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QUESTION NO 1

ANSWER:-

(A) HUMEROULNAR JOINT

The humeroulnar joint is the part of elbow joint. Humeroulnar joint is composed of two bones, the humerus and the ulna, and the junction between the trochlear notch of ulna and the trochlear notch of humerus. Humeroulnar joint is a simple hinge-joint.

MOVEMENT AT HUMEROULNAR JOINT

Humero-ulnar joint is classified as a simple hinge-joint, which allows for the movements of flexion, extension and circumduction. Owing to the obliquity of the humerus, this movement does not take place in the antero-posterior plane of the body of humerus.

(B) HUMERORADIAL JOINT

Humero-radial joint, is the part of the elbow joint or the Olecranon joint, between the ulna and humerus bone. Humero-radial joint is a simple hinge-joint.

MOVEMENT AT HUMERORADIAL JOINT

Humero-radial joint is synovial ball and socket hinge type joint, which allow movement of Flexion, Extension, Pronation and Supination.

(C) CARRYING ANGLE OF ELBOW JOINT

The carrying angle of the elbow is the clinical measurement of varus-valgus angulation of the arm with the elbow fully extended and the forearm fully supinated. With the arms extended at the

and the palm "facing" forward, the forearm and hands are normally slightly away from the body. The intersection of the axis of the upper arm and axis of the forearm defines the carrying angle. The carrying angle is greater in shorter persons compared to taller persons. The shorter the forearm bone length is the greater the carrying angle will be. The normal "carrying angle" of elbow is 5 to 15 degrees.

The carrying angle is more in women than men. The carrying angle is greater in throwing athletes. It is difficult to assess if there is a flexion contracture of the elbow.

IMPORTANCE

Carrying angle permits the forearm to clear the hip in swinging, walking and it is important when carrying objects.

QUESTION NO 2

ANSWER:-

(A)

WRIST COMPLEX

The wrist consist of two compound joints

- 1 radiocarpal joint
- 2 midcarpal joint

The radiocarpal joint is composed of:-
the radius and the radioulnar disk,
with the scaphoid, lunate, and the triquetrum.

The midcarpal joint is composed of:-
the scaphoid, lunate, and triquetrum with
the trapezium, the trapezoid, the capitate,
and the hamate.

The wrist complex: joint proximal
to the wrist complex serves to the
broaden the placement of the ' - ' hand
in space to increase the degree of
freedom available to the hand. The
Shoulder serve as a dynamic base
of support. Elbow allows the hand to
approach or extend away from the body,
and the forearm adjust the approach
of hand to an object.

Major Contribution Of The Wrist Complex

- ① To control length-tension relationships in the multi articular hand muscle.
- ② Allow fine adjustment of grip.
- ③ The wrist muscle appear to be designed for balance and control.
The adjustments in the length-tension

relationship that occur at the wrist cannot be replaced by compensatory movement of the shoulder, elbow, or forearm.

Range of Motion

The wrist complex is biaxial motion of extension/flexion, ulnar deviation/radial deviation. Pronation/supination may found especially at the radiocarpal joint.

Normal ranges at wrist complex are:

- 65 to 85 of Flexion
- 60 to 85 of Extension
- 15 to 21 of radial deviation.
- 20 to 45 of ulnar deviation.

(B) CARPAL TUNNEL SYNDROME

Carpal tunnel syndrome is a common condition that cause pain, numbness, and tingling in the hand and arm. The condition occur when one of the major nerves to the hand, the median nerve is squeezed or compressed as it travels through the wrist.

ANATOMY OF CARPAL TUNNEL

The carpal tunnel is a narrow passage way in the wrist, about a inch wide. The floor and sides

of the tunnel are formed by small wrist bones called carpal bones. The carpal tunnel protects the median nerve and flexor tendons that bend the fingers and thumb.

QUESTION NO 3

ANSWER:-

(A) MUSCLE TWITCH

A muscle twitch is an involuntary contraction of the fibers that make up a muscle. Nerves control muscle fibers. When something stimulate or damages a nerve, it causes the muscle fiber to contract, resulting in a twitch, a person can often see or feel twitches on below the skin.

SUMMATION

Is the additive effects of several electrical impulse on a neuromuscular junction, The junction between a nerve cell and a muscle cell. Individually the stimuli cannot evoke a response, but collectively they can generate a response.

REFRACTORY PERIOD

Refractory period is a period immediately following stimulation during which a nerve or muscle is unresponsive to further stimulation.

(B) TYPES OF MUSCLE CONTRACTION

ISOMETRIC CONTRACTION

ISOTONIC CONTRACTION:

CONCENTRIC CONTRACTION

ECCENTRIC CONTRACTION

ISOMETRIC CONTRACTION

An isometric contraction of a muscle generate tension without changing length.

Example is when the muscle of the hand and forearm grip a object, the joint of the hand do not move, but muscle generate sufficient force to prevent the object from being dropped.

ISOTONIC CONTRACTION

In isotonic contraction the tension in the muscle remain constant despite a change in muscle length. This occurs when a muscle's force of contraction matches the total weight load on the muscle.

CONCENTRIC CONTRACTION

In concentric contraction, muscle tension is sufficient to overcome the load, and the muscle shortens as it contracts. This occurs when the force generated by the muscle exceeds the load opposing its contraction.

ECCENTRIC CONTRACTION

In eccentric contraction, the tension generated while isometric is insufficient to overcome the external load on the muscle and the muscle fibers lengthen as they contract. Rather than working to pull a joint in the direction of the muscle contraction, the muscle acts to decelerate the joint at the end of a movement or otherwise the repositioning of a load.

(c) WHY WE CANNOT FEEL PAIN IN GRADE III MUSCLE STRAIN

Minimum to no pain significant loss of function complete loss of function.

Complete rupture of a muscle or tendon, these can present with a palpable defect in the muscle or tendon. These injuries sometimes require surgery to reattach the damaged muscle and tendon.

QUESTION NO 4

ANSWER:-

CRANIAL NERVE

Cranial nerves are ~~emerge~~ the nerves that emerge directly from the brain. In contrast, spinal nerves emerge from segments of spinal cord. Cranial nerves relay information between the brain and parts of the body, primarily to and from regions of head and neck.

We have 12 cranial nerve.

SPINAL NERVE

Spinal nerves are bundles of nerve fibers connected to the spinal cord. These nerves carry information to and away from spinal cord. Spinal cord nerves supply all the areas of the body except the head and neck region. Some structures in the head and neck region are also innervated or supplied by the spinal nerve such as muscles of the ~~rest~~ neck.

The dorsal and ventral rami contain nerves that provide visceral

motor, somatic motor, and sensory information, with the dorsal ramus feeding the dorsal trunk and the ventral ramus feeding the ventral trunk and limbs through the ventrolateral surface.

(B) NEUROPRAXIA

Is a type of peripheral nerve injury, and is known as the mildest form of nerve injury. It is classified as a transient conduction block of motor or sensory function without nerve degeneration.

AXONOTMESIS

The second degree in which the axon is damaged but the surrounding connecting tissue remains intact is called axonotmesis.

NEUROTOMESIS

The last degree in which both the axon and the connective tissue are damaged is called neurotmesis.

QUESTION NO 5

ANSWER:-

(A) WOLF'S LAW

* Wolf's law states that bones develop a structure most suited to resist the forces acting upon them, adapting both the internal conformation to the change in external loading conditions.

The internal architecture is adapted in terms of change in density and in disposition of the trabeculae and osteons and the external conformation in terms of shape and dimensions.

(B) HOW FRACTURE REPAIR

Bones can heal by wearing a cast, others require more invasive treatments, such as bone fracture repair.

Bone fracture repair is a surgery to fix a broken bone using metal screws, pins, rods, or plates to hold the bone in place. It's also known as open reduction and internal fixation.

STAGES OF FRACTURE REPAIR

These are four stages of repairing of a broken bone.

(1) The formation of hematoma.

(2) The formation of a fibrocartilaginous callus.

(3) The formation of a bony callus.

(4) Remodeling and addition of compact bone.

THE END