Orthopaedics and physiotherapy (VN)

or maybe you are challenging them sooner than they are capable of delivering. Evaluate your patient's performance on a daily basis and amend the rehabilitation plan accordingly.

Goals of therapeutic exercises

- Improve muscle mass and strength
- Improve core stability and balance
- Improve active pain-free range of motion in the joints and limbs overall
- Improve flexibility
- Reduce lameness
- Improve limb use
- Improve ability to perform activities of daily living
- Prevent further injury through owner education

Assisted therapeutic exercises

Assisted therapeutic exercises comprise a group of exercises that revolve around standing and can be used to help patients that have some ability to bear weight but are too weak. Various support devices are available that provide more or less support depending on the strength and weight-bearing ability of the patient.

Examples of therapeutic exercises include:

- Assisted standing exercises
- Weight-shifting
- Downward pelvic/shoulder pressure
- Side bending
- Cervical flexion and extension
- Balancing/wobble boards

Active therapeutic exercises

As suggested, active therapeutic exercises are beneficial for patients who are able to exercise with very little, or no support. The exercises are used to improve the patient's strength, cardiovascular fitness and overall functional ability.

Examples of active therapeutic exercises include:

- Supported walking
- Sit-to-stand
- Dancing exercises
- Wheel barrowing
- Cavaletti poles
- Weaving poles

KEY LEARNING OBJECTIVES

- Understand the key indications for physiotherapy
- Be able to convey the key aims of physiotherapy to clients and colleagues
- Understand the various physiotherapy techniques available in patient rehabilitation

MULTIPLE CHOICE QUESTIONS

1. Which of the following is an indication for physiotherapy?
(A) Postoperative rehabilitation of orthopaedic conditions
(B) Patient bonding
(C) Inflammation of the skin
(D) Improve wellbeing by passing the time
2. Physiotherapy should begin:
(A) After 1 week
(B) After 3 weeks
(C) After 6 weeks
(D) As soon as possible unless contraindicated
3. Which of the following is *not* an aim of physiotherapy
(A) Restore functional movement
(B) Promote healing of musculoskeletal tissues
(C) Increase speed of recovery
(D) Prolong healing of musculoskeletal tissues

When to use hydrotherapy

Gillian Calvo

Hydrotherapy is predominantly used for the management of orthopaedic disorders. It is based on the principles of water properties and how they react with objects within it. During the lecture case studies will be discussed relating hydrotherapy to orthopaedic conditions.

PRINCIPLES OF HYDROTHERAPY

Patient density

This determines how well the patient will float on water as it determines the weight of the patient compared with an

equal volume of water. The density of water is 1.0 compared with 0.8 for fat and 2.0 for bone; therefore fat will float and bone will sink. The implication of this is that a lean patient will need more support in the water than an obese patient.

Buoyancy

Describes the upward thrust of water on an immersed or partially immersed (floating) object, equivalent to the weight of water that is displaced by the object. This coincides with the relative density of the patient; i.e. buoyancy creates an apparent loss of weight of the patient while in the water. If gravity is not over the centre of the patient's body on the vertical or horizontal plane then the patient is likely to roll or be nose up/bottom down in the water or *vice versa*. This has practical importance if using floatation devices around the midriff or pelvic region of the patient. Immersion depth can be adjusted in accordance with the clinical condition of the patient and the desired effect of the treatment.

Hydrostatic pressure

As an object is submerged or partially submerged in water the pressure exerted upon it is directionally proportional to the depth and density of the water, therefore the height of the water or amount of body that is placed within the water undergoes compression which can help reduce oedema of the limbs.

Viscosity

Viscosity is a fluid's resistance to flow, and affects the amount of force that must be exerted to move a solid body part such as a limb through the fluid. Water has a higher viscosity than air and therefore creates more resistance so that walking through water requires more force than walking through air. This resistance can be beneficial to patients when clinically aiming to improve musculoskeletal strength or cardiovascular fitness

Surface tension

Cohesion of the molecules within water is greater at the surface than at any given depth. Resistance to movement of the limb through water is greater at the water surface than beneath the water. Practically, this means that it is more difficult for a patient to break surface tension, i.e. lift the limb out of the water and re-immerses with each step, than it is to move the limb through the water at a given depth. This can be beneficial in patients when increased joint range of motion is desired. By positioning patient such that the surface of the water is 1–2 inches below the joint of interest the patient is encouraged to lift the limb up and out of the water and re-immerses or break

surface tension during each step resulting in increased joint range of motion.

KEY LEARNING OBJECTIVES

- Understand the key terms used in hydrotherapy
- Be able to convey the key benefits of hydrotherapy to clients and colleagues
- Understand the indications and contraindications for hydrotherapy

MULTIPLE CHOICE QUESTIONS

1. Hydrotherapy is predominantly used for which of the following?
(A) Orthopaedic disorders
(B) Soft tissue disorders
(C) To maintain good coat health
(D) Treat skin conditions
2. Which of the following is *not* a principle of hydrotherapy?
(A) Hydrostatic pressure
(B) Surface tension
(C) Buoyancy
(D) Humidity
3. Which patient is more likely to float unaided in the water?
(A) 25 kg Labrador Retriever
(B) 3 kg Chihuahua
(C) Lean 10 kg Whippet
(D) 55 kg obese Border Collie