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Research Article

Preferences, Interests, and Barriers to Physical Activity–Based Prehabilitation Prior to Lung Resection: A Survey Study

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Purpose: Despite its demonstrated benefits, prehabilitation before lung cancer surgery remains poorly implemented. This study investigated the preferences, interests, and barriers to exercise-based prehabilitation among patients eligible for thoracic surgery.
Method: This cross-sectional study conducted from January 2022 to July 2023 used self-administered questionnaires to collect data on preferences and barriers to exercise-based prehabilitation in cancer patients scheduled for lung resection at a French comprehensive cancer center.
Results: Most of the 23 participants ($n = 20$, 90.9%) were unaware of prehabilitation but expressed a strong interest in participating in an exercise program prior to lung surgery ($n = 16$, 72.7%). Walking ($n = 16$, 80.0%) and home-based exercise ($n = 14$, 70.0%) were the most preferred activities. Programs of short to moderate duration (1–4 weeks) and located within 30 min travel from home were preferred. Participants preferred exercising alone or with family members and showed limited interest in the group or facility-based sessions. While 81.8% ($n = 18$) felt capable of engaging in an exercise-based prehabilitation program, common barriers included distance from the care center, breathlessness, and fatigue. Physical and medical limitations were more frequently reported than psychological ones.
Conclusion: Despite limited awareness, lung cancer patients show a strong interest in exercise-based prehabilitation. Home-based and flexible programs aligned with patient preferences may help overcome participation barriers. These findings support the development of personalized, accessible prehabilitation strategies to enhance engagement before lung surgery.

Keywords: barriers; exercise; lung cancer; preferences; prehabilitation; preoperative

1. Introduction

Lung cancer is the leading cause of cancer-related mortality worldwide [1], with surgical resection remaining the gold standard treatment for early-stage disease patients [2]. However, up to 50% of patients experience postoperative complications, which can delay recovery, impair long-term outcomes, and increase healthcare costs [3]. In this context, optimizing patient's physical capacity prior to surgery, particularly cardiorespiratory fitness, is therefore essential to mitigate adverse surgical outcomes [4]. Prehabilitation, defined as the implementation of preoperative interventions such as physical exercise, nutritional support, psychological care, and behavioral strategies, has emerged as a promising approach to enhance functional capacity before surgery and is a part of continuum to rehabilitation. It is important to distinguish physical activity (PA)—any body movement above resting energy expenditure—from exercise, which is planned, structured, and repetitive with the goal of improving fitness [5]. In thoracic oncology, exercise-based prehabilitation has demonstrated benefits including improved pulmonary function, increased surgical eligibility, reduced postoperative complications, and shorter hospital stays [6–8]. A recent meta-analysis confirmed significant improvements in cardiorespiratory fitness, including gains in six-minute walk distance ($g = 0.2$, $p < 0.001$) and peak oxygen uptake (VO_2 peak) ($g = 0.6$, $p = 0.001$), following prehabilitation programs [9].

Despite these demonstrated benefits, exercise-based prehabilitation before lung cancer surgery remains poorly implemented [6, 10]. A major challenge is the limited time window before surgery, which often restricts the opportunity to engage patients in prehabilitation programs [11]. In this context, enhancing patient engagement becomes crucial [12, 13]. Achieving this requires a clear understanding of patients' preferences and perceived barriers, which is key to tailoring interventions, enhancing adherence, and improving program effectiveness. A patient-centered approach, integrating individual expectations, motivations, and constraints, could help tailor programs to improve both feasibility and participation. Despite the recognized importance of patient engagement, few studies have directly explored how patients perceive the components of exercise-based prehabilitation. A recent qualitative stakeholder analysis identified the perceived value of prehabilitation and emphasized the need to integrate patient feedback into program design [14]. However, quantitative data on patients' specific preferences, interests, and perceived barriers remain scarce—particularly in the context of lung cancer surgery. Furthermore, our clinical observations suggest that preferences for physical exercise may differ between men and women, and evidence indicates that physiological responses to exercise also vary by sex [15]. These insights highlight the importance of performing sex-specific subanalyses in future research to better personalize prehabilitation programs and maximize their effectiveness.

This study aims to investigate preferences, interests, and barriers to participation in exercise prehabilitation among patients scheduled for lung surgery at the Centre Léon Bérard Comprehensive Cancer Center in France. Preferences and barriers will be analyzed according to age, sex, and PA level. The findings will inform the development of personalized and accessible programs that improve engagement and clinical outcomes.

2. Methods

2.1. Study Design. This cross-sectional study was conducted at the Léon Bérard Comprehensive Cancer Center, in Lyon, France, between January 2022 and July 2023. All patient data were pseudonymized, and the study was declared to the National Commission for Data Protection and Liberties (CNIL) (reference number: 1,994,192). Ethical approval was granted by the Institutional Research Ethics Committee (R201-004-472). Patients have received an information note and consent was obtained from all participants prior to data collection.

2.2. Study Population. Eligible patients were adults aged ≥ 18 years, with a diagnosis of primary lung cancer, eligible for surgery. Patients were required to speak and understand French and to have no contraindications to PA, as determined by their treating surgeon. Recruitment occurred during the preoperative consultation at the center.

2.3. Data Collection. Data were collected during the preoperative medical consultation and included the following:

Anthropometric and demographic data such as age, gender, weight, height, smoking status, and employment status were self-reported at the time of inclusion. The body mass index (BMI) was calculated by dividing the weight in kilograms by their height in meters squared (kg/m^2). Distance from the patient's home to the cancer center (in kilometer) was also recorded.

PA level: PA level was assessed using The National Observatory for Physical Activity and Sedentariness-Physical Activity Questionnaire (ONAPS-PAQ) [16], a self-administered PA questionnaire validated in a French population in 2021. This 31-item questionnaire evaluates PA across four domains: household, occupational, transportation, and leisure. Weekly PA was expressed in metabolic equivalent of task (MET)-minutes/week. Based on the reported duration and intensity (in METs), participants were categorized into different PA levels: inactive (< 600 MET-min/week), active (600–3000), or very active (> 3000) and sedentary behavior classifications (low, moderate, and high).

Self-reported PA times were calculated by multiplying the number of days in PA by minutes/day engaged at the level. Measurement of total weekly PA in METs.-minute/week refers to ONAPS questionnaire, considering an energy expenditure of 3.3 METs for walking, 6 METs for cycling, and 2 METs for housework.

Physical fitness: physical function was assessed using the six-minute walk test (6MWT) [17], which measures the maximum distance a patient can walk in 6 min and serves as an indicator of functional exercise capacity. Muscular strength was assessed through two tests: upper limb strength, measured in kilograms using a Handgrip Jamar Plus Digital Hand Dynamometer (Patterson Medical), and lower limb strength, evaluated by the maximum number of chair sit-to-stand repetitions performed in 30 s [18].

PA interests, preferences and barriers: as no validated questionnaire exists for this specific population, we developed a custom survey based on previous literature in oncology [19–21]. The survey is available in supplementary data. The 19-item survey explored three main areas:

Prehabilitation awareness and motivation: questions addressed participants' awareness of prehabilitation, interest in engaging in a PA program, perceived ability to participate, ideal timing to receive PA information (e.g., diagnosis, surgical consultation, and PA consultation), and key influencers (e.g., surgeon, oncologist, physiotherapist, and peer patients).

Preferences for PA modalities: items explored preferences regarding setting (e.g., cancer center, home, outdoors, and fitness club), travel time (< 15 to > 90 min), program duration (< 1 week to full preoperative period), preferred activities (e.g., walking, yoga, and strength training), supervision (individual, group, or mixed), time of day, frequency (1–7 sessions/week), and interest in using technology or connected devices.

Barriers to PA: barriers were assessed using a 4-point Likert scale (1 = completely disagree to 4 = totally agree) across 19 items including fatigue, pain, motivation, cost, transportation, health issues, social obligations, time constraints, self-efficacy, age, and distance from the center.

2.4. Statistical Analysis. Categorial data were described using frequency and percentage, and continuous data were described using mean and standard deviations (SDs) or the median and the interquartile range (IQR). Statistical analysis was mainly based on descriptive analysis. Given the potential influence of sex on health behaviors, interest, facilitators, and barriers to PA, this study also aimed to explore potential sex-based differences in preferences and perceived obstacles to prehabilitation. Although such differences remain underexplored in the context of lung cancer surgery, prior research in other clinical populations suggests that sex may shape engagement with exercise-based interventions. To compare the 6MWT performance between men and women, a Mann–Whitney U test was used for independent group comparison. A threshold of 440 m in the 6MWT has been chosen to define a low functional capacity and a low peak oxygen uptake (VO_2 peak < 11 mL/kg/min) [22]. To identify PA barriers, we calculated the percentage of participants responding to the questions, combining the response options "totally agree" and "agree" into one category and "disagree" and "completely disagree" into another.

3. Results

3.1. Participants' Characteristics. The study included 23 participants from January 2022 to July 2023%, and 64% were men ($n = 15$) (Table 1). The mean age was 63 years (SD = 11.5), with no significant difference between men (63.5 ± 12.7) and women (62.1 ± 9.6). The mean BMI was 26.7 (SD = 3.5), with men showing a slightly higher BMI (27.15 kg/m^2, SD = 3.6), although nonsignificant, compared to women (25.73 kg/m^2, SD = 3.2). The majority ($n = 16$, 69.6%) of participants were overweight or obese (BMI ≥ 25 kg/m^2), including 73.3% of men ($n = 11$) and 62.5% of women ($n = 5$). Most participants were former smokers ($n = 15$, 65.2%), while 17.4% were current ($n = 4$) and 8.7% never smokers ($n = 2$). The average distance from home to the cancer center was 103.4 km (SD = 63.9), with women living on average farther away (133.0 ± 51.1 km) than men (86.4 ± 65.9 km). Most participants ($n = 9$, 39.1%) were retired and 5 participants (21.7%) were employed at the time of inclusion.

3.2. PA and Sedentary Behavior. Participants reported a median of 338 min [IQR 154, 885] of moderate to intense activity per week and a median sedentary time of 311 min [IQR 203, 378] per week. Three participants reported having vigorous PA with a median of 540 min [IQR 450, 570] per week. According to the ONAPS questionnaire, 73.9% of participants met the PA recommendations and 26.1% were inactive. However, 82.9% of participants reported having moderate to high sedentary behavior, while only 17.4% reported low sedentary behavior (Table 1). When stratified by gender, the median weekly PA was comparable between men and women (337 min for both).

3.3. Physical Fitness. The mean 6MWT distance was 467.0 m (SD = 92.8), with no statistically significant difference between men (453.8 ± 111.6 m) and women (490.0 ± 41.9 m) (Mann–Whitney $U = 39.0$, $p = 0.26$). Seven participants (30.4%) walked less than 440 m—considered a threshold for low functional capacity—including six men and one woman. Lower-body strength (sit-to-stand test) averaged 15.4 repetitions (SD = 4.8), with similar scores across sexes. Handgrip strength was higher among men (right hand: 39.9 ± 9.3 kg; left hand: 37.5 ± 8.6 kg) than women (right: 22.5 ± 6.2 kg; left: 23.1 ± 4.9 kg), reflecting expected sex differences (Table 1).

3.4. Exercise Prehabilitation Knowledge. Only 9.1% of participants reported having prior knowledge of prehabilitation. Nevertheless, most perceived it as beneficial (63.6%) or potentially useful (31.8%), with only one patient (4.5%) indicating no perceived benefit. A large majority ($n = 18$, 81.8%) believed they had the capacity to engage in prehabilitation activities, while 18.2% were unsure. No participants reported an inability to engage in prehabilitation and no notable differences were observed between men and women regarding awareness or interest in prehabilitation.

3.5. Influencers of Participation in Exercise Prehabilitation Program. Healthcare professionals were identified as the most influential figures in encouraging participation in prehabilitation. Primary care physicians and health centers were the most frequently cited sources of influence (48%), followed by surgeon (43%) and physiotherapists (38%). While overall influence patterns were broadly similar between men and women (Figure 1(a)), differences in proportions were observed. For instance, 75% of women ($n = 6$) reported being influenced by physiotherapists, compared to only 15.4% of men ($n = 2$). Surgeons were also more frequently cited as influential by women (62.5%, $n = 5$) compared to men (30.8%, $n = 4$). Nurses had a relatively limited influence (19.0%), and family members were mentioned by 33% of participants as a source of encouragement. Peers and fitness professionals had minimal overall impact (< 15%), and notably, none of the male respondents reported being influenced by peers or fitness centers.

3.6. Preferences for Program Delivery. Program duration preferences were heterogeneous, with participants favoring 1 week programs (25.0%) or longer durations of 2–4 weeks (40.0%). On average, participants preferred 3.5 sessions per week (SD = 1.5). A majority of participants (70%) preferred home-based prehabilitation followed by health centers and outdoor settings (55% each). While overall preferences were similar, some sex-based differences emerged. Home-based programs were the primary choice among men ($n = 10$, 83.3%), whereas health centers were most preferred by women compared to other locations ($n = 5$, 75%) (Figure 1(b)). Sports associations and cancer centers were the least popular locations for PA prehabilitation, both for men and women (20%).

Overall, walking (80.0%) and cycling (60.0%) were the preferred forms of exercise. However, visual analysis (Figure 1(c)) reveals distinct patterns between men and women. Notably, 91.7% of men ($n = 11$) preferred walking establishing it as their top choice over cycling (53.8%, $n = 7$), whereas women showed no clear preference, with 62.5% ($n = 5$) favoring both walking and cycling. Moreover, at least 50% of women expressed interest in all activities—except running and yoga—suggesting more varied preferences, while among men, few activities exceeded 30.7% interest. Running was the least popular activity overall (Figure 1(c)).

A majority of participants expressed a preference for having an individual coach at home, including 62.5% of women ($n = 5$) and 53.8% of men ($n = 7$), while others opted against it (25.0%) without sex difference.

Most patients (75%) preferred programs located within 30-min commute, with 55% preferring 15–30 min travel distance. Overall, participants' views on the need for free transportation varied, with a portion leaning towards either not needing it (45.0% of participants) or being undecided (20.0%). However, 35.0% of participants expressed a preference for free transportation for exercise prehabilitation.

3.7. Exercise Preferences: Social, Timing, and Technological Considerations. The majority of participants, especially women, preferred exercising either alone or with family members (both 45%) or in small groups with individuals of similar abilities (40%) (Figure 1(d)). Less popular options included combinations of modalities, exercising with peers, or participating in larger groups, indicating a clear preference for more personalized or small-scale PA settings.

Regarding supervision, 35.0% preferred supervised sessions at cancer centers, and 20.0% preferred supervised sessions at home, while 65.0% were comfortable with nonsupervised exercise. When considering exercise timing, 45.0% preferred morning sessions and 35.0% favored afternoon sessions. Only 40.0% of participants ($n = 8$) expressed interest in using connected devices, with a strong predominance among women (75.0%, $n = 6$) compared to men (16.7%, $n = 2$). Additionally, half of the participants (50.0%, $n = 10$) preferred using activity trackers to monitor their exercise progress.

3.8. Barriers to Participation in Exercise Prehabilitation. Participants reported on average of 5 perceived barriers (SD = 2.3) out of 19. The most commonly reported barriers were distance to the cancer center ($n = 15$, 65%), breathlessness ($n = 14$, 61%, especially for men $n = 10$, 76.9%), and fatigue ($n = 11$, 48%, more importantly for women, $n = 5$, 82.2%) (Figure 2). These top three barriers were consistently reported by both men and women (Figure 2). Pain ($n = 9$, 45%) was also common, while psychological barriers such as low motivation, lack of pleasure, or self-efficacy were less frequently reported (Figure 2). Motivation ($n = 5$, 25%) was the only psychological or motivational barrier reported, and it was mentioned exclusively by men—none of the women cited any barriers in this category, which included "lack of motivation," "no pleasure," "no interest," and "low self-efficacy." In contrast, barriers categorized as physical or medical—such as pain, fatigue, breathlessness, health issues, injury, and age—were the most frequently reported overall (Figure 2).

4. Discussion

4.1. Principal Findings. This study provides new quantitative insights into PA levels, preferences, and perceived barriers to exercise-based prehabilitation among patients awaiting lung cancer surgery. Despite limited awareness of prehabilitation (91% of participants), the vast majority expressed strong interest in participating. Walking and home-based programs were the most favored, with patients preferring short-duration interventions located within 30 min of their home. Notably, over 80% of participants felt capable of engaging in prehabilitation, although the most frequently reported barriers were distance from care centers, breathlessness, and fatigue. These findings highlight a paradox: while lung cancer patients report significant physical and logistical constraints, they also express clear motivation and willingness to participate—provided that the program is accessible and tailored to their needs. Furthermore, programs should be personalized to reflect patients' preferences, with careful consideration of gender-specific differences.

4.2. Clinical Implications. In light of these logistical challenges, home-based prehabilitation programs appear to offer a practical and patient-centered alternative. Given the

Table 1: Sociodemographic characteristics, physical condition, and PA level of participants ($n = 23$).

	All ($n = 23$)	Male ($n = 15$)	Female ($n = 8$)
Age at inclusion, mean (SD)	63 (11.5)	63.5 (12.7)	62.1 (9.6)
< 65 years, n (%)	13 (56.5)	9 (60.0)	4 (50.0)
> 65 years, n (%)	10 (43.5)	6 (40.0)	4 (50.0)
Body mass index (BMI) (kg/m^2), mean (SD)	26.7 (3.5)	27.2 (3.6)	25.7 (3.2)
Normal weight (< 25)	7 (30.4)	4 (26.7)	3 (35.7)
Overweight (25.0–29.9)	12 (52.2)	8 (53.3)	4 (50.0)
Obese (> 30)	4 (17.4)	3 (20.0)	1 (12.5)
Smoking status, n (%)			
Current cigarette smoker	4 (17.4)	3 (20.0)	1 (25.0)
Previous cigarette smoker	15 (65.2)	9 (60.0)	6 (75.0)
Never	2 (8.7)	1 (6.7)	1 (12.5)
Missing data	2 (8.7)	2 (100.0)	
Distance from cancer center (km), mean (SD)	103.4 (63.9)	86.4 (65.9)	133.0 (51.1)
Employment status, n (%)			
Working	13 (59.1)	8 (61.5)	5 (38.5)
Retired	9 (39.1)	6 (66.7)	3 (33.3)
Missing data	1 (4.3)	1 (6.7)	
Sedentary behaviour, n (%)			
Low (< 3 h)	3 (13.0)	3 (20.0)	
Moderate (3–7 h)	16 (69.6)	10 (66.7)	6 (75.0)
High (> 7 h)	3 (13.0)	1 (6.7)	2 (25.0)
Missing data	1 (4.3)	1 (6.7)	
Self-reported physical activity, median (IQR)	337.5 (154; 885)	337 (199; 1013)	337 (120; 540)
Inactive (< 600 METs.min/wk), n (%)	6 (27.3)	3 (20.0)	3 (35.7)
Active (600–3000 METs.min/wk), n (%)	9 (40.1)	6 (40.0)	3 (35.7)
Very active (> 3000 METs.min/wk), n (%)	7 (31.8)	5 (33.3)	2 (25.0)
Missing data	1 (4.3)	1 (6.7)	
Physical fitness, mean (SD)			
Sit to stand score	15.4 (4.8)	15.1 (4.5)	16.1 (5.9)
Handgrip strength, right (kg)	33.6 (11.8)	39.9 (9.3)	22.5 (6.2)
Handgrip strength, left (kg)	32.2 (10.2)	37.5 (8.6)	23.05 (4.9)
Distance 6MWT (m)	467.0 (92.8)	453.8 (111.6)	490.0 (41.9)
< 440 m, n (%)	7 (30.4)	6 (40.0)	1 (12.5)
Missing data	1 (4.3)	1 (6.7)	

substantial travel distance reported in this study, centralizing prehabilitation in hospital-based facilities is unlikely to be scalable. This finding aligns with previous research in other surgical populations, such as patients undergoing major abdominal surgery, where 71% favored walking-centered, home-based interventions [23]. These results confirm that distance is a major barrier to participation and underscore the need to develop home-based prehabilitation as a standard and feasible option [19]. Evidence for effectiveness is also emerging. A recent meta-analysis showed that home-based exercise during cancer treatment improves 6 min-walk performance, indicating a clinical benefit [24]. Yet most included studies involved breast cancer, leaving lung-cancer-specific data sparse. Although limited, the available trials are encouraging. A small-scale study involving twelve patients awaiting lung surgery showed the feasibility of a home-based walking program with complete adherence, suggesting potential applicability in lung cancer patients [25]. In a second multicenter randomized control trial, home-based prehabilitation prevents the decline in quality-of-life after lung surgery in 41 patients [26]. Conversely, in a larger cohort of 204 frail surgical candidates (70 thoracic), 61% adhered to a multimodal home program, but walking distance and postoperative complications did not improve [27]. Additional barriers to successful implementation have also been identified. A prospective observational study found that living alone, polypharmacy (indicating multimorbidity), and delayed program initiation were independently associated with noncompletion of home-based prehabilitation among patients awaiting lung resection [28]. Although the optimal timing between diagnosis and surgery is still debated, a 4 week timeframe is generally recommended, as delays beyond this period are associated with poorer outcomes, particularly after neoadjuvant chemo-immunotherapy [11, 29]. This highlights the importance of initiating prehabilitation as early as possible after diagnosis, as program setup, patient evaluation, and treatment-related constraints can lead to delays, ultimately reducing the overall duration of the program and its potential benefits.

While home-based programs help address access barriers, challenges remain in tailoring intensity, ensuring safety, and maintaining adherence. Digital health tools—such as tele-exercise platforms, wearable trackers, and app-based coaching—can support real-time supervision and personalized adjustments [30]. Programs such as ExerciseGuide UK have demonstrated the feasibility of delivering tailored, accessible

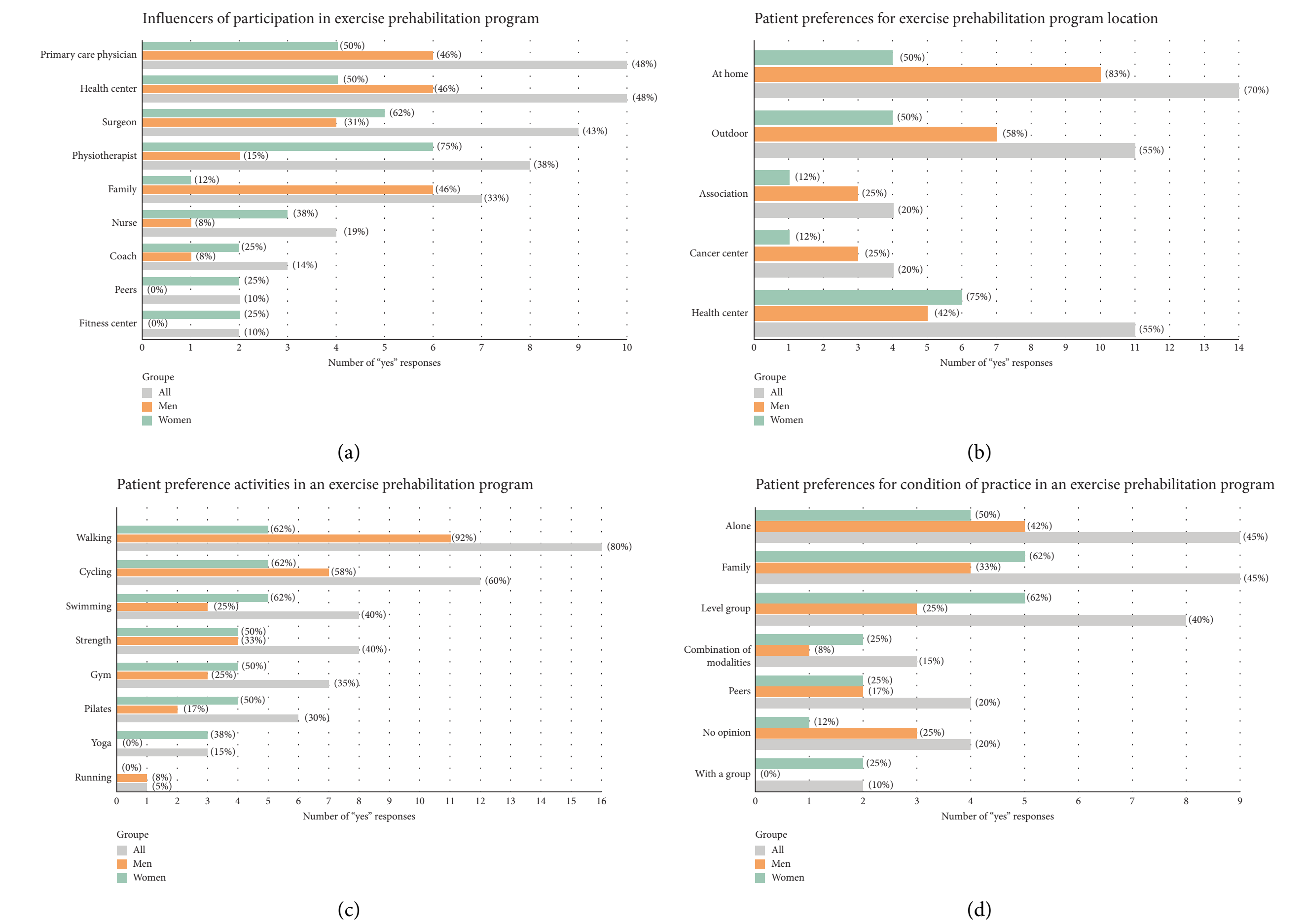

Figure 1: (a) Influencers of participation in exercise prehabilitation program, overall ($n = 21$) and by sex ($n = 8$ women; $n = 13$ men). (b) Patient preferences for exercise prehabilitation program location, overall ($n = 21$) and by sex ($n = 8$ women; $n = 13$ men). (c) Patient preference activities in an exercise prehabilitation program, overall ($n = 20$) and by sex ($n = 8$ women; $n = 12$ men). (d) Patient preferences for condition of practice in an exercise prehabilitation program, overall ($n = 21$) and by sex ($n = 8$ women; $n = 12$ men).

interventions to lung cancer patients [30]. In our study, less than half of participants were interested in connected devices, with half preferring activity trackers. Despite moderate interest, such tools have proven effective and safe even in complex cancer populations, as shown in the TELEX-Liver Cancer trial [30]. To optimize participation, programs should allow flexibility in delivery modes—individual coaching, remote monitoring, and the involvement of family or caregivers, based on patient needs and preferences.

4.3. Role of Healthcare Professionals. This study highlights the central role of healthcare professionals in initiating and supporting patient engagement in exercise prehabilitation programs. In our cohort, doctors and health centers had the highest influence (48%), followed by surgeons (43%) and physiotherapists (38%). These findings are consistent with Waterland et al., who reported that 89% of patients scheduled for major gastrointestinal and urological cancer surgery were likely to engage in prehabilitation when recommended by a healthcare professional [19]. Similarly, a recent systematic review confirmed the significant influence of clinicians on PA engagement among lung cancer patients [31]. Encouragement from healthcare professionals was identified as a key facilitator, while its absence constituted a major barrier. The review also emphasized that patients preferred to receive PA guidance from their primary care physician prior to treatment, reflecting the high importance patients place on their primary care physician in cancer management. Integrating brief, structured PA counseling into routine preoperative consultations could also serve as a key lever to enhance uptake, especially when delivered by healthcare providers. However, a study has shown that when preoperative exercise prescriptions (e.g., 30 min of moderate-to-vigorous PA, five days per week) were delivered by a surgeon and supported solely by an activity tracker, adherence remained low [14]. This highlights the importance of multimodal, team-based approaches and the need for healthcare professionals to be adequately trained to discuss and recommend prehabilitation programs as part of usual cancer care. Early identification and referral of eligible patients are therefore essential. Introducing prehabilitation discussions at the point of diagnosis and implementing automatic referrals to exercise professionals may help overcome this barrier.

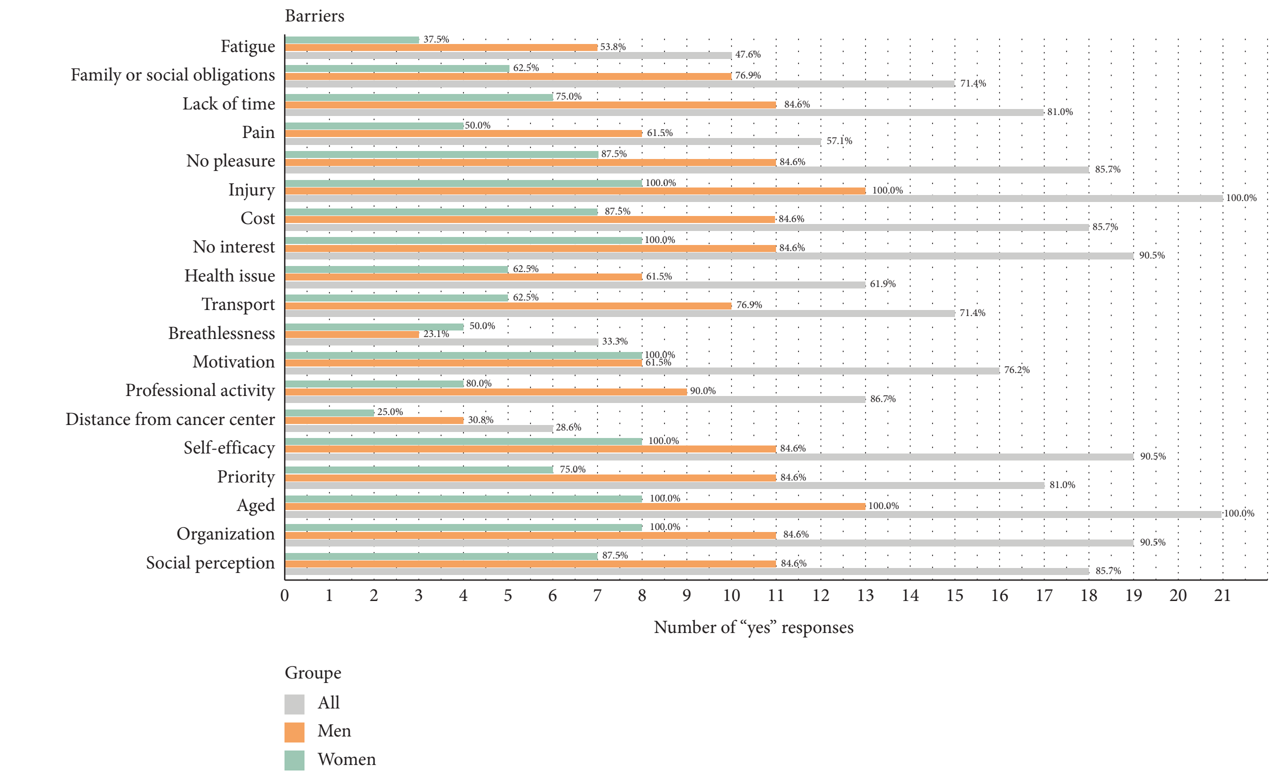

Figure 2: Barriers to participate in exercise prehabilitation program, overall $(20 = 20)$ and by sex $(n = 8$ women; $n = 12$ men).

4.4. Physical and Psychological Barriers. The common symptoms associated with cancer, such as breathlessness, fatigue, and pain, are among the barriers cited in this survey and make it difficult for patients to take part in exercise programs. Designing effective and acceptable home-based programs—whether digital or traditional—requires aligning interventions with patient preferences and perceived capabilities. In this context, walking and cycling were by far the most preferred activities among respondents. Such observations are consistent with previous studies which have shown that moderate-intensity exercises are better tolerated and more appealing to patients in this context [19]. Additionally, adherence to these programs tends to improve when activities align with participants' perceived capabilities. A recent feasibility study evaluating a multimodal prehabilitation program included a hybrid exercise approach—supervised weekly sessions of high-intensity interval training combined with low-intensity home-based walking or cycling. Compliance with this program reached 75%, demonstrating that combining structured supervised sessions with flexible home-based activities can be effective [32]. Furthermore, a recent review highlighted that 18 out of 28 studies incorporated walking as a key component, either alone or combined with other exercise stimuli such as strength training, into their home-based protocols. These findings suggest that home-based exercise programs, particularly those centered around walking, may be a viable and effective strategy to improve functional outcomes such as the 6MWT distance in cancer patients undergoing active treatment [24]. The consistent preference for walking across multiple studies highlights its suitability as a cornerstone of prehabilitation programs for lung cancer patients. Walking is accessible, adaptable to individual fitness levels, and associated with minimal risk, making it an ideal option for this population. These preferences emphasize the importance of integrating simple, accessible modalities into prehabilitation programs.

This study was intentionally designed as an exploratory, hypothesis-generating investigation, and several limitations should be acknowledged. First, the small, single-center sample size limits statistical power and may reduce the generalizability of our findings. In addition, we did not report the total number of patients approached, which prevents calculation of a recruitment rate and may introduce selection bias. Second, while the physical exercise interests survey was carefully developed based on the oncology literature and reviewed by experts, it remains a custom, nonvalidated tool and should be considered exploratory. The use of self-reported PA data also introduce potential recall and social desirability bias. Third, we did not collect detailed clinical variables such as comorbidities, cancer stage, or neoadjuvant therapy, which limits the ability to adjust for potential confounders. Finally, prehabilitation is inherently multidisciplinary and includes exercise, nutritional optimization, and psychosocial support; our study focused exclusively on the exercise component, and results should therefore be interpreted within this scope.

5. Conclusion

This study highlights the strong interest of lung cancer patients in exercise prehabilitation before surgery. Walking and cycling were the preferred activities, with notable gender differences in preferences. Healthcare professionals—especially primary care physicians and surgeons—play a crucial role in motivating patient participation. However, barriers such as distance from healthcare centers limit engagement, and there is a need to improve patient awareness of PA benefits. Patient involvement in program design remains limited, yet integrating patients as partners can enhance program relevance and effectiveness by incorporating their unique insights. Early and active patient collaboration is key to boosting autonomy, aligning programs with needs, and improving recruitment and adherence. Home-based or hybrid prehabilitation models supported by digital tools show promise for increasing accessibility, personalization, and long-term impact. Embedding these patient-centered approaches into routine care could ultimately enhance surgical outcomes and quality of life.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section. *(Supporting Information)*

The supporting information includes the *Survey on Physical Activity Preferences for Patients with Lung Cancer Scheduled for Surgery*, translated from French into English. This document presents the complete questionnaire used in the study, designed to assess patients' preferences, interest, and perceived barriers related to engaging in physical activity prior to lung cancer surgery.

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