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Summary of the Best Evidence for Patient Self-management after Lower Extremity Interventions for Arteriosclerosis Obliterans

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Abstract: *Objective*: To retrieve and summarize the evidence on self-management among patients following lower-extremity atherosclerosis interventions and provide a reference for self-management practices in this population. *Methods*: Based on the '6S' pyramid of evidence model, a systematic search was performed on BMJ Best Practice, UpToDate, Cochrane Library, Joanna Briggs Institute (JBI), National Institute for Health and Clinical Excellence (NICE), Scottish Intercollegiate Guidelines Network (SIGN), National Guidelines Collection (NGC), Medlive, American Society for Vascular Surgery, American College of Cardiology (ACC), American Heart Association (AHA), European Society of Cardiology (ESC), PubMed, CINAHL, MEDLINE, Web of Science, China Biomedical Literature Database, CNKI, Wanfang database and VIP database for evidence related to self-management in patients with lower extremity arteriosclerosis obliterans after intervention, with a timeframe for searching from database construction to January 2025. After quality assessment and combined with professional judgment, evidence was extracted and summarized from the included literature. *Result*: 28 articles were included, including 2 clinical decisions, 3 guidelines, 3 evidence summaries, 17 systematic reviews, and 3 randomized controlled trials. Thirty-seven items of best evidence were summarized around seven topics: exercise management, smoking cessation management, medication management, management of associated comorbidities, diet and nutrition management, psychological management, and others. *Conclusion*: This study provides evidence-based self-management recommendations for healthcare professionals and patients to carry out viable and scientific self-management after LEASO intervention.

Keywords: Lower extremity arteriosclerosis obliterans; Peripheral arterial disease; Self-management; Summary of evidence; Evidence-based nursing

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1. Introduction

Lower extremity arteriosclerosis obliterans (LEASO) is a chronic, progressive condition characterized by

intimal thickening, stenosis, or occlusion of the lower extremity arteries due to arteriosclerosis. This results in insufficient blood supply to the affected limb, leading to clinical manifestations such as intermittent claudication, decreased skin temperature, pain, and potentially ulceration or necrosis [1]. LEASO affects approximately 230 million adults worldwide and is associated with an increased risk of adverse clinical outcomes, including coronary heart disease, stroke, and amputation [2]. According to survey data, the prevalence of lower extremity artery stenosis and occlusion (LEASO) in Chinese adults aged 35 and older is 6.6% (approximately 45.3 million) [3]. Furthermore, the prevalence of peripheral artery disease (PAD) increases slowly before the age of 60 but exhibits an exponential increase after the age of 60 (2.8–15.3%) [4].

Endovascular intervention is recommended for patients with lower extremity arteriosclerosis obliterans (LEASO) who have not improved significantly with prolonged exercise interventions and pharmacological treatments. Endovascular interventions offer advantages such as reduced anesthesia requirements, shorter hospital stays, lower overall costs, and a lower risk of perioperative complications [5]. These interventions include percutaneous transluminal angioplasty, stent implantation, atherectomy, and thrombolytic therapy [1]. While lower extremity artery stenosis and occlusion (LEASO) is not curable, the patency rates following interventions diminish over time, necessitating repeated hospitalizations [6]. These recurrent treatments significantly impact patients' physical function, psychological well-being, and social activities. Consequently, early diagnosis and comprehensive management are of paramount importance [7].

So far, the post-intervention disease management of patients with LEASO is predominantly directed by healthcare professionals, with limited involvement from patients in self-management. Consequently, patients often exhibit poor self-management capabilities and low adherence, which negatively impacts symptom control and the development of self-efficacy. Currently, clinical practice lacks a standardized, practical, and evidence-based protocol for guiding self-management interventions in patients after LEASO procedures. Therefore, this study, grounded in evidence-based medicine, focuses on enhancing self-management among post-LEASO patients. Therefore, this study aims to identify and synthesize the best available evidence through a systematic review, providing a scientific and practical reference to support self-management among patients following LEASO intervention.

2. Methodology

2.1. Establishment of evidence-based questions

An evidence-based question was developed using the PICOST framework. Population (P): Patients who have undergone intervention for lower extremity artery stenosis and occlusion (LEASO); Intervention (I): Self-management strategies, including exercise management, smoking cessation, medication adherence, comorbidity management, dietary and nutritional guidance, and psychological support; Professionals (P): Healthcare providers, patients, and caregivers; Outcome (O): Evaluation of lower extremity perfusion and functional capacity, self-management proficiency, incidence of cardiovascular and limb-related adverse events, hospital readmission rates, and overall quality of life; Setting (S): Hospital, community, and home settings; Type of Evidence (T): Clinical guidelines, expert consensus statements, systematic reviews, clinical decision support tools, evidence summaries, and randomized controlled trials. This study has been registered with the Shanghai Evidence-Based Nursing Center (Registration No ES20257730).

2.2. Search resources and strategies

Systematic searches were conducted using the '6S' pyramid model, based on the top-down principle. Guidelines and professional association websites included BMJ Best Practice, UpToDate, Cochrane Library, Joanna Briggs Institute (JBI), National Institute for Health and Clinical Excellence (NICE), Scottish Intercollegiate Guidelines Network (SIGN), National Guidelines Collection (NGC), Medlive, American Society for Vascular Surgery, American College of Cardiology (ACC), American Heart Association (AHA), European Society of Cardiology (ESC), PubMed, CINAHL, MEDLINE, Web of Science, China Biomedical Literature Database, CNKI, Wanfang database and VIP database, with a timeframe for searching from database construction to January 2025. The search strategy is inPubMed as an example: ("Arterial Occlusive Diseases"[MeSH Terms] OR "Peripheral Arterial Disease"[MeSH Terms]) AND ("guide*"[Title] OR "consensus"[Title] OR "systematic review"[Title] OR "evidence summary"[Title] OR "RCT"[Title]) AND ("self-management"[Title/Abstract] OR "health management"[Title/Abstract] OR "exercise"[Title/Abstract] OR "nutrition"[Title/Abstract] OR "medicine"[Title/Abstract] OR "self-care"[Title/Abstract]).

2.3. Literature inclusion and exclusion criteria

2.3.1. Literature inclusion criteria

(1) Conducted on patients after LEASO intervention;
(2) Content related to self-management measures, including lifestyle modification, symptom management, etc.;
(3) Outcomes of the study, including walking ability, cardiovascular function, readmission rate, and quality of life of patients after LEASO intervention;
(4) The study was a clinical practice guideline, summary of evidence, expert consensus, systematic evaluation, clinical decision making, or randomized controlled trial;
(5) Publication language was Chinese or English.

2.3.2. Literature exclusion criteria

(1) Duplicative publications, inability to retrieve the full text or extract valid information;
(2) Updated guidelines or interpretations of guidelines;
(3) Studies with poor quality assessments.

2.4. Literature quality evaluation

The study team received systematic training in evidence-based nursing methodology. Two researchers independently assessed the quality of the literature. In cases of disagreement, a third researcher conducted an additional evaluation to reach a consensus. Clinical practice guidelines were appraised using the AGREE II (Appraisal of Guidelines for Research and Evaluation II) criteria [8]. Systematic reviews and randomized controlled trials were evaluated using the Veracity Assessment Tool developed by the Joanna Briggs Institute (JBI) Center for Evidence-Based Health Care in Australia [9]. The quality of evidence summaries and clinical decision-making was assessed using the Critical Appraisal for Summaries of Evidence (CASE) tool [10].

2.5. Summary and grading evidence

Evidence extraction and summarization were independently conducted by two researchers, while evidence grading and final synthesis were performed by a third researcher. The principles for summarization were as

follows:

(1) When multiple pieces of evidence were consistent or complementary, they were integrated into a single summary statement;

(2) When recommended evidence presented conflicting findings, priority was given to high-grade, high-quality, and more recently published studies.

For grading, clinical guidelines and evidence summaries retained their original grading systems, while other sources were evaluated using the JBI Evidence Pre-Grading and Recommendation Level System to determine both the level of evidence and the strength of recommendations [9].

3. Result

3.1. Literature search results and basic characteristics

After the initial computer search, 2221 documents were obtained, 1079 duplicates and obsolete documents were excluded, and 28 articles were finally included after reading the titles, abstracts, and full texts. The 28 articles included 2 clinical decisions, 3 guidelines, 3 evidence summaries, 17 systematic reviews, and 3 randomized controlled trials. The literature screening process and results are shown in **Figure 1**. The basic characteristics of the included literature are presented in **Table 1** [11–38].

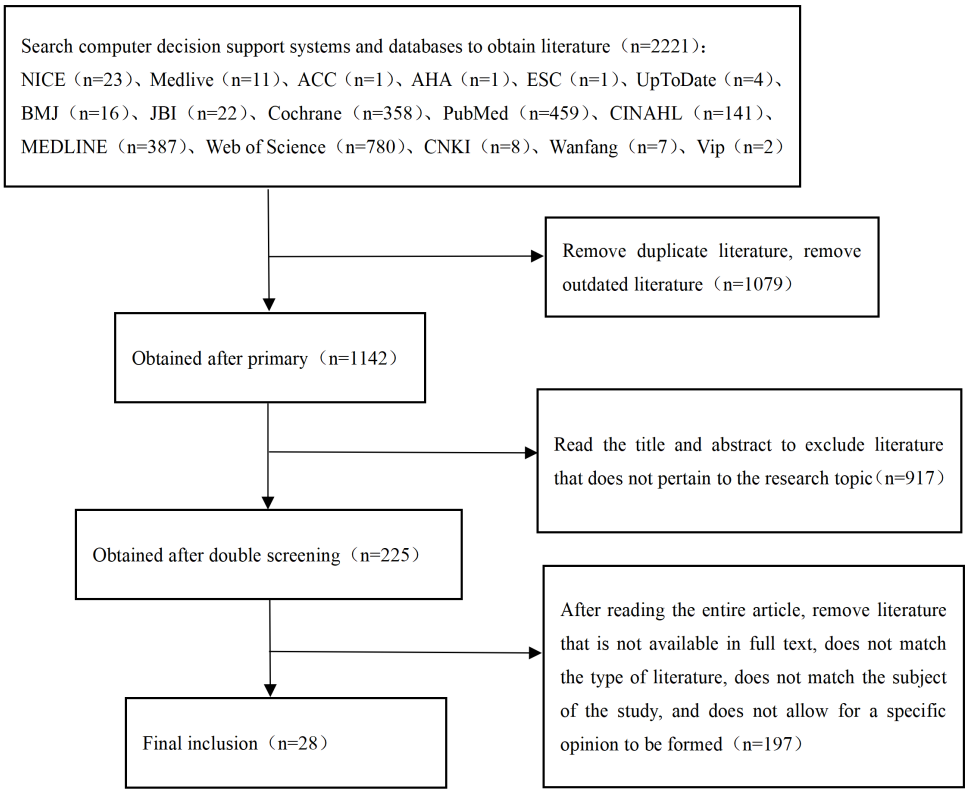

Figure 1. The literature screening process and results.

Table 1. Basic characteristics of the included literature (n = 28)

Included literature	Year of publication	Type of literature	The literature theme
Dosluoglu [11]	2025	clinical decision-making	Endovascular techniques for lower extremity revascularization
Davies [12]	2025	clinical decision-making	Management of symptomatic peripheral artery disease
Gornik [16]	2024	Guideline	The Management of Lower Extremity Peripheral Artery Disease
Mazzolai [17]	2024	Guideline	The management of peripheral arterial and aortic diseases
Nordanstig [18]	2024	Guideline	The Management of asymptomatic lower limb peripheral arterial disease and intermittent claudication
Ortega [14]	2023	Summary of Evidence	Peripheral arterial disease risk factor management
Pearson [13]	2024	Summary of Evidence	Exercise for intermittent claudication:
Lu [15]	2024	Summary of Evidence	Exercise therapy for intermittent claudication in LEASO
Xiao [19]	2024	Systematic review	Effect of supervised exercise training on cardiovascular function in patients with intermittent claudication
Abaraogu [20]	2024	Systematic review	Effect of behavior-change interventions on daily physical activity in patients with intermittent claudication
Doss [32]	2023	Systematic review	Interventions to prevent readmissions in hospitalized peripheral vascular surgery patients
Wan [33]	2022	Systematic review	Diet and nutrition in peripheral artery disease
Veiga [27]	2022	Systematic review	Smartphone use for activity monitoring during exercise therapy in intermittent claudication
Liang [21]	2022	Systematic review	The efficacy and safety of cilostazol, pentoxifylline, beraprost in the treatment of intermittent claudication
Adegbola [28]	2022	Systematic review	The impact of nutrition on the development and progression of peripheral artery disease
Thanigaimani [22]	2021	Systematic review	Comparing the outcomes of treatments for intermittent claudication
Pymer [29]	2021	Systematic review	Home-based exercise programs for individuals with intermittent claudication
Kim [23]	2021	Systematic review	Effectiveness of mobile health-based exercise interventions for patients with peripheral artery disease
Machado [30]	2020	Systematic review	Combined aerobic and resistance exercise in walking performance of patients with intermittent claudication
Pymer [31]	2019	Systematic review	High-intensity interval training as an exercise intervention for intermittent claudication
Golledge [24]	2019	Systematic review	The benefit of structured home exercise in patients with peripheral artery disease
Klaphake [26]	2018	Systematic review	Combination of endovascular revascularization and supervised exercise therapy for intermittent claudication
Golledge [25]	2018	Systematic review	The Benefit of exercise programs using Nordic walking in patients with peripheral artery disease
Abaraogu [34]	2018	Systematic review	The burden of peripheral artery disease on patients' lives.
Abaraogu [35]	2018	Systematic review	Barriers and enablers to walking in individuals with intermittent claudication
Rezvani [36]	2024	Randomized controlled trials	Telephone health coaching and remote exercise monitoring (TeGeCoach) in peripheral arterial occlusive disease
Lin [37]	2021	Randomized controlled trials	Cycling exercise training enhances platelet mitochondrial bioenergetics in patients with peripheral arterial disease.

Girold [38]	2017	Randomized controlled trials	Nordic walking versus walking without poles for rehabilitation with cardiovascular disease

3.2. Literature quality assessment

3.2.1. Clinical decision-making and summary of evidence

Two clinical decisions from UpToDate were included, representing high-quality literature [11,12]. Three evidence summaries were also incorporated [13–15]; two of these showed "no" for items 4 and 5, while the rest were affirmative [14,15]. One evidence summary showed all evaluation items as "yes" [15].

3.2.2. Guidelines

This study included three guidelines, which were evaluated by two researchers using the AGREE II instrument [16–18]. The intraclass correlation coefficients (ICCs) were 0.872, 0.866, and 0.709, respectively. All three guidelines were assigned a Grade A recommendation, and detailed domain scores are presented in **Table 2**.

Table 2. The quality evaluation results of included guidelines (n = 3)

Included literature	Percentage of standardization by domain						≥ 60% of the number of fields	≥ 30% of the number of fields	Recommended level
	Scope and Purpose	Participants	Rigor of formulation	Clarity of presentation	Usefulness of the guide	Editorial independence			
Gorink [16]	97.2	83.3	90.6	100.0	68.8	100.0	6	0	A
Mazzolai [17]	97.2	80.5	83.3	100.0	52.1	91.7	5	1	A
Nordanstig [18]	100.0	91.6	95.8	100.0	79.2	100.0	6	0	A

3.2.3. Systematic reviews

A total of 17 systematic reviews were included in this study, and **Table 3** shows the quality evaluation results for these systematic reviews. Eight reviews met all assessment criteria [19–26]. Six reviews had one item rated as "no" (item 9), with all other items rated as "yes" [27–32]. One review had two items rated as "no" (items 9 and 10), with all other items rated as "yes" [33]. Two reviews had item 9 rated as "not applicable", with all other items rated as "yes" [34,35].

Table 3. Quality evaluation results of included systematic reviews (n = 17)

Included literature	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
Xiao [19]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Abaraogu [20]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Doss [32]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Wan [33]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Veiga [27]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Liang [21]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adegbola [28]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Thanigaimani [22]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pymer [29]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Kim [23]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Machado [30]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Pymer [31]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Golledge [24]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Klaphake [26]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Golledge [25]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Abaraogu [34]	Unclear	Yes	Yes	Yes	Yes	Yes	Unclear	Y	Not applicable	Y	Y
Abaraogu [35]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not applicable	Yes	Yes

3.2.4. Randomized controlled trials

This study included a total of three randomized controlled trials [36–38]. All three trials scored "No" for items 4 and 5. One trial scored "Unclear" for items 2 and 6, while another scored "Unclear" for item 2 [37,38].

3.3. Summary and generation of evidence

Following evidence synthesis of self-management strategies for patients' post-lower extremity artery stenosis and occlusion (LEASO) intervention, seven themes were identified, encompassing 37 best practice recommendations, as detailed in **Table 4**.

Table 4. Summary of the best evidence for patient self-management after lower extremity arteriosclerosis obliterans interventions

Theme of evidence		Content of evidence	Level of evidence	Level of recommendation
Exercise management	Exercise modalities and their monitoring and feedback	1. Supervised exercise training (SET) is the evidence-based strongest exercise form; the training sessions should be supervised by clinical exercise physiologists or physiotherapists in a clinical setting [12,16].	1a	A
		2. When SET is unavailable, structured home-based exercise training (HBET) with behavioral intervention strategies should be proposed [13]. This includes exercise planning and goal setting, motivational techniques, and providing exercise-related education, with remote monitoring facilitated by mobile health technologies (e.g., wearable devices) [20].	1a	A
		3. Employing mobile health (mHealth) strategies, wearable activity trackers (wrist-worn devices integrated with smartphone applications) are used to quantify physical activity metrics, including exercise duration and heart rate. The application platform delivers exercise-related education and facilitates user interaction to enhance engagement [23,27].	1a	A
		4. Healthcare professionals provide feedback and motivation through face-to-face guidance and telephone follow-ups every 2–3 weeks. These interventions include exercise monitoring, assessment of exercise capacity, adjustment of exercise plans, and providing positive reinforcement and education [24,29]. Additional telephone follow-up will be triggered for patients using wearable devices if the platform does not receive exercise data or the exercise goals are not met [36].	1a	A

	Exercise protocols and exercise modalities	5. Exercise protocol: Initiate with a warm-up phase, followed by a series of either aerobic or resistance exercises, and conclude with gentle stretching and a cool-down period [15,22].	1a	A (*Continued*)
		6. Walking (treadmill or flat ground) is recommended as the primary exercise modality. Alternative exercises (Nordic pole walking, cycling, resistance training, or a combination of aerobic and resistance training) should be considered when walking is not available [13,17].	1a	A
		7. Nordic pole walking: Patients utilize hand-held, height-adjustable, lightweight (approximately 150–200 g) carbon fiber poles for ambulation. Optimal pole length is determined by the distance from the elbow to a flat surface when the arm is flexed at a 90-degree angle [25,38].	1b	A
		8. Cycling: Exercise workouts with a bicycle ergometer [37].	1c	A
		9. Resistance exercise: Exercise using tools such as resistance bands and weighted machines, including bench press, leg press, seated row, knee extension, arm curl, leg curl, frontal raise, and hip abduction, focusing on lower extremity exercises [19].	1a	A
		10. Combined aerobic and resistance exercise: Aerobic exercise primarily involves treadmill walking, while resistance exercise incorporates a variety of modalities [26,30].	1b	B
Exercise management v	Exercise frequency, intensity, and time	11. Exercise frequency: Aerobic exercise 3–5 times/week, resistance training 2–3 times/week (10 repetitions per set, 3 sets total) [19,24].	1a	A
		12. Walking exercise intensity should reach moderate levels, with heart rate approximating 50% of heart rate reserve（HRR）, allowing a ± 10% margin of error [19,38]; cycling exercise intensity involves a 3-minute warm-up at 30% VO2peak, followed by 30 minutes at ventilatory threshold (VT) continuous workload, and a 3-minute cooldown at 30% VO2peak [37]; resistance training intensity should achieve moderate levels, corresponding to a score of 5–7 on the OMNI resistance exercise scale, indicating perceived exertion as somewhat difficult [19].	1a	A (*Continued*)
		13. High-intensity interval training (HIIT): alternating 2 minutes of high-intensity exercise at 85–90 % VO2peak (equivalent to 90–95 % peak heart rate) with 2 minutes of rest [31].	1b	B
		Exercise duration should be gradually increased, starting with 20–30 minutes per session and gradually extending to 45–60 minutes per session [24].	1a	A
	Special situation	15. Before developing an exercise regimen, patients should undergo medical evaluation to exclude contraindications to physical activity [36]. Exercise is contraindicated if the patient's heart rate exceeds 90 beats per minute or systolic blood pressure exceeds 150 mmHg [38].	1c	A
		16. Exercise training must be immediately discontinued if the patient experiences maximal claudication pain or exhibits symptoms/signs indicative of other cardiovascular conditions during physical activity [37].	1c	A

Smoking cessation management		17. Patients who smoke should be strongly advised to cease smoking, accompanied by pharmacotherapy, behavioral interventions for smoking cessation, and relevant counseling [12,16,18].	1a	A
		18. Pharmacotherapy includes varenicline, bupropion, and nicotine replacement therapy [16,18].	1a	A
		19. E-cigarettes are considered potential adjuncts for smoking cessation; however, their long-term effects remain uncertain. It is recommended to restrict their use and avoid concurrent consumption with conventional tobacco products [17].	3a	B
		20. Avoid exposure to secondhand tobacco smoke in indoor or enclosed environments [16].	2b	A
Medication management		21. Adherence to long-term prescribed antiplatelet therapy (aspirin, clopidogrel) and anticoagulant therapy (rivaroxaban) is recommended [11,12].	1a	A (*Continued*)
		22. Regularly monitor coagulation parameters and adjust medication dosages based on bleeding and ischemic risk assessments [17]	1a	A
Management of common comorbidities	Diabetes mellitus	23. Maintain strict glycemic control with HbA1c < 53 mmol/mol (7%) to prevent vascular complications [17].	1a	A
		Patients with type 2 diabetes are prescribed SGLT2i and GLP-1Ras, which have been demonstrated to confer cardiovascular benefits, as first-line antihyperglycemic agents [18].	1a	A
	Hypertension	25. For patients under 70 years of age, blood pressure should be controlled to 120–129/80 mmHg, while for those aged 70 and above, the target blood pressure is 130–139/80 mmHg [18].	1a	A
		26. Utilize ACEI or ARB as first-line antihypertensive agents [14,17].	2a	B
	hyperlipidemia	27. Regardless of baseline LDL-C levels, all patients with LEASO should receive lipid-lowering therapy with at least a moderate-intensity (or even high-intensity) statin [11,12].	1a	A
		28. Achieve LDL-C targets of < 1.4 mmol/L (< 55 mg/dL), with a reduction of >50% from baseline [17,18].	1a	A
		29. If target lipid levels are not achieved with high-dose statin therapy, ezetimibe is recommended [18]. If target lipid levels are still not achieved after adding ezetimibe, the addition of a PCSK9 inhibitor is recommended [17].	1a	A
Management of common comorbidities	Diabetes mellitus	23. Maintain strict glycemic control with HbA1c < 53 mmol/mol (7%) to prevent vascular complications [17].	1a	A
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	Hypertension	25. For patients under 70 years of age, blood pressure should be controlled to 120–129/80 mmHg, while for those aged 70 and above, the target blood pressure is 130–139/80 mmHg [18].	1a	A
		26. Utilize ACEI or ARB as first-line antihypertensive agents [14,17].	2a	B
	hyperlipidemia	27. Regardless of baseline LDL-C levels, all patients with LEASO should receive lipid-lowering therapy with at least a moderate-intensity (or even high-intensity) statin [11,12].	1a	A
		28. Achieve LDL-C targets of < 1.4 mmol/L (< 55 mg/dL), with a reduction of >50% from baseline [17,18].	1a	A
		29. If target lipid levels are not achieved with high-dose statin therapy, ezetimibe is recommended [18]. If target lipid levels are still not achieved after adding ezetimibe, the addition of a PCSK9 inhibitor is recommended [17].	1a	A

Diet and nutrition management	30. The Mediterranean diet is recommended, emphasizing the intake of vegetables, fruits, legumes, nuts, whole grains, and fish [16,17].	1a	A
	31. Restrict or avoid the intake of trans fats, saturated fats, high-sodium foods, refined sugars, high-glycemic index (GI) foods, and excessive alcohol [28].	1b	A
Psychological management	32. Employ nutritional risk scores to assess nutritional status [33].	3a	B
	33. Employ Cognitive Behavioral Therapy (CBT) to enhance self-management by modifying patients' maladaptive cognitions regarding their condition and therapeutic interventions, thereby improving health outcomes [34,35].	1a	B (*Continued*)
	34. Providing social support systems: socioemotional support from family members/pets, peer support among patient groups, and encouragement from healthcare providers [35].	3b	B
Others	35. Integrated case management: Develop individualized care plans and coordinate discharge needs, including follow-up via telephone or home visits to ensure the absence of unforeseen complications [32].	1a	A
	36. Routine follow-up and review should encompass assessment of limb symptoms and functional status, lower extremity pulse and foot evaluation, and progress in risk factor management [11,16,17].	1a	A
	37. Annual influenza vaccination is recommended to mitigate the risk of severe influenza infections [16,18].	1c	A

Q1: Did the research questions and inclusion criteria for the review include the components of PICO? Q2: Were the literature inclusion criteria appropriate for that evidence-based question? Q3: Was the search strategy used appropriate? Q4: Were the sources of the research papers appropriate? Q5: Were the criteria used to evaluate the quality of the literature appropriate? Q6: Was the evaluation of the quality of the literature done independently by two or more evaluators? Q7: Whether the data were extracted with measures to reduce errors? Q8: Whether the methods used to synthesize/combine studies were appropriate? Q9: Whether possible publication bias was assessed? Q10: Whether recommendations for policy and/or practice were made with the support of the reported data? Q11: Whether appropriate recommendations were made for future directions for further research?

4. Discussion

4.1. The efficacy of exercise management strategies is critical for self-management in patients post-LEASO

Extensive evidence supports the pivotal role of exercise in the symptomatic management of lower extremity arteriosclerosis obliterans (LEASO). Exercise interventions improve walking capacity, including maximal walking distance (MWD) and pain-free walking distance (PFWD), and reduce the incidence of future major adverse cardiovascular events (MACE) and major adverse limb events (MALE) [39]. Supervised exercise training (SET) demonstrates significant advantages in safety and efficacy; however, its practical application is limited by specialized facilities, the need for multidisciplinary team support, and variable patient adherence [40]. The costs associated with establishing and maintaining SET also pose barriers to its widespread adoption from a health economics perspective [17]. In clinical scenarios where SET is not feasible, structured home-based exercise training is recommended as an alternative. The use of wearable devices facilitates remote

monitoring, thereby ensuring adherence and completion of exercise programs [29]. In the application of mobile health (mHealth), it is essential to systematically consider patient data privacy and security, as well as disparities in technological accessibility [27] . Efforts should be made to bridge the digital divide for elderly individuals and those with limited internet access, while also preventing over-reliance on remote mHealth interactions that could diminish face-to-face patient-physician communication.

4.2. Establishing an integrated management system is fundamental for postoperative self-management in LEASO patients

A systematically integrated and structured exercise regimen can optimize health benefits, minimize risks, and enhance adherence. Exercise modalities include walking and alternative forms, each varying in frequency, intensity, and time. Personalized, evidence-based exercise prescriptions should be tailored to the patient's baseline functional status and clinical condition [15]. Before initiating any exercise program, a comprehensive pre-exercise evaluation is essential to ensure safety [41]. During exercise, continuous monitoring of heart rate and blood pressure is critical; exercise should be immediately discontinued if heart rate exceeds 60% of the maximum predicted heart rate, or if cardiovascular events or severe pain occur, followed by implementation of emergency protocols [37].

Continuous follow-up and reassessment enable the identification of issues in patient self-management and enhance their self-care capabilities. Healthcare professionals should educate patients during hospitalization about the timing and scope of follow-up evaluations, as well as recognize symptoms and signs warranting immediate medical attention [11,17]. Implementing telephonic follow-up through integrated case management facilitates ongoing patient monitoring [32]. Remote monitoring, utilizing wearable devices for real-time feedback and mobile health applications for delivering health education [23,27], significantly improves patient self-management efficacy.

The management of multidimensional risk factors is a critical component. Effective management of risk factors can significantly slow disease progression and reduce restenosis following intervention. Factors influencing LEASO progression include smoking, diabetes, hypertension, and hyperlipidemia [42]. Smoking cessation counseling combined with pharmacotherapy could enhance quit rates; e-cigarettes may serve only as a transitional aid and require strict risk monitoring [16]. Achieving target levels of glycemia, blood pressure, and lipid profiles markedly decreases atherosclerotic plaque development. Antihyperglycemic agents with proven benefits on cardiac function and cardiovascular outcomes are recommended, such as SGLT2i and GLP-1RAs [43]. Lipid management guidelines advocate for moderate- to high-intensity statin therapy in all LEASO patients [16]. Beyond pharmacological treatment, metabolic disorders should be managed synergistically with lifestyle interventions, including diet and exercise. Additionally, current guidelines recommend annual influenza vaccination for LEASO patients to mitigate infection-related cardiovascular risk [16,18].

4.3. Adherence to prescribed medication regimens is essential for ongoing therapeutic efficacy

Medication management is a critical component of post-vascular intervention self-care. To maintain vascular patency and reduce the incidence of cardiovascular events, long-term adherence to antiplatelet and anticoagulant therapy is required to prevent thrombosis [18]. The selection of drug types and dosages should be carefully determined by the physician based on a comprehensive assessment of the patient's surgical

approach, coagulation status, bleeding risk, and thrombotic risk [11,12]. Additionally, it is essential to ensure that patients are well-informed about the precautions associated with each medication.

4.4. Optimal psychological well-being enhances the efficacy of self-management

Chronic persistence of LEASO, limb pain, and patients' concerns about adverse disease outcomes impose significant psychological burdens, often accompanied by anxiety and depression. Patients experiencing anxiety and depression typically demonstrate poor adherence to self-management and related treatments [44]. Vascular surgery healthcare professionals should promptly identify patients with adverse psychological states and refer them to mental health specialists for evaluation and intervention. Psychological status can be improved by providing patients with cognitive behavioral therapy and social support systems, thereby enhancing confidence in symptom management and self-efficacy [34,35].

5. Conclusions

This study systematically collected, appraised, and extracted the best available evidence related to self-management in patients following LEASO intervention, encompassing 7 domains and 37 evidence items. The findings provide a theoretical framework to guide healthcare professionals and patients in implementing scientific and feasible self-management strategies post-LEASO intervention. Given that most of the recommended evidence originates from international sources, the clinical application should consider the specific context of self-management components, integrating factors such as patients' living environments, health literacy, socioeconomic status, and accessible healthcare resources to tailor individualized post-LEASO self-management plans.

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