Dermatomes of upper limb

* **Developmentally** the limbs grow as lateral protrusion of the trunk .

* The **initial embryonic position** of upper limb is abduction with the thumb & the lateral surface are directed more cranially .

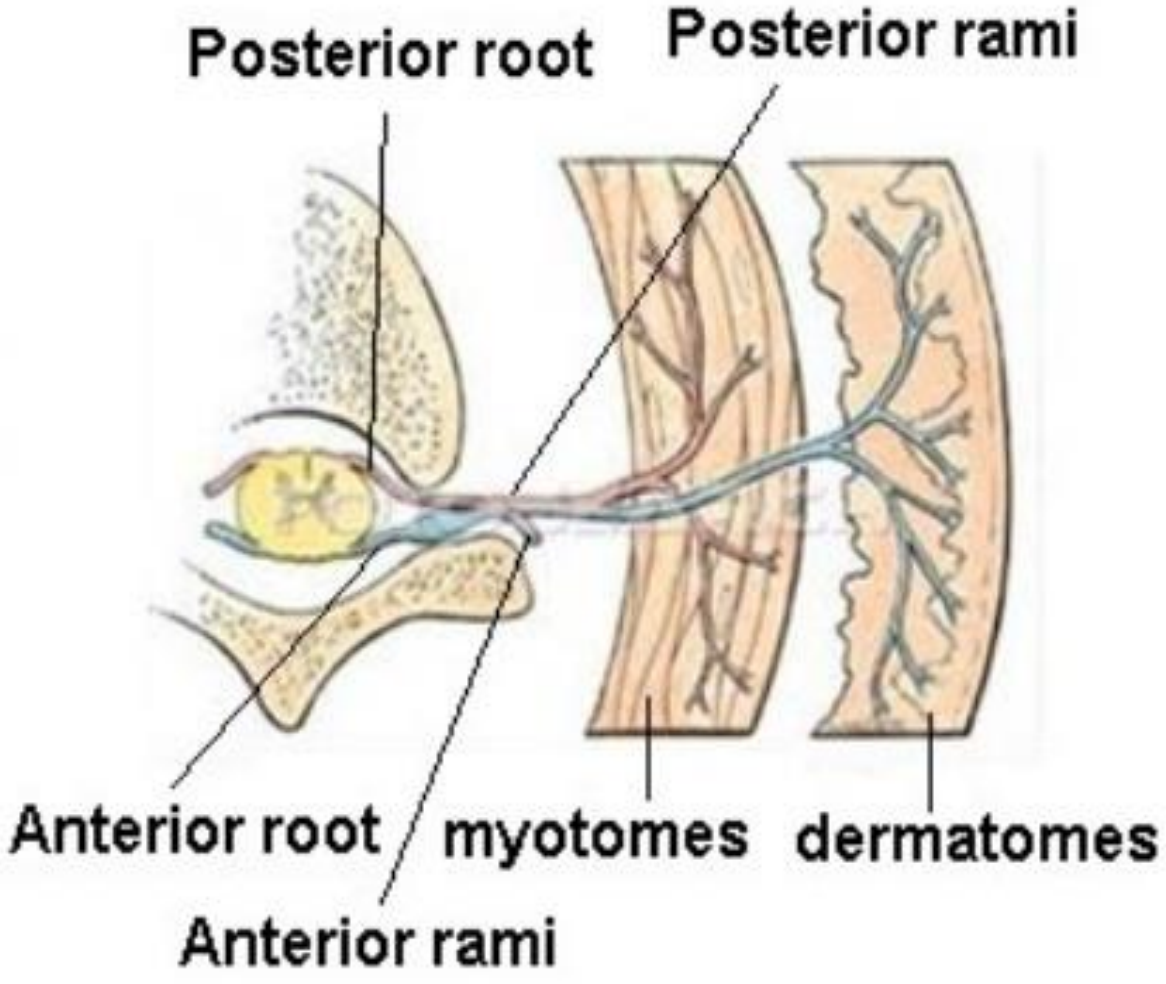
*** Dermatome :** is the segment of skin supplied by a known spinal cord segment or spinal nerve .

* These segments **progress in descending order around the upper limb** starting with C4 dermatome at the shoulder , proceeding distally along the lateral surface of the upper limb then proximally along the medial surface of upper limb to end in the axilla as T2 dermatome continous onto the thoracic wall .

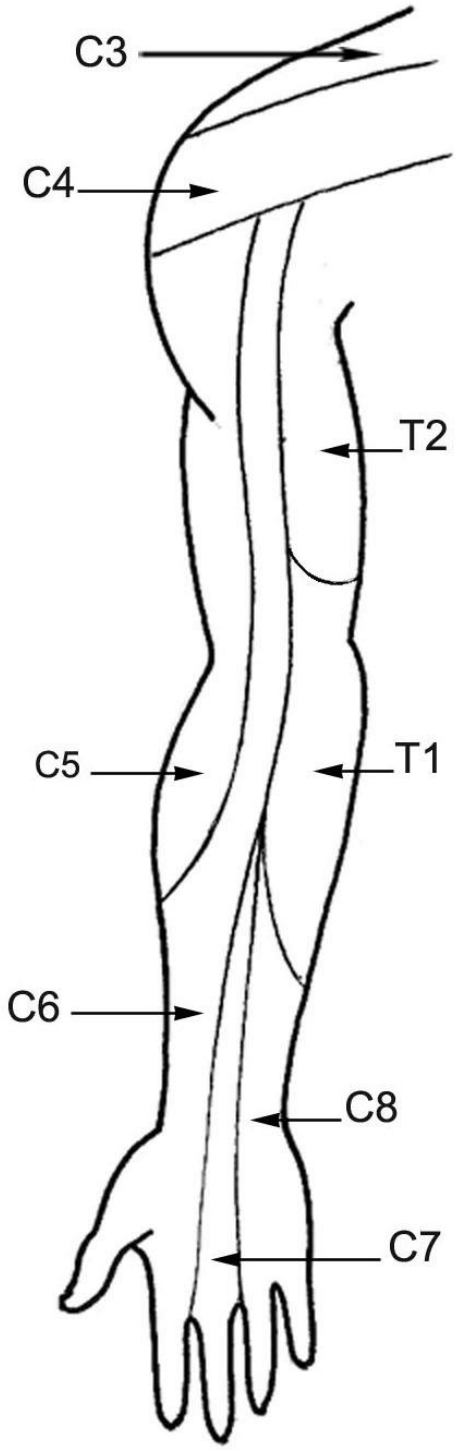
* Dermatomes of upper limb are :

Spinal segment or nerve	Dermatome
C 4	• Over the shoulder .
C5	• Lateral aspect of arm .
C6	• Lateral aspect of forearm & hand , thumb & ring fingers .
C7	• Middle finger and central part of hand & forearm .
C8	• Little & ring fingers , medial aspect of hand & lower part of forearm .
T1	• Medial aspect of upper part of forearm and lower part of arm .
T2	• Medial aspect of upper part of arm and axilla .

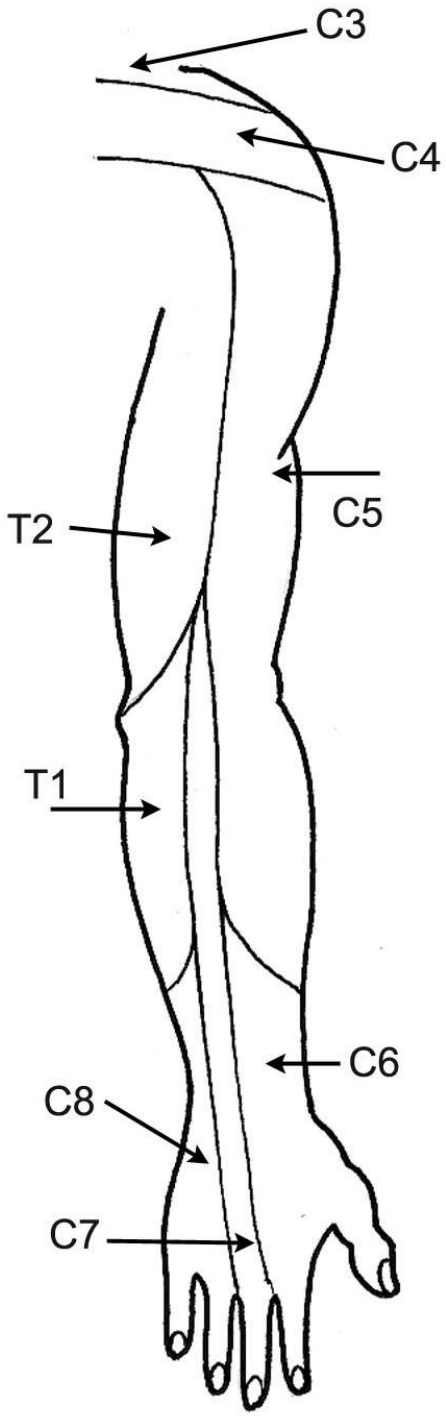
Dermatomes / myotomes



SEGMENTAL NERVE SUPPLY OF UPPER LIMB



Segmental Nerve Supply of the Skin of the Upper Limb (Anterior view)



Segmental Nerve Supply of the skin of the Upper Limb (Posterior view)

Cutaneous innervations of upper limb

* Cutaneous nerves of upper limb are derived mainly ***from brachial plexus*** which is formed from C5 to T1 spinal nerves ***except*** :

1- Cutaneous nerves of **shoulder** are derived from **cervical plexus** which is formed by **upper 4 cervical nerves** .

2- Cutaneous nerve of **medial aspect of upper part of arm and axilla** is derived from **T2** .

* **Like brachial plexus** , which forms medial , lateral and posterior ***cords*** (but no anterior cord) , the arm and forearm have medial , lateral and posterior (but no anterior) ***cutaneous nerves*** :

1- The ***medial cutaneous nerves*** of arm and forearm are branches ***from the medial cord*** of brachial plexus .

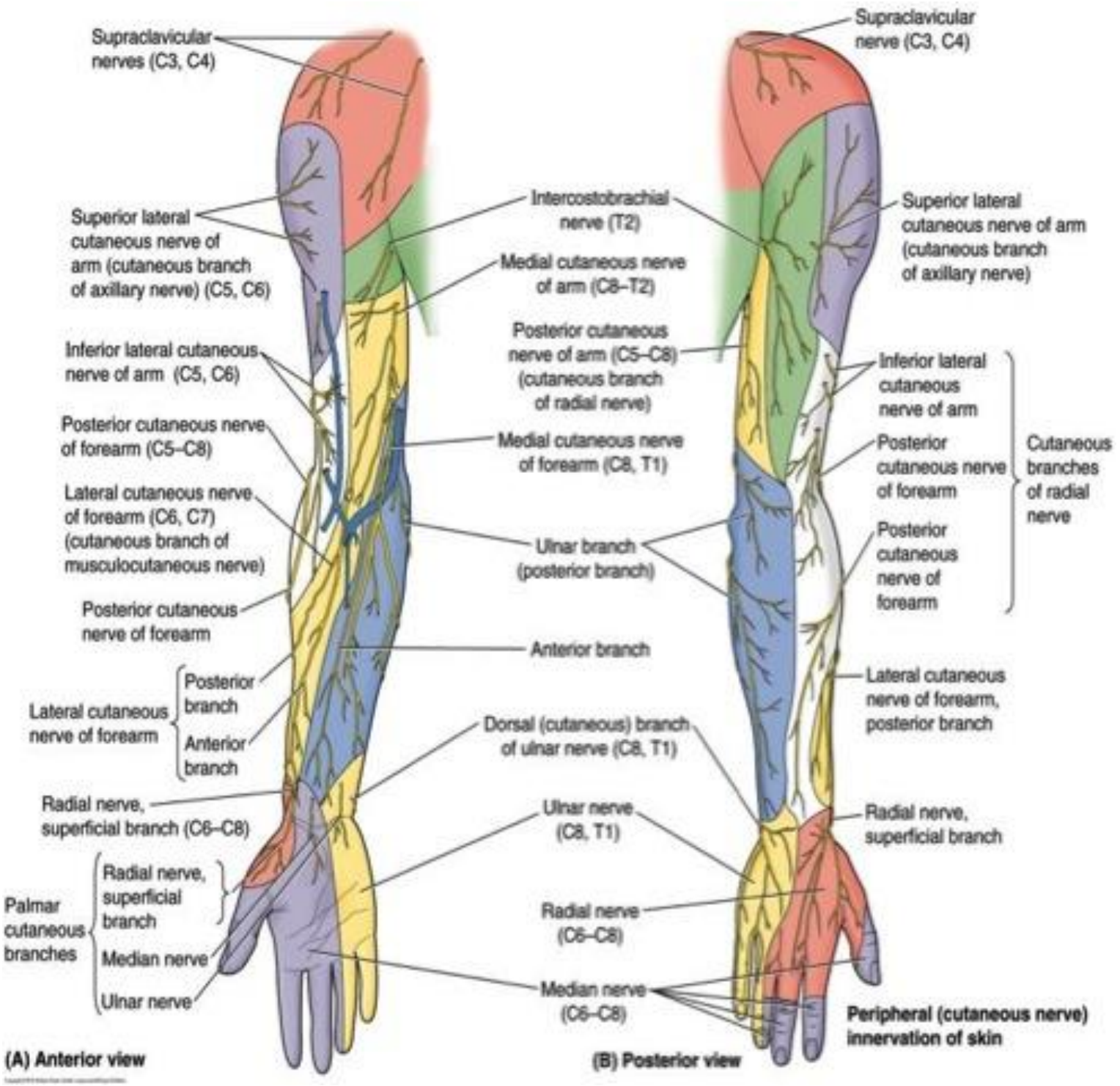
2- The ***posterior cutaneous nerves*** of arm and forearm are branches of ***radial nerve*** which arises from the ***posterior cord*** of brachial plexus .

3-The ***lateral cutaneous nerves*** of arm and forearm are branches of ***axillary , radial and musculocutaneous nerves*** which arises from the ***posterior and lateral*** cords of brachial plexus

★ **Cutaneous nerves of upper limb :**

Cutaneous Nerve	Contributing Spinal nerve	Source
1.Supraclavicular nerves	C3 & C4	Cervical plexus
2. Upper lateral cutaneous nerve of arm	C5 & C6	Termination of Axillary nerve
3. Lower lateral cutaneous nerve of arm	C5 & C6	Radial nerve (in spiral groove)
4. Posterior cutaneous nerve of arm	C5 – C8	Radial nerve (in axilla)
5. Posterior cutaneous nerve of forearm	C5 – C8	Radial nerve (in spiral groove)

6. Lateral cutaneous nerve of forearm	C6 & C7	Termination of musculocuaneous
7. Medial cutaneous nerve of forearm	C8 & T1	Medial cord of brachial plexus
8. Medial cutaneous nerve of arm	C8 & T1	Medial cord of brachial plexus
9. Intercostobrachial nerve	T2	2nd intercostal nerve


Supraclavicular nerves (C3, C4)
Superior lateral cutaneous nerve of arm (cutaneous branch of axillary nerve) (C5, C6)
Inferior lateral cutaneous nerve of arm (C5, C6)
Posterior cutaneous nerve of forearm (C5–C8)
Lateral cutaneous nerve of forearm (C6, C7) (cutaneous branch of musculocutaneous nerve)
Posterior cutaneous nerve of forearm
Lateral cutaneous nerve of forearm
Posterior branch
Anterior branch
Radial nerve, superficial branch (C6–C8)
Palmar cutaneous branches
Radial nerve, superficial branch
Median nerve
Ulnar nerve
(A) Anterior view
Intercostobrachial nerve (T2)
Medial cutaneous nerve of arm (C8–T2)
Posterior cutaneous nerve of arm (C5–C8) (cutaneous branch of radial nerve)
Medial cutaneous nerve of forearm (C8, T1)
Ulnar branch (posterior branch)
Anterior branch
Dorsal (cutaneous) branch of ulnar nerve (C8, T1)
Ulnar nerve (C8, T1)
Radial nerve (C6–C8)
Median nerve (C6–C8)
Supraclavicular nerve (C3, C4)
Superior lateral cutaneous nerve of arm (cutaneous branch of axillary nerve)
Inferior lateral cutaneous nerve of arm
Posterior cutaneous nerve of forearm
Posterior cutaneous nerve of forearm
Cutaneous branches of radial nerve
Lateral cutaneous nerve of forearm, posterior branch
Radial nerve, superficial branch
Peripheral (cutaneous nerve) innervation of skin
(B) Posterior view

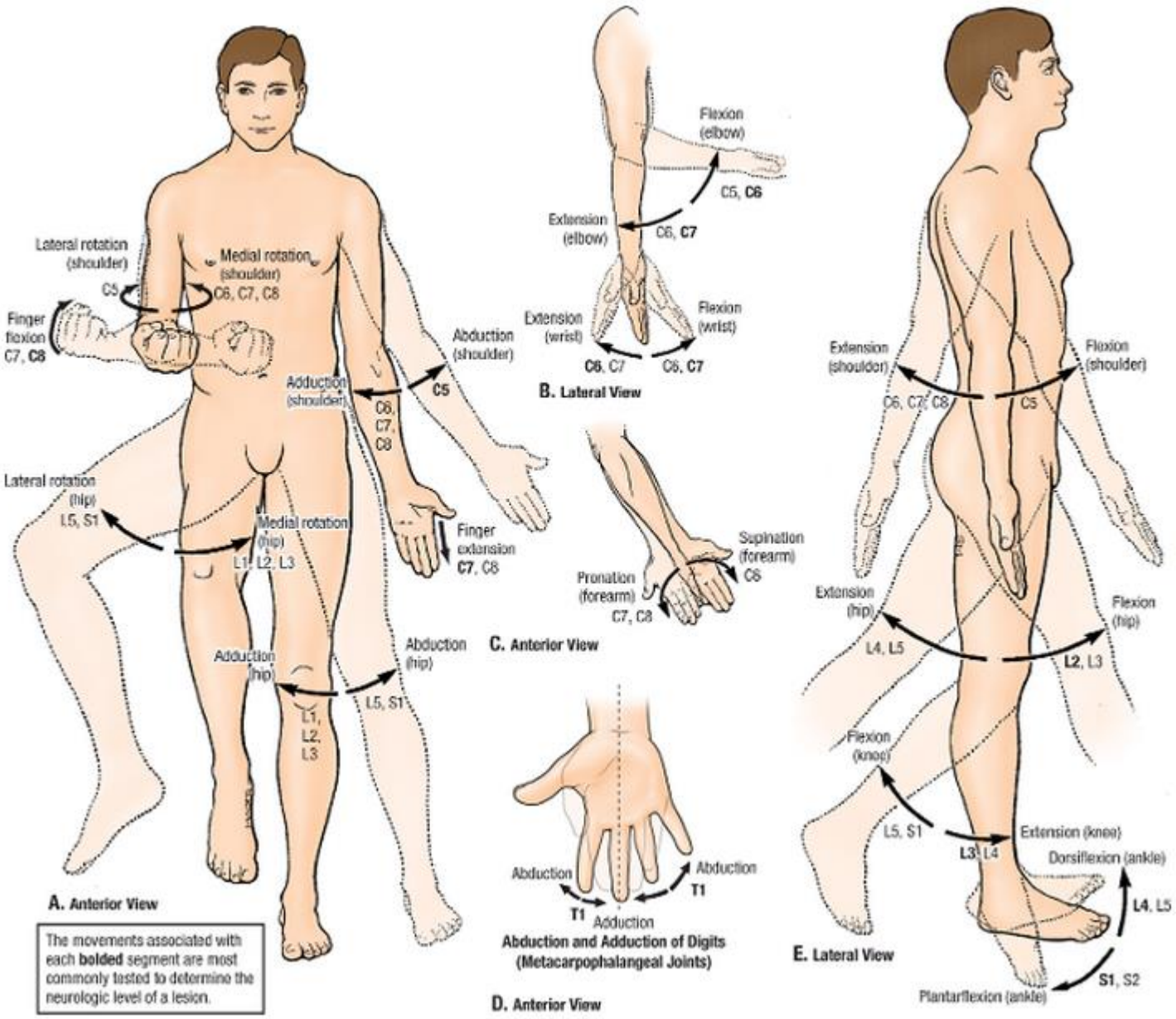
Myotomes of upper limb

* **Myotome :** is the unilateral embryological muscle mass receiving innervation from a single spinal cord segment or spinal nerve .

* **Most muscles** of upper limb are made up of ***more than one myotome*** , receiving motor fibers from ***several spinal cord segments*** , and several spinal cord segments are usually involved in producing ***movements*** of upper limb .

* The ***intrinsic muscles*** of the hand constitute a single myotome (***T1***)

Joint	Movements	Spinal segment
Shoulder	Flexion , abduction & lateral rotation	C5
	Extension , adduction & internal rotation	C6,7,8
Elbow	Flexion	C5, 6
	Extenion	C6, 7
Radioulnar	Pronation	C7 & 8
	Supination	C8
Wrist	Flexion & Extension	C6 & 7
Fingers	Flexion & Extension	C7 & 8
	Adduction & Abduction	T1


Lateral rotation (shoulder)
C5
Medial rotation (shoulder)
C6, C7, C8
Finger flexion
C7, C8
Abduction (shoulder)
C5
Adduction (shoulder)
C6, C7, C8
Lateral rotation (hip)
L5, S1
Medial rotation (hip)
L1, L2, L3
Finger extension
C7, C8
Adduction (hip)
L1, L2, L3
Abduction (hip)
L5, S1
A. Anterior View
The movements associated with each bolded segment are most commonly tested to determine the neurologic level of a lesion.
Flexion (elbow)
C5, C6
Extension (elbow)
C6, C7
Extension (wrist)
C6, C7
Flexion (wrist)
C6, C7
B. Lateral View
Supination (forearm)
C6
Pronation (forearm)
C7, C8
C. Anterior View
Abduction
T1
Abduction
T1
Adduction
Abduction and Adduction of Digits (Metacarpophalangeal Joints)
D. Anterior View
Extension (shoulder)
C6, C7, C8
Flexion (shoulder)
C5
Extension (hip)
L4, L5
Flexion (hip)
L2, L3
Flexion (knee)
L5, S1
Extension (knee)
L3, L4
Dorsiflexion (ankle)
L4, L5
S1, S2
Plantarflexion (ankle)
E. Lateral View