



Prehabilitation Instruction Manual

Department of Thoracic Surgery, Peking University People's Hospital

Name : _____

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Introduction

This manual is designed to provide prehabilitation guidance and assistance to patients scheduled to undergo thoracoscopic surgery in the Department of Thoracic Surgery of Peking University People's Hospital.

"Prehabilitation" is a new preoperative management strategy proposed based on the optimized concept of enhanced recovery after surgery. It refers to a series of preoperative intervention measures for patients scheduled for elective surgery to improve their physiological and psychological conditions, so as to enhance their ability to respond to surgical stress. Its main purpose is to secure more surgical opportunities for patients, improve prognosis, and reduce postoperative complications.

Before starting prehabilitation, patients need to be systematically evaluated by medical staff. For patients with severe cardiovascular and cerebrovascular diseases, severe osteoarticular disorders, and a high risk of falling, it is recommended to exercise caution when conducting exercise training, and it is best to carry out such training under the supervision of medical staff in medical institutions (including community hospitals).

This manual is compiled by professionals, and the guidance given is evidence - based.

If you encounter any problems during the prehabilitation process using this manual, please contact the medical staff in a timely manner. We will provide you with further rehabilitation guidance or treatment suggestions according to the specific situation.

Your family and friends can support you during the rehabilitation process. You can share the content of this manual with them and invite them to participate in your prehabilitation.

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Smoking Cessation

It is recommended to start smoking cessation 4 weeks before surgery. Smoking is associated with an increased risk of postoperative complications. Smoking increases the level of carboxyhemoglobin in the blood and raises the risks of postoperative pulmonary infection, wound infection, venous thrombosis, and cardiovascular and cerebrovascular events in thoracic surgery patients.

Smoking Cessation Guidance: Smoking cessation clinic services and smoking cessation hotline services are currently recognized as effective smoking cessation methods internationally. For those who fail to quit smoking independently, they can follow the normal medical procedures to register and seek treatment at the smoking cessation clinic of Peking University People's Hospital or one of the 13 standardized smoking cessation clinics in Beijing. They can also consult the smoking cessation hotline service by calling 12320.

Alcohol Abstinence

It is recommended to abstain from alcohol at least 2 - 3 weeks before surgery (preferably 4 weeks). The postoperative mortality rate of alcoholics is 2 - 3 times higher. Common complications include bleeding, wound infection, and cardiopulmonary complications. Moreover, alcohol - dependent patients metabolize analgesic drugs quickly. For the same level of pain, such patients require larger doses of analgesics, and the analgesic effect is poor.

Alcohol Abstinence Guidance:

Change lifestyle habits: Understand the harm of excessive drinking and develop self - control awareness.

Cultivate other hobbies: You can divert your attention by cultivating other hobbies, such as practicing Taijiquan, fishing, listening to music, etc.

Medical treatment: If you experience tension, anxiety, etc. during the process of alcohol abstinence, you can seek medical treatment under the guidance of a doctor.

Physical Activity and Exercise

Aerobic Exercise

Aerobic exercises mainly include walking, jogging, running, cycling, going up and down stairs, mountain climbing, swimming, skiing, skating, non - competitive ball games, and traditional Chinese sports such as Taijiquan, Wuqinxi, Baduanjin, and Yangko dancing. It is recommended to choose walking or jogging as the form of aerobic exercise. Exercise Method: The first step is a 5 - minute warm - up process, including ankle elevation and static quadriceps contraction for 5 minutes. The second step is 25 - 50 minutes of aerobic exercise, in the form of fast walking or jogging, which can be decided according to your own situation. The third step is a 5 - minute cool - down exercise. Exercise Frequency: At least 3 times a week. The exercise time per session should be gradually increased from 10 minutes to 20 minutes, and finally reach at least 30 minutes. Exercise Intensity: It is evaluated by the modified Borg scale and target heart rate. The target heart rate is calculated based on age: $(\text{Suggested target heart rate} = (220 - \text{age} - \text{resting heart rate}) \times 70\% + \text{resting heart rate})$. It is recommended to use a sports bracelet for monitoring when exercising at home. The intensity should be controlled between 13 - 16 on the modified Borg scale, that is, "somewhat hard" or "hard". If you feel that the exercise can be easily completed, you can appropriately increase the exercise intensity. When you feel severe fatigue or slightly severe shortness of breath, you can reduce the exercise intensity. It is not recommended to exercise too vigorously.

Modified Borg Scale Index

Borg Score	Self - perceived Exertion Level
6~8	Very light
9~10	Quite light
11~12	Light
13~14	Somewhat hard
15~16	Hard
17~18	Very hard
19~20	Extremely hard

Resistance Exercise

Resistance exercises can be carried out using one's own body weight or specific training equipment such as elastic bands, barbells, dumbbells, or fixed equipment. When performing resistance training, maintain a natural breathing state. Pay special attention to avoiding breath - holding to prevent hypoxia or excessive blood pressure fluctuations. Provide appropriate protection if necessary. It is recommended that elderly patients mostly practice in sitting or lying positions to avoid falls. If you feel very relaxed after practice, you need to increase the intensity of the elastic band or the weight of the dumbbells.

Practice Movements: You can choose sitting knee - lift, chest press, resistance chest expansion, resistance knee extension, resistance hip abduction, and lower - limb leg press.

Training Intensity: It is expressed by the maximum number of repetitions with a certain load, and 8 - 15 repetitions are appropriate.

Recommended Method: Complete 10 - 12 repetitions for each action in each group, complete 2 - 3 groups per training session, and rest for 2 minutes between groups. The practice frequency is 2 - 3 times a week.

Respiratory Function Training

Respiratory function training can be carried out while listening to soothing music for relaxation. It mainly includes the following three parts:

Diaphragmatic Breathing: Place your hands on your chest and abdomen respectively. When inhaling, inhale deeply through your nose while keeping your chest still and your abdomen bulging. When you reach the maximum inhalation volume, start exhaling. When exhaling, exhale through your mouth while trying to contract your abdomen to make it concave. Breathe deeply and slowly. 3 - 5 minutes per time, 4 - 5 times a day.

Effective Cough: Sit with your body slightly forward, take a deep breath to make your abdomen bulge, hold your breath for 3 - 5 seconds, and then perform 2 - 3 short and forceful coughs while quickly contracting your abdomen, minimizing chest movement. Repeat this process to expel phlegm. 5 minutes per time, 3 - 4 times a day.

Respiratory Function Trainer: Follow the instructions of the instrument for respiratory training. 15 times per group, 3 groups per time, 2 times a day. Take breaks in between to avoid fatigue.

Precautions for Exercise

Exercise should be carried out gradually. If you experience discomfort such as dizziness, headache, chest tightness, shortness of breath, ataxia, or chest pain during exercise, stop the exercise immediately. If the discomfort does not relieve in a timely manner or worsens, seek medical attention promptly.

Do warm - up activities before exercise and cool - down activities after exercise to reduce cardiovascular events and sports injuries during exercise.

Choose a suitable environment for exercise. Drink an appropriate amount of water before and after exercise to avoid heat stroke and dehydration during exercise.

Avoid exercising on an empty stomach. The duration of a single exercise should not exceed 60 minutes. Avoid exercising during the peak period of the hypoglycemic effect of hypoglycemic drugs to prevent exercise - induced hypoglycemia.

Minimize excessive changes in body position during exercise to prevent exercise - induced syncope.

If you have an indwelling catheter (such as a PICC), avoid movements that involve raising your upper limbs and swimming.



Balanced Nutrition and Diet

Optimizing nutrition can provide reserves for surgery. It is recommended to receive nutritional assessment and dietary guidance from medical staff, including improving disease - related symptoms (such as diarrhea, constipation, etc.), controlling blood sugar if necessary, optimizing body composition, making appropriate dietary balance choices, and changing unhealthy eating habits, especially high - calorie and high - fat diets (such as a large amount of chocolate, cream cakes, butter, hamburgers, French fries, nuts, instant noodles, fatty meat, ham sausages, fried chicken, animal offal, fried dough sticks, canned food, etc.). Appropriate increase the intake of fresh vegetables, fruits, and high - quality protein (such as fish, lean meat like chicken breast, milk, eggs, and soybeans).

If necessary, it is recommended to supplement whey protein powder 1 hour after exercise every day according to individual conditions to promote muscle synthesis (quantitative supplementation: 20g per day for men and 15g per day for women).

For obese patients, it is recommended to optimize the diet structure before surgery and lose weight appropriately.

Maintaining Mental Health

Reduce anxiety, fear, and tension. Enrich your life with hobbies.

Learn relaxation techniques: such as meditation, mindfulness - based stress reduction, taking a bath, yoga, and listening to music.

Maintain social interactions: Regularly communicate with family, relatives, and friends through the Internet, WeChat, etc. When you feel depressed or affected by negative emotions, take the initiative to talk to someone you trust to eliminate negative emotions.

Ensure sufficient sleep: Keep a regular schedule with fixed bedtime and wake - up time. Create a good sleep environment, avoid light and noise. Stop using electronic products such as mobile phones one hour before going to bed. Reduce the intake of coffee and strong tea.

If necessary, seek the help of professionals, such as psychological counseling.


