

Overview of Cardiorespiratory Physiotherapy

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Key concepts, goals, assessment tools, treatment techniques, and clinical considerations

1. Definition & Scope

- **Cardiorespiratory physiotherapy** focuses on the prevention, assessment, and treatment of disorders affecting the heart, lungs, and thoracic cage.
 - Encompasses **acute care**, **rehabilitation**, and **chronic disease management**.
 - Primary patient groups: postoperative cardiac surgery, chronic obstructive pulmonary disease (COPD), asthma, bronchiectasis, cystic fibrosis, neuromuscular disease, and patients on mechanical ventilation.
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2. Core Objectives

Objective	Clinical Rationale
Improve ventilation/perfusion matching	Enhances oxygen uptake and CO ₂ removal.
Promote airway clearance	Reduces infection risk, improves gas exchange.
Increase lung volumes & capacities	Prevents atelectasis, maintains functional residual capacity.
Enhance respiratory muscle performance	Supports effective breathing and weaning from ventilation.
Facilitate early mobilization	Improves cardiovascular endurance and reduces deconditioning.
Educate patients & caregivers	Encourages self-management and adherence to therapy.

3. Assessment Framework

3.1 Subjective Evaluation

- **Medical history:** cardiac surgery, pulmonary disease, comorbidities, medication.

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- **Symptoms:** dyspnea (scale: mMRC, Borg), cough, sputum characteristics, chest pain, fatigue.
- **Functional limitations:** ADL impact, exercise tolerance.

3.2 Objective Measures

Parameter	Tools/Methods	Normal/Target Values
Respiratory rate (RR)	Observation, monitor	12–20 breaths/min
Oxygen saturation (SpO ₂)	Pulse oximeter	≥ 94% (room air)
Arterial blood gases (ABG)	Blood sample	PaO ₂ ≥ 80 mmHg, PaCO ₂ 35–45 mmHg
Spirometry	FEV ₁ , FVC, FEV ₁ /FVC	≥ 80% predicted
Peak cough flow	Peak flow meter	> 270 L/min (adequate clearance)
Respiratory muscle strength	MIP/MEP, sniff nasal inspiratory pressure	MIP ≥ 80 cmH ₂ O (men), ≥ 70 cmH ₂ O (women)
Functional capacity	6-Minute Walk Test (6MWT), Shuttle Walk Test	6MWD ≥ 400 m (healthy adult)
Chest wall motion	Observation, thoracic excursion tape	Symmetric expansion
Heart rate & rhythm	ECG, pulse	60–100 bpm, regular

3.3 Clinical Decision-Making

- Identify **restrictive vs. obstructive patterns**, **muscle weakness**, or **ventilation-perfusion mismatch**.
- Prioritize interventions based on **severity**, **risk of complications**, and **patient goals**.

4. Treatment Modalities

4.1 Airway Clearance Techniques

Technique	Indication	Key Steps
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Chest percussion & vibration	Secretions in dependent lung zones	Perform 3–5?min per segment, synchronize with exhalation
Postural drainage	Gravity?assisted drainage	Position patient 30