11. In an outpatient rehabilitation gym you observe a 7-year-old with repaired meningomyelocele walking with high steppage and excessive hip flexion. He tires quickly during the 6-minute walk and has frequent UTIs. The challenge: relate gait biomechanics (compensatory hip flexion, hip hiking) to neurogenic bladder, recurrent infection and risk of deterioration; select investigations (renal ultrasound, urine culture) and initial safe therapy priorities.

Options:
A. Recommend a multidisciplinary review (urology for renal ultrasound & urine culture, neurosurgery if tethered cord suspected) and focus physiotherapy on energy-efficient gait strategies.
B. Intensify endurance training with daily 30-minute treadmill sessions.
C. Concentrate on strengthening ankle dorsiflexors only to reduce foot drop.
D. Discharge to home exercise program.

Structured reasoning:

- Accuracy: A connects movement deficit with systemic complications (UTI, renal risk) and prioritises investigations; B/C insufficiently holistic.
- Efficiency & safety: A addresses medical risks and preserves renal function; B could worsen fatigue without addressing bladder issues.
- Resources & ethics: A needs multidisciplinary referral; ethically avoid narrow focus and protect renal function.
- Short vs long term: Early urology input prevents renal scarring (long-term), while gait energy strategies help immediate function.

12. During a community diabetes camp you assess a 64-year-old woman with peripheral neuropathy who demonstrates decreased ankle proprioception and a wide-based gait. There is a 2-cm plantar ulcer under the second metatarsal callus. She reports intermittent claudication. The challenge: integrate biomechanical loading patterns, peripheral vascular disease, and infection risk to decide safe management steps before in-depth physiotherapy.

Options:
A. Refer urgently for vascular assessment (ABPI/duplex), wound swab, and offloading; avoid weight-bearing through ulcerated foot.
B. Begin balance training immediately to reduce fall risk while the ulcer is present.
C. Recommend firm shoe insoles and continue regular exercises.
D. Debride the callus by self-care at home and continue walking.

Structured reasoning:

- Accuracy: A prioritises vascular and wound care and offloading—high accuracy. B may risk wound deterioration if weight-bearing is not modified.
- Efficiency & safety: A prevents progression to infection/amputation; D unsafe.
- Resources & ethics: A requires vascular diagnostics and wound care team; ethically, do no harm and ensure specialist input.
- Short vs long term: Offloading and vascular correction improve healing (short-term) and limb salvage (long-term).

13. In the emergency department you see a 22-year-old male with penetrating abdominal wound from a road traffic accident. He is pale, tachycardic (HR 130), BP 86/60 and restless. While you measure peripheral perfusion, you observe guarded trunk movements and shallow breaths. The challenge: integrate haemodynamic instability, shock physiology (decreased preload, compensatory tachycardia), and movement restrictions to make immediate safe decisions about mobilisation and basic physiotherapy roles.

Options:
A. Do not mobilise; call for immediate surgical and resuscitation team, monitor airway, breathing, circulation, and assist with positioning to preserve perfusion.
B. Attempt to assess mobility and teach deep breathing exercises to prevent atelectasis.
C. Elevate legs and perform passive ROM to prevent DVT while awaiting surgery.
D. Encourage patient to sit up and cough to clear secretions.

Structured reasoning:

- Accuracy: A aligns with trauma resuscitation—life-saving steps take precedence; B/D may destabilise hypotensive patient.
- Efficiency & safety: A is most efficient for survival; passive limb movement (C) might be acceptable if circulatory status permits but only under supervision.
- Resources & ethics: A needs trauma team, IV access, blood products; ethically, prioritize life and avoid therapy outside scope.
- Short vs long term: Immediate resuscitation saves life; subsequent physiotherapy will target pulmonary and mobility recovery.

14. During a home visit you observe an 82-year-old man with Parkinsonian features who has developed a new, painful hip after a ground-level fall. He moves with an external rotation of the leg, shortened limb, and refuses to put weight through it. Pain is severe and he is hypotensive (BP 90/60). The challenge: differentiate hip fracture vs soft tissue injury and plan immediate safe actions considering geriatric haemodynamics and risk of head injury/dehydration.

Options:
A. Immobilise limb, call ambulance for urgent imaging (pelvic X-ray) and analgesia; avoid moving patient unnecessarily.
B. Encourage ambulation to assess function, then decide.
C. Attempt to reduce the fracture at home to relieve pain.
D. Provide oral analgesic and observe for 24 hours.

Structured reasoning:

- Accuracy: A follows fracture suspicion protocols. B/C/D are unsafe (reduction attempts require sedation/OR; observation risks complications).
- Efficiency & safety: A protects haemodynamics and reduces further injury.
- Resources & ethics: A needs ambulance, imaging and analgesia; ethically avoid risky interventions at home.
- Short vs long term: Early immobilisation and surgical care reduce morbidity and restore mobility long term.

15. A 28-year-old woman in a maternity clinic presents 5 days postpartum, says she feels breathless when feeding and notes new-onset palpitations. You observe tachypnea and bilateral basal crepitations on auscultation. While assessing maternal transfer mechanics, you observe poor trunk control and fatigue during lifting infant. The challenge: consider peripartum cardiomyopathy vs pulmonary embolism vs fluid overload and decide immediate investigations (ECG, BNP, echocardiogram, D-dimer) and safe postpartum physiotherapy advice.

Options:
A. Urgent cardiology referral with ECG, BNP, and echocardiogram; advise minimal exertion and arrange supervised care for infant.
B. Reassure that postnatal fatigue is normal and proceed with usual postnatal exercises.
C. Start high-intensity aerobic exercise to improve endurance rapidly.
D. Initiate anticoagulation empirically.

Structured reasoning:

- Accuracy: A is correct; postpartum cardiomyopathy is possible and has haemodynamic implications (reduced ejection fraction). D is medical and must await diagnosis.
- Efficiency & safety: A quickly secures diagnostic clarity and protects mother and infant.
- Resources & ethics: A needs imaging and cardiology; ethically prioritize maternal safety and informed consent.

- Short vs long term: Prompt diagnosis and treatment reduce heart failure progression and enable safe rehabilitation.

16. While reviewing a 50-year-old man's squatting and lifting technique in an industrial health camp, you note an S-shaped posture with excessive lumbar rotation and antalgic step; he reports sharp left upper quadrant pain after lifting heavy equipment a week ago. On abdominal palpation he winces and there is a tender mass near the inguinal region that increases on standing. The challenge: differentiate inguinal hernia with incarceration vs musculoskeletal strain or splenic injury, and decide safe immediate steps and investigations (ultrasound, surgical consult).

Options:
A. Avoid further heavy lifting, refer urgently for surgical assessment and ultrasound; advise against attempting to reduce mass.
B. Teach modified lifting mechanics and resume full work duties.
C. Attempt manual reduction of hernia at site to relieve discomfort.
D. Reassure patient and recommend NSAIDs and rest.

Structured reasoning:

- Accuracy: A is best—surgical pathology (incarcerated hernia) must be ruled out; C is unsafe without surgical supervision.
- Efficiency & safety: A prevents strangulation and bowel ischemia.
- Resources & ethics: A needs surgical input; ethically ensure timely referral to avert bowel compromise.
- Short vs long term: Urgent repair may be required (short-term) to prevent long-term complications and restore function.

17. In a pediatric sports clinic, a 12-year-old gymnast collapses after a high landing. She is conscious but complains of neck pain and paraesthesia in both arms. Observed movement: guarding of cervical spine and hyperextension during landing. The challenge: suspect acute cervical spine injury vs transient brachial plexus neurapraxia (stinger), and decide immobilisation and urgent imaging steps consistent with spinal precautions.

Options:
A. Immobilise cervical spine and arrange urgent cervical spine imaging (CT/X-ray per protocol) with trauma team.
B. Allow child to sit up and move neck to check range; if pain decreases, continue assessment.
C. Provide analgesic and resume light stretching.
D. Encourage activity to assess for permanent neurologic deficit.

Structured reasoning:

- Accuracy: A follows spinal injury protocol—immobilisation and imaging mandatory with neurologic signs.
- Efficiency & safety: A prevents potential cord injury; B–D risk catastrophic harm.
- Resources & ethics: A needs immobilisation equipment and radiology; ethically prioritise safety and guardianship.
- Short vs long term: Early imaging determines surgical vs conservative care; stabilisation preserves long-term neurologic function.

18. You observe a 36-year-old male on the cardiology unit completing a supervised walking test 4 days after an uncomplicated MI. He becomes dizzy, diaphoretic, and complains of nausea; ECG monitor shows new ST depression and heart rate rose to 120. You note increased forward trunk lean and reduced stride length. The challenge: interpret these as signs of possible ongoing ischemia or arrhythmia, link to cardiac haemodynamics (ischemia reduces stroke volume, triggers sympathetic tachycardia), and decide safe actions.

Options:
A. Terminate the test immediately, assist to supine, call cardiology team, and monitor vitals; withhold further exertion.
B. Allow the patient to rest seated and complete a shorter session if symptoms resolve.
C. Encourage slower walking to build tolerance the same day.
D. Ignore brief ECG changes as artefact and continue test.

Structured reasoning:

- Accuracy: A is mandatory—symptoms and ECG changes indicate possible ischemia; testing must stop.
- Efficiency & safety: A promptly prevents infarct extension; B/C/D risky.
- Resources & ethics: A uses monitoring equipment and expert input; ethically must cease testing when signs emerge.
- Short vs long term: Preventing further ischemia improves survival and preserves rehabilitation potential.

19. On ward rounds you find a 78-year-old woman with dementia who has difficulty rising; observation of transfers reveals poor lower limb power, narrow base of support, and freezing episodes. She has a recent urinary tract infection treated with antibiotics. The challenge: differentiate delirium due to infection vs progression of Parkinsonism vs deconditioning; choose safe steps to reduce fall risk and indicate investigations (urine culture, cognitive assessment, medication review).

Options:
A. Screen for delirium and infection, review medications for anticholinergics, implement fall precautions and simple supervised bed-to-chair transfers.
B. Encourage independent transfers to maintain autonomy.
C. Start vigorous resistance training immediately to restore power.
D. Restrict patient to bed indefinitely to avoid falls.

Structured reasoning:

- Accuracy: A appropriately screens for reversible causes (UTI causing delirium) and balances mobility with safety. B/D unsafe; C may be premature without addressing delirium.
- Efficiency & safety: A is efficient—treat cause and reduce risk.
- Resources & ethics: A needs nursing input and medication reconciliation; ethically respect autonomy while ensuring safety.
- Short vs long term: Treating infection improves cognition (short-term) and allows safe rehabilitation (long-term).

20. A 3-year-old with recurrent wheeze attends a physiotherapy play session. You notice increased work of breathing, intercostal retractions, and use of accessory muscles during running. The child prefers to sit and leans forward on arms. Oxygen saturation is 94% at rest. The challenge: differentiate acute asthma exacerbation vs bronchiolitis and decide acute management and safe involvement of physiotherapy.

Options:
A. Refer immediately for bronchodilator therapy and physician review; avoid strenuous play; teach parents pursed-lips and controlled breathing only when stable.
B. Encourage free play to mobilise secretions.
C. Start chest physiotherapy techniques like vigorous percussion immediately.
D. Provide antihistamine and continue session.

Structured reasoning:

- Accuracy: A is correct—bronchodilator and medical review needed; aggressive physiotherapy is contraindicated during acute bronchospasm.
- Efficiency & safety: A secures respiratory status and prevents decompensation.
- Resources & ethics: A needs quick medical access; ethically protect paediatric safety.

Short vs long term: Immediate bronchodilation restores ventilation; subsequent physiotherapy may aid recovery.