

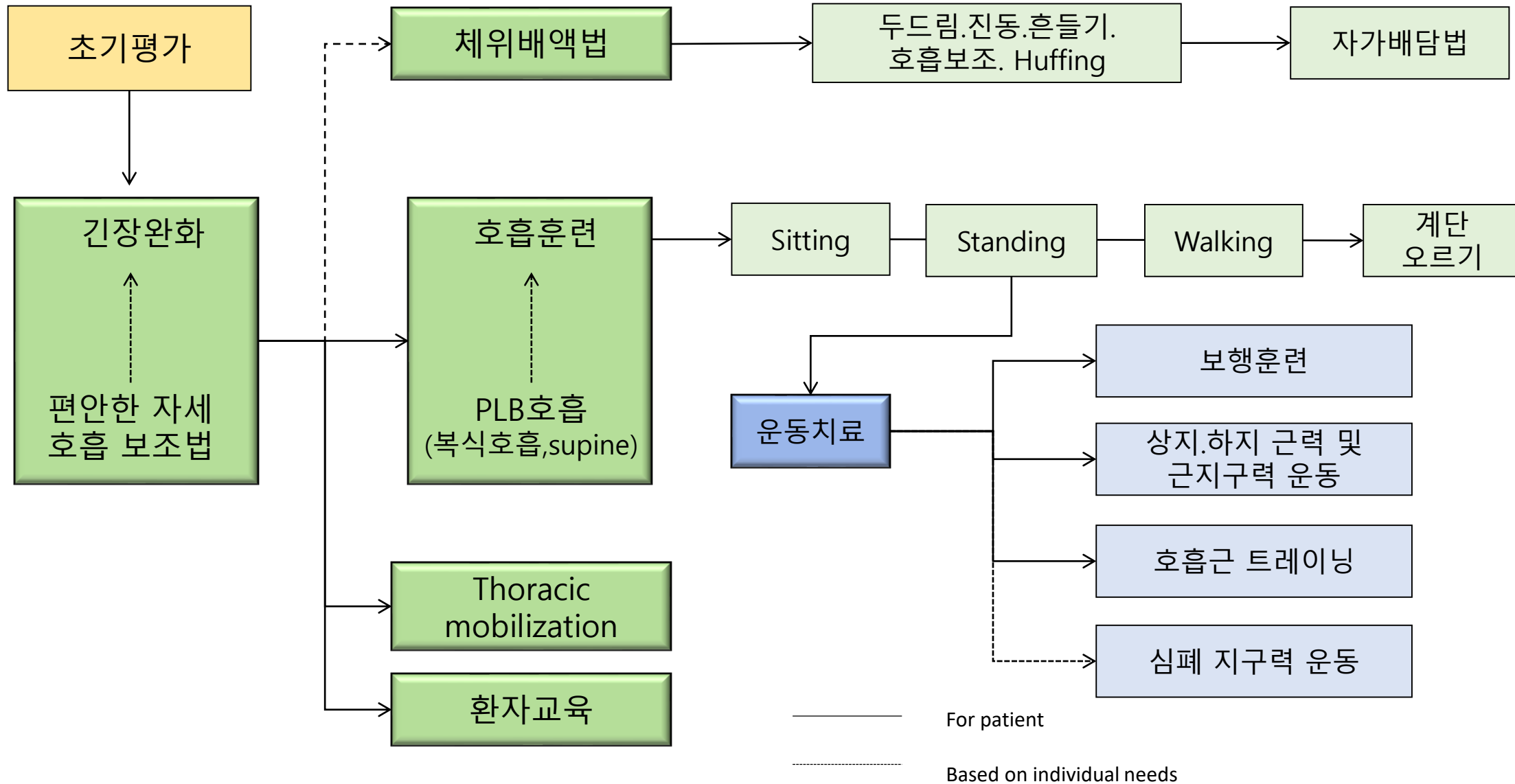
호흡법과 운동치료실습

정종화

재활의학과 물리치료실



Service flow of Respiratory PT



*PT = Physical therapy

Patients of PNUH

Obstructive diseases

COPD

Persistent asthma

Bronchiectasis

Cystic fibrosis

Bronchiolitis obliterans

Restrictive diseases

Interstitial fibrosis

Chest wall diseases

Neuromuscular diseases

Other conditions

Lung cancer

Primary pulmonary hypertension

Before and after surgery

Before and after lung transplantation

Pediatric patients with respiratory disease

Obesity related respiratory disease

Post chest trauma

Myopathy

ALS

High cervical cord injury

- Ward(or bedside)
 - ✓ Two physical therapists
 - ✓ Sputum removal & Breathing re-training
 - ✓ Acute state

- Treatment room
 - ✓ Two physical therapists
 - ✓ Exercise capacity ↑
 - ✓ Subacute or chronic state

Exercise program according to severity

"Treatment room"

- Airway clearance techniques
- Breathing re-training

Mild

Moderate

Severe

Conditioning

Skill
↑

ADL
Training

↓
Basic

High Intensity
↑

Edurance & Strength
Training

↓
Low Intensity

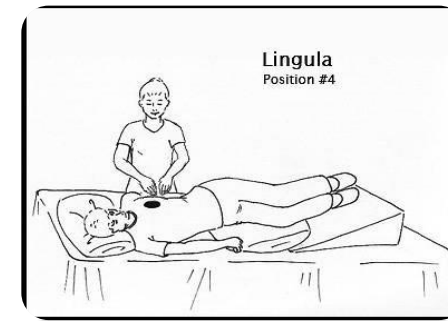
"Ward(or Bedside)"

Components of Respiratory PT

- Airway clearance techniques
- Breathing exercise
- Exercise training

Airway clearance techniques

- Cough Assist Machine
- HFCWO(Vest Machine)
- IPV
- Postural Drainage
- Autogenic Drainage
- Air Stacking Exercise
- Active Cycle of Breathing Techniques
- Coughing / Huffing Teaching
- Flutter / Acapella
- Suction



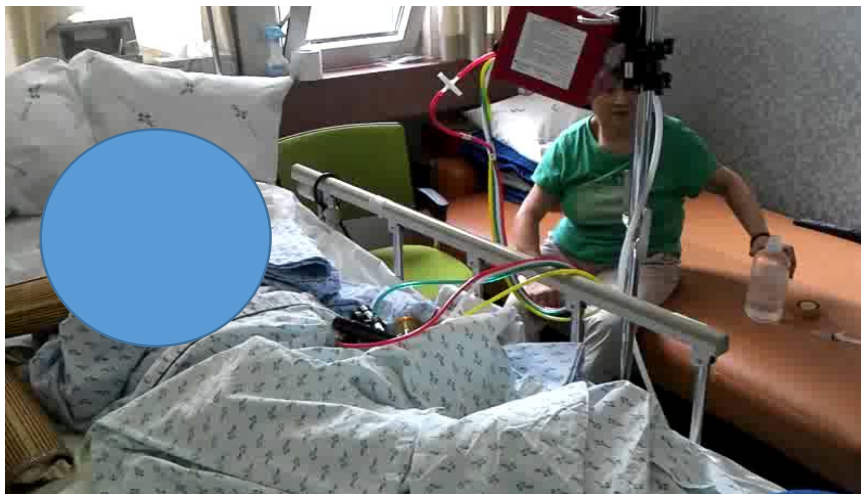
Airway clearance techniques



Cough assist machine



HFCWO(VEST)



IPV



Acapella

Airway clearance techniques



Postural drainage



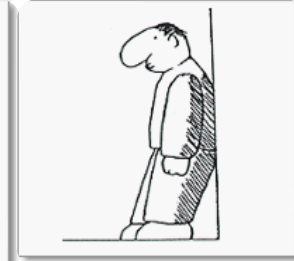
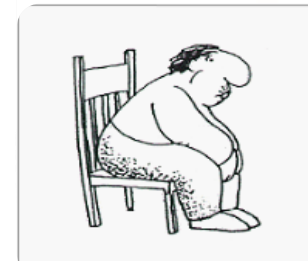
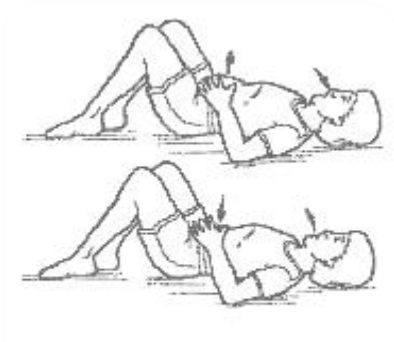
Assist cough



Splint cough

Breathing exercise

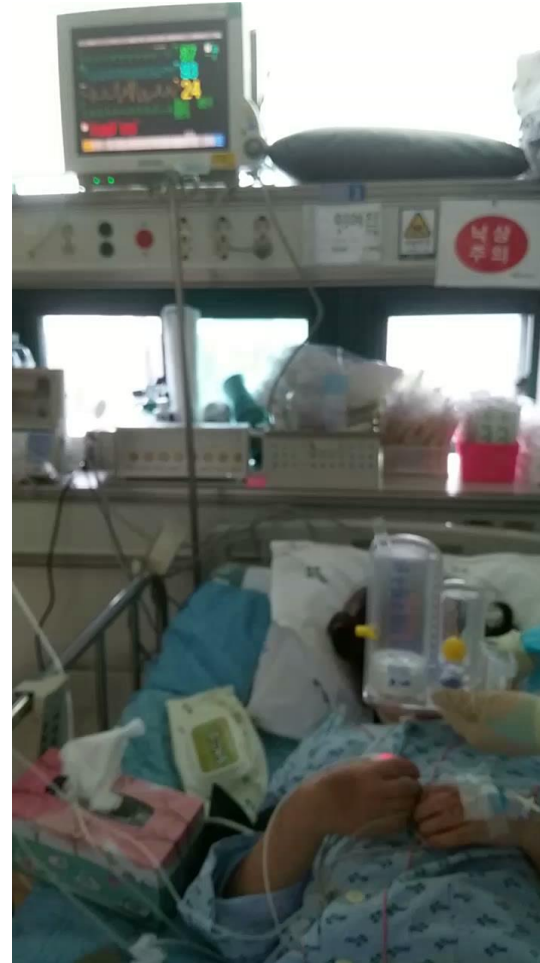
- Diaphragmatic Breathing
- Insp. / Exp. M. Training
- Segmental Breathing
- Glossopharyngeal Breathing
- Pursed Lip Breathing
- Relaxation Technique



Breathing exercise



Manual hyperinflation



IS training



Chest mobilization



Assist breathing

Exercise training

- Relax position
- Mobilization
- Stretch exercise

- Strength exercise
- Aerobic exercise

(Cycle / Treadmill / Ergometer)



**Piedmont Fayette
Hospital. Georgia,
USA**



**Atlantic Health
Hospital. New
York, USA**

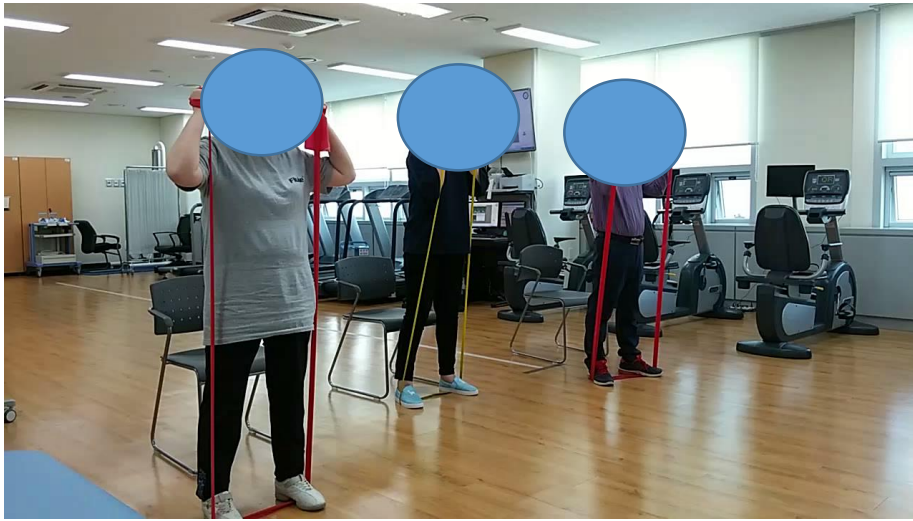


**Vanderbilt Univ.
Medical Center.
Nashville, USA.**

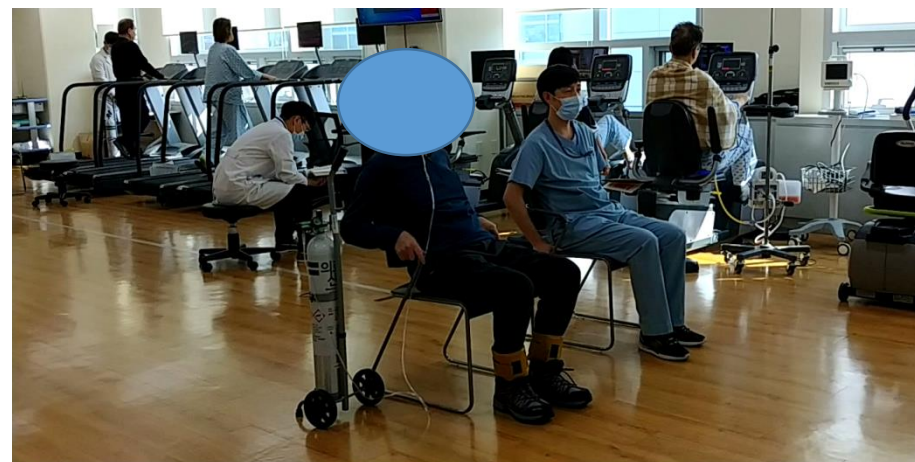


**Utah Univ. Health
Care
Pulmonary
Laboratory**

Exercise training(strength ex.)

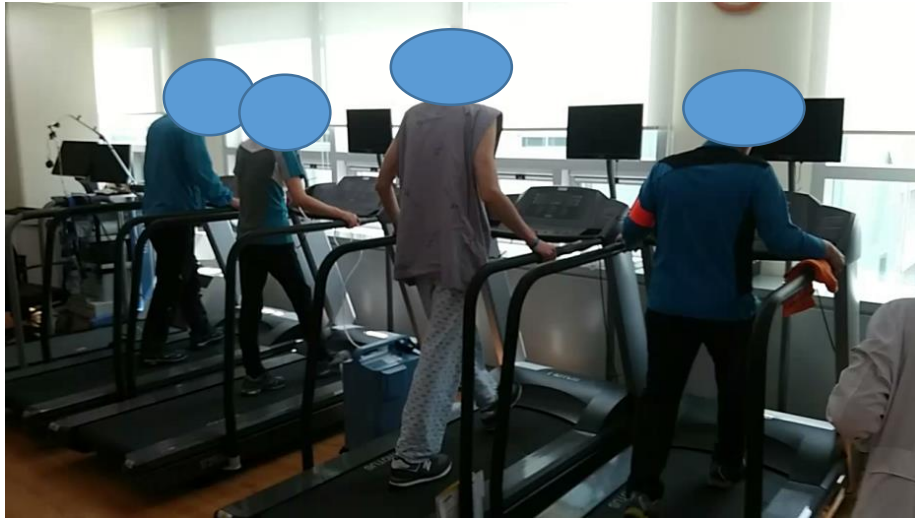


Group strength exercise



Individual strength exercise(education)

Exercise training(aerobic ex.)



Treadmil



Field walking(10m walk track)



U/E ergometer



Cycle

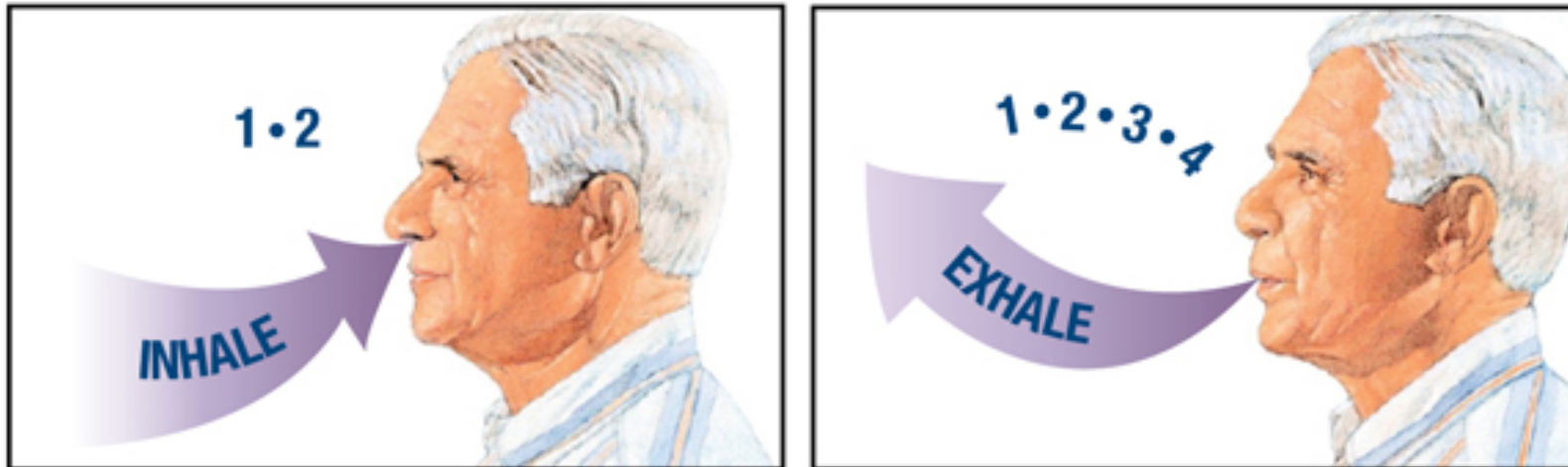
Diaphragm breathing



Key point

- 폐활량 증가, 기침능력 향상, 발성 시 호흡능력 보조, 기능적 움직임 향상
- 횡격막호흡법은 일상호흡(normal breathing)이 아님
- COPD환자 중 적용할 수 없는 경우가 있음
- 진행 : 누운자세 → 앉은자세 → 선자세 → 걷기 → 계단

Pursed lip breathing



Key point

- 호흡곤란이 있는 COPD환자들이 자발적으로 사용하는 방법
- 호흡률 감소, 1회 호흡량(TV) 증가
- 강한 호기(expiration)은 호흡곤란을 증가시킬 수 있음
- 가능하다면 횡격막호흡법과 함께 적용

ACBT (Active Cycle of Breathing Technique)



Key point

- 환자 스스로 가능, 치료사 보조 시 더욱 효과적
- 3~4세 교육 시작, 8~10세 독립적 수행 가능
- Postural drainage와 함께 적용 가능



**Thank you
For your
Attention!**



부산대학교병원
Pusan National University Hospital

