

21. A 47-year-old diabetic female attending exercise class shows new-onset confusion and profuse sweating after 30 minutes of moderate cycling. You notice clumsy foot placement and unsteadiness. Capillary glucose measured by nurse reads 48 mg/dL. The challenge: manage acute hypoglycaemia in a movement session and decide safe steps while considering fall risk and subsequent return-to-activity decisions.

Options:

- A. Stop exercise, administer 15g fast-acting carbohydrate orally (if conscious), recheck glucose after 15 minutes, and monitor before resuming.
- B. Continue low-intensity exercise assuming glucose will stabilise.
- C. Encourage vigorous activity to stimulate release of counter-regulatory hormones.
- D. Wait for patient to feel better without intervention.

Structured reasoning:

- Accuracy: A follows hypoglycaemia protocol; immediate carbohydrate reverses neuroglycopenic symptoms and reduces fall risk.
- Efficiency & safety: A is rapid and safe; B/C/D dangerous.
- Resources & ethics: A requires glucometer, carbohydrate, and supervision; ethically prevent harm and educate patient.
- Short vs long term: Immediate correction avoids seizure/accident; long-term adjust medication/exercise timing to prevent recurrence.

22. A 56-year-old with chronic kidney disease (CKD) stage 4 is referred for pre-dialysis conditioning. During a supine-to-stand test you observe orthostatic hypotension: BP drops from 140/85 supine to 100/65 on standing with dizziness. He has pitting edema and muscle wasting. The challenge: balance conditioning benefits against haemodynamic instability and electrolyte abnormalities common in CKD; decide safe initial plan and required investigations (electrolytes, ECG).

Options:

- A. Pause active standing exercises; liaise with nephrology to correct fluid/electrolyte issues, and start graded recumbent exercises until stable.
- B. Proceed with independent standing and resistance training to build muscle quickly.
- C. Encourage rapid standing mobilisations to desensitise orthostatic response.
- D. Advise strict bed rest until dialysis starts.

Structured reasoning:

- Accuracy: A recognises CKD haemodynamic and metabolic risks; recumbent conditioning is safe interim strategy. B/C may provoke syncope; D risks deconditioning.
- Efficiency & safety: A is safe and practical; requires coordination with nephrology.

- Resources & ethics: Needs electrolyte checks, staff supervision; ethically protect patient and collaborate with medical team.
 - Short vs long term: Stabilising haemodynamics enables longer-term strength gains and dialysis tolerance.
23. While assessing a 19-year-old university athlete for knee pain after twisting injury, you notice an antalgic gait, rapid swelling within 30 minutes, and inability to fully extend the knee. The challenge: suspect hemarthrosis from ACL tear vs meniscal injury vs fracture; decide acute management and initial imaging pathway (X-ray, MRI) while ensuring safe movement.

Options:

- A. Immobilise knee in extension, use RICE, arrange urgent orthopaedic review and MRI when appropriate.
- B. Continue weight-bearing as tolerated with physiotherapy to regain extension.
- C. Apply aggressive mobilisation to reduce swelling quickly.
- D. Ignore swelling and return to play.

Structured reasoning:

- Accuracy: A is consistent with suspected ACL tear causing hemarthrosis; urgent orthopaedic assessment is indicated. B/C/D risk worsening instability.
 - Efficiency & safety: A prevents further joint damage and ensures accurate diagnosis.
 - Resources & ethics: A needs splinting, imaging; ethically avoid premature return to sport.
 - Short vs long term: Early immobilisation and surgical planning reduce chronic instability.
24. A 34-year-old female with recent history of thyroidectomy for multinodular goitre is being taught neck ROM exercises. She reports numbness and tingling around the mouth and fingertips during active neck extension. You note carpopedal spasm when monitoring hand posture. The challenge: recognise signs of hypocalcaemia (tetany) after thyroid surgery, link to neuromuscular excitability, and decide immediate actions.

Options:

- A. Stop exercises immediately, notify medical team for serum calcium check, and prepare for IV calcium replacement if symptomatic.
- B. Continue exercises as these paresthesias are benign and will settle.
- C. Teach more vigorous neck strengthening to overcome perceived weakness.
- D. Give oral calcium tablets and continue.

Structured reasoning:

- Accuracy: A is correct—post-thyroidectomy hypocalcaemia is a known complication; stopping activity and lab confirmation is required. D may be insufficient if severe.
- Efficiency & safety: A ensures rapid correction and prevents tetany/arrhythmia.
- Resources & ethics: A needs lab/equipment; ethically prioritise prompt medical care.
- Short vs long term: Immediate correction avoids seizures; long-term calcium/Vit D management may be required.

25. During a community fall-prevention clinic, an 87-year-old woman demonstrates slow reactive stepping, reduced ankle proprioception, and a history of multiple falls. Medication list includes benzodiazepine and antihypertensive. You must integrate medication effects, dehydration, and sarcopenia in fall risk and decide safe interventions and medication review steps.

Options:

- A. Recommend multidisciplinary review including pharmacist/physician for medication rationalisation, implement progressive balance and strength training with supervised sessions.
- B. Advise the patient to stop antihypertensives to prevent dizziness.
- C. Focus only on environmental modification (remove rugs) and no exercise.
- D. Start vigorous treadmill training to improve reactive stepping immediately.

Structured reasoning:

- Accuracy: A is comprehensive—addresses reversible meds and provides targeted physiotherapy. B is unsafe; C insufficient; D too intense.
- Efficiency & safety: A reduces fall risk while protecting cardiovascular health.
- Resources & ethics: A requires coordination and informed consent for med changes; ethically optimise function and safety.
- Short vs long term: Medication review provides immediate symptom reduction; exercise yields long-term strength and balance gains.

26. You observe a 60-year-old man post-laparoscopic colectomy ambulating on POD1. He reports abdominal pain and mild shortness of breath; observed shallow breaths and guarded cough. You notice diminished diaphragmatic excursion on ipsilateral side during breathing observation. The challenge: prevent postoperative pulmonary complications by linking shallow breathing to reduced lung volumes and atelectasis; decide initial physiotherapy measures (incentive spirometry, early mobilisation) vs caution with surgical wound.

Options:

- A. Encourage splinted deep breathing, incentive spirometry, and supervised short walks;

coordinate analgesia with medical team.

- B. Avoid any mobilisation until drain is removed.
- C. Start heavy abdominal exercises to restore core quickly.
- D. Use high-force coughing exercises without analgesia.

Structured reasoning:

- Accuracy: A balances pulmonary prevention with wound safety—analgesia/splinting reduces pain barriers to good breathing. B delays pulmonary recovery; C/D may cause wound dehiscence.
- Efficiency & safety: A prevents atelectasis and reduces pneumonia risk while being safe for incision.
- Resources & ethics: A needs analgesia availability and supervision; ethically promote recovery without harm.
- Short vs long term: Early pulmonary care reduces immediate complications and improves rehabilitation trajectory.

27. In outpatient orthopaedics, a 70-year-old female with long-standing osteoarthritis knee uses trunk lean and increased knee flexion to reduce load during stance. She has controlled HTN and BMI 31. You must analyse gait compensation (dynamic valgus vs crouch) and consider systemic contributors (obesity, cardiovascular fitness) before planning safe physiotherapy.

Options:

- A. Start low-impact aerobic program (stationary cycling) and quadriceps strengthening with progressive dosing; refer for weight management counselling.
- B. Immediately recommend total knee arthroplasty without conservative measures.
- C. Advise complete rest and avoid addressing muscle weakness.
- D. Teach deep squats to improve knee flexion quickly.

Structured reasoning:

- Accuracy: A is guideline-concordant—conservative management first. B may be considered later; C/D inappropriate and risky.
- Efficiency & safety: A improves pain and function efficiently and safely.
- Resources & ethics: A needs equipment and referral for weight management; ethically promote evidence-based conservative care.
- Short vs long term: Exercise yields symptomatic relief (short) and reduces progression and need for surgery (long).

28. While assisting at immunisation camp you assess a 5-month-old with delayed gross motor milestones and persistent hypotonia. Mother reports poor feeding and

frequent constipation. You note facial weakness and diminished deep tendon reflexes. The challenge: consider infantile botulism, spinal muscular atrophy, or hypothyroidism as systemic causes; choose urgent investigations and safe physiotherapy—the role is supportive and non-aggressive.

Options:

- A. Refer urgently for neurology and metabolic screen (T4/TSH, CK, genetic testing) and commence gentle passive ROM and positioning.
- B. Begin intensive active strengthening to accelerate milestones.
- C. Provide multivitamin and advise parents to wait for a month.
- D. Start high-dose thyroid hormone empirically.

Structured reasoning:

- Accuracy: A is prudent—investigate metabolic/endocrine/neuromuscular causes before intensive therapy. B/D risk harm without diagnosis.
- Efficiency & safety: A addresses urgent reversible causes; supports safe physiotherapy.
- Resources & ethics: A needs lab access and specialist input; ethically avoid presumptive medical treatment.
- Short vs long term: Early diagnosis enables disease-specific treatment (e.g., SMA gene therapy) and better developmental outcomes.

29. A 30-year-old post-renal transplant patient arrives for post-op mobility training. He complains of calf tightness and mild chest discomfort during transfers. You observe jugular venous distention and peripheral edema. He is on immunosuppressants and antihypertensives. The challenge: consider fluid overload, pericardial effusion, or rejection-related cardiomyopathy; determine immediate vitals assessment and prompt cardiac imaging/evaluation before resuming intensive mobilization.

Options:

- A. Halt intensive activity, measure vitals and daily weights, request immediate cardiology/renal team review and echocardiography.
- B. Proceed with standard strengthening to prevent deconditioning.
- C. Increase oral fluid intake to relieve perceived 'tightness'.
- D. Encourage rapid walking to mobilise fluid.

Structured reasoning:

- Accuracy: A addresses potential volume overload and cardiac involvement; safe diagnostic pathway. B/C/D could worsen haemodynamic compromise.
- Efficiency & safety: A prevents deterioration and allows tailored rehabilitation.

- Resources & ethics: Echocardiography and team collaboration needed; ethically ensure transplant safety.
- Short vs long term: Early detection of cardiac complications protects graft and patient outcomes; rehabilitation can proceed once stable.

30. You assess a 6-month-old infant with poor head control and failure to thrive. On observation of reaching, there is low tone and delayed visual tracking. The child has recurrent chest infections. The challenge: consider neuromuscular disease, chronic lung disease, or congenital heart disease affecting growth and motor skills; decide urgent investigations (CXR, echocardiogram, immunology) and safe physiotherapy input focused on positioning and energy conservation.

Options:

- A. Refer urgently for paediatric evaluation including cardiac and respiratory workup; initiate gentle positioning and energy-conserving handling.
- B. Start vigorous tummy time and strengthening without further medical evaluation.
- C. Prescribe unassisted prone play all day to speed development.
- D. Discharge with reassurance parents are over-concerned.

Structured reasoning:

- Accuracy: A addresses multiple systemic causes tied to motor delay; safe initial physiotherapy focuses on support. B/C may increase infection risk or fatigue.
- Efficiency & safety: A provides comprehensive, safe approach and prevents missed systemic illness.
- Resources & ethics: Requires multidisciplinary assessment; ethically prioritise infant health.
- Short vs long term: Early diagnosis supports targeted interventions for growth and motor outcomes.