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FACTA ANATOMICA

HAND HARMONY

Mapping Nervous Connections

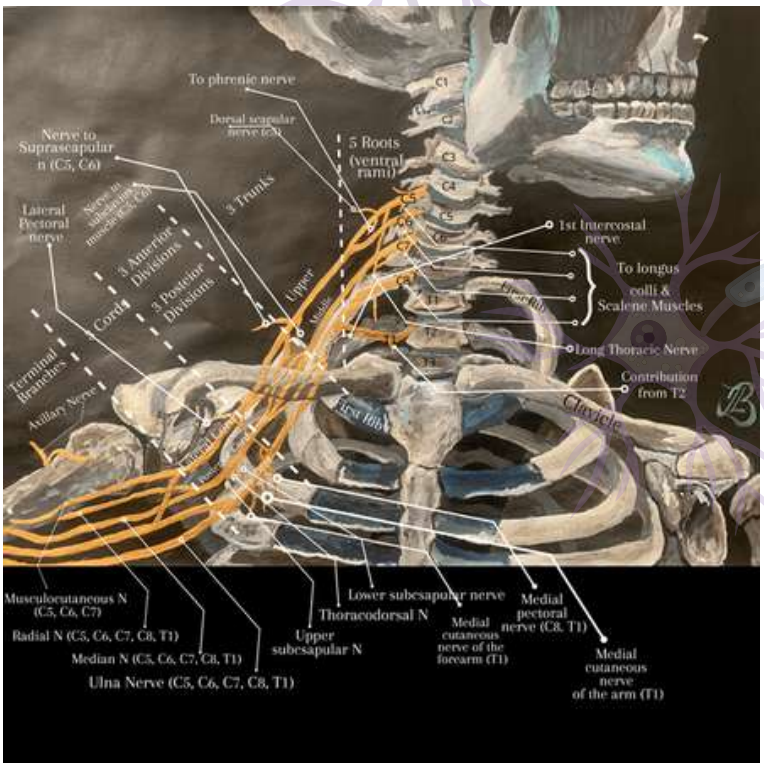
There are 7 trillion nerves in human body

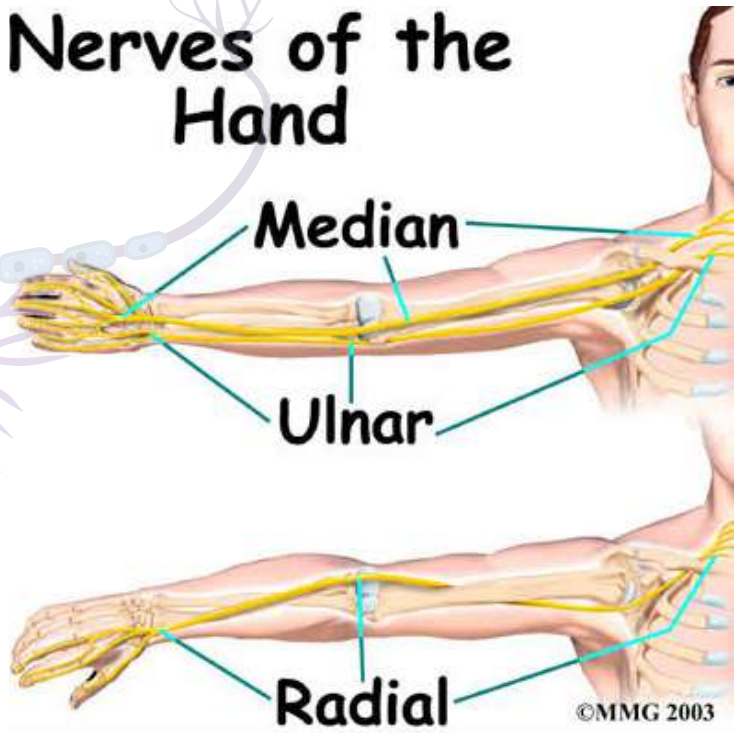
In the clinical practice, the meticulous assessment of sensory and motor functions of the hand serves as an indispensable tool to diagnose various neurological and musculoskeletal conditions.

A thorough sensory examination allows clinicians to discern abnormalities indicative of nerve compression, injury or dysfunction and it aids in localizing lesions or guiding differential diagnosis.

The motor examination of the hand includes evaluating muscle tone, assessing for weakness, and scrutinizing precision and power grip which illuminate the functional status of the motor pathways.

	Median Nerve	Ulnar Nerve	Radial Nerve
ORIGIN	It is derived from the medial and lateral cords of the brachial plexus. It contains fibres from roots C5-T1	It is a continuation of the medial cord and contains fibres from spinal roots C8 and T1	The radial nerve is the terminal continuation of the posterior cord of the brachial plexus. It contains fibres from nerve roots C5 - T1.
SUPPLY	**SENSORY:** Lateral 2/3 of Palmar aspect of the hand and lateral 3½ digits including distal portions of their dorsum	**SENSORY:** Medial 1/3 of Palmar & dorsal aspect of the hand and lateral 1½ digits	**SENSORY:** Lateral 2/3 of dorsum of the hand including dorsal aspects of proximal parts of lateral 3½ digits
	MOTOR: • Flexor compartment except Flexor carpi ulnaris and Medial half of FDP • Thenar muscles • 1st & 2nd lumbricals	**MOTOR** • Flexor carpi ulnaris and medial half of FDP • All intrinsic muscles except thenar & first 2 lumbricals	**MOTOR:** All extensors muscles of arm & forearm

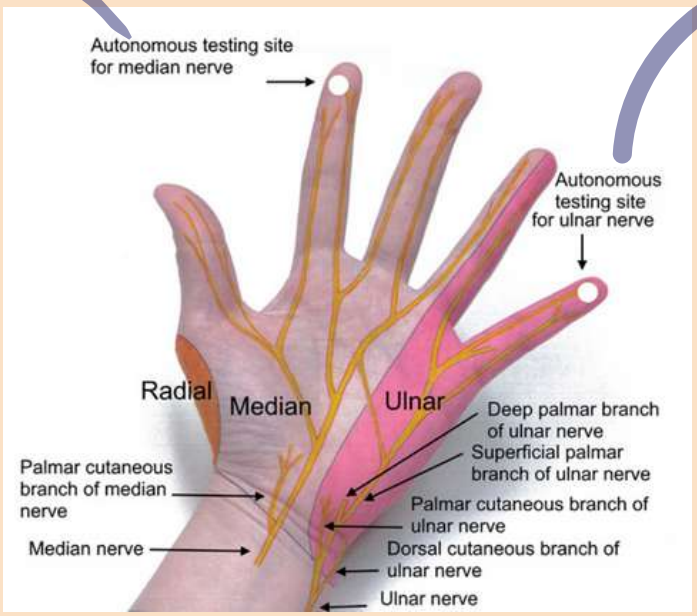




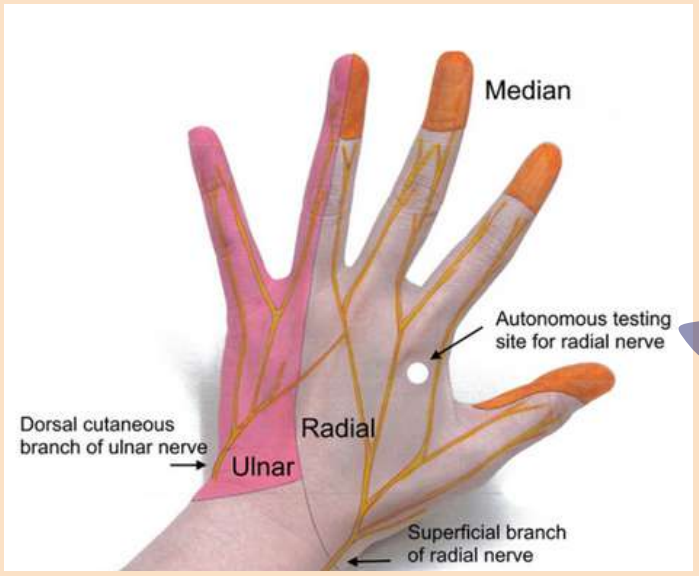
Sensory Examination of Hand

Sensory examination checks touch, pin-prick, and two-point discrimination (normal ≤5mm). Assess for numbness or tingling to reveal signs of nerve injury or compartment syndrome.

Testing area for Median nerve



Testing area for Ulnar nerve



Testing area for Radial nerve

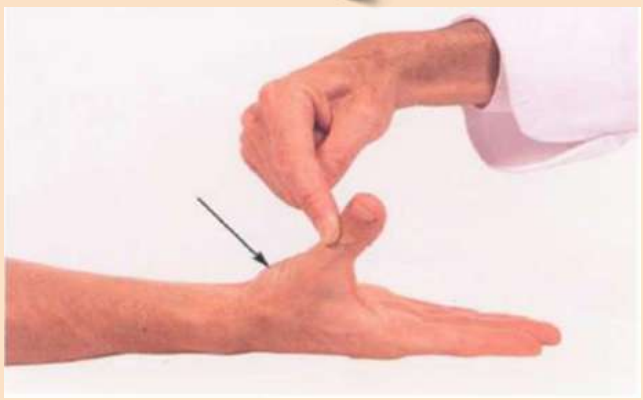
Motor Examination of Median nerve

•Tinel's sign

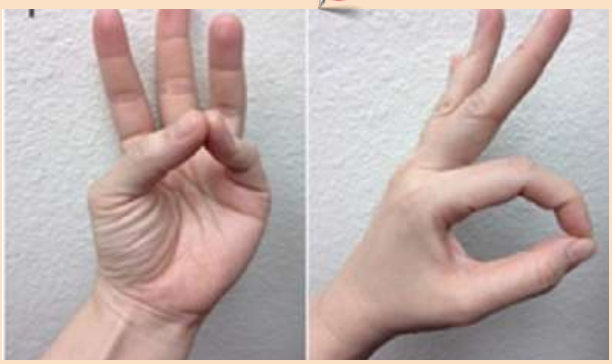
•Phalen maneuver

•Test for flexor pollicis longus muscle

•Test for 1st & 2nd tendons of Flexor digitorum profundus muscle



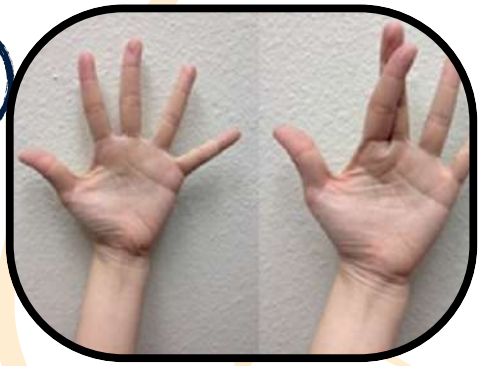
•Test for abductor pollicis brevis muscle



•Evaluation of median nerve integrity includes thumb opposition with little finger, and flexion of interphalangeal (IP) joint of thumb with proximal IP (PIP) joint of little finger to form an "OK" sign

Motor examination of ulnar nerve

1

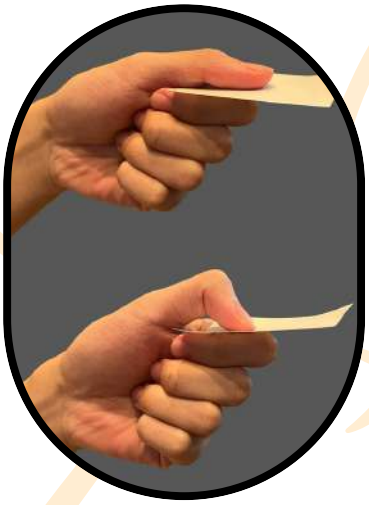


Evaluation of ulnar nerve includes abduction of fingers by spreading them apart and criss-crossing index and 3rd finger.

2

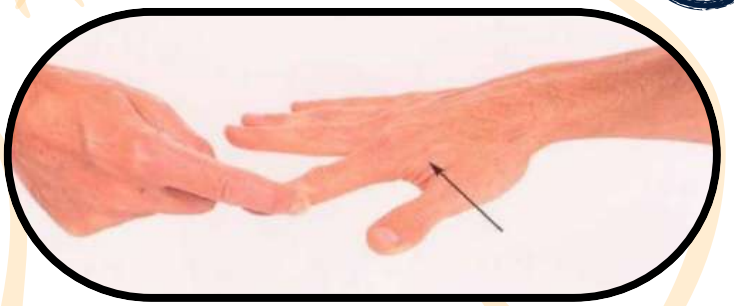
Jeanne sign = Patient is asked to demonstrate a key pinch movement , it is positive if first metacarpophalangeal joint is hyperextended

3



•Foment's sign

4



•Test for 1st dorsal interosseous muscle

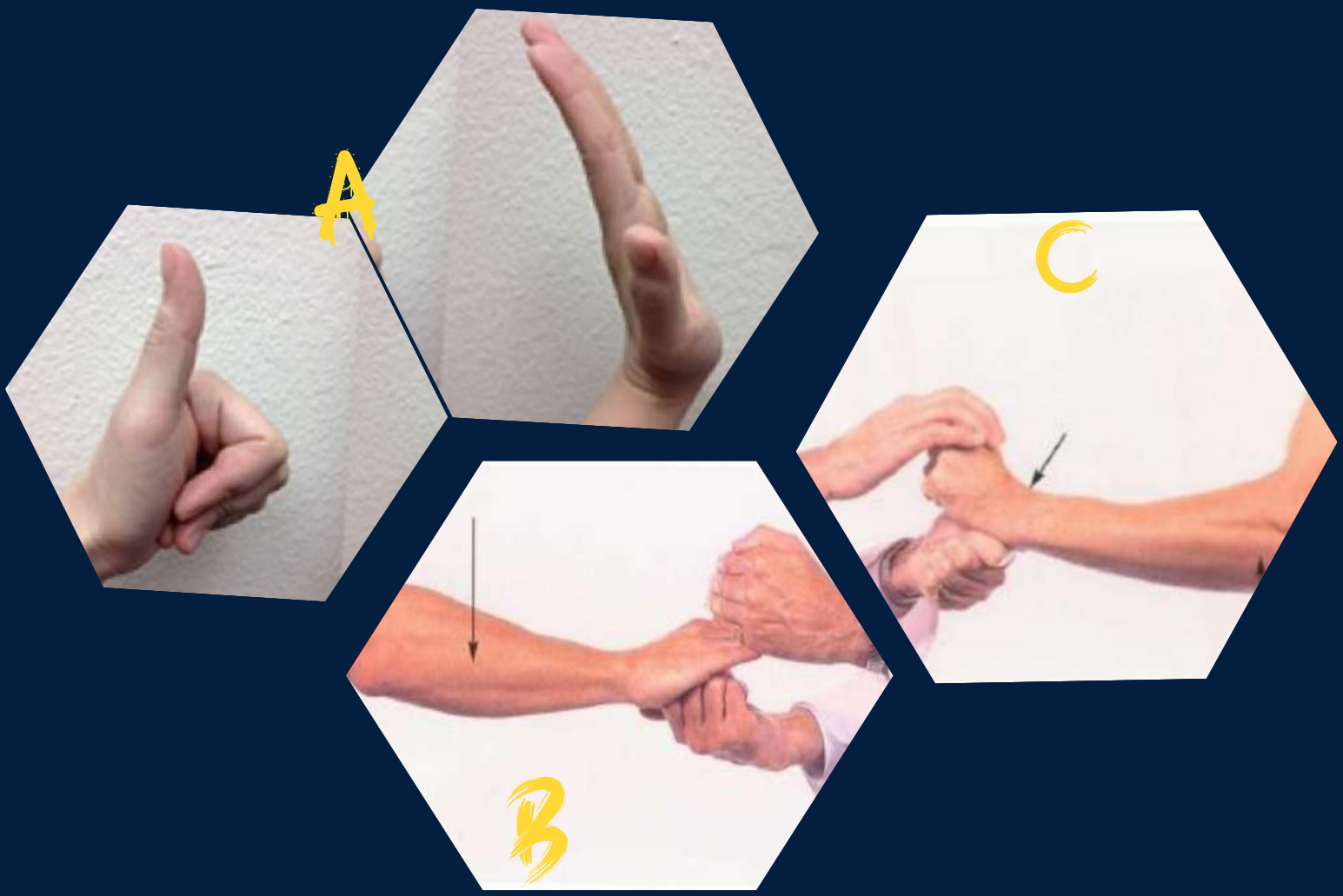
5

•Test for 3rd & 4th tendon of Flexor digitorum profundus

6

•Test for Adductor pollicis muscle

Motor examination of radial nerve



A

Radial nerve evaluation includes extension of thumb & Extension of wrist along with extension of fingers at MCP joint

B

Test for Extensor digitorum muscle

C

- Test for Extensor carpi radialis longus muscle = Extending and abducting the hand against the resistance

Simple approach to test all 3 nerves is "Rock, paper, scissor, OK" test

'Rock' tests the median nerve

'Paper' tests the ulnar nerve

'Scissor' tests the Radial nerve

'OK' tests the anterior interosseous nerve

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MESSAGE FROM EXECUTIVE DIRECTOR

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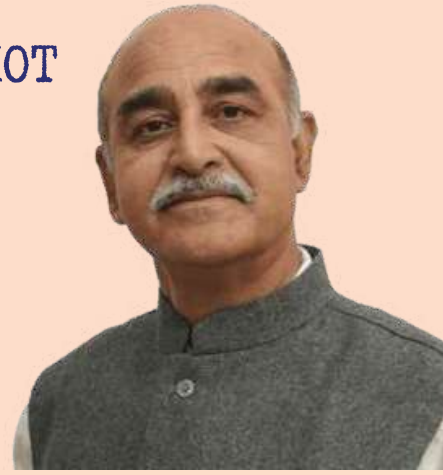

I heartily congratulate the Department of Anatomy for bringing this informative newsletter on the anatomical explanation of the 'HAND HARMONY - Mapping nervous connections'. My best wishes to the entire team.

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