measures cannot be established, possibility of recall bias.
Saito et al. [36] 2022	Japan	4,612	Observational study	Develop a predictive model of disease onset based on the objective monitoring of human daily life and health status.	Wearable Devices	Participants from the health database of society-managed health insurance in Japan The inputs to the predictive model were 3 month of continuous wearable data and medical examinations within and near that period; the output was the presence or absence of mental illness over the following month.	Use of the level of physical activity to predict mental illness onset.	Using wearable devices makes it possible to develop a machine learning model that forecasts the development of mental illness, and measurements like activity cycles could be helpful in forecasting the start of mental illness.

Authors/ Year	Country	N	Study	Aim	Tool Used	Study Characteristics	Outcomes	Barriers and Challenges
Son et al. [26] 2023	United States	24	Pilot Quasi-Experimental study	To find out whether mobile health technology, combined with health coaching, could improve a user's ability to self-manage their mental health.	Wearable Devices	Participants were college students with veteran status IG, n=10 CG, n=14 Both groups were taught a deep breathing technique. The control group had to perform the breathing exercises alone, while the intervention group used the biofeedback app and smartwatch.	Participants' heart rates decreased significantly in the 6 minutes immediately following the breathing exercises; improvement in stress management skills; using a mobile device for health training was beneficial to the overall health.	Limitations: during the study period, the breathing exercises were not practiced consistently, mobile biofeedback app was only available to participants using iOS smartphones.

ASD – Autism Spectrum Disorder, CG – Control Group, CR – Cardiac Rehabilitation, DLI – Daily Lifestyle Intervention, HPA – Habitual Physical Activity, GDS – Geriatric Depression Scale, GSE – General Self-Efficacy Scale, IG – Intervention Group, MHCP – Mental Healthcare Professional, PA – Physical Activity, SAT – Schultz's Autogenic Training, SFT – Senior Fitness Test, VR – Virtual Reality, VRE – Virtual Reality Exercise, YPMI – Young People with Mental Illness, WD – Wearable Device. Papers included in the scoping review are identified with a (*) in the final reference list.

Discussion

The aim of this study was to identify and better understand what digital technologies are available for physical activity promotion in mental healthcare contexts. The results not only shed light on what is being implemented and researched in different regions but also give us a vision of the way forward with technology in the service of promoting and monitoring physical activity. Most importantly, they contribute not only to the study of existing digital solutions but also to the study of their application in the context of mental illness.

When analysing mental illnesses, patients who had been diagnosed with an anxiety or mood disorder displayed higher levels of physical activity than those with other mental illnesses. In particular, people with psychotic disorders had lower levels of physical activity than people with other psychiatric diagnoses. Although autism spectrum disorders are somewhat different, the literature available suggests that adults with autism may be less physically active and more sedentary than adults with neurotypical behaviors, and that there may be correlations that affect these behaviors. As a result, this group may be more vulnerable to a variety of negative effects on their bodily and mental health [37]. Additionally, many patients improved their levels of physical activity while receiving inpatient care which emphasizes the window of opportunity such care offers in terms of potential interventions to raise physical activity levels [38].

It is important to note that engagement in this context is measured by the frequency with which the user interacts with the application and the impact that using the application has on the user's physical health [39]. The definition of engagement must be adapted to the field of psychiatry, as psychiatrically ill persons have variable demands. From this point of view, the frequency of use of a mobile application or wearable device is just as important, if not more important, than the way in which it is used [40]. There remains uncertainty about an appropriate 'dose' of engagement in digital mental health interventions [41] and the amount of time spent with a digital tool varies between different types of interventions, people or environments [42]. In the field of digital mental health therapies, the ideal "dose" of engagement varies depending on the environment, the individual using the therapy, and the type of intervention, because low participation may be a positive indicator if it indicates that users have already met their recovery objectives or are using other resources that are more beneficial at the time, or that they have been empowered to seek other technologies [43]. Participant engagement can be influenced by many factors, including incentives to participate, involvement in the design process, health

status, privacy and security, adaptation of app use to the user's routine, initial training and ongoing technical support [43].

The self-determination aspect is also important: "*They're taking responsibility for their own monitoring of their health as well, you know, we're not just, sending letters out and, and wanting them to come in and do it. I suppose that's taking, you know, a bit more responsibility for themselves as well*" [31]. Not only do users end up taking more responsibility for themselves, but they also play an active part in their physical and psychological well-being.

According to the application used, different types of strategies can be adopted to attract the user's attention and increase their engagement. Although the most common is through notifications (e.g. reminding the user to complete the remaining actions), other feedback strategies have been described as beneficial as well. Information provided through graphics, social interactions, motivational phrases, and peer support, among other methods, has been found to be equally satisfying to users [27,32]. In terms of notifications, however, care must be taken to ensure that they are personalised, relevant and not excessive, as this was one of the limitations identified in one of the studies [32,44].

Using social influence (e.g. peer-to-peer communication) to motivate users is one of the social support functions mentioned above. The provision of rewards, such as points or badges, in exchange for the completion of tasks or challenges is a common approach that encourages target behaviours. Gamified mobile applications can be useful for well-being and mental health interventions, increasing motivation and reducing attrition [45].

The study conducted by Okobi et al. [32] shows that out of 2,026 participants, 541 used wearable devices on a daily basis and that 70% of them reported that they often reached the levels of physical activity recommended by the guidelines. The study also shows that wearable devices are predominantly used by women and that their use correlates with higher levels of physical activity. There are some good practices from outside mental health settings that could be replicated. One possible way to get people moving is virtual reality fitness. This technology was useful during the COVID-19 pandemic and can be a good substitute for gyms or public areas for physical activity. Furthermore, people with mental illness can readily adjust to it [46]. According to another study [47], during the COVID-19 pandemic, individuals with severe mental illness benefitted from twice-weekly group exercise via videoconferencing, which included pilates and/or fitness, and this led to improvements in their physical and psychological well-being, showing that these approaches are feasible. This shows that people with mental illness are open to using digital technologies to increase their physical activity levels.

Although the positive feedback from participants and service users is encouraging, there are still limitations that need to be considered. Health professionals report that the accessibility of these devices to people with a history of mental illness remains low, as does their digital literacy [31,32,48]. A person-centred approach or participatory design is needed to identify the personal or application-specific factors that may contribute to engagement at different stages. Low levels of technological literacy discourage users because they can find it difficult to understand and remember the steps required for use [32,35]. This is in addition to the distraction that the smartphone causes for some users due to the amount of stimulation received [32].

Besides infrastructure and technical issues, psychological barriers (related to personal traits) and workload concerns could hinder the use of digital technologies, and that is why specific training in these areas could promote the perception of usefulness and willingness to use [49]. The criteria and measures used for assessing user participation are very heterogeneous. The inconsistency of opinions makes it difficult to compare results across studies and limits our understanding of what makes apps appealing to different users [50]. However, it is also important to note that the interventions are reported to be generally acceptable and achievable.

A scoping review has limitations when it comes to its capacity to offer advice on the effectiveness of specific interventions. These include subjective user reports, which may be biased, obtained through qualitative methods or questionnaires (focusing on satisfaction surveys, usability interviews, etc.) and objective measures such as use and information provided by technology, user behaviour and user responses to interventions (focusing on frequency of use, response to queries, retention). In addition, the scope of this review did not allow for quality assessment at the level of individual studies. Nevertheless, this review shows that digital technologies can and should be used by mental health professionals to promote physical activity in rehabilitation settings.

Conclusions

This scoping study has provided a general overview of the digital tools and technologies being employed to promote physical activity, including virtual reality, wearable technology, and mobile applications, as well as the potential health advantages and drawbacks of using them in clinical settings for patients with mental illness.

Several benefits were found; however, the most significant was the increased in the willingness of participants to engage in physical activity. The integration of these technologies must be prepared and must involve not only mental health professionals, but also patients, including training in their proper use. These results may serve as a basis for additional investigation into the effectiveness of digital technology in promoting physical exercise for mental health and recovery. It is crucial to include the evidence about physical activity's positive effects on mental health in regular programs, and digital technologies could be an interesting tool to facilitate that.

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Conflicts of interest
The authors declare no conflict of interest.

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