

Education and behavioural change as part of exercise programmes for patients with peripheral arterial disease

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Peripheral arterial disease (PAD) is a prevalent cardiovascular disease worldwide.¹ Some patients with PAD develop intermittent claudication, characterized by a limited walking distance and calf or, less commonly, thigh pain.¹ Its prevalence increases with age, reaching 18–20% among individuals aged 75 years or older (Tan).² PAD is associated with reduced quality of life and participation in social activities.¹

Management of intermittent claudication includes (supervised) exercise therapy, lifestyle counselling, pharmacological interventions, and revascularization, following a stepped-care approach.² Treatment begins with non-invasive options, with escalation to invasive interventions when results are insufficient. Short-term results of exercise therapy are promising: walking distance and speed increase, with improved functional status and health-related quality of life.³ Increased physical activity also benefits overall functioning and brain health.³ Exercise therapy is therefore an effective treatment for PAD without the risks associated with revascularization. However, many patients fail to maintain adherence to their exercise programme or lifestyle changes after therapy.^{3,4}

Demirel *et al.* conducted a systematic review of six studies describing long-term outcomes of exercise therapy and highlighting considerable heterogeneity.⁵ Improvements in physical activity are often not maintained over time, and evidence for sustained improvements in walking ability, functional status, mobility, and quality of life remains inconsistent. Evidence regarding improvements in anxiety, depression, and self-efficacy is also limited.

Improving adherence and achieving sustainable long-term outcomes requires adequate education and information, as emphasized by Demirel *et al.*⁵ Education should not only address self-management but also self-efficacy and illness beliefs and

should actively involve patients, to improve engagement, outcomes and healthcare performance.⁶ Self-management refers to an individual's ability to manage symptoms, treatment, consequences, and lifestyle changes associated with chronic conditions.⁷ Self-efficacy describes a person's belief in their ability to organize and execute actions required to manage specific situations.⁸ Patients' perceptions of their illness may therefore influence treatment success and long-term behavioural change.⁴

Patients with PAD often demonstrate low levels of both self-management and self-efficacy.⁹ Lower self-efficacy is associated with poorer self-management behaviours, possibly due to a lack of knowledge about the disease and its treatment.⁹ Limited understanding of PAD and inconsistent information cause confusion about appropriate self-management strategies.¹⁰ Patients have difficulties recalling instructions or exercise advice.¹⁰ Some patients perceive PAD as a condition with limited threat and feel little control over their illness, reducing their sense of responsibility for disease management.^{4,11} Such illness beliefs can negatively influence disease management and adherence.¹¹

An interdisciplinary survey involving patients, vascular surgeons, and accredited exercise physiologists identified several barriers and facilitators related to exercise programmes.¹² Reported patient barriers included lack of motivation (50%) and the belief that exercise would not be beneficial or might even be harmful (10%).¹² Key facilitators included the belief that exercise is beneficial (83%), personalized exercise advice (77%), and clear instructions (56%).¹² Healthcare professionals similarly identified lack of patient interest as a major barrier (80%).¹² Structured educational programmes may help address these challenges, as they have been shown to increase physical activity levels, and improve symptoms and quality of life in patients with PAD.¹³ Nurses and allied health professionals play a pivotal role in both the development and delivery of these programmes. Innovative care models often adopt a whole-of-system approach to ensure the provision of the most appropriate care. These professionals bring expertise in delivering person-centred,

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interdisciplinary, and holistic care. Their knowledge and expertise extend beyond PAD alone, but also the broader context, effective team collaboration, and the overall patient experience.¹⁴

To develop effective programmes, behavioural frameworks should be considered, particularly the Common Sense Model and Social Cognitive Theory.^{15,16} The Common Sense Model proposes that patients develop cognitive and emotional representations of their illness, which influence coping strategies and self-management behaviours.¹⁵ When PAD is perceived as mild or uncontrollable, patients may be less likely to adhere to treatment. Social Cognitive Theory emphasizes the role of self-efficacy in behaviour change.¹⁶ Patients with low confidence in their ability to walk are less likely to initiate and maintain walking behaviour.

Understanding these frameworks, alongside illness beliefs, self-efficacy, and self-management, can inform the development of interventions aimed at improving adherence and sustaining long-term benefits of exercise. An example of how such principles can be implemented in routine care is Chronic CareNet.¹⁷ This nationwide Dutch quality network supports physical therapists in delivering care for patients with non-communicable chronic diseases, including intermittent claudication. In the Netherlands, patients treated by therapists affiliated with Chronic CareNet are eligible for reimbursement of up to 37 physical therapy sessions within 1 year through basic health insurance. Treatment consists of supervised exercise therapy combined with lifestyle counselling. Therapists receive additional training in motivational interviewing and use standardized outcome measures every 3 months to monitor treatment progress and adjust treatment accordingly.¹⁷ This approach emphasizes patient education and supports long-term lifestyle change. Currently, more than 87% of patients in the Netherlands receive supervised exercise therapy through Chronic CareNet as primary treatment, and more than 83% remain free of revascularization after 5 years.¹⁸

The structure of Chronic CareNet may serve as a blueprint for organizing intermittent claudication care in other countries. However, achieving long-term benefits requires supportive conditions, including appropriate reimbursement, specialized professionals and integrated behavioural care. Despite its success, further development of structured educational programmes targeting self-management and self-efficacy remains necessary. International guidelines on exercise therapy for intermittent claudication mainly focus on exercise frequency, duration, and intensity, while providing limited guidance on patient education and behavioural change strategies.¹⁹

Demirel *et al.* provide important insights into long-term effects of exercise therapy and highlight factors that may explain why benefits are not always sustained.⁵ Exercise therapy remains a cornerstone in the treatment of PAD, but behavioural change strategies should be incorporated within integrated care approaches to ensure structured focus and achieving both short- and long-term treatment effects. Education plays a key role in facilitating behavioural change and should therefore become a core component of exercise programmes. Addressing psychosocial factors, including self-efficacy and self-management, may support personalized treatment plans and improve adherence. Future research should focus on the development and evaluation of structured educational programmes that are feasible for implementation in daily clinical practice.

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