ISRCTN18425201 https://doi.org/10.1186/ISRCTN18425201

# Perioperative respiratory therapy hierarchical management in enhanced recovery after surgery

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| **Submission date**<br>12/05/2025 | **Recruitment status**<br>No longer recruiting | [_] Prospectively registered<br>[_] Protocol |
| **Registration date**<br>16/05/2025 | **Overall study status**<br>Completed | [_] Statistical analysis plan<br>[_] Results |
| **Last Edited**<br>17/09/2025 | **Condition category**<br>Surgery | [_] Individual participant data<br>[_] Record updated in last year |

## Plain English summary of protocol

Background and study aims
This study focuses on improving recovery after surgery, especially for patients having chest or upper abdominal operations. After surgery, some patients develop breathing problems like lung infections or difficulty getting enough oxygen, which can slow recovery and increase hospital stays. The study tests a new approach called "graded respiratory care management," which includes breathing exercises before surgery, special lung-protecting techniques during surgery and guided breathing exercises after surgery. This study aims to see if this approach helps patients recover faster, reduces breathing problems, and shortens hospital stays.

Who can participate?
Adults (18 years or older) scheduled for chest or upper abdominal surgery can join.

What does the study involve?
All control group participants were enrolled in one period, and all treatment group participants were enrolled in a later, separate period:
1. Standard care group (control): Receives usual medical treatment.
2. Graded respiratory care group (treatment): Receives extra breathing exercises before surgery, lung-protecting techniques during surgery, and guided exercises after surgery.

Doctors will check lung function (using simple breathing tests), blood oxygen levels, and track recovery progress.

What are the possible benefits and risks of participating?
Possible benefits:
- Better lung recovery after surgery.
- Lower chance of breathing problems.
- Possibly shorter hospital stay.

Possible risks:
- Breathing exercises may feel tiring.

- Minor discomfort from tests (e.g., blood draws).
- No extra physical harm—all methods are safe and proven.

Where is the study run from?
The Sir Run Run Shaw Hospital, School of Medicine, Zhejiang University, China

When is the study starting and how long is it expected to run for?
January 2022 to June 2025

Who is funding the study?
This study receives no external funding.

Who is the main contact?
Dr. Ge Huiqing, Gehq@zju.edu.cn

# Contact information

### Type(s)
Principal investigator

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## Additional identifiers

### Protocol serial number
2022021530

## Study information

### Scientific Title
Respiratory stratification for periorperative optimization in enhanced recovery after surgery: a multicenter study

### Acronym
RESPRO-ERAS

### Study objectives
Graded perioperative respiratory management reduces length of stay

### Ethics approval required
Ethics approval required

### Ethics approval(s)
Approved 15/02/2022, Ethics Committee of Sir Run Run Shaw Hospital Zhejiang University School of Medicine (3 East Qinchun Rd, Sir Run Run Shaw Hospital, Hangzhou, 310016, China; +86 571 86006811; 594961420@qq.com), ref: 20250323

### Primary study design
Interventional

### Study design
Multicenter non-randomized intervention trial with a non-concurrent enrollment design

## Study type(s)
Treatment

## Health condition(s) or problem(s) studied
Recovery after surgery

## Interventions
Current interventions:
This study is now a non-randomized intervention trial with a non-concurrent enrollment design, with control group participants enrolled in one period, and all treatment group participants enrolled in a later, separate period.

Four aspects of the patient's condition were assessed: aerosol therapy, bronchial hygiene, lung expansion, and aerobic exercise.

-Control Group
Guided deep breathing exercises, to achieve the pre-operative assessment's FVC (forced vital capacity)

-Experimental Group
1. Aerosol Therapy AT
Score 0-2: Continue previous treatment
Score 3-4: Bronchodilator inhalation (Salbutamol 2.5 mg, three times daily)
Score 5-6: Bronchodilator inhalation (Salbutamol 2.5 mg + Ipratropium Bromide 0.5 mg, three times daily)
Score >7: Bronchodilator inhalation (Salbutamol 2.5 mg + Ipratropium Bromide 0.5 mg, three times daily) + combination therapy, three times daily

2. Bronchial Hygiene (BH)
Score 0-2: Deep breathing, 3-5 times per hour
Score 3-4: Coughing guidance 3-5 times per hour + Flutter 3-5 times per hour for 6-8 hours
Score 5-6: Metaneb or High Frequency Chest Wall Oscillation twice daily
Score >7: Same as 5-6, with possible bronchoscopy if necessary

3. Lung Expansion (LE)
Score 3-4: Inhalation device (IS) 5-10 times per hour for 6-8 hours
Score >5: If ineffective, PEP (Positive Expiratory Pressure) with a three-ball resistance device, set to maximum resistance
FVC < 15 ml/kg: Non-invasive ventilation 12/6 cmH2O for 2 hours twice daily

4. Aerobic Exercise (AE)
Daily walking distance and time: 6-minute walk distance / 6 * 20 minutes * 0.8 meter

Previous Interventions:
Participants are randomized using a simple randomization method at the time of recruitment into an intervention group and a control group.

Four aspects of the patient's condition were assessed: aerosol therapy, bronchial hygiene, lung expansion, and aerobic exercise.

-Control Group
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### Intervention Type
Procedure/Surgery

### Primary outcome(s)
Length of stay measured using data collected from the hospital record at one time point

### Key secondary outcome(s)
Maximum Inspiratory Pressure and Forced Vital Capacity, measured using pulmonary function testing, post-operatively at day 2

### Completion date
30/06/2025

## Eligibility

### Key inclusion criteria
1. Peri-operative patient
2. Age over 18 years old

### Participant type(s)
Patient

### Healthy volunteers allowed

No

### Age group
Mixed

### Lower age limit
18 Years

### Upper age limit
100 Years

### Sex
All

### Key exclusion criteria
1. Age less than 18 years old
2. Pregnant
3. Neuromuscular disease
4. Other systemic diseases induced ineligibility for surgery
5. Impaired cognitive functions
6.Refuse to enroll

### Date of first enrolment
15/02/2022

### Date of final enrolment
05/06/2025

## Locations

### Countries of recruitment
China

### Study participating centre
**Sir Run Run Shaw Hospital, Zhejiang University, School of Medicine**
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310016

### Study participating centre
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321399

**Study participating centre**
**Shaoxing People's Hospital**
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312035

**Study participating centre**
**Wuyi County First People's Hospital**
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321299

**Study participating centre**
**Zhejiang Putuo Hospital**
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**Study participating centre**
**Lanxi People's Hospital**
No. 896, Huancheng West Road
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321102

**Study participating centre**
**Jiaxing First Hospital**
No. 1882, Zhonghuan South Road
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314001

**Study participating centre**
**Ningbo Yinzhou No. 2 Hospital**
No. 998, Qianhe North Road
Ningbo

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315192

**Study participating centre**
**The First Affiliated Hospital of Wenzhou Medical University**
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315010

**Study participating centre**
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# Sponsor information

**Organisation**
Sir Run Run Shaw Hospital

**ROR**
https://ror.org/00ka6rp58

# Funder(s)

**Funder type**
Other

**Funder Name**

Investigator initiated and funded

# Results and Publications

### Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are not expected to be made available

### IPD sharing plan summary
Not expected to be made available