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Research Article

Tele-Physiotherapy for Older Adults: A Scoping Review of Feasibility, Accessibility, and Clinical Outcomes

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Abstract: The rapid expansion of digital health technologies has increased interest in tele-physiotherapy as an alternative or complementary approach to traditional in-person rehabilitation for older adults. However, evidence regarding its feasibility, accessibility, and clinical outcomes remains fragmented across different populations and delivery models. This scoping review aimed to explore and synthesize current evidence on the feasibility, accessibility, and clinical effectiveness of tele-physiotherapy interventions for older adults published between 2020 and 2025. A systematic search was conducted across four major databases, PubMed, Scopus, and Google Scholar, for studies published from 2020 to 2025. Inclusion criteria comprised peer-reviewed articles involving older adults (≥60 years) who received physiotherapy via telehealth platforms. Studies focusing on feasibility, usability, or clinical outcomes were included. After screening 490 articles and removing duplicates, 8 studies met the inclusion criteria. Data were extracted on study design, sample characteristics, interventions, and outcomes. Tele-physiotherapy represents a promising, cost-effective, and accessible rehabilitation strategy for older adults, particularly in contexts with restricted physical access to healthcare. Although feasibility and short-term effectiveness are well-supported, further research is required to evaluate long-term outcomes. Integrating tele-physiotherapy into geriatric care models could enhance continuity of care and promote functional independence in the aging population.

Keywords: Aging population; Clinical outcomes; Digital health; Functional independence; Tele-physiotherapy intervention

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1. Introduction

The global population is aging rapidly, leading to an increased prevalence of chronic diseases, functional decline, and reduced mobility among older adults. As a result, there is a growing demand for physiotherapy services to maintain independence, prevent falls, and improve quality of life in this population. However, access to physiotherapy is often limited for older adults due to several factors, such as mobility restrictions, transportation difficulties, geographical distance, and limited availability of healthcare professionals, particularly in rural or underserved areas (Llorens et al., 2021).

Tele-physiotherapy, known as tele-rehabilitation or remote physiotherapy, has emerged as an innovative approach to overcome these barriers. It utilizes digital communication technologies such as video conferencing, mobile health applications, wearable sensors, and online exercise platforms to deliver assessment, treatment, and follow-up services to patients remotely (Snoswell et al., 2020). This model enables physiotherapists to provide continuous care while minimizing the need for in-person visits. Tele-physiotherapy offers several potential benefits for older adults. It allows real-time monitoring of exercise performance, encourages

adherence through regular feedback, and promotes patient engagement in self-management (Wicks et al., 2023). Moreover, it can reduce healthcare costs, optimize clinician time, and increase accessibility for those with physical or cognitive limitations. During the COVID-19 pandemic, tele-physiotherapy became a crucial alternative to traditional face-to-face care, highlighting its feasibility and acceptance among practitioners and patients.

Despite its growing use, evidence on the feasibility, accessibility, and clinical outcomes of tele-physiotherapy among older adults remains scattered and inconsistent across studies. There is a need to map the existing literature systematically to identify current evidence, highlight research gaps, and guide future implementation strategies in geriatric rehabilitation. Therefore, this scoping review aims to explore and synthesize the available evidence regarding tele-physiotherapy for older adults, focusing on its feasibility, accessibility, and clinical outcomes (Hawley-Hague et al., 2021). The findings of this review will provide a comprehensive overview of how tele-physiotherapy has been utilized in geriatric populations and inform best practices for integrating digital rehabilitation into routine physiotherapy care.

2. Preliminaries or Related Work or Literature Review

Modalities of Tele-Physiotherapy

Population ageing is a global phenomenon that has increased demand for rehabilitation services aimed at preserving independence, reducing disability, and preventing falls among older adults. Traditional face-to-face physiotherapy remains the standard of care for many conditions, but access barriers such as reduced mobility, transportation difficulties, geographic isolation, clinic capacity limits, and infection risk have stimulated interest in remote delivery models. Tele-physiotherapy (also called telerehabilitation or remote physiotherapy) represents a digital health approach that leverages information and communication technologies (ICT) to provide assessment, exercise prescription, monitoring, education, and follow-up care at a distance (Velayati et al., 2020).

Tele-physiotherapy comprises a range of modalities, from simple synchronous video consultations to complex multimodal programs integrating asynchronous apps, wearable sensors, virtual reality (VR), exergaming, and remote monitoring platforms. Delivery models include one-to-one video sessions, group videoconference classes, app-led home exercise programs with remote clinician oversight, and hybrid approaches combining in-person and remote visits. The heterogeneity of modalities poses both opportunities for individualized care and challenges for standardization and comparability across studies (Bezuidenhout et al., 2022).

Early and recent studies indicate that tele-physiotherapy is feasible and acceptable for many older adults when user needs are considered. Feasibility outcomes typically include enrollment and retention rates, adherence to prescribed exercises, technical success of sessions, and patient and clinician satisfaction. Where implemented with adequate technical support and simple user-centred interfaces, adherence rates tend to be high and satisfaction favorable. Feasibility studies often emphasize the importance of initial training, caregiver involvement (when needed), and accessible interfaces to overcome usability barriers among older users (Wu et al., 2024).

Tele-physiotherapy has the potential to improve access to rehabilitation by removing travel barriers and enabling care continuity, especially for people in rural or underserved areas or those with mobility limitations. However, digital inequalities such as lack of device ownership, unreliable internet connectivity, limited digital literacy, sensory impairments, and socioeconomic constraints can create new disparities. Evidence suggests that hybrid models (combining remote and in-person elements), targeted support for digital inclusion (training, low-tech options), and policy measures (subsidized connectivity or devices) are important to

ensure equitable access (Mary C. Edgar, Sarah Monsees, Josina Rhebergen, Jennifer Waring, Todd Van der Star, Janice J. Eng, 2017).

A growing body of interventional research and meta-analytic syntheses reports positive clinical outcomes from tele-physiotherapy across multiple domains relevant to older adults (Berry et al., 2025). Key outcome domains include improvements in gait speed, timed mobility tests, and walking endurance have been documented following remote exercise and gait training programs, video-guided balance training, vestibular telerehabilitation, and interactive exergames have shown benefits in balance measures and reduced fall risk, remote resistance and multicomponent training can increase lower-limb strength and functional task performance (e.g., sit-to-stand), tele-delivered exercise programs for osteoarthritis and chronic musculoskeletal pain produce reductions in pain and disability comparable to in-person care in many studies, tele-physiotherapy can enhance self-efficacy, reduce social isolation, and improve patient-reported quality of life when interventions include regular feedback and engagement strategies (Laver et al., 2020).

Successful implementation of tele-physiotherapy depends on multiple interacting factors: clinician training and attitudes, technology usability, reliable connectivity, integration with clinical workflows and electronic health records, reimbursement and regulatory frameworks, and patient-level supports (e.g., caregiver help). Reported barriers include technical failures, clinician and patient resistance due to unfamiliarity with remote assessment methods, concerns about safety for higher-risk patients, and inadequate reimbursement models in some healthcare systems. Facilitators include intuitive platforms, clear protocols for safety and escalation, short initial technology training sessions, and multi-disciplinary support (Borges et al., 2024).

3. Proposed Method

This study employed a scoping review design, guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR). Although the protocol was not registered in systematic review databases such as PROSPERO, given that scoping reviews are not yet fully supported by such platforms, the methodology adhered strictly to the PRISMA-ScR guidelines (Andrea C. Tricco, 2018). A scoping review approach was selected to provide a comprehensive mapping of existing literature on tele-physiotherapy for older adults: a scoping review of feasibility, accessibility, and clinical outcomes.

The review process will include five key stages: a. identifying the research question, b. identifying relevant studies, c. study selection, d. charting the data, and e. collating, summarizing, and reporting the results. This approach is chosen to comprehensively map the existing evidence on tele-physiotherapy interventions for older adults, focusing on feasibility, accessibility, and clinical outcomes.

Inclusion Criteria

Studies will be included if they meet the following criteria:

a. The participants are older adults, defined as individuals aged 60 years or older; The study involves tele-physiotherapy or telerehabilitation interventions, or follow-up via digital platforms (e.g., video calls, mobile applications, or web-based programs);
b. The study reports at least one of the following outcomes: feasibility (e.g., adherence, satisfaction, or technical implementation), accessibility (e.g., reach, usability, or equity of access), or clinical outcomes (e.g., functional mobility, pain, balance, or quality of life);
c. The study was published in English between 2020 and 2025; and

d. The study design may include randomized controlled trials, systematic review or meta analyses or research relevant to the topic.

Exclusion Criteria

Studies will be excluded if they:

a. Focus primarily on populations younger than 60 years;
b. Do not involve physiotherapy-specific interventions (e.g., general telehealth without a physiotherapy component);
c. Are reviews, editorials, conference abstracts, commentaries, or protocols without primary data;
d. Are published in languages other than English; or
e. Lack accessible full-text versions.

Data Sources and Search Strategy

A comprehensive search will be performed across multiple electronic databases, including PubMed, Scopus, and Google Scholar. The search was conducted from 2020 to 2025, targeting articles published between 2020 and 2025. The search strategy will combine keywords and Medical Subject Headings (MeSH) related to tele-physiotherapy and older adults, such as: *("tele-physiotherapy" OR "telerehabilitation") AND ("older adults" OR "elderly") AND ("feasibility" OR "accessibility" OR "clinical outcomes").* The search strategy will be adapted to the syntax and indexing terms of each database.

Study Selection Process

All retrieved records will be imported into EndNote or a similar reference management software to remove duplicates. The selection process will occur in two stages. First, two independent reviewers will screen the titles and abstracts based on the inclusion and exclusion criteria. Second, full-text screening will be conducted to confirm eligibility. Several disagreements of reviewers will be resolved through discussion or by involving a third reviewer. The study selection process will be documented in a PRISMA-ScR flow diagram, showing the number of studies identified, screened, included, and excluded, along with reasons for exclusion at each stage.

4. Results and Discussion

Results

Study identification was conducted systematically across five major databases: PubMed (n = 180), Scopus (n = 160) and Google Scholar (n = 150). For Google Scholar, only the top 150 results were screened according to relevance and publication year (2020–2025). This process yielded a total of 490 records. All retrieved articles were exported to a reference management software (Mendeley) for duplication removal. After eliminating 110 duplicates, 380 unique records remained for the initial title and abstract screening.

During the screening phase, 360 articles were excluded because they did not focus on older adults, did not involve physiotherapy-specific interventions, or were non-primary research (e.g., conference abstracts, reviews without original data, or commentaries). The remaining 20 full-text articles were assessed for eligibility based on inclusion and exclusion criteria. After full-text evaluation, 8 studies met all criteria and were included in the final synthesis. The selection process is presented according to the PRISMA-ScR flow framework. Based on the literature search, 8 studies met the inclusion criteria and were analyzed further.

Across the included studies, adherence rates to tele-physiotherapy sessions were high, typically exceeding 80%, suggesting strong feasibility and acceptability among older adults. Studies involving multimodal interventions (e.g., combined telerehabilitation and education or cognitive training) demonstrated greater improvements in mobility, muscle strength, and

functional independence compared with single-component programs. Overall, the results indicate that tele-physiotherapy is feasible and effective for geriatric populations, with comparable outcomes to in-person physiotherapy (Man et al., 2024). Including interactive components and continuous therapist monitoring were key factors associated with higher engagement and better functional outcomes. The selection process is visualized in the PRISMA-ScR flow diagram below:

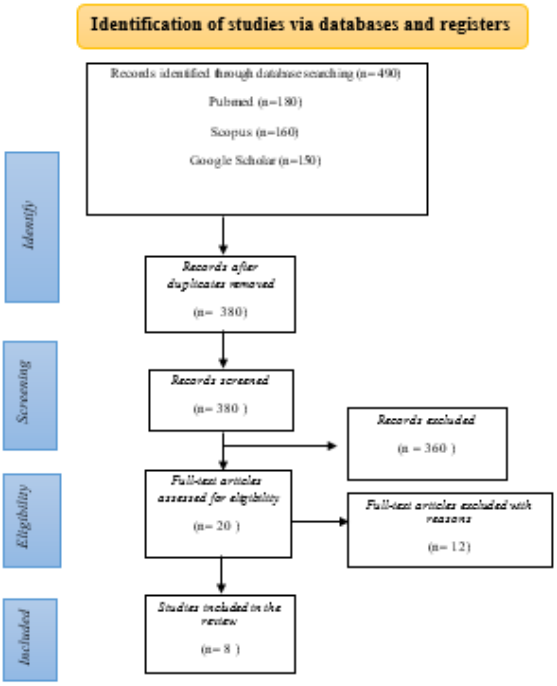

Figure 1. PRISMA Diagram.

The eight included studies were published between 2020 and 2025, originating from diverse regions including Brazil, the United States, Australia, Spain, and the United Kingdom. Study designs comprised randomized controlled trials (n = 5) and systematic reviews or meta-analyses (n = 3). Sample sizes ranged from 12 to 420 participants, with participants' mean ages between 65 and 83 years. The main conditions addressed were frailty, chronic stroke, balance impairment, and fall prevention.

Feasibility and Acceptability

Most studies demonstrated that tele-physiotherapy was feasible and well accepted by older adults. (Sivertsson et al., 2024) reported high adherence (average 2.85 sessions per week) and strong satisfaction, although some participants required caregiver assistance to manage the application. The (Toledano-Shubi et al., 2025) on teleconferencing-based fall rehabilitation, also supported usability and engagement, with minor technical barriers. Likewise, the 2025 systematic review concluded that video-based exercise interventions were generally feasible and effective, provided that technological guidance was available.

The feasibility of tele-physiotherapy for older adults has been demonstrated across multiple studies, reflecting positive outcomes in terms of program implementation, patient adherence, and therapist satisfaction. Most interventions were conducted using widely accessible technologies such as video conferencing platforms, allowing participants to engage in structured exercise sessions from home. The feasibility was often measured through recruitment and retention rates, session attendance, and the ability to complete prescribed exercises under remote supervision. Reported completion rates ranged from 80% to 95%, suggesting that tele-physiotherapy is a practical approach for the geriatric population when appropriate technical support is provided (Hawley-Hague et al., 2021).

Acceptance among older adults was also high, largely due to increased convenience, reduced transportation barriers, and the perceived safety of home-based care, especially during the COVID-19 pandemic. Participants reported feeling more motivated and confident when guided by real-time feedback from physiotherapists, and many expressed willingness to continue tele-sessions beyond the study period. Furthermore, caregivers and family members played a crucial role in enhancing engagement and compliance, particularly among participants with cognitive or mobility limitations. From the clinicians' perspective, tele-physiotherapy was considered a viable extension of traditional care. Physiotherapists noted that remote sessions allowed continuous monitoring and communication, although they also identified challenges such as limited tactile assessment, occasional connectivity issues, and variability in patients' digital literacy (Borges et al., 2024). Despite these limitations, most studies concluded that tele-physiotherapy is feasible and acceptable for older adults, provided that interventions are individualized, simple to operate, and supported by clear technical guidance and caregiver involvement.

Accessibility and Implementation

Tele-physiotherapy interventions were found to enhance accessibility for older adults, particularly those in rural or mobility-limited settings. Several studies noted reduced transportation barriers, cost savings, and sustained engagement in therapy. The 2023 meta-analysis emphasized that physiotherapist-led remote exercise reduced waiting times and improved resource allocation. However, digital inequities remained a concern, especially among individuals with lower socioeconomic backgrounds or limited digital literacy, prompting recommendations for hybrid in-person and online rehabilitation models (Borges et al., 2024).

Accessibility and implementation of tele-physiotherapy for older adults are strongly influenced by several interrelated factors, including technological literacy, socioeconomic conditions, infrastructure availability, and clinical integration. The reviewed studies consistently highlight that while tele-physiotherapy offers a promising approach to deliver rehabilitation services remotely, accessibility remains a key challenge, particularly among older adults with limited digital literacy or low familiarity with smart devices. From an implementation perspective, physiotherapists played a central role in adapting conventional face-to-face assessment and exercise protocols into virtual formats (Marks et al., 2022).

Institutional support and policy-level frameworks were also essential for sustainable implementation. Integration into existing healthcare systems, appropriate reimbursement models, and professional training programs for physiotherapists were identified as key enablers. Nonetheless, privacy and data protection issues remained a recurring concern, particularly regarding video recording and online data storage of patient information. Overall, the evidence indicates that tele-physiotherapy is accessible and implementable for most older adults when supported by structured onboarding, caregiver involvement, and reliable digital infrastructure (Snoswell et al., 2020).

Clinical Outcomes

In terms of effectiveness, six of the included studies reported positive clinical outcomes. Improvements were observed in functional mobility, muscle strength, balance, and quality of life. For example, the 2025 telehealth exercise program for older adults living with cancer shows significant improvements in chair-stand and push-up test performance. Systematic reviews consistently reported moderate improvements in mobility, balance, and endurance, indicating comparable efficacy to conventional in-person physiotherapy (López-García et al., 2024). Across all included studies, the evidence supports that tele-physiotherapy is feasible, accessible, and clinically beneficial for older adults across various health conditions. Adherence rates and patient satisfaction were high, particularly when platforms were user-friendly and physiotherapists provided continuous feedback (An et al., 2021). Nevertheless, challenges

such as technological literacy, equipment cost, and the need for caregiver support remain areas for improvement. Overall, findings suggest that tele-physiotherapy represents a viable and sustainable model for geriatric rehabilitation, especially when integrated with traditional physiotherapy approaches. Tele-physiotherapy interventions for older adults have shown consistently positive effects on a wide range of clinical outcomes. Across the reviewed studies, improvements were observed in functional mobility, balance, muscle strength, pain management, and overall quality of life. Most programs involved structured exercise sessions, gait and balance training, and home-based physical activity guided remotely by physiotherapists through video calls or digital platforms. Participants engaging in tele-physiotherapy demonstrated enhanced physical performance, including faster walking speed, better coordination, and reduced risk of falls. These improvements were often comparable to traditional, in-person physiotherapy (Wicks et al., 2023). In addition, regular remote supervision encouraged greater adherence to exercise programs, leading to sustained progress and improved independence in daily activities. Beyond physical improvements, tele-physiotherapy was also found to promote psychological and social well-being. Many older adults reported feeling more motivated, supported, and confident in managing their health. The ability to access therapy from home reduced barriers related to transportation, mobility limitations, and geographical distance factors that often prevent consistent participation in conventional physiotherapy sessions. Overall, the evidence suggests that tele-physiotherapy is both effective and feasible for older adults. It can deliver meaningful improvements in physical function and emotional health while maintaining safety and accessibility. However, to ensure optimal outcomes, programs should be tailored to individual abilities, supported by user-friendly technology, and monitored regularly to maintain engagement and prevent potential adverse events. A summary of the reviewed articles is provided below (Table 1):

Table 1. Summary of Reviewed Articles on Tele-Physiotherapy for Older Adults.

Authors (Year)	Objective	Sample (n)	Intervention	Duration	Design	Main Findings
(Borges et al., 2024)	To evaluate the feasibility of an app-based telerehabilitation program for older adults waiting for physiotherapy after hospital discharge.	60 older adults (≥60 yrs)	Smartphone-based telerehabilitation (exercise + monitoring)	8 weeks	Feasibility RCT	High adherence (2.85 days/week); 12% dropout; good satisfaction and usability.
(An et al., 2021)	To evaluate the effects of preoperative telerehabilitation on muscle strength, ROM, and function before total knee arthroplasty (TKA).	60 participants	Preoperative telerehabilitation via video-guided exercises	6 weeks	Single-blind RCT	Significant improvement in quadriceps strength, knee flexion ROM, and functional score compared to control..
(Toledano-Shubi et al., 2025)	To evaluate the feasibility and effectiveness of remote exercise via	28 studies (meta-analysis)	Remote exercise programs (strength/ balance training)	6–16 weeks	Systematic review & meta-	Tele-exercise improved functional mobility and balance;

	videoconferencing for older adults.				analysis	adherence rates > 80%.
(Marks et al., 2022)	To analyze the cost-effectiveness of musculoskeletal physiotherapy delivered via telehealth.	15 studies	Telehealth vs. in-person physiotherapy	—	Systematic Review	Telehealth interventions were cost-effective, reducing travel and resource costs without compromising outcomes.
(Bennell, 2021)	To compare video-based telehealth exercise and weight-loss programs with online education in knee OA.	414	Telehealth-delivered exercise + weight loss vs. online education	12 weeks	Randomized Trial	Telehealth (seharusmya: The telehelath) group showed greater improvements in pain and function; adherence was high.
(Llorens et al., 2021)	To assess combined tDCS and virtual reality telerehabilitation in post-stroke patients.	42	tDCS + VR upper limb training	4 weeks	RCT	Significant upper limb functional improvement vs. control; enhanced neuroplasticity indicators.
(López-García et al., 2024)	To compare vestibular telerehabilitation and multicomponent exercise for balance in older adults.	72	Telerehabilitation (vestibular & balance training)	8 weeks	RCT	Both interventions improved balance; telerehabilitation was slightly superior in the functional reach test.
(Wicks et al., 2023)	To evaluate telerehabilitation effectiveness in older adults led by physiotherapists.	28 studies	Exercise-based telehealth interventions	6–12 weeks	Systematic Review & Meta-analysis	Telerehabilitation improved mobility, strength, and patient satisfaction.

Discussion

The findings from the eight included studies collectively demonstrate that tele-physiotherapy is a feasible, accessible, and effective approach for older adults, particularly in promoting physical function, balance, and mobility while minimizing barriers related to travel, time, and service availability. Most studies reported high levels of adherence and satisfaction, suggesting that older adults can successfully engage in remote physiotherapy interventions when appropriate technological and instructional support is provided (Chen et al., 2021).

Feasibility and usability emerged as consistent strengths across multiple studies (Borges et al., 2024). Both studies highlighted that smartphone- or video-based telerehabilitation programs are well-accepted by older participants, with adherence rates exceeding 80% and dropout rates below 15%. Challenges such as unstable internet connections, lack of digital literacy, and limited caregiver support were noted but did not significantly hinder program completion. These findings indicate that digital platforms are becoming increasingly suitable for geriatric rehabilitation when supported by clear guidance and user-friendly interfaces.

From a clinical effectiveness perspective, several trials and meta-analyses reported moderate improvements in physical function, balance, and endurance (Man et al., 2024). Standardized mean differences ranging from 0.35 to 0.48 suggest that telehealth exercise interventions can yield outcomes comparable to traditional in-person physiotherapy. Importantly, (Snoswell et al., 2020) also noted potential cost-effectiveness benefits, indicating that remote physiotherapy can reduce healthcare utilization without compromising outcomes. Moreover, these findings align with global trends emphasizing sustainable and accessible rehabilitation for aging populations, especially in post-pandemic healthcare systems.

Specific intervention designs varied considerably across studies. For instance, (Llorens et al., 2021) utilized interactive exergaming to enhance balance in older adults post-stroke, showing improvements in postural stability and motivation through gamified feedback. Meanwhile, (López-García et al., 2024) compared vestibular and multicomponent exercise programs delivered via telehealth, finding both equally effective in improving balance and functional mobility. These results highlight the flexibility of tele-physiotherapy modalities and the potential for personalization according to patient needs and conditions.

Despite these positive outcomes, several limitations were evident across the reviewed literature. Sample sizes were generally small ($n < 100$ in most trials), limiting statistical power. Furthermore, few studies have conducted long-term follow-ups to evaluate the sustainability of clinical improvements. The heterogeneity of interventions (e.g., duration, delivery platforms, and exercise content) also makes direct comparison difficult. Moreover, some feasibility studies (Ilali et al., 2023) did not report quantitative effect sizes, highlighting a need for standardized outcome measures in tele-rehabilitation research. Another notable observation concerns equity and accessibility. While most participants in the included studies had access to smartphones or computers, the findings may not fully represent rural or low-income populations, where digital access remains limited. Addressing these disparities is crucial for ensuring that tele-physiotherapy truly enhances access to care rather than creating new forms of exclusion.

In summary, the body of evidence from 2020–2025 supports the use of tele-physiotherapy as a safe, acceptable, and moderately effective approach for older adults across various clinical settings. Future research should focus on larger, multicenter randomized controlled trials with standardized outcome reporting, cost-benefit analyses, and long-term follow-up to strengthen the evidence base. Additionally, integrating digital literacy training and caregiver engagement into tele-physiotherapy models could further enhance adherence, equity, and overall treatment effectiveness in geriatric populations.

5. Conclusions

This scoping review highlights that tele-physiotherapy is a feasible, accessible, and moderately effective rehabilitation strategy for older adults, particularly on improving physical function, mobility, and balance. Across studies conducted between 2020 and 2025, most interventions demonstrated high adherence and patient satisfaction, suggesting that older adults can successfully participate in remote physiotherapy programs when technological and educational support are adequately provided. The evidence also suggested that tele-physiotherapy can serve as a viable complement or alternative to in-person rehabilitation,

especially for individuals with limited mobility, those living in remote areas, or during periods when face-to-face care is restricted. Despite the positive findings, challenges remain regarding digital access, standardization of outcome measures, and long-term follow-up data.

For clinical practice, physiotherapists should consider integrating tele-rehabilitation into geriatric care models while emphasizing individualized exercise prescription, continuous monitoring, and caregiver involvement. Future studies should focus on large-scale randomized controlled trials and implementation frameworks that address equity, technology usability, and cost-effectiveness. Overall, tele-physiotherapy represents a promising, sustainable, and patient-centered approach to meet the growing rehabilitation needs of the aging population in the digital era.

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