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## Hosford Muscle Tables

This document details information about the skeletal muscles of the human body. Included are each muscle's origin, insertion, action, blood supply and innervation. Many health professionals will find this document helpful in their study, but it is especially suited to Physical Therapy.

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## Welcome to the Human Skeletal Muscle Tables!

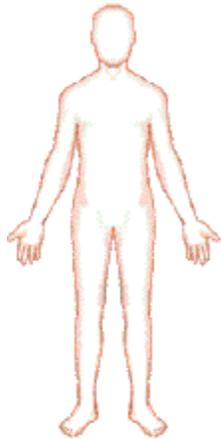
This document details information about the skeletal muscles of the human body. Included are each muscle's origin, insertion, action, blood supply and innervation. The student should be reminded that there is great variability in blood supply and innervation within a population of individuals.

## Hints for Anatomy Study:

1. Visualize as you memorize. A picture can really be worth a thousand words! Save brain cells, sweat and tears by referring to a good anatomy atlas as you study.
2. Review regularly. Spatially organize and order anatomical parts in relation to each other, as if you were to construct a three dimensional image in your mind.
3. Utilize a study group. Organize a group of fellow students to regularly study, review and quiz over the anatomy material. Information presented from a variety of perspectives is often much easier to learn.

## Online Anatomy Study Materials:

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Clickable anatomy graphics are provided on the web site, with links to a wide variety of Internet anatomy resources including pictures and video.

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## Document Background:

This document began as a personal study tool while I was taking Gross Anatomy, in the Doctor of Physical Therapy program at Slippery Rock University of Pennsylvania.

## References:

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Happy studies, and I wish you the best of success.

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## Superficial Back Musculature

Muscle	Origin	Insertion	Action	Blood	Nerve
<b>Trapezius</b>	1. external occipital protuberance 2. medial 1/3 of the superior nuchal line 3. ligamentum nuchae (surrounding the cervical spinous processes) 4. spinous processes of C1-T12	1. posterior, lateral 1/3 of the clavicle 2. medial margin of the acromion 3. superior spine of the scapula	1. elevates scapula and 2. upwardly rotates the scapula (upper portion) (note: the glenoid fossa is the reference for scapular rotation) 3. retracts scapula (all) 4. downwardly rotates the scapula (lower portion)	transverse cervical artery	1. motor: spinal accessory (XI cranial) 2. sensory: ventral rami of C3 & C4 (possibly C2)
<b>Latissimus dorsi</b>	1. spinous process of T7-L5 2. supraspinous ligament 3. upper 2-3 sacral segments 4. iliac crest 5. lower 3 or 4 ribs 6. inferior angle of the scapula	floor of the bicipital groove of the humerus a portion of the crest of the lesser tubercle (the bicipital groove is also known as the intertubercular groove)	1. extends the arm (from a flexed position) 2. internally (medially) rotates the arm 3. adducts the arm 4. downwardly rotates the scapula	thoracodorsal artery	thoracodorsal nerve, C6,7,8
<b>Serratus posterior superior</b>	spinous processes and supraspinous ligaments of C7-T2	posterior aspect of ribs 2-5	control movements of the ribs and assists with forced inspiration	posterior intercostal arteries 1-4	anterior primary rami T2-5)
<b>Serratus posterior inferior</b>	spinous processes and supraspinous ligaments of T11-L2	posterior aspect of ribs 9-12	control movements of the ribs and assists with forced expiration	lowest posterior intercostal, subcostal, first two lumbar arteries.	anterior primary rami (T9-12)

## Shoulder Girdle Musculature

Muscle	Origin	Insertion	Action	Blood	Nerve
<b>Levator scapulae</b>	posterior tubercles of the transverse processes of the upper 3 or 4 cervical vertebrae	superior angle of scapula at and above the scapular spine	<ol style="list-style-type: none"> <li>1. elevates the scapula</li> <li>2. extends and/or laterally flexes the neck</li> <li>3. assists to downwardly rotate the scapula</li> </ol>	transverse cervical artery	<ol style="list-style-type: none"> <li>1. nerves off cervical plexus, C3,4</li> <li>2. dorsal scapular nerve, C5</li> </ol>
<b>Rhomboid minor</b>	<ol style="list-style-type: none"> <li>1. spinous process of C7 &amp; T1</li> <li>2. lower part of the ligamentum nuchae</li> <li>3. supraspinous ligament</li> </ol>	medial margin of the scapula at the root of the spine	<ol style="list-style-type: none"> <li>1. retracts &amp; stabilizes the scapula</li> <li>2. assists to downwardly rotate the scapula</li> <li>3. assists to adduct the arm</li> </ol>	deep branch of transverse cervical artery or dorsal scapular artery	dorsal scapular nerve, C5
<b>Rhomboid major</b>	<ol style="list-style-type: none"> <li>1. spinous processes of T2-T5</li> <li>2. supraspinous ligament</li> </ol>	medial scapula from the scapular spine to the inferior angle	<ol style="list-style-type: none"> <li>1. retracts &amp; stabilizes the scapula</li> <li>2. assists to downwardly rotate the scapula</li> <li>3. assists to adduct the arm</li> </ol>	deep branch of transverse cervical artery or dorsal scapular artery	dorsal scapular nerve, C5
<b>Serratus anterior</b>	outer surfaces and superior borders of the upper 8 or 9 ribs	costal aspect of medial margin of the scapula	<ol style="list-style-type: none"> <li>1. protracts the scapula</li> <li>2. stabilizes the scapula (preventing winging of the scapula)</li> <li>3. assists to upwardly rotate the scapula</li> </ol>	<ol style="list-style-type: none"> <li>1. lateral thoracic artery supplies the upper part</li> <li>2. thoracodorsal artery supplies the lower part</li> </ol>	long thoracic nerve, C5,6,7
<b>Deltoid</b>	<ol style="list-style-type: none"> <li>1. anterior portion: anterior border of the lateral 1/3 of the clavicle</li> <li>2. middle portion: lateral boarder of the acromion process of the scapula</li> <li>3. posterior portion: scapular spine</li> </ol>	deltoid tuberosity, on the lateral surface of the shaft of the humerus	<ol style="list-style-type: none"> <li>1. anterior portion: flexes and internally rotates the arm</li> <li>2. middle portion: abducts the arm</li> <li>3. posterior portion: extends and externally (laterally) rotates the arm</li> </ol>	<ol style="list-style-type: none"> <li>1. posterior humeral circumflex artery</li> <li>2. deltoid branch of thoracoacromial artery</li> </ol>	axillary nerve, <ol style="list-style-type: none"> <li>1. anterior portion, C5</li> <li>2. middle &amp; posterior portions, C5,6</li> </ol>
<b>Supraspinatus</b>	1. supraspinous fossa of the scapula	<ol style="list-style-type: none"> <li>1. uppermost of three facets of the greater tubercle of humerus</li> <li>2. capsule of the shoulder joint</li> </ol>	<ol style="list-style-type: none"> <li>1. abducts the arm (almost solely for first 20°)</li> <li>2. stabilizes glenohumeral joint</li> </ol>	suprascapular artery (poorly supplied)	suprascapular nerve, C5,6
<b>Infraspinatus</b>	1. infraspinous fossa of the scapula	<ol style="list-style-type: none"> <li>1. middle facet of greater tubercle of humerus</li> <li>2. capsule of the shoulder joint</li> </ol>	<ol style="list-style-type: none"> <li>1. externally rotates the arm</li> <li>2. stabilizes the glenohumeral joint</li> </ol>	<ol style="list-style-type: none"> <li>1. suprascapular artery</li> <li>2. scapular circumflex artery</li> </ol>	suprascapular nerve, C5,6
<b>Teres minor</b>	middle half of the scapula's lateral margin	<ol style="list-style-type: none"> <li>1. lowest of three facets of the greater tubercle of humerus</li> <li>2. capsule of the shoulder joint</li> </ol>	<ol style="list-style-type: none"> <li>1. externally rotates the arm</li> <li>2. stabilizes the glenohumeral joint</li> </ol>	scapular circumflex artery	axillary nerve, C5,6
<b>Teres major</b>	lower third of the posterior surface of the lateral margin of the scapula	medial lip of the bicipital groove of the humerus (just medial to the insertion of latissimus dorsi)	<ol style="list-style-type: none"> <li>1. internally rotates the arm</li> <li>2. extends the arm (from a flexed position)</li> <li>3. adducts the arm</li> </ol>	thoracodorsal artery	lower subscapular nerve, C5,6
<b>Subscapularis</b>	subscapular fossa on the anterior surface of the scapula	<ol style="list-style-type: none"> <li>1. lesser tubercle of humerus</li> <li>2. lower part of the capsule of the shoulder joint</li> </ol>	<ol style="list-style-type: none"> <li>1. internally rotates the arm</li> <li>2. stabilizes the glenohumeral joint</li> </ol>	branches of subscapular artery	upper & lower subscapular nerves, C5,6

## Pectoral Musculature

Muscle	Origin	Insertion	Action	Blood	Nerve
<b>Subclavius</b>	first rib about the junction of bone and cartilage	lower surface of clavicle	assists to stabilize the clavicle	clavicular branch of thoracoacromial artery	nerve to the subclavius, C5,6
<b>Pectoralis major</b>	1. medial 1/3 of clavicle 2. anterior aspect of the sternum 3. upper 6 costal cartilages 4. aponeurosis of the external oblique	lateral lip of bicipital groove to the crest of the greater tubercle  (clavicular fibers insert more distally; sternal fibers more proximally)	1. adducts the arm 2. internally rotates the arm 3. flexes the arm (from an extended position) 4. depresses the arm & shoulder	1. pectoralis branch of thoracoacromial artery 2. lateral thoracic artery (lesser supply)	1. lateral pectoral nerve, C5,6,7 to clavicular portion 2. medial pectoral nerve, C8,T1 to sternal portion
<b>Pectoralis minor</b>	outer surface of ribs 3-5 (may be variable)	medial aspect of coracoid process of the scapula	1. depresses the scapula 2. downwardly rotates the scapula 2. assists to protract the scapula from a retracted position 3. stabilizes the scapula	lateral thoracic artery	medial pectoral nerve, C8,T1

## Brachium Musculature

Flexors:

Muscle	Origin	Insertion	Action	Blood	Nerve
<b>Coracobrachialis</b>	coracoid process of the scapula	medial shaft of the humerus at about its middle	1. flexes the humerus 2. assists to adduct the humerus	muscular branches of the brachial artery	musculocutaneous nerve, C5,6,(C7)
<b>Biceps brachii</b>	1. long head- supraglenoid tubercle and glenohumeral labrum 2. short head- tip of the coracoid process of the scapula	1. radial tuberosity 2. bicipital aponeurosis	1. flexes the forearm at the elbow (when supinated) 2. supinates forearm from neutral 3. stabilizes anterior aspect of shoulder 4. flexes shoulder (weak if at all)	muscular branches of brachial artery	musculocutaneous nerve, C5,6
<b>Brachialis</b>	1. lower 1/2 of anterior humerus 2. both intermuscular septa	1. ulnar tuberosity 2. coronoid process of ulna slightly	elbow flexion (major mover)	1. muscular branches of brachial artery 2. radial recurrent artery	

Extensors:

<b>Triceps brachii</b>	1. long head: infraglenoid tubercle of the scapula 2. lateral head: upper half of the posterior surface of the shaft of the humerus, and the upper part of the lateral intermuscular septum 3. medial head: posterior shaft of humerus, distal to radial groove and both the medial and lateral intermuscular septum (deep to the long & lateral heads)	1. posterior surface of the olecranon process of the ulna 2. deep fascia of the antebrachium	1. long head: extends the forearm at the elbow, adducts the arm, may extend the shoulder from a flexed position 2. lateral head: extends the forearm at the elbow 3. medial head: extends the forearm at the elbow	1. muscular branches of the brachial artery 2. superior ulnar collateral artery 3. profunda brachii artery	radial nerve, C7,8
<b>Anconeus</b>	posterior surface of the lateral epicondyle of the humerus	lateral surface of olecranon extending to the lateral part of ulnar body	1. extends the forearm at the elbow 2. supports the elbow when in full extension	middle collateral artery from the profunda brachii artery	

## Antebrachial Flexor Musculature

Muscle	Origin	Insertion	Action	Blood	Nerve
<b>Pronator teres</b>	1. humeral head: a) upper portion of medial epicondyle via the CFT (common flexor tendon) b) medial brachial intermuscular septum 2. ulnar head: coronoid process of ulna 3. antebrachial fascia	lateral aspect of radius at the middle of the shaft (pronator tuberosity)	1. pronates forearm (during rapid or forced pronation) 2. weakly flexes the elbow	1. muscular branches of ulnar artery 2. muscular branches of radial artery	median nerve, C6,7
<b>Flexor carpi radialis</b>	1. medial epicondyle of the humerus via the CFT 2. antebrachial fascia	base of the 2nd and sometimes 3rd metacarpals	1. flexes the hand at the wrist 2. radially deviates the wrist 3. may assist to pronate the forearm	muscular branches of radial artery	
<b>Palmaris longus</b>	1. medial epicondyle via the CFT 2. antebrachial fascia	1. central portion of the flexor retinaculum 2. superficial portion of the palmar aponeurosis	flexes the hand at the wrist	muscular branches of ulnar artery	
<b>Flexor carpi ulnaris</b>	1. humeral head: medial epicondyle via the CFT 2. ulnar head: a) medial aspect of olecranon b) proximal 3/5 of dorsal ulnar shaft c) antebrachial fascia	1. pisiform & hamate bones (via the pisohamate ligament) 2. base of the 5th metacarpal (via the pisometacarpal ligament)	1. flexes the hand at the wrist 2. ulnarly deviates the wrist 3. stabilizes wrist to permit powerful thumb motion	muscular branches of ulnar artery	ulnar nerve, C8,T1
<b>Flexor digitorum superficialis</b>	1. humeral-ulnar head: a) medial epicondyle via the CFT b) medial boarder of base of coronoid process of ulna c) medial (ulnar) collateral ligament d) antebrachial fascia 2. radial head: oblique line of radius along its anterior surface	both sides of the base of each middle phalanx of the 4 fingers	1. flexes the proximal and middle phalanges 2. flexes the wrist if fingers are extended	1. muscular branches of ulnar artery 2. muscular branches of radial artery	median nerve, C7,8,T1
<b>Flexor digitorum profundus</b>	1. anterior & medial surface of proximal 3/4 ulna 2. adjacent interosseous membrane	distal phalanx of medial 4 digits (through the FDS tunnel)	1. flexes the distal IP joints and in so doing flexes the proximal and middle IP joints 2. flexes the wrist if fingers are extended	1. muscular branches of the ulnar artery 2. muscular branches of the radial artery 3. anterior interosseous artery (from ulnar artery)	1. medial portion: ulnar nerve, C8,T1 2. lateral portion: anterior interosseous branch of median nerve, C8,T1
<b>Flexor pollicis longus</b>	1. middle anterior surface of the radius 2. interosseous membrane 3. (may also originate from lateral boarder of coronoid process 4. or medial epicondyle)	palmar aspect of base of the distal phalanx of thumb (deep to flexor retinaculum)	1. flexes the distal phalanx of the thumb (IP joint) 2. flexes the other joints to the wrist (McP, CMc and weakly at the wrist)	1. muscular branches of radial artery 2. anterior interosseous artery	anterior interosseous branch of median nerve, C8,T1
<b>Pronator quadratus</b>	distal 1/4 anteromedial surface of ulna	distal 1/4 anterolateral surface of radius	pronates the forearm and hand	1. anterior interosseous artery 2. muscular branches of the radial artery	

## Antebrachial Extensor Musculature

Muscle	Origin	Insertion	Action	Blood	Nerve
<b>Brachioradialis</b>	1. upper lateral supracondylar ridge of humerus (between the triceps and brachialis muscles) 2. lateral intermuscular septum of humerus	1. superior aspect of styloid process of radius 2. lateral side of the distal 1/2 to 1/3 of the radius 3. antebrachial fascia	1. flexes the forearm at the elbow 2. pronates the forearm when supinated 3. supinates the forearm when pronated	radial recurrent artery	radial nerve, C5,6  (or deep branch of radial nerve)
<b>Extensor carpi radialis longus</b>	1. lower lateral supracondylar ridge (below the brachioradialis) 2. lateral intermuscular septum of humerus	base of 2nd metacarpal	1. extends the hand at the wrist 2. radially deviates the hand at the wrist 3. weakly flexes the forearm at the elbow 4. weakly supinates the forearm		
<b>Extensor carpi radialis brevis</b>	1. lateral epicondyle via the CET (common extensor tendon) 2. radial collateral ligament 3. antebrachial fascia	base of 3rd metacarpal	1. extends the hand at the wrist 2. radially deviates the hand at the wrist		
<b>Extensor digitorum</b>	1. lateral epicondyle via the CET 2. antebrachial fascia	1. base of middle phalanx of each of the four fingers (central band) 2. base of distal phalanx of each of the four fingers (2 lateral bands)	1. extends the four medial digits 2. extends the wrist (if fingers flexed) 3. abducts the digits (spreads the digits as it extends them)	posterior interosseous artery	posterior interosseous nerve of radial nerve, C6,7,8
<b>Extensor digiti minimi</b>	1. lateral epicondyl via the CET 2. antebrachial fascia 3. ulnar aspect of extensor digitorum	1. base of middle phalanx of the 5th digit (central band) 2. base of distal phalanx of the 5th digit (2 lateral bands)	1. extends the 5th digit 2. abducts the 5th digit		
<b>Extensor carpi ulnaris</b>	1. 1st head: lateral epicondyle via CET 2. 2nd head: posterior body of ulna 3. antebrachial fascia	medial side of base of the 5th metacarpal	1. extends the hand at the wrist 2. ulnarly deviates the hand at the wrist		
<b>Supinator</b>	1. lateral epicondyle of humerus 2. supinator crest of ulna 3. radial collateral ligament 4. annular ligament 5. antebrachial fascia	proximal portion of anterolateral surface of the radius	supinates the forearm	radial recurrent artery	deep branch of radial nerve, C6
<b>Abductor pollicis longus</b>	1. posterior surfaces of ulna and radius 2. interosseous membrane 3. antebrachial fascia	lateral aspect of base of 1st metacarpal	1. abducts the 1st metacarpal 2. assists to extend & rotate the thumb 3. radially deviates the hand at the wrist 4. flexes the hand at the wrist	posterior interosseous artery	posterior interosseous nerve of radial nerve, C6,7,(C8)
<b>Extensor pollicis brevis</b>	1. posterior surfaces of radius (below abductor pollicis longus) 2. interosseous membrane 3. antebrachial fascia	base of proximal phalanx of thumb (often a slip inserts into extensor pollicis longus tendon)	1. extends the proximal phalanx and 1st metacarpal of the thumb 2. radially deviates the hand at the wrist		
<b>Extensor pollicis longus</b>	1. posterior surface of ulna 2. interosseous membrane 3. antebrachial fascia	distal phalanx of thumb	1. extends distal phalanx of thumb 2. extends proximal phalanx of thumb 3. assists to extend the hand at the wrist (if fingers flexed)	posterior interosseous nerve of radial nerve, C6,7,8	
<b>Extensor indicis</b>	1. posterior surface of ulna (distal to extensor pollicis longus) 2. interosseous membrane 3. antebrachial fascia	base of middle and distal phalanx of the index finger	1. extends the 2nd digit (McP & IP joints) 2. adducts the 2nd digit 3. assists to extend the hand at the wrist 4. stabilizes MCP joint for flexion of IP solely		

## Hand & Wrist Musculature

Muscle	Origin	Insertion	Action	Blood	Nerve
<b>Abductor pollicis brevis</b>	1. distal border of flexor retinaculum 2. trapezium (may be variable)	1. lateral aspect of base of proximal phalanx of the thumb 2. may also send a slip to the tendon of extensor pollicis longus	1. abducts thumb (at the McP joint) 2. participates to flex the thumb (at the McP joint) 3. if attached to extensor pollicis longus, it might assist to extend the thumb	superficial palmar branches of radial artery	recurrent branch of median nerve, C8,T1
<b>Flexor pollicis brevis</b>	1. superficial head a) distal border of flexor retinaculum b) trapezium 2. deep head a) floor of carpal tunnel b) indirectly to scaphoid & trapezium	1. base of proximal phalanx of thumb 2. can also attach to the lateral sesamoid bone at the McP joint	powerfully flexes the thumb (at the McP joint)		1. superficial head: recurrent branch of median nerve, C8,T1 2. deep head: deep branch of ulnar nerve, C8,T1
<b>Opponens pollicis</b>	1. distal border of flexor retinaculum 2. trapezium	lateral aspect of the 1st metacarpal	opposes the thumb to the fingers		recurrent branch of median nerve, C8,T1
<b>Adductor pollicis</b>	1. transverse head: 3rd metacarpal 2. oblique head: a) base of 1st, 2nd and 3rd metacarpals b) floor of carpal tunnel	1. medial aspect of the base of proximal phalanx 2. medial sesamoid at McP	1. adducts the thumb 2. may assist to flex the thumb (at the McP joint)		deep branch of ulnar nerve, C8,T1
<b>Palmaris brevis</b>	medial margin of palmar aponeurosis	1. skin of ulnar border of palm 2. may insert on the pisiform	tenses the skin on the ulnar side of the palm, which is used in a grip action	superficial palmar branches of ulnar artery	superficial branch of ulnar nerve, C8,T1
<b>Abductor digiti minimi</b>	pisiform & tendon of flexor carpi ulnaris	1. medial aspect of the base of proximal phalanx of the 5th digit 2. may send a slip to the ulnar side of the dorsal expansion	1. abducts the 5th digit (requires pisiform stabilized by FCU) 2. assists to flex the 5th digit (at McP) 3. may assist in extension of 5th digit (at IP due to slips to extensor digitorum)	deep palmar branches of ulnar artery	deep branch of ulnar nerve, C8,T1
<b>Flexor digiti minimi brevis</b>	1. distal border of flexor retinaculum 2. hook of the hamate	medial aspect of the base of proximal phalanx	flexes the 5th digit (at the McP joint)		
<b>Opponens digiti minimi</b>	1. distal border of flexor retinaculum 2. hook of the hamate	medial aspect of the 5th metacarpal	1. opposes the 5th digit with the thumb 2. assists to "cup" the palm		
<b>Palmar interossei</b>	from the side of the metacarpal that faces the midline - to adduct them	1. on the base of the proximal phalanx of the digit of origin (same side toward the midline) 2. extensor hood of the same digit(s)	1. adducts the fingers (hint: PAD) 2. flexes the fingers (at the McP while IP joints are extended)	palmar metacarpal artery of deep palmar arch	
<b>Dorsal interossei</b>	between each metacarpal	1. directly distal to the origin on the base of the proximal phalanx closest to the midline (to abduct them.) 2. extensor hood of the same digit(s)	1. abducts the fingers (hint: DAB) 2. flexes the fingers (at the McP while IP joints are extended)		
<b>Lumbricals</b>	tendon of flexor digitorum profundus 1 & 2 have a single head of origin (from radial aspect of tendon) 3 & 4 have two heads of origin (each head from an adjacent tendon)	extensor hood of digits 2-5	1. flexes the fingers (at the McP joints) 2. extend IPs		

Pages 7 – 22 are intentionally not present in the un-registered version.

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