



Home-based cardiac telerehabilitation after coronary events: A short communication on emerging evidence and implications for cardiovascular physiotherapy practice

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Abstract

Exercise-based cardiac rehabilitation (CR) is a guideline-endorsed, physiotherapist-delivered intervention that reduces cardiovascular mortality and hospital readmission after coronary events, yet global referral and completion rates remain low. Home-based cardiac telerehabilitation (HBCTR), delivered through mobile health (mHealth) platforms, wearable sensors, and remote monitoring, has become one of the most actively studied strategies for closing this participation gap. This short communication synthesises recent systematic reviews and meta-analyses comparing HBCTR with centre-based cardiac rehabilitation (CBCR) in coronary heart disease and heart failure, outlines the shift toward hybrid and technology-enabled delivery models, and discusses implications for cardiovascular physiotherapy practice. Recent pooled analyses show that health-supported HBCTR produces clinically meaningful gains in peak oxygen uptake and six-minute walk distance compared with usual care, with effects broadly comparable to centre-based programmes, and that wearable-sensor-assisted models modestly outperform centre-based rehabilitation on cardiorespiratory fitness in some analyses. Evidence in heart failure populations remains more heterogeneous. We argue that cardiovascular physiotherapy services should adopt stratified, hybrid CR pathways that match delivery mode to patient risk and preference, rather than treating home-based and centre-based rehabilitation as separate, competing services.

Keywords: Cardiac rehabilitation, telerehabilitation, coronary heart disease, heart failure, physiotherapy, mHealth, wearable sensors

Introduction

Cardiac rehabilitation is a core secondary-prevention intervention following myocardial infarction, percutaneous coronary intervention, coronary artery bypass grafting, and in chronic heart failure and physiotherapists typically lead its exercise-training component. Despite consistent evidence that CR reduces mortality, hospital readmission, and improves quality of life, international audit data continue to show that a large proportion of eligible patients are never referred to, or never complete, structured rehabilitation, with travel burden, work and caregiving commitments, and limited programme capacity repeatedly identified as key barriers [1].

Home-based cardiac telerehabilitation, delivered through smartphone applications, wearable heart-rate or ECG monitors, and remote video supervision, has moved rapidly from a pandemic-era contingency to an evidence-supported core delivery option. Several large systematic reviews and meta-analyses published in 2024–2026 now provide pooled comparisons of HBCTR against both usual care and centre-based rehabilitation, making this a timely area to summarise for a cardiovascular physiotherapy audience.

Current Evidence: Home-Based Telerehabilitation versus Centre-Based Care

A 2025 systematic review and meta-analysis of mHealth-supported home-based cardiac rehabilitation, pooling randomised trial data across several hundred patients with heart disease, found significant improvements in six-minute walk distance and peak oxygen uptake compared with usual care, supporting mHealth HBCTR as an effective alternative delivery pathway [2]. An earlier meta-analysis focused specifically on coronary heart disease, including 14 RCTs

and 2,869 participants, found home-based cardiac telerehabilitation produced functional-capacity outcomes comparable to phase 2 centre-based rehabilitation, reinforcing telerehabilitation's role as a genuine alternative rather than a lesser substitute for standard care [3].

Reviews focused specifically on wearable-sensor-based models add further nuance: a meta-analysis of 14 RCTs comparing wearable-assisted home-based rehabilitation with centre-based rehabilitation found a small but statistically significant advantage for the home-based, sensor-supported group on cardiorespiratory fitness, while effects on physical activity, quality of life, and risk-factor modification did not differ significantly between delivery modes [4]. A separate meta-analysis of wearable ECG or heart-rate-monitor-based telerehabilitation, spanning 15 RCTs and over 1,300 participants, similarly reported favourable effects on ejection fraction, peak oxygen uptake, and walk distance, with additional benefit for anxiety and depression symptoms in programmes lasting three months or longer [5].

Evidence in heart failure is comparatively more mixed. A network meta-analysis comparing centre-based, home-based, hybrid, and technology-enabled exercise-based rehabilitation across 139 RCTs and nearly 18,700 participants with heart failure found broadly similar effects on exercise capacity and quality of life across delivery modes, without a single model showing clear superiority for hospitalisation or mortality outcomes, underscoring that delivery-mode choice in heart failure should be guided by patient risk profile and preference rather than a presumed hierarchy of settings [6].

Emerging Directions Shaping the Field

Hybrid, risk-stratified pathways. Rather than positioning home- and centre-based rehabilitation as competing models, current position statements and reviews increasingly frame hybrid pathways — an initial supervised, in-person phase followed by remote, technology-supported maintenance — as the most pragmatic model for scaling cardiac rehabilitation capacity while preserving safety oversight for higher-risk patients [7].

Wearable's and remote physiological monitoring. The use of wearable ECG, heart-rate, and activity sensors to support real-time exercise monitoring during home-based sessions is one of the fastest-growing areas of intervention research, and is increasingly paired with smartphone applications and structured coaching contact rather than deployed as a stand-alone technology [8].

Psychosocial and population-specific outcomes. Newer trials are extending beyond physical exercise-capacity endpoints to examine psychological well-being, sex-specific responses to tailored rehabilitation, and applicability to postoperative populations such as coronary artery bypass graft recipients, reflecting growing recognition that a meaningful proportion of the cardiac rehabilitation benefit relates to psychosocial support and behaviour change, not aerobic training alone [9].

Implications for Cardiovascular Physiotherapy Practice

Three practical implications follow for physiotherapy-led cardiac rehabilitation services. First, home-based telerehabilitation should be offered as a first-line option for appropriately risk-stratified patients, rather than reserved only for those who decline or cannot attend centre-based programmes, given consistent evidence of comparable functional-capacity gains. Second, wearable-sensor integration adds measurable value and should be incorporated into home-based pathway design where resources allow, particularly for monitoring exercise intensity safely outside a supervised setting. Third, physiotherapists coordinating cardiac rehabilitation should build formal risk-stratification and escalation protocols into home-based pathways — covering arrhythmia detection, symptom-response criteria, and clear routes back to centre-based or medical review — since safety monitoring approaches vary considerably across the underlying trial literature.

Limitations and Research Gaps

Trial heterogeneity in technology platform, supervision intensity, and follow-up duration limits direct comparison across studies, and long-term outcomes beyond 6–12 months, including hospitalisation and mortality, are inconsistently reported for home-based models. Evidence in heart failure with reduced versus preserved ejection fraction, in older and multimorbid patients, and in low-resource settings remains comparatively limited, as does cost-effectiveness evidence needed to support health-system-level adoption decisions. These represent priority directions for future physiotherapy-led trials in cardiovascular rehabilitation.

Conclusion

Recent meta-analyses converge on a consistent finding: physiotherapist-guided home-based cardiac telerehabilitation, particularly when supported by mHealth platforms and wearable sensors, achieves functional-

capacity outcomes comparable to, and in some analyses modestly exceeding, centre-based cardiac rehabilitation, across coronary heart disease and, with more heterogeneity, heart failure. The research frontier has shifted from establishing basic feasibility toward risk-stratifying delivery mode, integrating wearable monitoring, and addressing psychosocial outcomes. Cardiovascular physiotherapy services should respond by building hybrid, stratified rehabilitation pathways that treat home-based telerehabilitation as a core, evidence-supported option rather than a fallback for access failure.

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