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Effects of twelve weeks of telecare-based elastic band resistance exercise training after laparoscopic sleeve gastrectomy in physical fitness, body composition and nutritional intake

Submission date
10/12/2025

Recruitment status
No longer recruiting

Registration date
30/12/2025

Overall study status
Completed

Last Edited
29/12/2025

Condition category
Nutritional, Metabolic, Endocrine

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

Plain English summary of protocol
Plain English summary of protocol not provided at registration

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Study information

Scientific Title
A randomized controlled trial investigating the effects of a 12-week telehealth resistance-training program on preservation of fat-free mass and improvement of physical fitness in adults undergoing sleeve gastrectomy compared with usual postoperative care

Study objectives
The primary objective is to determine whether a 12-week telehealth elastic-band resistance training program can reduce the loss of fat-free mass and improve physical fitness in adults undergoing laparoscopic sleeve gastrectomy.
Secondary objectives include evaluating changes in body composition, muscle strength, balance, dynamic balance, agility, biochemical markers, and dietary intake following the intervention.

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 02/08/2024, Institutional Review Board of the E-DA Hospital (No. 6, Yida Road, Jiasu Village, Yanchao District, Kaohsiung City, 824, Taiwan; +886-7-6151100 ext. 5109; ed114818@edah.org.tw), ref: EMRP-113-060

Primary study design
Interventional

Allocation
Randomized controlled trial

Masking
Open (masking not used)

Control
Placebo

Assignment
Parallel

Purpose
Supportive care

Study type(s)

Health condition(s) or problem(s) studied
Severe obesity requiring bariatric surgery (laparoscopic sleeve gastrectomy)

Interventions
Intervention group:
Participants received a 12-week telehealth elastic-band resistance training program. The program included structured weekly exercise sessions delivered via online video guidance and remote supervision. Exercises targeted major muscle groups and were performed using elastic resistance bands, with progressive intensity based on individual tolerance. Participants were instructed to complete the training 3 times per week.

Control group:
Participants received usual postoperative care following laparoscopic sleeve gastrectomy, including standard clinical follow-up and general lifestyle advice, but did not receive structured exercise training.

Intervention Type
Behavioural

Primary outcome(s)
1. Static balance performance measured using the single-leg stance test with eyes open; the longest time (seconds) from two trials was recorded at at baseline (postoperative month 3, prior to intervention) and after the 12-week intervention period

2. Lower extremity muscle strength measured using the 30-second Chair Stand Test (number of repetitions completed in 30 seconds) at at baseline (postoperative month 3, prior to intervention) and after the 12-week intervention period

3. Handgrip strength measured using a handgrip dynamometer; two trials on the dominant hand with the best value recorded (kg) at at baseline (postoperative month 3, prior to intervention) and after the 12-week intervention period

4. Functional mobility and agility measured using the Timed Up and Go (TUG) test; time required to stand up, walk 3 meters, turn, return, and sit down (seconds) at at baseline (postoperative month 3, prior to intervention) and after the 12-week intervention period

Key secondary outcome(s))
1. Fat mass, fat-free mass, skeletal muscle mass, percent body fat, visceral fat, total body water, and basal metabolic rate measured using Bioelectrical Impedance Analysis (BIA) using the BC-710 body composition analyzer at at baseline (postoperative month 3, prior to intervention) and after the 12-week intervention period

2. Body weight, body mass index, waist circumference, hip circumference, blood pressure, and heart rate measured using standard clinical measurements at at baseline (postoperative month 3, prior to intervention) and after the 12-week intervention period

3. Glycated hemoglobin, fasting glucose, insulin, lipid profile, liver and renal function markers, hematological indices, and iron-related parameters measured using data collected from the hospital electronic medical record system obtained after standard laboratory blood testing at at baseline (postoperative month 3, prior to intervention) and after the 12-week intervention period

4. Total energy intake, macronutrient intake, and macronutrient distribution measured using three-day dietary records assessed by a registered dietitian at at baseline (postoperative month 3, prior to intervention) and after the 12-week intervention period

Completion date
23/10/2025

Eligibility

Key inclusion criteria
1. Adults aged 20–65 years undergoing laparoscopic sleeve gastrectomy
2. Diagnosed with severe obesity and eligible for bariatric surgery
3. Willing and medically able to participate in a 12-week postoperative telehealth resistance-training program
4. Able to provide informed consent

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
20 years

Upper age limit
65 years

Sex
All

Total final enrolment
34

Key exclusion criteria
1. Those who have previously undergone bariatric surgery
2. Drug addiction
3. Malignant tumor patients
4. Patients whose mobility is limited and who cannot perform physical fitness activities
5. Pregnancy
6. Chronic obstructive pulmonary disease
7. Neurological or musculoskeletal diseases
8. Patients who refuse to sign the study consent form
9. Patients who, or whose caregivers, are unable to use mobile communication software

Date of first enrolment
02/08/2024

Date of final enrolment
31/07/2025

Locations

Countries of recruitment
Taiwan

Study participating centre
International Weight Loss and Diabetes Surgery Center, E-Da Hospital, Kaohsiung, Taiwan
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Sponsor information

Organisation
E-DA Hospital

Funder(s)

Funder type

Funder Name
E-DA Hospital

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Data sharing statement to be made available at a later date