CASE SCENARIO: KNEE

The patient is a 14-year-old female presenting direct access to your physical therapy clinic with knee pain and large joint effusion. She fell and twisted her knee while jumping on a trampoline. She is hesitant to bear weight due to pain and refuses to flex or extend her knee due to pain. For ambulation, she borrowed crutches from her brother and is toe touch weight bearing due to pain. The patient is an active player on her travel soccer team.

1. In addition to anything suggested by your evaluation, based on her report, which first imaging test would be recommended at this time?
    a. computerized tomography scan.
    b. magnetic resonance imaging.
    c. no imaging is indicated based on history.
    d. plain-film radiograph.

After having an x-ray completed and identified as normal, she returns to you in an outpatient setting. Your clinical examination identifies decreased knee range of motion 5^{o} – 110^{o}, (+) Lachman, (-) varus and valgus testing at 0^{o} and 30^{o}, 5mm side to side difference on KT arthrometer and 3+ joint effusion. Maximum voluntary isometric contraction testing demonstrates a 63% quadriceps index and her Knee Outcome Survey-ADLs score is 54%. As her physical therapist, you provide her with the name of a local orthopaedic surgeon for a consultation. She was advised to undergo anterior cruciate ligament reconstruction at the conclusion of the school year (in 2 months). She begins physical therapy and in 2 weeks she is able to resolve joint effusion, restore quadricep strength and knee range of motion, and she ambulates without crutches.

2. Following resolution of her strength and range of motion deficits and effusion, what is the most appropriate treatment intervention for this phase of her rehabilitation?
    a. neuromuscular electrical stimulation.
    b. perturbation training.
    c. plyometrics.
    d. static balance training.

You see the patient 3 days status post anterior cruciate ligament reconstruction and medial meniscal repair. She has knee range of motion 0^{o}-80^{o}, 3+ knee effusion, and 49% quadriceps index. Ambulation is weight bearing as tolerated in a knee immobilizer.

3. What is the least appropriate exercise during the first 4 weeks of her postoperative recovery?
    a. leg press (0-45°).
    b. neuromuscular electrical stimulation (performed at 60°).
    c. seated knee extension (90-45°).
    d. straight leg raise.

4. You treat the patient on a Wednesday, and she reports her knee joint is sore from Monday's session. After warm up, the knee soreness does not improve, what is the most appropriate way to modify her program?
   a. hold physical therapy for today.
   b. keep program exactly the same.
   c. progress program as usual.
   d. regress program below last treatment level.

ANSWERS

1. The correct answer is **d. plain-film radiograph:** Imaging is recommended based on the Ottawa Knee Rule, which indicates the patient's inability to bear weight >4 steps after a trauma warrants a radiograph. In addition to the Ottawa Knee Rule, the University of Pittsburgh Knee Rule suggests a radiograph should be performed due to the mechanism of injury (fall).
2. The correct answer is **b. perturbation training.** Given the patient wants to delay surgery until her school year is over and the goal to enhance stability to prevent meniscal injury, performing exercises such as perturbation training can to help the patient dynamically stabilize her knee to prevent her knee from giving ways during daily activities.
3. The correct answer is **a. leg press (0-45º).** The presence of a medial meniscal repair warrants weight bearing in full extension only to protect the repair for the first 4 to 8 weeks depending on the surgeon's preference and the degree of the repair.
4. The correct answer is **d. regress program below last treatment level:** Using soreness rules to guide the patient's progression, if soreness does not improve after warm-up, it is necessary to reduce the intensity of the treatment session to below the previous treatment level.