

<i>MS</i>	<i>Nerve</i>	<i>Action</i>	<i>Origin</i>	<i>Insertion</i>
<i>Pectoral Region</i>				
<i>Pectoralis major</i>	Lateral pectoral N. & Medial pectoral N.	<p>1. <u>Adduction, flexion & medial rotation of the arm.</u></p> <p>2. The clavicular head brings the <u>extended arm</u> to the resting position (flexion of shoulder joint)</p> <p>3. The sternocostal head brings the <u>flexed arm</u> to the resting position (extension of shoulder joint)</p> <p>4. With the insertion fixed & the arm raised, the whole muscle draws the trunk upwards towards the arm as in swimming</p>	<p>It takes origin by 2 heads;</p> <p>1. Clavicular head: Anterior surface of the medial ½ of the clavicle.</p> <p>2. Sternocostal head: Front of the sternum, upper 7 costal cartilages & aponeurosis of the external abdominal oblique</p>	<p>By a flat bilaminar tendon into the lateral lip of the bicipital groove of the humerus.</p>
<i>Pectoralis minor</i>	Medial pectoral nerve.	Protraction & depression of the shoulder.	From 3 rd , 4 th & 5 th ribs just lateral to their costal cartilages	Into upper surface of the coracoid process of the scapula
<i>Serratus anterior</i>	<p>Long thoracic nerve (N. to serratus anterior).</p> <p><i>*Injury of long thoracic nerve Cause Paralysis of serratus anterior muscle causing winging of the scapula</i></p>	<p>1. Protraction & depression of the shoulder.</p> <p>Protraction of scapular Girdle made by Serratus anterior+Pectoralis minor</p> <p>2. The lower 5 digitations help in the <u>rotation up of the scapula</u> to raise the arm above the head. (lateral rotation)</p>	By 8 fleshy slips from the middle of the outer surface of the upper 8 ribs, interdigitating with the slips of the external abdominal oblique muscle	<p>Into the ventral surface of the medial border of the scapula;</p> <p>- 1st digitation opposite the superior angle.</p> <p>- 2nd & 3rd digitations along the whole length of the medial border.</p> <p>- Lower 5 digitations opposite the inferior angle</p>
<i>Subclavius</i>	N. to subclavius.	Stabilizes & fixes the clavicle.	From the junction between the 1 st rib & its costal cartilage.	subclavian groove on the lower surface of the middle 1/3 of the clavicle
<i>The back Muscles</i>				

<i>Trapezius</i>	<p>1. Motor: spinal accessory nerve (11th cranial N.).</p> <p>2. Sensory (Proprioceptive): C3 & C4.</p>	<p>1. Upper fibers → elevate the scapula. *elevation of scapula (shoulder Girdle) made by the upper fibers + levator scapula</p> <p>2. Middle fibers → retract the scapula.</p> <p>3. Upper and lower fibers (with lower (5) digitations of serratus anterior) → upward rotation of the scapula (90-180° take place at shoulder girdle) Depression of scapula made by Lower fibers + Pectoralis minor</p>	<p>1. External occipital protuberance + medial 1/3 of the superior nuchal line.</p> <p>2. Ligamentum nuchae + C7 spine.</p> <p>3. All thoracic vertebral spines (T1 –T12) + Supraspinous ligaments</p>	<p>1- Upper fibers : Posterior border of the lateral 1/3 of clavicle.</p> <p>2- middle fibers : Medial border of the acromion + upper lip of crest of spine of scapula</p> <p>3-lower fibers: Tubercle at the medial end of the scapular spine.</p>
<i>Latissimus dorsi</i>	<p>Nerve to latissimus dorsi (C6,7,8).</p>	<p><u>Adduction, medial rotation and extension of the arm</u></p> <p><u>* The only muscle of the upper limb which has pelvic attachment</u></p>	<p>1. Pelvic: Posterior 1/3 of the outer lip of the iliac crest of the hip bone.</p> <p>2. Vertebrel: Lumbar fascia + spine of lower 6 thoracic vertebrae.</p> <p>3. Costal: back of the lower 3 or 4 ribs.</p> <p>4. Scapular: back of the inferior angle of the scapula.</p>	<p>The floor of the bicipital groove of the humerus</p>
<i>Levator scapulae</i>	<p>Nerve to rhomboides (Dorsal scapular nerve).</p>	<p>all :rotation down (medial) of scapula/S.girdle</p> <p>Levator scapulae : eLevation of scapula</p> <p>Rhomboideus minor and major :</p> <p>Retraction of scapula</p> <p>Retraction of scapular Girdle made by Middle fibers of trapezius +.Rhomboideus minor & major.</p>	<p>the transverse processes of the upper (4) cervical vertebrae</p>	<p>Back of the medial border of the scapula between the superior angle and the scapular spine</p>
<i>Rhomboideus Minor</i>			<p>Lower part of ligamentum nuchae, 7th cervical & 1st thoracic spines</p>	<p>root of the scapular spine.</p>
<i>Rhomboideus Major</i>			<p>Spines of T 2, 3, 4, 5 and their supraspinous ligaments.</p>	<p>Back of the medial border of the scapula between the root of the scapular spine and the inferior angle</p>

Shoulder Muscles

<i>Supra spinatus</i>	Supra scapular nerve.	Initiation of <u>abduction</u> of shoulder (0-18) at shoulder <u>joint</u>	<u>Medial 2/3 of supra spinous fossa of scapula.</u>	All in greater tuberosity of the humerus but S. Spinatus in upper impression / I. spinatus in middle impression / T. minor in lowest impression
<i>Infra spinatus</i>		<u>Adduction & lateral rotation</u> of shoulder joint.	<u>Medial 2/3 of infra spinous fossa of scapula</u>	
<i>Teres minor</i>	Axillary N		Adduction, <u>extension</u> & <u>medial rotation</u> of shoulder joint	<u>Upper 2/3 of the dorsal aspect of the lateral border of the scapula.</u>
<i>Teres major</i>	Lower subscapular nerve	<u>Lower 1/3 of the dorsal aspect of the lateral border of the scapula</u>		
<i>Sub scapularis</i>	Upper & Lower subscapular nerves	<u>Adduction & medial rotation</u> of shoulder joint.	<u>Medial 2/3 of subscapular fossa.</u>	<u>Lesser tuberosity of the humerus.</u>
<i>Deltoid</i>	Axillary nerve All 6 ms above supplied by nerves with root value C5,6.	<u>Anterior fibers: Flexion & medial rotation of shoulder joint while the Posterior fibers: Extension & lateral rotation of shoulder joint</u> <u>Middle fibers: Abduction of shoulder joint (18-90)</u>	1. Anterior fibers: from anterior & upper surface of lateral 1/3 of clavicle. 2. Middle fibers: from lateral border of the acromion process. 3. Posterior fibers: from inferior lip of the crest of the scapular spine.	Deltoid tuberosity of the humerus.

Muscles of Front of Arm / flexors

<i>Biceps Brachii</i>	Musculo-cutaneous nerve.	acts on 3 joints: • helps in flexion of shoulder joint. • flexion the <u>supinated forearm at elbow joint.</u> • supination of partially <u>flexed forearm at radio-ulnar joints.</u>	1. The short head: apex of coracoid process together with corachobrachialis. 2. The long head: supraglenoid tubercle within the shoulder joint (intracapsular & extrasynovial).	The 2 heads unite in the distal 1/3 of the arm and is inserted; by tendon into the posterior part of radial tuberosity and into the bicipital aponeurosis.
<i>Corachobrachialis</i>	Musculo-cutaneous nerve.	<u>Flexion</u> of arm in shoulder joint . <u>Adduction</u> of Arm.	the apex of coracoid process (with short head of biceps)	the middle of the medial border of the humerus

Brachialis	lateral part of brachialis : radial nerve. medial part : musculo cutaneous N.	flexion the forearm. acts only on the elbow joint main flexor of elbow	the lower ½ of the anterior surface of humerus	the anterior surface of coronoid process of the ulna.
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Muscle of Back of Arm / extensor

Triceps Brachii	The radial nerve gives separate branches for each head of it	main extensor of the elbow joint. The long head helps in adduction of arm. The long head supports the shoulder joint inferiorly in the abducted position of the arm.	1. The long head: infra glenoid tubercle of the scapula (extracapsular). 2. The lateral head : upper part of the posterior surface of the humerus, above the radial groove. 3. The medial head, it is deep to the other 2 heads: lower ½ of the posterior surface of the humerus below the radial groove.	into the posterior part of the upper surface of the olecranon process of ulna.
Articularis Cubiti (Subanconeus muscle)		It pulls the capsule of the elbow joint posteriorly during extension of the joint.	few fibers from the deep surface of the lower part of the triceps (medial head)	the back of the capsule of the elbow joint.

Muscles of front of forearm / Superficial group

Pronator teres	median nerve	Flexion of elbow Pronation of forearm *The median nerve enters the forearm by passing between the two heads of pronator teres	common flexor origin (front of medial epicondyle) for humeral head of both Additional origins : *ulnar head of pronator teres: med. border of coronoid process of ulna. *Ulnar head of F. carpi. ulnaris : med. Margin of olecranon process & post. Border of ulna	Middle of lateral surface of radius. All are inserted in the hand except pronator teres in the radius
Flexor carpi ulnaris	ulnar nerve *Blood supply of ms of front of forearm is radial + ulnar Artery	Flexion of wrist Adduction of wrist * ulnar nerve enters the forearm by passing between two heads of flexor carpi ulnaris		Pisiform bone & 5th metacarpal bone & hook of hamate *Note: pisiform is sesamoid bone within the tendon of F. Carpi ulnaris
Flexor carpi radialis:	median nerve	Flexion of wrist Abduction of wrist	Front of medial epicondyle (common flexor origin).	Palmar surface of bases of 2nd & 3rd metacarpal bones

<i>Palmaris longus</i> May be absent.	median nerve	Flexion of wrist.	Front of medial epicondyle (common flexor origin).	Apex of palmar aponeurosis and flexor retinaculum
<i>Flexor digitorum superficialis</i> Intermediate group	median nerve	Flexion of wrist. Flexion of proximal & middle phalanges of medial 4 fingers. <u>Superficial group</u> : All help in flexion of elbow. All help in flexion of wrist (except pronator teres).	1-humeroulnar head: from <u>med. Epicondyle of humerus (common flexor origin)</u> and med. border of coronoid process of ulna. 2-radial head: from ant. oblique line of radius.	By 4 tendons into the middle phalanges of medial 4 fingers
<i>Muscles of front of forearm / Deep muscles</i>				
<i>Flexor pollicis longus</i>	All anterior interosseous nerve (branch from median) except <u>medial ½ of flexor digitorum profundus</u> by ulnar nerve	Flexion of wrist. Flexion of all joints of thumb.	Upper 2/3 of ant. surface of radius + interosseous membrane + med. border of coronoid process of ulna.	Terminal phalanx of thumb
<i>Flexor digitorum profundus</i>		Flexion of wrist. Flexion of all joints of medial 4 fingers	Upper 2/3 of ant. & med. surface of ulna + interosseous membrane + post. border of ulna	Terminal phalanges of medial 4 fingers
<i>Pronator quadratus</i>		Main Pronator of forearm	lower ¼ of ant. surface of ulna *All take origin from radius or ulna only	Lower ¼ of ant. surface of radius All inserted in hand except pronator quadratus in radius
<i>Muscles of Back of Forearm / Superficial group</i>				
<i>Anconeus</i> Only one that is short and the other six are long muscles.	radial nerve	Extension of the <u>elbow</u> Extension OF elbow by : a. Triceps. b. Anconeus	the back of the lateral epicondyle of the humerus	the lateral side of the olecranon process and upper part of the posterior surface of ulna.
<i>Brachio radialis</i>	radial nerve	*Flexion the elbow in mid prone position . acts more effectively in mid-prone position. *Initiates pronation &	<u>upper two third of the lateral supracondylar ridge</u>	into lateral side of lower end of radius just above the styloid process

		<u>supination of forearm</u>			
<i>Extensor carpi radialis longus</i>	radial nerve	Extention and abduction of the hand at the wrist joint	<i>lower one third of the lateral supracondylar ridge</i>	<i>into the back of the base of the second metacarpal bone.</i>	
<i>Extensor carpi radialis brevis</i>	posterior interosseous nerve branch of the radial nerve.	Extention and abduction of the hand at the wrist joint * carpi means wrist so any ms named carpi acts on wrist joint	common extensor origin (the front of the lateral humoral epicondyle)	<i>into the back of the base of the third metacarpal bone</i>	
<i>Extensor digitorum</i>		Extends the MP and IP joints of the medial four fingers		<i>by four tendons into the back of the bases of the middle and distal phalanges of the medial four fingers through extensor expansion</i>	
<i>Extensor digiti minimi</i>		Extends all the joints of the little finger		<i>its tendon joins the extensor expansion of the little finger.</i>	
<i>Extensor carpi ulnaris</i>		Extention and adduction of the hand at the wrist joint *ulnaris > adduction raDialis> abDuction		<i>from the common extensor origin and from ulnar aponeurosis (post. Border of ulna)</i>	<i>into the back of the base of the fifth metacarpal bone</i>

Muscles of Back of Forearm / Deep group

Supinator <i>Only one that is short and the other 4 are long muscles.</i>	posterior interosseous nerve	Supination of the <u>extended arm</u> * supination of flexed arm is by Biceps Brachii	<i>Superficial head from radial collateral lig. of elbow & annular lig. Of sup. RU joint.</i> •Deep head from supinator fossa and supinator crest of ulna	<i>front, lat. Surface & back of upper 1/3 of radius</i>
Abductor pollicis longus	posterior interosseous nerve	abducts and extends the thumb at the carpometacarpal joint	<i>from the posterior surface of radius below the supinator</i> •From the posterior surface of ulna below the anconeus •From the interosseous	<i>the back of the base of the first metacarpal bone of the thumb.</i>

			membrane.	
<i>Extensor pollicis brevis</i>	posterior interosseous nerve *blood supply to MS of back of forearm is from the posterior interosseous artery	extends the proximal phalanx of the thumb	posterior surface of radius and adjacent part of the interosseous membrane.	back of the base of proximal phalanx of the thumb.
<i>Extensor pollicis longus</i>		extends the distal phalanx of the thumb.	posterior surface of ulna and adjacent part of the interosseous membrane	back of the base of distal phalanx of the thumb.
<i>Extensor indicis</i>		extends the joints of the index finger	posterior surface of ulna and adjacent part of the interosseous membrane below extensor pollicis longus	extensor expansion of the index

Muscles of Hand

<i>Palmaris brevis</i>	Superficial terminal branch of ulnar nerve	Deepening the hollow of the palm to improve the grip of the palm during holding a rounded object.	the medial margin of the palmar aponeurosis and the flexor retinaculum	the skin of the medial (ulnar) border of the hand
<i>The lumbricals</i>	L1 & L2: are unipennate (median N.) L3 & L4: are bipennate (ulnar N.)	Writing position (flexion of MCPjs. & extension of the IPjs.)	Tendons of flexor digitorum profundus	Extensor expansion of the medial 4 fingers
<i>4 Palmar Interossei Muscles</i>	Ulnar N. Shape: Unipennate.	1-Writing position. 2-Adduction (PAD) of fingers. * Since the thumb has its own adductor (adductor pollicis, the 1 st palmar interosseous muscle may be absent).	Note: <i>Palmaris brevis</i> : a thin sheet of subcutaneous muscle which covers the proximal part of the hypothenar muscles	
<i>4 Dorsal Interossei Muscles</i>		1-Writing position. 2-Abduction (DAP).		

Muscles of Hand

1. Short muscles of thumb: a. Muscles of thenar eminence. b. Adductor pollicis <i>Thenar muscles:</i> 1-Externally: Abductor pollicis	2. Short muscles of little finger: a. Muscles of hypothenar eminence. b. Palmaris brevis. <i>Hypothenar muscles:</i>	3. Small muscles of fingers: a. 4 lumbrical muscles. b. 4 Palmar interossei. c. 4 Dorsal interossei
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<p><i>brevis.</i> 2-Internally: Flexor pollicis brevis. 3-In between: Opponens pollicis Opposition (of the abducted thumb) is by opponens pollicis and flexor pollicis brevis at Carpometacarpal joint of thumb Note : opponens pollicis also flexes the thumb at Carpometacarpal joint</p>	<p>1-Externally: Abductor digiti minimi. 2-Internally: Flexor digiti minimi. 3-In between: Opponens digiti minimi</p>	<p><i>*axis of toes passes in the middle toe (not the 2nd toe as in lower limb)</i></p>
<p>All Ms of hand are supplied by the <i>Ulnar N</i> except : 1st and 2nd Lumbricals and Thenar eminence ms which are supplied by <i>Median n</i></p>		

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