Muscular System Case Scenarios

Case 1: Delayed Onset Muscle Soreness After First Strength Session

- A physiotherapy intern supervises a new client's first resistance session. Two days later, the client complains of severe soreness and difficulty walking.

  Options:

  1. Explain DOMS as a normal eccentric muscle adaptation process.
  2. Prescribe immediate high-intensity exercise to "push through."
  3. Advise complete bed rest for a week.

  Reasoning:

  Option 1 educates and empowers the client while balancing safety. Option 2 risks further microtrauma and demotivation. Option 3 may cause deconditioning and stiffness.

Case 2: Muscle Cramp During Marathon

- While observing a marathon, a runner suddenly stops due to a calf cramp.

  Options:

  1. Consider electrolyte imbalance and neuromuscular fatigue.
  2. Recommend sprinting to loosen the muscle.
  3. Ignore and encourage finishing race immediately.

  Reasoning:

  Option 1 addresses physiological cause and safety. Option 2 risks worsening cramp. Option 3 disregards muscle physiology and injury prevention.

Case 3: Unilateral Weakness During Squats

- During gym observation, you notice a client consistently shifts weight onto one leg when squatting.

  Options:

  1. Assess for muscle imbalance or inhibited glute activation.
  2. Add heavier loads without correction.
  3. Ignore as individual style.

  Reasoning:

Option 1 applies muscular assessment to prevent compensatory patterns. Option 2 may exacerbate imbalance. Option 3 ignores possible risk of injury.

Case 4: Early Fatigue in Repeated Contractions

- An athlete fatigues after very few repetitions despite normal strength.

  Options:

  1. Evaluate muscular endurance and fiber type distribution.
  2. Prescribe maximal lifting to build strength only.
  3. Ignore and assume laziness.

     Reasoning:

     Option 1 uses physiology to guide training. Option 2 misses endurance component. Option 3 dismisses legitimate issue.

Case 5: Muscle Twitching After High-Volume Training

- A client reports small involuntary twitches in quads after a long session.

  Options:

  1. Explain benign fasciculations due to motor unit fatigue.
  2. Panic and refer for neurological emergency.
  3. Ignore without educating the client.

     Reasoning:

     Option 1 reassures while promoting understanding. Option 2 creates unnecessary fear. Option 3 wastes a teaching opportunity.

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Case 6: Strength Plateau in Powerlifter

Athlete's 1RM hasn't improved for months despite consistent training. **Options:**

1. Adjust program for periodization and neural adaptation.
2. Add random exercises daily.
3. Ignore and keep volume the same. **Reasoning:** Option 1 leverages muscular adaptation science. Option 2 lacks progressive overload principle. Option 3 delays progress.

Case 7: Muscle Atrophy After Immobilization

Post-cast removal, client shows visible calf wasting. **Options:**

1. Educate about disuse atrophy and start gradual loading.
2. Resume maximal sports immediately.

3. Ignore difference. **Reasoning:** Option 1 respects physiological recovery. Option 2 risks re-injury. Option 3 neglects rehab.

Case 8: Muscle Spasm During Stretching

During hamstring stretch, muscle spasms involuntarily. **Options:**

1. Reduce stretch intensity and allow relaxation.
2. Push stretch harder to overcome spasm.
3. Ignore and hold position. **Reasoning:** Option 1 prevents injury and respects stretch reflex. Option 2 may cause strain. Option 3 unsafe.

Case 9: Muscle Hypertrophy Without Strength Gain

Client notes size increase but no change in strength. **Options:**

1. Explain sarcoplasmic vs myofibrillar hypertrophy.
2. Remove strength work entirely.
3. Ignore progress. **Reasoning:** Option 1 educates client. Option 2 counterproductive. Option 3 demotivates.

Case 10: Muscle Fatigue During Hot Weather

Athlete fatigues early in summer training. **Options:**

1. Consider dehydration and impaired muscle metabolism.
2. Increase intensity regardless.
3. Ignore complaints. **Reasoning:** Option 1 ensures performance and safety. Option 2 risks heat illness. Option 3 ignores physiology.

Case 11: Recurrent Hamstring Strains

Sprinter repeatedly injures hamstrings. **Options:**

1. Assess eccentric strength and flexibility balance.
2. Focus only on sprint volume.
3. Ignore cause. **Reasoning:** Option 1 addresses injury prevention. Option 2 may worsen problem. Option 3 unsafe.

Case 12: Muscle Stiffness After Prolonged Sitting

Office worker reports stiff hip flexors. **Options:**

1. Teach mobility drills and postural awareness.
2. Recommend ignoring stiffness.
3. Prescribe maximal weighted squats. **Reasoning:** Option 1 practical and safe. Option 2 neglects prevention. Option 3 may overload tissues.

Case 13: Weak Grip in Rock Climber

Climber struggles to hold after few moves. **Options:**

1. Analyze forearm muscle endurance and train accordingly.
2. Suggest only resting longer between climbs.

3. Ignore. **Reasoning:** Option 1 builds specific endurance. Option 2 partial solution. Option 3 unhelpful.

Case 14: Rapid Muscle Fatigue in Elderly Client

Client fatigues quickly during chair rises. **Options:**

1. Teach progressive resistance with adequate rest.
2. Push for maximal reps immediately.
3. Ignore due to age. **Reasoning:** Option 1 safe and builds capacity. Option 2 may risk falls. Option 3 ageist.

Case 15: Muscle Symmetry Concern in Bodybuilder

Client notices one bicep smaller. **Options:**

1. Assess unilateral training load and neural drive.
2. Recommend only bilateral lifts.
3. Ignore difference. **Reasoning:** Option 1 optimizes symmetry. Option 2 may perpetuate imbalance. Option 3 not ideal for goals.

Case 16: Overtraining Symptoms in Athlete

Reports persistent soreness and declining performance. **Options:**

1. Educate about recovery and muscle repair physiology.
2. Increase training volume further.
3. Ignore until pain resolves. **Reasoning:** Option 1 promotes long-term performance. Option 2 worsens overtraining. Option 3 delays intervention.

Case 17: Low Muscle Tone in Child

Child shows hypotonia during play. **Options:**

1. Engage in play-based strengthening and coordination activities.
2. Prescribe high-load adult-style lifting.
3. Ignore as “clumsiness.” **Reasoning:** Option 1 developmentally appropriate. Option 2 unsafe. Option 3 misses opportunity.

Case 18: Muscle Cramp in Swimmer

Cramps mid-pool during race. **Options:**

1. Evaluate fatigue, hydration, and neuromuscular control.
2. Encourage swimming through cramp.
3. Ignore. **Reasoning:** Option 1 addresses root cause. Option 2 unsafe. Option 3 dangerous.

Case 19: Slow Recovery After Plyometrics

Athlete remains sore for 5 days. **Options:**

1. Explain muscle microtrauma and adjust volume.
2. Double next session’s workload.

3. Ignore. **Reasoning:** Option 1 optimizes adaptation. Option 2 increases injury risk. Option 3 neglectful.

Case 20: Weak Core in Postpartum Client

Struggles with simple planks. **Options:**

1. Teach graded core activation respecting abdominal wall healing.
2. Prescribe heavy sit-ups.
3. Ignore. **Reasoning:** Option 1 safe and progressive. Option 2 may cause harm. Option 3 leaves dysfunction.