ISRCTN15332421 https://doi.org/10.1186/ISRCTN15332421

The influence of a prehabilitation on the health of lung cancer patients

Submission date
23/01/2026

Recruitment status
Recruiting

Registration date
05/02/2026

Overall study status
Ongoing

Last Edited
02/02/2026

Condition category
Cancer

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[X] Record updated in last year

Plain English summary of protocol
Background and study aims
Lung cancer surgery can be physically and mentally demanding. Many patients feel weaker or experience problems with memory or concentration after their operation. This study aims to find out whether a short programme of exercises and support before surgery—called prehabilitation—can help improve patients' physical fitness, mood, and thinking skills, and support their recovery after lung cancer surgery.

Who can participate?
Adults aged 18 to 80 with a confirmed diagnosis of primary lung cancer, who have been assessed as fit for lung surgery and are scheduled for an operation such as a lobectomy or VATS. Participants must be able to communicate clearly and provide written informed consent. People with certain serious health problems, advanced cancers, mobilitylimiting conditions, severe heart or breathing problems, or those needing urgent surgery cannot take part.

What does the study involve?
Participants are randomly assigned to one of two groups. One group takes part in a 2–4week prehabilitation programme before surgery. This includes supervised exercise (such as cycling and strength training), breathing exercises, psychological support, and personalised nutritional advice. The other group receives the usual care provided before lung cancer surgery, including general advice to stay physically active. All participants complete assessments of their physical fitness, thinking skills, and general wellbeing before and after the programme, after surgery, and again two months later.

What are the possible benefits and risks of participating?
Taking part may help patients improve their fitness and wellbeing before surgery, which could support a smoother recovery. However, the exercises and assessments may feel tiring, and not everyone will experience a noticeable benefit. The research team ensures that all activities are safe and suitable for each participant.

Where is the study run from?
The study is being carried out in Poland at the Wielkopolskie Centre for Pulmonology and Thoracic Surgery in Poznań.

When is the study starting and how long is it expected to run for?
The first participants joined the study in May 2023. Recruitment is expected to continue until May 2026, and the study is planned to finish in June 2026.

Who is funding the study?
The study is funded by Poznan University of Medical Sciences (Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu), a governmentlinked organisation in Poland.

Who is the main contact?
Mr Krystian Mania, mania.krystian1@gmail.com

Contact information

Type(s)
Principal investigator, Scientific, Public

Contact name
Mr Krystian Mania

ORCID ID
https://orcid.org/0000-0003-2683-8058

Contact details
Świetlikowa 36/1
Poznań
Poland
61-680
+48 727926281
krystian.mania@lutycka.pl

Additional identifiers

Study information

Scientific Title
The effect of preoperative multimodal prehabilitation versus standard care on functional capacity, psychological status, and selected laboratory parameters in patients scheduled for lung cancer resection

Study objectives

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 30/09/2022, Ethics Committee of the Poznań University of Medical Sciences (ul. Bukowska 70, pok. A204, Poznań, 60-812, Poland; +48 (61) 854-73-36; bioetyka.ump@ump.edu.pl), ref: 670/22

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Open (masking not used)

Control
Active

Assignment
Parallel

Purpose
Prevention, Supportive care, Treatment

Study type(s)

Health condition(s) or problem(s) studied
Lung cancer

Interventions
Arm 1: Interventional Group (Multimodal Prehabilitation)
Participants in this arm receive a comprehensive, supervised multimodal prehabilitation program lasting for a total duration of 2–4 weeks prior to surgery.
The intervention is tailored to the patient's baseline respiratory capacity (FEV1) and exercise tolerance (METs).

The intervention consists of:
-Physical Training: Endurance training on a bicycle ergometer (5 days/week), resistance training (3 days/week), and daily general conditioning exercises..
-Respiratory Therapy: Daily sessions (6 days/week) focused on breathing re-education, effective cough techniques, and autogenic drainage
-Psychological Support: Standardized cognitive and emotional assessment followed by individualized support to optimize mental health outcomes and adherence.
-Nutritional Intervention: Individualized dietary counselling based on BMI and NRS screening, prioritizing high protein intake and hydration to support metabolic demands and muscle recovery

Arm 2: Control Group (Standard Care)
Participants randomized to the control group receive usual care and physical activity according to standard clinical recommendations. Clinicians provide medical clearance prior to the patients' involvement in the study. In addition to routine preoperative preparation and medical clearance determined by the surgical and multidisciplinary team, participants in this group are provided with standard physical activity guidelines via printed materials. Specifically, they are instructed to perform 30 minutes of moderate physical activity five days per week, totalling 150 minutes per week.

The randomization of participants into the interventional group (n=75) and the control group (n=75) is conducted using a computer-generated random sequence. This process is managed by a researcher who is not directly involved in the clinical treatment of the participants to ensure allocation concealment.

Intervention Type
Mixed

Primary outcome(s)
1. Global Cognitive Function measured using the Addenbrooke's Cognitive Examination III (ACE-III), which evaluates attention, memory, verbal fluency, language, and visuospatial abilities at baseline, post-prehabilitation, immediately post-surgery, and 2-month follow-up

Key secondary outcome(s))
1. Functional Physical Capacity measured using 6-Minute Walk Test (6MWT) distance measured in meters at baseline, post-prehabilitation, immediately post-surgery, and 2-month follow-up

2. Fatigue Syndrome measured using Fatigue Assessment Scale (FAS), assessing general, physical, and mental fatigue dimensions at baseline, post-prehabilitation, immediately post-surgery, and 2-month follow-up

3. Laboratory and Nutritional Parameters measured using analysis of selected laboratory parameters and nutritional markers (e.g., BMI, SGA, NRS) at baseline, post-prehabilitation, immediately post-surgery, and 2-month follow-up

4. Surgical and Clinical Outcomes: measured using length of ICU stay, duration of surgical drainage, and length of postoperative hospital stay at during the postoperative period

Completion date
30/06/2026

Eligibility

Key inclusion criteria
1. Confirmed Diagnosis: Histologically or cytologically confirmed primary lung cancer (e.g., Non-Small Cell Lung Cancer).
2. Age: Patients aged between 18 and 80 years (inclusive) at the time of signing the informed consent.
3. Treatment Plan: Patients qualified and scheduled for elective surgical resection via lobectomy or Video-Assisted Thoracoscopic Surgery (VATS).
4. Clinical Status: Patients cleared by a multidisciplinary team (MDT) or surgeon as fit for surgery, with preserved consciousness and the ability to maintain logical verbal contact.
5. Informed Consent: Ability to provide voluntary, written informed consent to participate in the study and comply with the prehabilitation protocol.

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 years

Upper age limit
80 years

Sex
All

Total final enrolment
0

Key exclusion criteria
1. Contraindicating comorbidities: Presence of severe comorbidities that prevent the safe performance of endurance training or the 6minute walk test (6MWT), including but not limited to severe heart failure (NYHA III/IV) or uncontrolled hypertension.
2. Cardiovascular instability: Recent myocardial infarction (within the last 6 months) or unstable angina that contraindicates physical exertion.
3. Locomotor and neurological disabilities: Severe orthopaedic, musculoskeletal, or neurological impairments that prevent the participant from completing the exercise protocol or functional assessments.
4. Cognitive and communication barriers: Patients in a state of minimal consciousness, or those with cognitive impairments (e.g., dementia) that prevent logical verbal contact or the ability to follow study instructions.
5. Refusal of consent: Patients who do not provide voluntary, written informed consent to participate in the study.
6. Urgent surgical requirement: Patients requiring emergency or urgent surgery within a timeframe that does not allow for completion of the prehabilitation protocol.
7. Advanced malignancy: Presence of concurrent advanced cancers or metastatic disease (Stage IV) that would significantly limit physical performance or life expectancy.
8. Severe respiratory failure: Baseline requirement for continuous longterm oxygen therapy (LTOT) that prevents participation in the training program.
9. Concurrent trial participation: Enrolment in another interventional clinical trial that could interfere with the study’s primary outcomes or parameters.

Date of first enrolment
16/05/2023

Date of final enrolment
29/05/2026

Locations

Countries of recruitment
Poland

Study participating centre

Wielkopolskie Centrum Pulmonologii i Torakochirurgii im. Eugenii i Janusza Zeylandów
ul. Szamarzewskiego 62, 60-569
Poznań
Poland
60-569

Sponsor information

Organisation
Poznan University of Medical Sciences

ROR
https://ror.org/02zbb2597

Funder(s)

Funder type

Funder Name
Uniwersytet Medyczny im. Karola Marcinkowskiego w Poznaniu

Alternative Name(s)
Uniwersytet Medyczny w Poznaniu, Poznań University of Medical Sciences, Poznan University of Medical Sciences, UMP, PUMS

Funding Body Type
Government organisation

Funding Body Subtype
Local government

Location
Poland

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available