Review

The Implementation of Technologies Supporting Home-Based Digital Physical Rehabilitation: Scoping Review

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Abstract

Background: The demand for rehabilitation is increasing, while health care resources remain constrained. Technologies supporting home-based digital physical rehabilitation may help address this imbalance, but their implementation remains limited. It is therefore important to understand which contextual determinants act as barriers or facilitators, which actions relevant to implementation are reported, and how implementation success or failure is assessed.

Objective: This scoping review aimed to map the barriers, facilitators, actions relevant to implementation, and implementation outcomes reported for technologies supporting home-based digital physical rehabilitation.

Methods: MEDLINE, Embase, Web of Science Core Collection, the Cochrane Central Register of Controlled Trials, APA PsycINFO, and the top 200 results from Google Scholar were searched from inception to February 18, 2025. The search was updated on August 7, 2026, and CINAHL was added during the update. Studies were eligible if they reported either (1) both actions relevant to implementation and implementation outcomes or (2) both contextual barriers and facilitators. ASReview, an open-source AI tool, was used to support screening. Data extraction and synthesis were guided by the Non-Adoption, Abandonment, Scale-up, Spread, and Sustainability (NASSS) framework, the refined Expert Recommendations for Implementing Change (ERIC) taxonomy, and the Implementation Outcomes Framework (IOF).

Results: A total of 186 studies were included. Most studies focused on neurological (84/186, 45.2%) or musculoskeletal (49/186, 26.3%) conditions. The most common technology types were digital platforms (109/186, 58.6%) and exergames or serious games (48/186, 25.8%). Both technology types were often combined with sensors, wearable devices, or other external devices (eg, step mats). Barriers and facilitators were identified mainly in the condition, technology, value proposition, and adopter system domains. Reported actions were most often mapped to ERIC implementation strategies related to train and educate stakeholders, provide interactive assistance, and engage consumers. Fidelity (141/186, 75.8%) and acceptability (131/186, 70.4%) were the most commonly reported implementation outcomes. Few studies reported implementation costs (22/186, 11.8%), and even fewer used formal economic evaluation methods (10/186, 5.4%). Economic evaluations were often incomplete.

Conclusions: The current literature tends to focus on intervention effects rather than implementation. It provides limited insight into barriers and facilitators within the organization, wider system, and embedding and adaptation over time domains. Evidence on implementation costs also remains limited, and evaluations often omit the cost of relevant implementation actions, such as staff training time. Future studies should adopt a multilevel approach, evaluate the effectiveness of actions relevant to implementation, and fully account for their associated costs.

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Introduction

An estimated 2.41 billion people worldwide live with conditions that could benefit from rehabilitation [1,2]. As populations age and chronic conditions become more prevalent, the demand for rehabilitation is expected to grow [2,3]. However, access is already constrained by workforce shortages, geographical barriers, and, in many contexts, financial limitations [2,4]. As a result, interest is growing in approaches that improve the efficiency and accessibility of rehabilitation programs.

Home-based digital physical rehabilitation offers one such approach as it allows patients to train at home with minimal professional supervision. In this review, "home-based digital physical rehabilitation" refers to the use of digital technologies, such as sensors, virtual reality, robotics, and digital platforms, to support physical rehabilitation in the home setting [5]. Evidence suggests that such technologies can achieve outcomes comparable to those of traditional rehabilitation [6-9], may reduce health care costs [7], and could help alleviate workforce pressures [10].

Nevertheless, adoption remains limited [11,12]. Many technologies fail to become part of routine practice and are abandoned once a research project or pilot ends [11,13]. This raises questions about which contextual determinants (ie, barriers and facilitators) influence implementation, which actions relevant to implementation and sustainment are undertaken, and what is needed to move beyond research projects and pilots.

Several reviews have examined the implementation of technology in rehabilitation. For example, Kouijzer et al [14] synthesized the evidence on the implementation of virtual reality across diverse health care settings (eg, general health clinics, mental health clinics, and rehabilitation settings). Pearce et al [15] summarized reported implementation strategies and outcomes across different rehabilitation populations (eg, stroke, cancer, and COVID-19). Jarvis et al [16] focused on barriers and facilitators to implementing digital health technologies in neurological rehabilitation. Olsen et al [17] examined contextual determinants affecting the adoption and sustained use of rehabilitation technologies. While these reviews address important aspects of implementation, none focuses specifically on technologies supporting home-based digital physical rehabilitation. Consequently, to our knowledge, there is no overview of the contextual determinants, actions relevant to implementation, and implementation outcomes reported in this setting.

Implementation science theories, models, and frameworks, hereafter collectively referred to as frameworks, can be used to systematically examine implementation and sustainment processes, as well as the contextual determinants that influence implementation [18,19]. The Non-Adoption, Abandonment, Scale-up, Spread, and Sustainability (NASSS) framework, for example, provides a multilevel perspective on why technologies in health and social care succeed or fail. The NASSS framework consists of 7 domains: condition, technology, value proposition, adopter system, organization, wider system, and embedding and adaptation over time [20]. The framework is often used to examine the contextual determinants of technology implementation [14,21,22]. The refined Expert Recommendations for Implementing Change (ERIC) taxonomy can be used to study actions relevant to implementation and sustainment. This taxonomy comprises 73 implementation strategies, grouped into 9 clusters [23,24]. The 9 clusters are: use evaluative and iterative strategies, provide interactive assistance, adapt and tailor to context, develop stakeholder interrelationships, train and educate stakeholders, support clinicians, engage consumers, utilize financial strategies, and change infrastructure [24]. Implementation success and the effects of selected strategies can be evaluated using the Implementation Outcomes Framework (IOF). The IOF includes 8 outcomes: acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, penetration, and sustainability [25].

NASSS, ERIC, and IOF are widely applied in empirical studies [21,26,27] and reviews [14,15,22,28,29]. Combined, they offer a comprehensive approach to studying contextual determinants, implementation strategies, and implementation outcomes [14]. Accordingly, this review applies these 3 frameworks to answer the following research questions (RQs):

- RQ1: Which contextual determinants influence the implementation of technologies supporting home-based digital physical rehabilitation?
- RQ2: Which actions relevant to implementation have been reported?
- RQ3: Which outcomes have been used to assess implementation success or failure?

Methods

Study Design

A scoping review was conducted to systematically map the existing evidence on the implementation of technologies supporting home-based digital physical rehabilitation. This approach was considered the most suitable because it enables evidence from diverse study designs to be synthesized and gaps in the literature to be identified [30]. The review followed the methodological framework developed by Arksey and O'Malley [31], and reporting adhered to the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews) guidelines [32] (Checklist 1). No review protocol was registered or published.

Study Eligibility Criteria

This review focused on empirical studies examining technologies supporting home-based digital physical rehabilitation with minimal professional supervision. Here, "minimal supervision" was defined as limited professional involvement during the rehabilitation process, such as occasional phone calls, video calls, or asynchronous feedback. Studies involving professional contact, such as video check-ins or video-supported exercise sessions, were eligible only if this contact served a supportive or follow-up function and the majority of exercises were performed independently at home. Eligible technologies had to support physical exercise intended to improve or restore physical functioning and had to form part of a structured rehabilitation program. Studies were eligible if they reported either (1) both actions relevant to implementation and implementation outcomes or (2) both contextual barriers and facilitators. Studies focusing solely on clinical effectiveness were excluded. Studies were also excluded if the technologies did not support physical exercise or were primarily intended to achieve outcomes other than the improvement or restoration of physical functioning. Examples included monitoring tools that merely tracked vital signs and transmitted these data to a rehabilitation center without providing patients with feedback or opportunities for interaction. In addition, studies were excluded if they relied mainly on real-time supervision or were conducted primarily in clinical or laboratory settings. Nonpeer-reviewed studies, conference abstracts, and reports published in languages other than English were also excluded.

Information Sources and Search Strategy

The literature search was conducted with support from a medical information specialist. MEDLINE, Embase, Web of Science Core Collection, the Cochrane Central Register of Controlled Trials, APA PsycINFO, and the top 200 results from Google Scholar were searched from inception to February 18, 2025. The searches were updated on August 7, 2026. CINAHL was added during this update and searched from inception. The search strategy was developed by KB and JC in collaboration with a medical information specialist. It combined terms related to "rehabilitation," "digital technology," "implementation and dissemination," and "home setting." Search terms related to digital rehabilitation technologies were based on those used by Arntz et al [5]. Full search strategies for each source are provided in Table S1 in Multimedia Appendix 1. All search results were exported and deduplicated before screening began.

Study Selection

All records identified through the search were imported into ASReview [33]. ASReview is an AI-assisted screening tool that ranks records by estimated relevance based on reviewer input. Prior research suggests that the software enables reviewers to identify approximately 95% of relevant records within the first 20% of records screened [34], indicating that relevant records are concentrated early in the ranking. In this review, ASReview was used solely to determine the screening order; all imported records were screened.

Following the approach described in a previous application of ASReview [19], one reviewer (KB) trained the tool by screening the titles and abstracts of 10 randomly selected records. KB then screened all imported records at the title and abstract level. To assess whether any records had been incorrectly excluded, a second reviewer (MM) independently rescreened records that KB had excluded until 50 consecutive exclusion decisions had been confirmed; a disagreement would have reset the count to zero. All 50 decisions were confirmed, so no further records were rescreened. All records marked as potentially eligible by KB were independently rescreened at the title and abstract level by a second reviewer (MM or SK). Full-text reports retrieved after title and abstract screening were then independently assessed for eligibility by KB and a second reviewer (MM or SK). Disagreements at either stage were resolved through discussion and, where necessary, consultation with GR and JC. Consultation was required for only 2 reports. The reference lists of included reports were also screened to identify additional eligible reports. Reports were linked and treated as a single study if they shared a trial registration number or explicitly identified themselves as related (eg, a substudy of a trial reported elsewhere); linked reports are identified in Table S1 in Multimedia Appendix 2.

The methodological quality of the included reports was appraised using the Mixed Methods Appraisal Tool (MMAT), version 2018 [35]. The results were used descriptively; no reports were excluded based on methodological quality.

Data Extraction

Data were extracted by KB and reviewed by other members of the review team (MM, SK, and JC). The extraction process was based on 2 previously published scoping reviews [14,19] and adapted to the aims of this review.

General study characteristics, including country, population, study design, and technology type, were extracted from each report. Three extraction tables guided the coding of implementation-related data. The first table was structured according to the domains and subdomains of the NASSS framework to map contextual barriers and facilitators. The second table was structured according to the ERIC taxonomy and its 9 clusters. Actions described in the included reports were retrospectively mapped to ERIC strategies using the strategy definitions and subsequently grouped into the corresponding clusters. For example, providing participants with an instruction booklet was mapped to the strategy distribute educational materials (ERIC 31) within the train and educate stakeholders cluster (Cluster 5). Actions were mapped based on their descriptions, regardless of whether the report authors identified them as implementation strategies. The third table was based on the IOF and was used to map the reported implementation outcomes. The barriers and facilitators identified per NASSS subdomain, and the text excerpts supporting each ERIC and IOF code, are documented in Tables S2, S3, S5, and S7 in Multimedia Appendix 2.

MM and JC reviewed the assigned codes, and disagreements were resolved through discussion. In addition, SK independently coded a sample of 20 included reports

(approximately 10%) using all 3 frameworks without access to KB's initial coding. A comparison of the coding performed by SK and KB revealed several differences. For example, SK assigned technical support to an excerpt that KB had coded as reassurance-related support. Following discussion, both codes were retained because they represented different NASSS domains. SK also identified additional ERIC strategy codes and IOF outcome codes that KB had not initially assigned. These codes were retained after discussion, and all previously coded reports were checked for similar omissions.

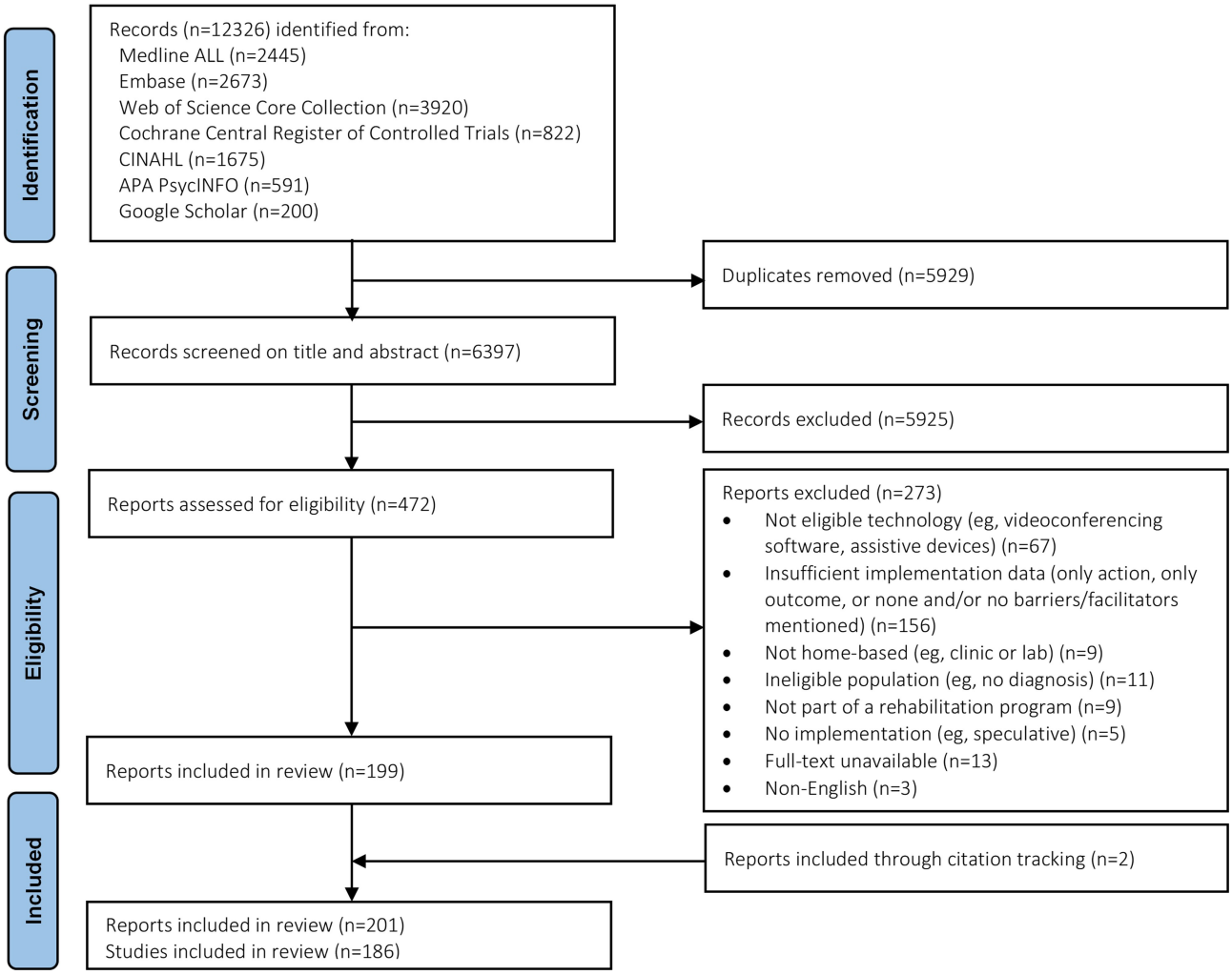
Data extraction and coding were conducted at the report level. Publication year, study design, and MMAT ratings were summarized at the report level because these are characteristics of individual reports. All other frequencies were calculated at the study level. Multiple reports of the same study were collated, and each study was counted no more than once for each barrier, facilitator, ERIC-mapped action, or implementation outcome. All reports were considered during data extraction, and citations refer to the report or reports from which the relevant data were extracted.

Results

Overview

The search yielded 12,326 records. After duplicates were removed, 6397 unique records remained. Title and abstract screening identified 472 reports for full-text review. Of these, 199 met the inclusion criteria. Screening of the reference lists identified 2 additional reports, resulting in a total of 201 reports representing 186 unique studies [36-236]. Twelve studies were described in multiple reports, accounting for 27 reports in total. Figure 1 illustrates the study selection process.

Figure 1. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram of the study selection process.



The 201 reports were published between 2005 and 2026. The most common study designs were randomized controlled trials (87/201, 43.3%) and quantitative nonrandomized studies (63/201, 31.3%), followed by qualitative studies (24/201, 11.9%), mixed methods studies (20/201, 10.0%), and quantitative descriptive studies (7/201, 3.5%). In the MMAT appraisal, 74 reports met all 5 criteria, 84 met 4 criteria, 39 met 3 criteria, 2 met 2 criteria, and 2 met 1 criterion.

Study Characteristics

Most of the 186 studies [36-236] focused on neurological conditions (84/186, 45.2%), followed by musculoskeletal

conditions (49/186, 26.3%), cardiac conditions (25/186, 13.4%), pulmonary conditions (20/186, 10.8%), and cancer (7/186, 3.8%). One study included a mixed population with COVID-19 or Parkinson disease (1/186, 0.5%). The studies were conducted in 34 countries. The United States was the most common study location (45/186, 24.2%), followed by China (16/186, 8.6%), Australia (13/186, 7.0%), the Netherlands (12/186, 6.5%), Italy (10/186, 5.4%), and the United Kingdom (10/186, 5.4%). Eight studies were conducted in multiple countries (8/186, 4.3%).

Home-based digital physical rehabilitation was predominantly delivered through digital platforms (109/186, 58.6%). These included mobile and tablet applications and web-based platforms, used either independently or in combination with devices such as wearable devices. Exergames and serious games (eg, Nintendo Wii Sports and Wii Fit) were also common (48/186, 25.8%) and were often combined with sensors or other devices such as step mats or balance boards. Less frequently studied technologies included robotics (11/186, 5.9%), desktop software (8/186, 4.3%), augmented reality, mixed reality, or virtual reality technologies (5/186, 2.7%), standalone wearable devices (3/186, 1.6%), and sensor-based devices (eg, a sensor-integrated training desk; 2/186, 1.1%). Table 1 summarizes the technologies and health conditions studied, along with the most frequently reported actions relevant to implementation, implementation outcomes, barriers, and facilitators. Details of each study are provided in Table S1 in Multimedia Appendix 2.

Table 1. Study characteristics and implementation findings by technology type[a].

Technology type, n/N (%)	Conditions, n/N (%)	Actions mapped to ERIC[b] strategies, n/N (%; top 3)	Implementation outcomes, n/N (%; top 3)	Barriers by NASSS[c] domain, n/N (%; top 3)	Facilitators by NASSS[c] domain, n/N (%; top 3)
• Digital platforms (app- or web-based; used alone or in combination), 109/186 (58.6)	• Musculoskeletal: 38/109 (34.9) • Neurological: 28/109 (25.7) • Cardiac: 21/109 (19.3) • Pulmonary: 16/109 (14.7) • Cancer: 5/109 (4.6) • Mixed: 1/109 (0.9)	• ERIC 15: Conduct educational meetings: 90/109 (82.6) • ERIC 39: Intervene with patients/consumers to enhance uptake and adherence: 33/109 (30.3) • ERIC 54: Provide local technical assistance: 33/109 (30.3)	• Fidelity: 86/109 (78.9) • Acceptability: 79/109 (72.5) • Feasibility: 58/109 (53.2)	• Technology: 54/109 (49.5) • Adopter system: 40/109 (36.7) • Condition: 26/109 (23.9)	• Value proposition: 54/109 (49.5) • Technology: 52/109 (47.7) • Adopter system: 38/109 (34.9)
• Exergames and serious games, 48/186 (25.8)	• Neurological: 37/48 (77.1) • Musculoskeletal: 4/48 (8.3) • Pulmonary: 3/48 (6.3) • Cardiac: 3/48 (6.3) • Cancer: 1/48 (2.1)	• ERIC 15: Conduct educational meetings: 39/48 (81.3) • ERIC 54: Provide local technical assistance: 24/48 (50) • ERIC 33: Facilitation: 17/48 (35.4)	• Fidelity: 37/48 (77.1) • Acceptability: 31/48 (64.6) • Feasibility: 25/48 (52.1)	• Technology: 30/48 (62.5) • Adopter system: 17/48 (35.4) • Condition: 14/48 (29.2)	• Technology: 32/48 (66.7) • Value proposition: 22/48 (45.8) • Adopter system: 14/48 (29.2)
• Robotics, 11/186 (5.9)	• Neurological: 11/11 (100)	• ERIC 15: Conduct educational meetings: 10/11 (90.9) • ERIC 41: Involve patients/ consumers and family members: 6/11 (54.5) • ERIC 54: Provide local technical assistance: 5/11 (45.5)	• Feasibility: 10/11 (90.9) • Fidelity: 8/11 (72.7) • Acceptability: 6/11 (54.5)	• Technology: 8/11 (72.7) • Adopter system: 7/11 (63.6) • Condition: 2/11 (18.2)	• Technology: 8/11 (72.7) • Adopter system: 6/11 (54.5) • Value proposition: 5/11 (45.5)
• Desktop software, 8/186 (4.3)	• Musculoskeletal: 5/8 (62.5) • Neurological: 2/8 (25) • Cancer: 1/8 (12.5)	• ERIC 15: Conduct educational meetings: 6/8 (75) • ERIC 39: Intervene with patients/consumers to enhance uptake and adherence: 2/8 (25) • ERIC 41: Involve patients/ consumers and family members: 2/8 (25)	• Acceptability: 8/8 (100) • Fidelity: 3/8 (37.5) • Adoption: 2/8 (25)	• Technology: 6/8 (75) • Adopter system: 2/8 (25) • Condition: 1/8 (12.5)	• Value proposition: 5/8 (62.5) • Technology: 4/8 (50) • Adopter system: 2/8 (25)

Technology type, n/N (%)	Conditions, n/N (%)	Actions mapped to ERIC[b] strategies, n/N (%; top 3)	Implementation outcomes, n/N (%; top 3)	Barriers by NASSS[c] domain, n/N (%; top 3)	Facilitators by NASSS[c] domain, n/N (%; top 3)
• Augmented, mixed, or virtual reality technologies, 5/186 (2.7)	• Neurological: 4/5 (80) • Musculoskeletal: 1/5 (20)	• ERIC 15: Conduct educational meetings: 5/5 (100) • ERIC 31: Distribute educational materials: 2/5 (40) • ERIC 33: Facilitation: 2/5 (40)	• Acceptability: 5/5 (100) • Appropriateness: 3/5 (60) • Feasibility and fidelity: 2/5 each (40)	• Technology: 5/5 (100) • Adopter system: 3/5 (60) • Condition: 2/5 (40)	• Technology: 4/5 (80) • Value proposition: 4/5 (80) • Adopter system: 3/5 (60)
• Standalone wearable devices, 3/186 (1.6)	• Neurological: 1/3 (33.3) • Pulmonary: 1/3 (33.3) • Cardiac: 1/3 (33.3)	• ERIC 15: Conduct educational meetings: 3/3 (100) • ERIC 33: Facilitation: 1/3 (33.3) • ERIC 54: Provide local technical assistance: 1/3 (33.3)	• Fidelity: 3/3 (100) • Implementation cost: 1/3 (33.3)	• Technology: 1/3 (33.3)	• Technology and value proposition: 1/3 each (33.3)
• Sensor-based devices (eg, a sensor-integrated training desk), 2/186 (1.1)	• Neurological: 1/2 (50) • Musculoskeletal: 1/2 (50)	• ERIC 15: Conduct educational meetings: 2/2 (100) • ERIC 31: Distribute educational materials: 1/2 (50)	• Acceptability: 2/2 (100) • Fidelity: 2/2 (100)	• Technology and adopter system: 1/2 each (50)	• Technology: 2/2 (100)

[a]Technology types are mutually exclusive, based on the primary technology. In the other columns, studies could contribute to multiple findings; the 3 most frequent are shown, including ties. Percentages are calculated using N=186 in the technology type column and the row's own n in all other columns.
[b]ERIC: Expert Recommendations for Implementing Change.
[c]NASSS: Non-Adoption, Abandonment, Scale-up, Spread, and Sustainability.

Barriers and Facilitators to Implementation (NASSS Framework)

Barriers and facilitators to implementation were identified and mapped to 5 of the 7 NASSS domains: condition, technology, value proposition, adopter system, and organization. Barriers were identified in all 5 domains, whereas facilitators were identified in the technology, value proposition, adopter system, and organization domains. No barriers or facilitators were identified in the wider system or the embedding and adaptation over time domains. Because studies could report determinants in more than one subdomain, subdomain counts are not additive.

Barriers to Implementation

The condition domain included barriers related to the nature of the condition or illness (34/186, 18.3%) and comorbidities (17/186, 9.1%). Many conditions were multifaceted and involved physical, cognitive, and/or communication impairments, which sometimes limited patients' ability to use the technology [37-47,83-91,141,157-161,228,229]. Fluctuations in health, such as exacerbations or progressive decline, also occasionally contributed to reduced or discontinued technology use [48,92,93,142,162,163]. Additional health issues sometimes prevented safe or effective technology use [42,48,49,84,92,94-96,134,159,164-166,228,230-232].

The technology domain included several barriers to implementation, including material features (91/186, 48.9%), type of data generated (17/186, 9.1%), and knowledge needed to use it (53/186, 28.5%). Material feature-related barriers included technical problems (eg, login failures and glitches) [37,38,41-47,49-62,84,85,87,88,90,91,95-114,134-136,140,143-147,159-161,164,165,167-175,222,223,230,231,233,234], repetitive or monotonous content [41,47,53,58,59,84,86,87,90,96,104,108,114,140,143,148,159,161,170,231], too few personalization options (eg, for difficulty, feedback, or scheduling) [37,38,42,43,83-85,87,90,97-100,108,109,114,115,133,134,137,145,149,176,224,228,231], a lack of prompts or reminders [50,89,97,230,235], uncomfortable designs (eg, painful straps) [45,59,84,96,114,115,140,159,161,233], and designs that limited outdoor or everyday use [99,140,171,177,178]. Barriers related to the type of data generated included limited or absent feedback on performance or progress [47,59,89,99,100,108,113,158], generic feedback (eg, thumbs-down icons) [143,149,170], and complex feedback (eg, large graphs) [58,87,99,161]. Moreover, in some cases, data could be manipulated [84,87,143] or could conflict with patients' experiences or professional advice, thereby undermining trust in the data [85,149,224]. Barriers related to knowledge needed to use it included difficulty operating the technology or specific features (eg, navigating menus or recording videos) [37,41,42,56,63-65,85,87-89,91,94,98,102,104,110,116-118,135,137,140,141,143,167,168,171,179-182,222,224,231,232], complex setup procedures (eg, placing and calibrating sensors or fitting straps) [45,53,55,64-66,84,87,90,102,114,117,134,140,160,170,233], delayed support that prevented patients from continuing their exercises until assistance was available [110], and manuals or explanations that were confusing, incomplete, or difficult to remember [38,45,87,94,106,109,145,170,230].

The value proposition domain included barriers related only to demand-side value (9/186, 4.8%). Health care professionals sometimes questioned the added therapeutic value (eg, reduced motivation without direct supervision, the absence of group sessions, or exercises that were perceived as too simple) [37,161,183,235]. Patients who were already physically active saw no need for the technology [232]. Some patients perceived no benefit or felt that the required effort or potential side effects (eg, elevated blood pressure) outweighed the perceived benefits [42,96]. In addition, technology-supported home rehabilitation was more expensive than usual care or no care in some analyses, although it was still considered cost-effective sometimes [150,151,161,184].

The adopter system domain contained barriers related to staff (4/186, 2.2%), patients (69/186, 37.1%), and carers (12/186, 6.5%). Staff-related barriers involved assumptions about older patients' inability to use the technology [37,38], health care professionals' own unfamiliarity with it [37,85], and concerns about fall risk [161]. Patient-related barriers included a lack of contact with peers and health care professionals [38,44,47,58,67,83,104,110,115,119,143,147,158,161,185,231], low or declining motivation (eg, following repeated failure, poor performance, or unnoticed effort) [37,38,43,44,58,84,88,95,99,107,134,136,140,145-147,149,158,159,161,162,164,224,230], discomfort with being monitored or sharing data [38,84,85,88,104,118,179], fatigue from prolonged screen time [115], and underuse due to apprehension (eg, unfamiliarity or fear of breaking it) or practical reasons (eg, forgetting to switch it on or misplacing it) [95,96,98,99,114,118,185,186,224,228]. The home setting also posed barriers. These included limited space, difficulty integrating the technology into daily routines, and inadequate infrastructure (eg, unreliable Wi-Fi and an insufficient number of power outlets) [37,41-45,47,48,57,58,62,68,84-86,88,91-93,96,100,108,110,115,120,133,134,140,145-147,152,153,157,159,161,164,179,183,187-189,222,224,228,230,232,233,235,236]. During the COVID-19 pandemic, some patients were reluctant to have the technology installed at home [138]. Carer-related barriers included limited support, particularly for patients living alone [41,45,84,85,109,134,147,233]. Some carers received insufficient onboarding or training [38], and the additional workload associated with troubleshooting or acting as a coach sometimes created tensions between carers and patients [38,42,69,84,152,185].

The organization domain also included barriers to implementation (6/186, 3.2%). Limited capacity to innovate (6/186, 3.2%) resulted from barriers that arose either at the outset, including a lack of interest or skepticism among team members and competing management priorities, or later because of financial constraints [37]. Professionals also lacked time to learn about, use, or support the use of the technology [37,38,85,99,137]. Further barriers were related to the extent of change needed to routines (3/186, 1.6%). For example, the technology was not integrated into existing routines, and poor communication left some professionals

unaware that it was being used [37,99]. Barriers related to the work needed to implement change (3/186, 1.6%) included the absence of organization-wide training. Consequently, patients who were eligible to use the technology but were treated in units other than the pilot unit received no instructions [37]. Another barrier concerned the lack of on-site technical support, which required health care professionals without relevant training to resolve technical issues themselves [85,140].

Facilitators to Implementation

The technology domain included facilitators related to material features (54/186, 29.0%), type of data generated (36/186, 19.4%), and knowledge needed to use it (83/186, 44.6%). Material feature-related facilitators included accessible and straightforward interfaces that clearly presented information and instructions [44,49,70,86,89,118,133,159,170,173,179,185,232,236], varied and personalized content (eg, adjustable difficulty and feedback) [37,38,44,46,47,49,51,57,83,84,91,97,100,133,145,174,228,230,235], gamification (eg, badges, scoreboards, and rewards) [39-42,47,53,58,71,84,90,100,101,108,110,114,115,145,147-149,154,157,168,174,178,224,232,233], the option to exercise with family or friends [41,154,224], reminders and prompts [38,95,97,98,104,230,232], exercises resembling real-life tasks [109,147,228], and preset schedules [49,58,98,110,114]. Facilitators related to the type of data generated included real-time visual or auditory feedback [42,58,90,91,107,109,147,149,170,173,179], feedback on specific aspects of performance (eg, repetition counts or posture correction) [110,134,147,173,178,223,234], feedback on progress (eg, scores and exercise reports) [37,38,43,47,60,88,95,104,114,118,133,135,146,149,185,224,232,236], exercise logs [72,118,181,229,232], and health care professionals' access to patients' (exercise) data [107,161,170]. Facilitators related to knowledge needed to use it included ease of learning and use [37-39,43,49,51,53,60,66,70,73,74,83,84,86,89,90,95,97-101,104-110,112,114,115,117,119,121-123,134,135,145,148,153,154,157,159,161,170-172,174-176,179,183,188,190-193,233,236], clear explanations, such as personalized manuals or verbal instructions [38,42,59,90,115,134,143,145], and support from health care professionals or the research team to resolve technical or practical problems (eg, setup, connectivity, or device errors) [41,42,44-46,49,51,53,55,57,58,60-62,64,65,67,84,90,91,95,96,98-100,102,103,106-111,113,114,124,142,159,173,231].

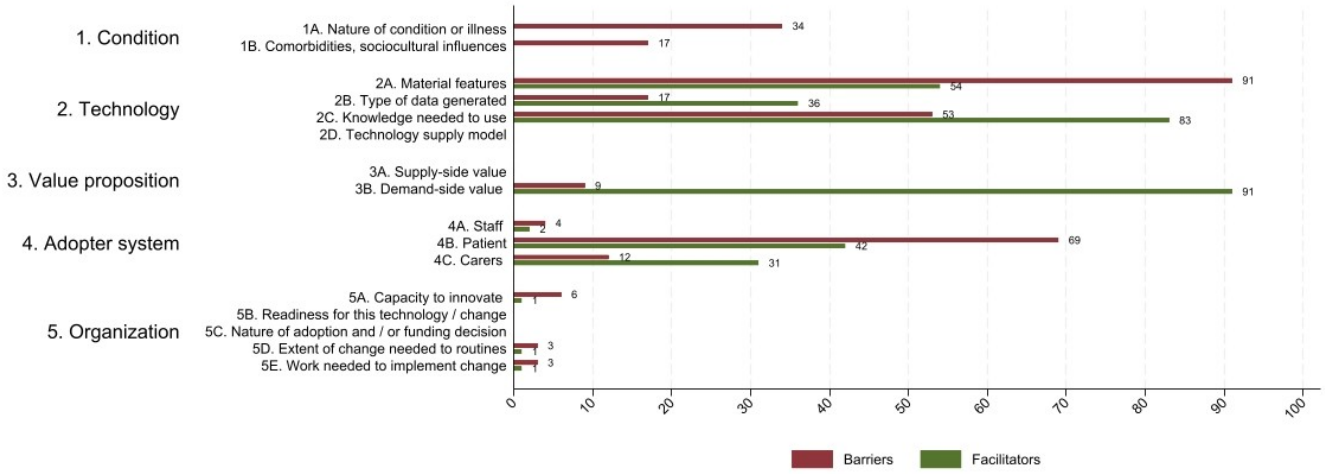
The value proposition domain included facilitators related only to demand-side value (91/186, 48.9%). Patients and health care professionals reported or anticipated improvements in physical function, which increased trust in the technology [36,38,39,41-43,47,49,53,58-60,68,73,75,83,84,86,89,90,95-97,100,109,114,118,121,133,139,140,143,145,147,148,154,157,158,161,170,194,195,224,230,231,233]. The technology was also viewed as a useful addition to or substitute for traditional rehabilitation care [37,38,43,44,47,49,50,52,53,58,67,70,97,99,101,104,105,108,112,113,118,120,134,140,145,147,154,161,168,170,173,179,181,185,193,196,233,236]. Moreover, patients valued the flexibility to train according to their own schedules [38,41-44,47,49,53,64,74,83,84,88-90,94,95,99,100,108,110,113,115,118,124,133,135,138,140,154,158,159,161,169,185,191,223,224,228,230,233,234], the comfort and privacy of exercising at home [42,43,58,67,74,89,100,113,122,133,135,146,148,169,224,228,229,233], and the sense of continuity in care [118,181]. Health care professionals valued its potential to ease pressure on overstretched rehabilitation services [37,161]. In addition, one technology met existing reimbursement criteria, suggesting its viability beyond research settings [60]. Finally, the technology was sometimes estimated to cost less than traditional rehabilitation and to be cost-effective [50,51,53,108,122,139,151,194-199,225,226].

The adopter system domain included facilitators for staff (2/186, 1.1%), patients (42/186, 22.6%), and carers (31/186, 16.7%). Staff-related facilitators included the perception among health care professionals that the technology was easy to explain and teach to patients [99,107]. Patient-related facilitators included internal and external sources of motivation. One internal source was patients' self-identification as active or strong-willed individuals [88,224]. External sources included knowing that someone was monitoring them [38,44,49,74,84,88,98,104,110,143,158,169,179,181], participating in a study, and having the technology present in the home setting [38,47,95,169,170,231]. Regular contact with professionals through phone or video calls, text messages, home visits, or follow-up calls gave patients a sense of accountability and made them feel cared for [37,38,42,44,46,47,49,59,60,76,84,88-90,95,97,104,110,118,133,141,146,148,158,169,179,183,185,224,229-231,235]. Actual or potential contact with peers reassured patients that others were also participating and that they were not alone [88,118,146]. A positive attitude toward new technology [112], previous positive experiences with exercise [231], and the ease of integrating the technology into daily life [59,69,105,121,158,228,229] also facilitated use. Carer-related facilitators included the availability of carers who provided practical and motivational support [41-43,45,47,49,55,59,64,65,75,84,90,95,98,100,103,105,106,109,113-115,124,125,134,147,149,158,160,185,224] and their involvement in onboarding, which fostered trust and a sense of inclusion [185]. When the technology guided exercise sessions, tensions between carers and patients sometimes decreased because carers no longer had to act as coaches and could resume their role as partners [149,233].

The organization domain also included facilitators to implementation (2/186, 1.1%). The facilitator related to capacity to innovate (1/186, 0.5%) was dedicated time for professionals to learn how to use the technology [37]. A limited extent of change needed to routines (1/186, 0.5%) was reflected in the technology's integration into clinical practice without disruption to existing workflows [170]. Facilitators related to the work needed to implement change (1/186, 0.5%) included the presence of a clinical champion

who supported and motivated colleagues and the availability of support within the organization [37]. Figure 2 shows the number of studies reporting barriers and facilitators for each NASSS domain and subdomain. Tables S2 and S3 in Multimedia Appendix 2 provide further details on barriers and facilitators to implementation.

Figure 2. Number of studies reporting barriers and facilitators by Non-Adoption, Abandonment, Scale-up, Spread, and Sustainability domain and subdomain. The wider system (domain 6) and embedding and adaptation over time (domain 7) are not shown because no studies reported barriers or facilitators in these domains.



Actions Mapped to ERIC Strategies and Clusters

Nineteen studies (19/186, 10.2%) explicitly focused, at least in part, on preimplementation, implementation, uptake, or adoption. Nevertheless, 177 of the 186 included studies [36-227] reported actions that could be mapped to one or more ERIC strategies. None of the included studies used the ERIC taxonomy; therefore, these actions were mapped retrospectively based on the original authors' descriptions. Overall, these actions were mapped to 19 of the 73 ERIC strategies (ERIC 8, 11, 12, 15, 29, 31, 33, 39, 40, 41, 46, 50, 51, 53, 54, 56, 58, 63, and 69). These strategies represented 8 of the 9 clusters. The only cluster not represented was utilize financial strategies.

The most frequently identified actions fell within the train and educate stakeholders cluster. These actions were primarily mapped to the strategies conduct educational meetings (involving patients, carers, and health care professionals; ERIC 15; 155/186, 83.3%) and distribute educational materials (ERIC 31; 50/186, 26.9%). Actions within the provide interactive assistance cluster were also common, particularly those mapped to provide local technical assistance (ERIC 54; 64/186, 34.4%) and facilitation (eg, scheduled phone calls; ERIC 33; 42/186, 22.6%). Within the engage consumers cluster, actions were primarily mapped to the strategies intervene with patients/consumers to enhance uptake and adherence (ERIC 39; 49/186, 26.3%) and involve patients/consumers and family members (ERIC 41; 24/186, 12.9%).

Two studies described preimplementation adaptations following stakeholder meetings, held with health care professionals and administrative assistants [37], or with the health care professionals involved [85]. These meetings focused on how the technology could be integrated into the rehabilitation process and resulted either in practical guidelines clarifying responsibilities across rehabilitation phases [37] or in refinements to how the technology was introduced to patients [85]. Two studies also reported adaptations during implementation [37,38]. Brouns et al [37] introduced additional educational sessions, added e-learning modules, and expanded the range of professionals responsible for introducing the technology to include nurses and movement therapists because physical and occupational therapists often lacked sufficient time. Toft et al [38] added an extra phone call to better address patients' needs. However, the rationales for these adaptations were only briefly described, and their effects on implementation outcomes were not formally evaluated. Detailed mappings of actions to ERIC strategies are provided in Table 2 and in Tables S4 and S5 in Multimedia Appendix 2.

Table 2. Summary of reported actions corresponding to ERIC[a] implementation strategies[b].

Waltz cluster and ERIC strategy	Example of an action reported	Reports describing actions mapped to the strategy
(1) Use evaluative and iterative strategies		
ERIC 46: Obtain and use patients/consumers and family feedback	Participants were asked to indicate their interest in patient advisory roles for future program and study development.	[36]
ERIC 56: Purposely reexamine the implementation	Phone calls were added after initial analyses to better address patient needs.	[37,38]
(2) Provide interactive assistance		
ERIC 33: Facilitation	Every two weeks, participants could discuss their programs and problem-solve any issues.	[37,39-82]
ERIC 54: Provide local technical assistance	Telephone and email support for the use of the modules was available for both patients and health care professionals.	[38,40,41,46,49,50,55,57,58,61-63,65,73,77,83-132]
ERIC 53: Provide clinical supervision	Coaches were supervised by a member of the Motivational Interviewing Network of Trainers.	[133]
ERIC 8: Centralize technical assistance	A dedicated support line was provided by Aseptika Ltd.	[37,55,56,94,105,108,123,134-139]
(3) Adapt and tailor to context		
ERIC 63: Tailor strategies	Clinicians met to refine how the app was introduced before the study began.	[37,85]
ERIC 51: Promote adaptability	Adaptations for integrating technology into rehabilitation were discussed during a meeting.	[37]
(4) Develop stakeholder interrelationships		
ERIC 40: Involve executive boards	Management expressed support for the intervention.	[37]
(5) Train and educate stakeholders		
ERIC 29: Develop educational materials	Participants received two manuals developed for this study.	[83,115,140]
ERIC 31: Distribute educational materials	Participants received a booklet with safety precautions and instructions.	[36-42,54,56,59,61,68,73,80,83,86,87,90,94,98,99,101,103,107,109,110,112,115,117,118,121,126,130,132,134,136,140-156]
ERIC 15: Conduct educational meetings	Participants and carers received home-based instruction on equipment use and safety.	[36-43,45-48,51-70,73-83,85-87,90-92,94-96,98,99,101-121,123,124,126,129,131-138,140-142,144-221]
(6) Support clinicians		
ERIC 58: Remind clinicians	Two days before appointments, health care professionals received reminders that monitoring data were available.	[99,135]
(7) Engage consumers		
ERIC 41: Involve patients/consumers and family members	A physical therapist trained carers.	[38,41,42,55,58,65,66,69,75,96,103,108,112,113,120,124,134,149,160,165,174,185,198,203]
ERIC 39: Intervene with patients/consumers to enhance uptake and adherence	Participants who exercised for <80 min/week over two weeks were contacted by telephone to encourage adherence and address barriers.	[38,39,43,48,49,54,59,60,63,66-68,70,72,74,79,80,82,95,96,98,99,105,108,120,123,125,127,130,138,142,144,158,169,179,180,183,184,194-196,198,201,205,207,220-227]
ERIC 50: Prepare patients/consumers to be active participants	Patients were encouraged to raise self-care questions and concerns with the nurse via the chatroom.	[118,141,146]
ERIC 69: Use mass media	Promotion included banners and flyers.	[37]
(8) Utilize financial strategies		
—[c]	—	—
(9) Change infrastructure		
ERIC 11: Change physical structure and equipment	3D-printed doorknobs and keys were reinforced and adjusted to better withstand repeated use.	[109,174]
ERIC 12: Change record systems	Symptom scores and sensor data were integrated into existing electronic medical records.	[99,132]

[a]ERIC: Expert Recommendations for Implementing Change.
[b]Examples are illustrative and drawn from individual reports. The reports listed in the final column each described an action mapped to the corresponding ERIC strategy, but not necessarily the specific action shown in the example.
[c]Not available.

Implementation Outcomes (IOF)

The IOF outlines 8 implementation outcomes: acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, penetration, and sustainability [25]. Acceptability (131/186, 70.4%) was commonly reported in terms of satisfaction or technology acceptance [36-38,40-44,47,49-54,56-60,63-67,69-76,78,83-91,94-101,104-110,112-115,117-119,121-124,126,127,133-135,137-141,143,145-149,153,154,157-162,167-179,181,183,185,188,190-198,203,206,212,214,219,220,222-224,227-236]. It was primarily assessed from patients' perspectives, although some studies also included the perspectives of health care professionals and carers. Satisfaction and acceptance typically related to the content, delivery format, program duration, or usability of the technology. Commonly used models and instruments included the Technology Acceptance Model, the Unified Theory of Acceptance and Use of Technology, the System Usability Scale, and the User Experience Questionnaire. Adoption (38/186, 20.4%) referred to patients' or health care professionals' actual use of the technology, intention to use it, or willingness to continue using it [37,40,48,49,56,58,61,69-71,73,75,79,83,85,89,95,99,104,108,109,118,134,135,138,141,145,151,155,157,161,168,170,173,181,183,190,192,213,222,232]. Appropriateness (60/186, 32.3%) was often characterized as the perceived suitability or relevance of the technology [36,38,41-44,47,49,50,52,53,58,67,69-71,73,76,83,85,88-90,95,97,98,101,104,105,107-109,112,113,115,118,121,126,133,134,137,140,147,154,157,159,161,168-170,173,178,179,181,183,185,193,224,228,231,233,235,236]. Feasibility (96/186, 51.6%) was commonly assessed in terms of patients' ability to use the technology safely and tolerate its use at home. Some studies also included clinical outcomes, adherence, and the absence of adverse events as indicators of feasibility [36,37,39,41,45,46,48,49,54-61,64-67,69,72-75,80,82,83,85,87,89,91,94,96-99,101,103,106,108,112,113,116-121,124,125,129-131,133,136,139,141,144,148,152,155,157-162,164-166,168-172,174,175,178,179,181,182,187,189-191,193,195,204,206,208,213,214,219,229,230,233]. Fidelity (141/186, 75.8%) was the most frequently reported outcome and was typically assessed through protocol adherence, delivery as intended, program completion, or technology use relative to the prescribed dose [36,37,39-41,43,45,46,48-50,52-63,65,67,68,70-78,80-83,85,87,89,91-99,101-103,105-109,111,113,114,116,117,119-133,136,137,139,140,142-144,147,148,150,152-154,156,158-161,163-166,169-172,174-176,179-184,186,188-202,204-219,221,227,229,232,234]. Actions used to support fidelity included automated reminders, text messages, and follow-up calls. Implementation cost (22/186, 11.8%) included technology costs, cost comparisons with usual care, costs assessed from a societal perspective, and cost-utility and cost-effectiveness analyses [50,51,53,61,66,79,96,108,122,139,150,151,170,184,194-199,219,225,226]. Ten studies [50,108,122,150,184,194-196,198,219] used formal economic evaluation methods (eg, cost-effectiveness or cost-utility analyses [237]), and one of these also conducted a budget impact analysis [108]. Some studies included costs associated with selected actions required for implementation, such as installation, monitoring, and follow-up. However, none accounted for the costs of all actions needed to implement the technology, such as staff training and the development of educational materials. Penetration (1/186, 0.5%) was reported as the spread of the service among eligible patients within a single organization [37]. Sustainability (5/186, 2.7%) was described as patients' continued use of the technology after completing the rehabilitation program [72,119,169,172,212]. Notably, most outcomes were assessed at the level of individual patients or health care professionals. No study formally examined the effect of a specific implementation strategy or action relevant to implementation on an implementation outcome. Further details on the implementation outcomes are provided in Tables S6 and S7 in Multimedia Appendix 2.

Discussion

Principal Findings

This scoping review mapped the available evidence on the implementation of technologies supporting home-based digital physical rehabilitation. Using the NASSS framework, the ERIC taxonomy, and the IOF, we structured evidence on contextual barriers and facilitators, actions relevant to implementation, and implementation outcomes.

Across studies, the reported barriers and facilitators were broadly similar despite differences in technology types and conditions. Nevertheless, some determinants appeared more closely linked to specific conditions or technology types. For example, determinants in the condition domain, such as cognitive and communication difficulties, and in the adopter system domain, such as the availability of carer support, were especially prominent in studies involving neurological conditions. Determinants in the technology domain also varied by technology type. Setup difficulties were particularly common for multicomponent technologies, such as digital platforms combined with sensors, and for robotics. Concerns about bulkiness were reported mainly for robotics, whereas a lack of reminders or prompts was reported primarily for digital platforms.

Beyond these differences, determinants were unevenly distributed across the NASSS domains. Most determinants were identified in the condition, technology, value proposition, and adopter system domains. Few were identified in the organization domain, and none in the wider system or embedding and adaptation over time domains. Several subdomains, including supply-side value and the nature of adoption, also contained no identified determinants. This distribution likely reflects the focus of the included studies, which predominantly captured the perspectives of patients and, to a lesser extent, those of health care professionals and carers. The perspectives of other stakeholders, such as technology developers and managers, were largely absent. Other reviews have reported similar distributions [14,22]. Consequently, the existing literature provides only a partial understanding of implementation. In particular, it largely overlooks how policy, regulation, and data governance

influence implementation; how these technologies are funded or reimbursed; and how they are scaled and sustained beyond initial pilots and trials. Future studies should therefore adopt a broader, multistakeholder approach and examine how technologies are integrated into clinical workflows, funded and governed, and adapted and sustained over time.

None of the included studies used the ERIC taxonomy. All actions were therefore mapped retrospectively based on the descriptions provided by the original authors. Overall, these actions corresponded to 19 of the 73 ERIC strategies and were most frequently mapped to conduct educational meetings (ERIC 15) and provide local technical assistance (ERIC 54). Moreover, none of the studies formally examined whether a specific action was associated with an implementation outcome. Previous reviews have reached similar conclusions [14,15]. This finding is also consistent with the broader implementation science literature, in which empirical evidence linking implementation strategies, or actions relevant to implementation, to implementation outcomes remains limited [238].

Implementation outcomes were reported inconsistently and were sometimes conceptually blurred. For example, patient adherence and clinical outcomes were occasionally used as indicators of feasibility. Outcomes such as adoption, fidelity, feasibility, and sustainability were also often measured at the patient level, whereas the IOF more commonly conceptualizes them at the provider or organizational level [25]. Although inconsistent conceptualization and terminology are common in emerging fields [19,25,238,239], they hinder cross-study comparisons. Applying the 6 recommendations proposed by Lengnick-Hall et al [239] could improve outcome reporting and strengthen comparability and knowledge accumulation.

Although several included studies suggested that these technologies could cost less than traditional rehabilitation or usual care [50,51,53,108,122,139,151,194-199,225,226], the economic evidence remains limited. More than half of the studies that reported costs did not use formal economic evaluation methods. Furthermore, studies rarely accounted for the additional staff time required to review patient data, conduct follow-up calls, and provide training. Reported staff time requirements varied considerably [36,51,53,66,101,108,124,196,198]. For example, Simpson et al [101] reported an initial visit of 50 minutes (range 40-80 min), followed by 5 minutes of monitoring per week. Burgos et al [66] estimated that remote monitoring during a 4-week program required up to 4 hours of health care professional time per patient. The cost-effectiveness and implementation costs of technologies supporting home-based digital physical rehabilitation therefore remain uncertain, underscoring the need for formal economic evaluations that fully account for implementation-related costs.

Limitations

This scoping review has several limitations that may have affected our findings. First, coding contextual determinants according to the NASSS domains was challenging. Although determinants could generally be categorized within the framework, overlap between domains complicated the coding process. For example, a lack of required infrastructure could be coded under both the technology domain (subdomain 2A: material features) and the adopter system domain (subdomain 4B: patient). To address this overlap, ambiguous cases were reviewed and resolved through discussion within the review team.

Second, the ERIC taxonomy also has limitations. It was developed primarily for implementation in clinical health care settings, such as hospitals, and may therefore not adequately represent strategies used in home settings. For example, we identified the action "send automatic reminders to patients to use the technology," which did not clearly map onto any existing ERIC strategy. Zhu et al [19] and Balis et al [240] also noted limitations when applying ERIC in home and community settings. Balis et al [240] adapted the taxonomy for the community setting. A similar adaptation may therefore be warranted for the home setting. Moreover, the reports rarely stated the purpose of an action, so deliberate implementation efforts could not be distinguished from routine intervention delivery. The frequencies of actions mapped to ERIC strategies should therefore be interpreted with caution.

Third, Proctor et al [25] noted that the most appropriate level of analysis for specific implementation outcomes has yet to be established. Nevertheless, the IOF generally positions outcomes such as adoption, fidelity, feasibility, and sustainability at the provider or organizational level. Most studies in this field reported these outcomes at the patient level, and we included patient-level outcomes to reflect the focus of the existing literature. In home-based settings, patients may influence or enact parts of the implementation process, making these outcomes potentially meaningful at the patient level. However, our inclusion of patient-level outcomes differs from how these outcomes are positioned within the IOF and may reduce comparability with studies that apply the framework more strictly.

Fourth, this review was limited to English-language, peer-reviewed studies. Consequently, gray literature (eg, service evaluations and policy documents) and non-English sources were not included. This restriction may have limited the breadth of the implementation-related evidence identified and may have contributed to the small number of determinants in the organization domain and the absence of determinants in the wider system and the embedding and adaptation over time domains. Future reviews could include gray literature and non-English sources to capture a broader range of implementation evidence.

Fifth, many of the included studies were not designed as implementation studies. Consequently, implementation-related data were often not collected prospectively and were reported only incidentally. These data may therefore have been incomplete or inconsistently reported, which should be considered when interpreting our findings.

Finally, although the validation of ASReview has been studied [33], there is no evidence-based guideline for determining an appropriate stopping point for a second

reviewer using this tool [19]. Consequently, potentially eligible records incorrectly excluded by the first reviewer may not have been identified during the second reviewer's check.

Future Directions and Recommendations

This scoping review highlights the need for more theory-informed implementation thinking. Most included studies focused on intervention outcomes and feasibility but often overlooked implementation and sustainment processes. Because the available evidence mainly reflects the perspectives of patients, health care professionals, and carers, future research should adopt a multilevel, multistakeholder approach that also includes developers, managers, and policymakers. Established frameworks, such as the Consolidated Framework for Implementation Research [241] and the NASSS framework [20], can support this approach.

Moreover, none of the included studies systematically assessed organizational readiness, and few identified barriers and facilitators before implementation. Consequently, actions relevant to implementation were often reported without a clear rationale, and their effects on implementation outcomes were not formally evaluated. We recommend that future studies consider using type II or type III effectiveness-implementation hybrid designs to examine the effects of deliberately selected implementation strategies and their alignment with the implementation context [238,242].

Finally, the available economic evidence is insufficient to determine the cost-effectiveness and net efficiency of technologies supporting home-based digital physical rehabilitation. As demand for rehabilitation increases while resources remain constrained [1,4], future research should measure realized efficiency gains and account for all relevant implementation costs. This evidence is needed to determine whether and under what conditions these technologies improve efficiency and contribute to sustainable and accessible rehabilitation care.

Conclusion

To our knowledge, this review provides the first synthesis of the literature on the implementation of technologies supporting home-based digital physical rehabilitation across multiple levels and stages. Our findings provide a structured foundation for future research. Specifically, they can inform developers in designing such technologies, guide (implementation) scientists to examine contextual determinants and strategies from a multilevel perspective and refine their evaluation focus (eg, net efficiency and cost-effectiveness), and support implementation staff in practice. Ultimately, this review may help embed these technologies into routine rehabilitation care.

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Data Availability

All data generated or analyzed during this study are included in this published article and its supplementary information files.

Authors' Contributions

Conceptualization: KB, MM, JC
Data curation: KB
Formal analysis: KB (lead), SK (supporting)
Investigation: KB (lead), MM (equal), SK (equal), JC (supporting), GR (supporting)
Methodology: KB (lead), JC (supporting), MM (supporting)
Supervision: JC (lead), GR (supporting)
Validation: MM, JC, SK
Writing - original draft: KB
Writing - review & editing: KB (lead), MM (supporting), JC (supporting), SK (supporting), GR (supporting)

Conflicts of Interest

None declared.

Multimedia Appendix 1

The search strategy.
[DOCX File (Microsoft Word File), 18 KB-Multimedia Appendix 1]

Multimedia Appendix 2

Overview of the results.
[DOCX File (Microsoft Word File), 499 KB-Multimedia Appendix 2]

Checklist 1

PRISMA-ScR checklist.
[DOCX File (Microsoft Word File), 27 KB-Checklist 1]

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Abbreviations

ERIC: Expert Recommendations for Implementing Change
IOF: Implementation Outcomes Framework
MMAT: Mixed Methods Appraisal Tool
NASSS: Non-Adoption, Abandonment, Scale-up, Spread, and Sustainability framework
PRISMA-ScR : Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews
RQ: research question

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