

**FREE to Healy's Clients please refer to reference books at the end of this Booklet and we strongly advise all Client to purchase the books Listed for further in Depth Studies to Complete your Health & Fitness Library**

***Free Information for 'Healy's clients'***

## ***"FUNCTIONAL ANATOMY"***

***by Graham Healy***

**[www.healyshealth.com](http://www.healyshealth.com)**



# "FUNCTIONAL ANATOMY INTRODUCTION"

by Graham Healy

Have you ever looked at an anatomy chart and wondered where do the muscles 'connect' and to what 'bone'? I know I have and could never 'figure out' how the actual muscle functioned relative to the exercise that I was performing.

It all gets very 'technical' when you hear the 'scientific' explanations etc so when I asked my lecturer this very question as to 'how he knew what 'attached to what' he recommended the following book **ATLAS OF THE SKELETAL MUSCLES** by Robert J. Stone & Judith A. Stone (Wm. C. Brown publishers USA) which I recommend if you require 'in depth' studies.

The purpose of this **PRACTICAL BOOKLET** is to give you some **BASIC FUNCTIONAL ANATOMY KNOWLEDGE** with the 'KISS' principle in mind (keep it simple), also it will give you a basic 'outline' of the simplified training methods and why we do them this way.

I find in **GYMS** 'everybody is an expert' and to the beginner it can be 'VERY CONFUSING' And just because somebody (he or she) is a 'body builder' doesn't mean they know all the answers, in fact it can mean just the opposite in most cases. In this business you have to be able to mix theory, with **PRACTICAL APPLICATION** this is usually based on 'real experience' basis.

As the old saying goes **'ONE OUNCE OF PRACTICE EQUALS 10 TON OF THEORY'**

What you have to realize that Physique can be largely 'genetical' and many of the 'body-builders' have or ARE using steroids to produce results (artificially!)

**MY FOCUS IS ON THE 'ORDINARY' PERSON** giving my clients a basic understanding of the **WHY'S** and **HOW'S** we are doing what we are doing, also, regarding Genetics, you may inherit your bone structure from your parents, but you do not inherit **BODY FAT LEVELS** (even though you may 'inherit' eating habits)

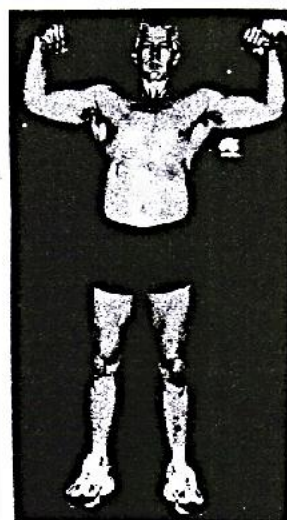
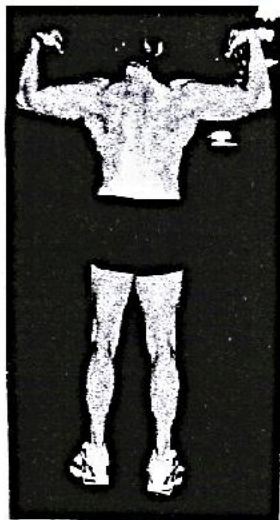
**SO BY CONTROLLING THE DIET WE CAN 'ALWAYS' REDUCE BODY-FAT LEVELS**, and provided we control all other elements a) weights training for muscle tone b) cardio (heart and lungs) ...also, this is very relevant to the activity ie 'horses for courses' c) Nutrition 'correct levels of fats, carbs and proteins d) **TESTING RESULTS** on a 4 weekly basis (to make sure you are losing **BODY-FAT** not valuable muscle tissue 'remember' 1 kg of muscle burns 120 calories per day!) **ALL THIS HAS TO BE DONE IN SYNERGY!**

**UNDERNEATH THE 'BODY FAT' LEVELS WE ALL HAVE A 'SIX PACK' ABS...**

(SOME 4 PACK DUE TO GENETICS) But the **BOTTOM LINE** is that we become a **'LIFE LONG HEALTH & FITNESS ADVOCATE'** and if I have 'enlightened' you along the way then I believe, I have successfully **'EDUCATED & MOTIVATED'** you to a point of making your 'training' a part of your life then its all worth it!

Yours in health,

Graham Healy



## Free Information for 'Healy's clients'

The 'Functional Anatomy' guide is 'free information' to our clients to further 'educate' 'why' and 'how' we do the exercises we do 'putting it all together' please refer to the reference sources of manuals and books from 'my library' that helped me 'put it all together' for you. I recommend that you 'purchase' the reference material yourself for 'in depth educational back-up'

This booklet is not intended for resale or to detract from the reference material



**DELTOIDEUS/TRAPEZIUS/RHOMBOIDEUS.....DELTS, TRAPS, 'UPPER BACK AROUND SHOULDER BLADE'**  
 Basically, the shoulders are probably the most 'overworked muscle' especially the anterior deltoid (front of shoulder), in the chest & back exercises, so to 'minimize' the overworking of the shoulders. The principle I use here is that we keep the exercises 'compound' such as the 'Clean & press.' This 'basic exercise' dynamically involves the lower back, legs, and total shoulder in the rotation movement (especially traps) and I find is the KING of shoulder and back exercises. Using the basic principle of 'Compound' to 'isolation' to 'finish off the exercise'. I apply the following Breaking down the basic Clean & press movement a) upright rows b) front presses c) side raises with 'thumbs' down to isolate 'mid delts' and d) rear delts (this is an important and often 'forgotten about' exercise and is relatively 'easy to develop). Again I do not recommend 'shoulders' on a chest/back day as you have 'already worked them'....better off on a Leg day ie Legs & shoulders (refer program)

3 'HEADS' OF DELT  
 ANTERIOR (FRONT)  
 MID (CENTRE)  
 POSTERIOR (REAR)

(UP) (IN) (DOWN)

**DELTOIDEUS**

**Origin**  
 Anterior portion—lateral border and superior surface of the acromion process  
 Middle portion—lateral border of the scapular process  
 Posterior portion—lower border of the crest of the spine of the scapula

**Insertion**  
 Deltoid tuberosity, on the middle of the lateral surface of the shaft of the humerus

**Action**  
 Abducts arm (middle portion), flexes and medially rotates arm (anterior portion), extends and laterally rotates arm (posterior portion)

**Nerve**  
 Axillary nerve (C5, C6)

STANDING FRONT OF CHEST

FRONT DELT  
 TRAPES  
 CLAVICULAR ACTION

FOCUS MID DELT

SIDE RAISE CABLES MID DELT

SIDE RAISES 'LATERAL OR SAGITTAL' THUMB DOWN

FOCUS MID DELT

NOTE: THUMB TURNED DOWN SUPPLIES MID DELT (GRANT'S DOWNWARD RAISE THEM'S DOWN HERE)

(CLEAN & PRESS) START

BK CHOKE TO SHIN

(CLEAN BAR TO CHEST) (UPRIGHT ROWS & SQUEEZES)

NOTE: LOWER CLEAVES CAN BE PRACTICED SEPARATELY

(PRESS)

POWER UP RIGHT ROWS

FRONT & MID DELT  
 UPPER TRAPS

REAR DELTS IN FLYS  
 TRAPS - RHOMBOIDEUS

POSTERIOR VIEW

**RHOMBOIDEUS MAJOR**

Posterior view

**Origin**  
 Spine of the second to fifth thoracic vertebrae, supraspinous ligament

**Insertion**  
 Medial border of the scapula below the spine

**Action**  
 Retracts and fixes scapula, elevates the medial border of the scapula, rotates the scapula to depress the lateral angle (assists in adduction of arm)

**Nerve**  
 Dorsal scapular nerve (C5)

**RHOMBOIDEUS MINOR**

Origin

**Insertion**  
 Lateral third of clavicle, medial margin of acromion, entire length of spine of scapula

**TRAPEZIUS**

Posterior view

**Origin**  
 Medial third of superior nuchal line, external occipital protuberance, ligamentum nuchae, spinous processes and supraspinous ligaments of seventh cervical and all thoracic vertebrae

**Insertion**  
 Lateral third of clavicle, medial margin of acromion, entire length of spine of scapula

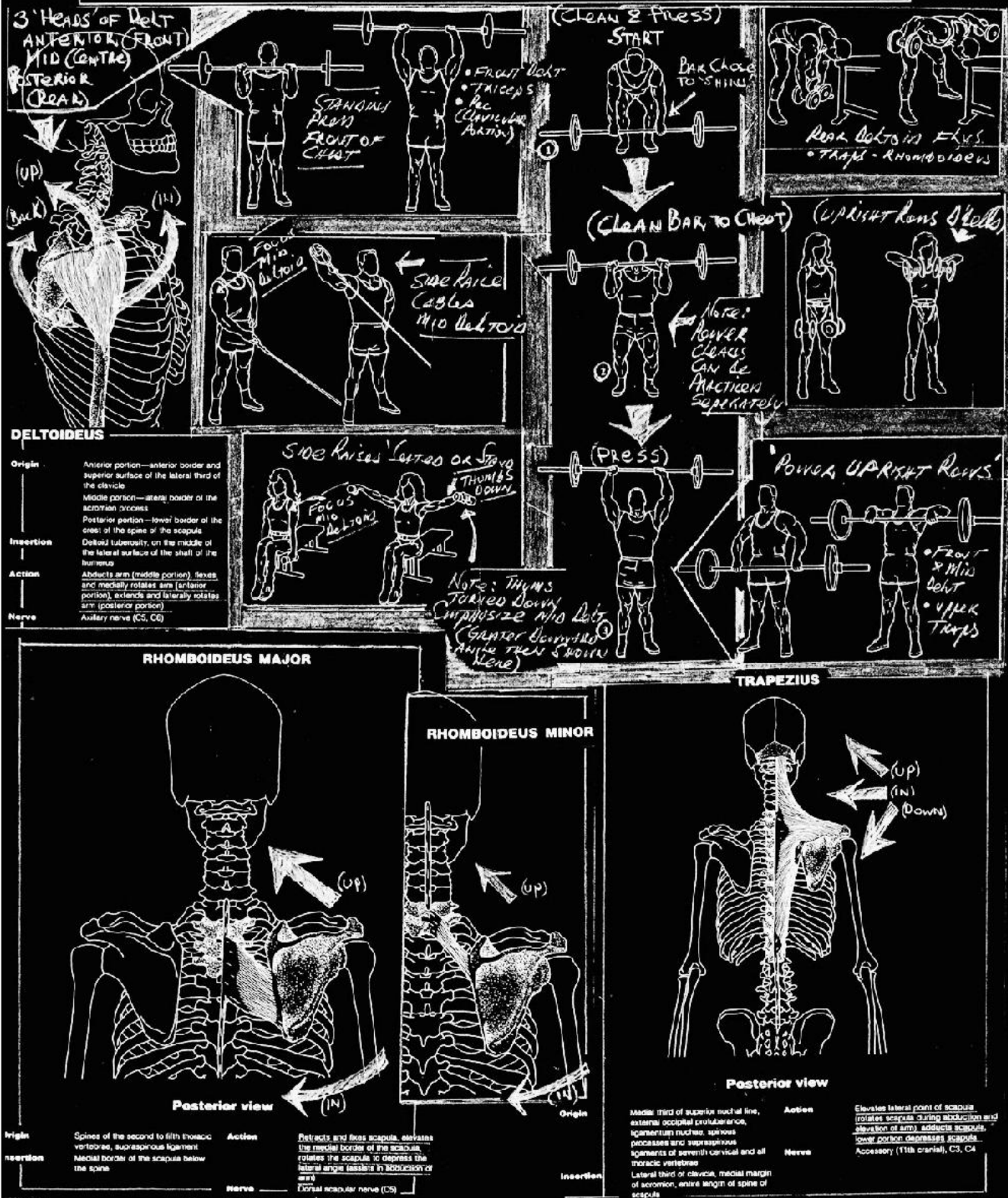
**Action**  
 Elevates lateral point of scapula (rotates scapula during abduction and elevation of arm), adducts scapula, lower portion depresses scapula

**Nerve**  
 Accessory (11th cranial), C3, C4

# Deltoideus/Trapezius/Rhomboideus



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## Deltoideus/Trapezius/Rhomboideus



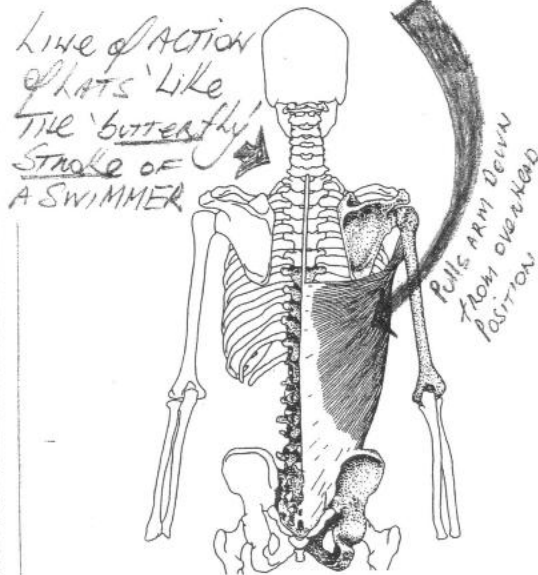
## LATISSIMUS DORSI, or 'Lats'

Basically, the problem with developing the LATS is that the various exercises involve the 'biceps'. And this becomes the 'limiting factor'. This is why I 'highly recommend' the dumbbell pullovers, Cable pullovers or if available a 'nautilus' pullover machine. If you 'pre-exhaust' the lats with a pullover technique, then 'fire' up with a 'Lat' exercise that requires use of the 'biceps' then you have a greater chance to fatigue the 'targeted muscles' namely the LATS!

So, when doing BACK I recommend combining a 'pullover' technique with LAT pull or LAT Row, in 'pre-exhaustion' with descending sets (refer training program).

The mental picture I always tell my clients is to imagine a 'butterfly swimmer' in action...this is primarily how the Lats work, so exercises as close to 'mimicking' this is best and overcoming the problem of the weakest link (the biceps) has to be accounted for in designing the exercise program.

### LATISSIMUS DORSI

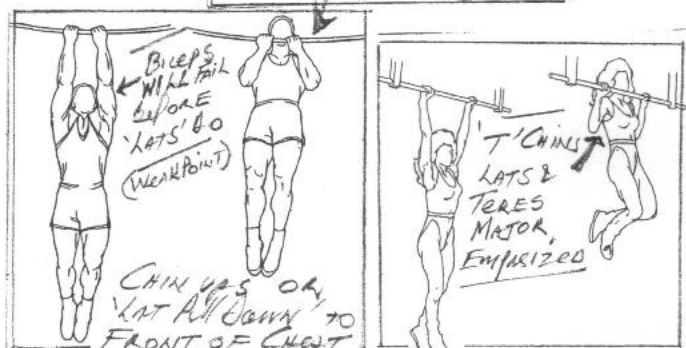


Posterior view

<b>Origin</b>	Spinous processes of the lower six thoracic vertebrae, lumbar vertebrae, sacral vertebrae, supraspinal ligament, and posterior part of the iliac crest through the lumbar (thoracolumbar) fascia, lower three or four ribs, inferior angle of the scapula	<b>Action</b>
<b>Insertion</b>	Floor (bottom) of the bicipital groove of humerus	Extends, adducts, and medially rotates the arm, draws the shoulder downward and backward, keeps inferior angle of scapula against the chest wall, accessory muscle of respiration
		<b>Nerve</b>

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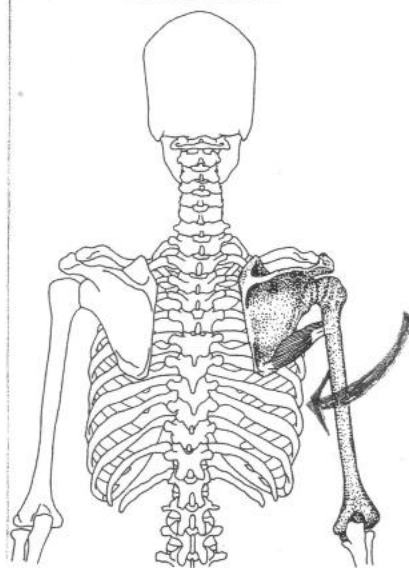
Thoracodorsal nerve, (C6-C8)



(NOTE: Biceps in 'STRONGEST' POSITION)



### TERES MAJOR

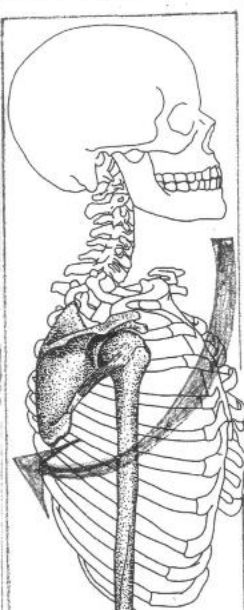


Posterior view

<b>Origin</b>	Lower third of the posterior surface of the lateral border of the scapula, near the inferior angle	<b>Action</b>
	Medial lip of the bicipital groove of the humerus	Medially rotates arm, adducts arm, extends arm
		<b>Nerve</b>

Medially rotates arm, adducts arm, extends arm

Lower subscapular nerve (C5, C6)

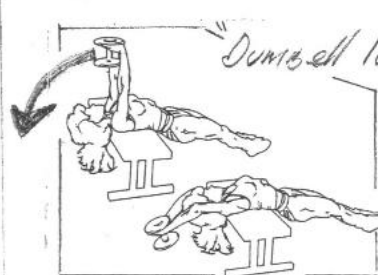
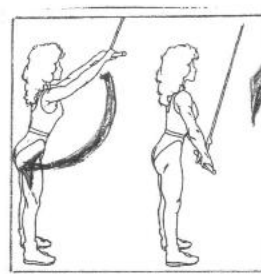


Lateral view

### TERES MINOR

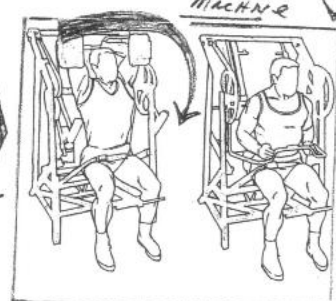
<b>Origin</b>	Upper two-thirds of the dorsal surface of the axillary border of the scapula	<b>Action</b>
<b>Insertion</b>	The capsule of the shoulder joint, the lower facet of the greater tuberosity of the humerus	Laterally rotates arm, weakly adducts arm, draws humerus toward glenoid fossa, stabilizes the shoulder joint (rotator cuff)
		<b>Nerve</b>

Axillary nerve (C5)



NOTE: use of Biceps Bi-Phase with NAUTILUS MACHINE

NAUTILUS PULLOVER MACHINE DESCRIBES THE PERFECT 'ARC' OF THE LATS





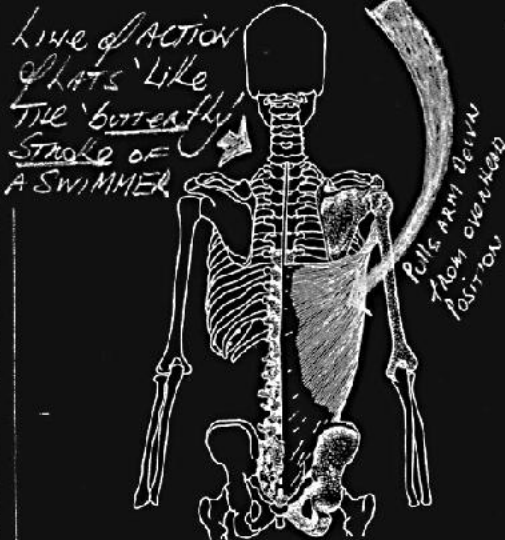
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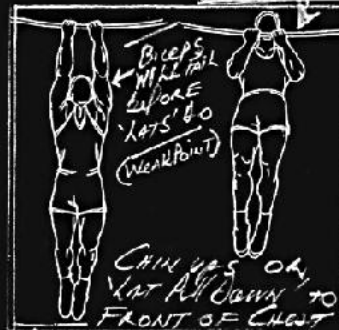
### LATISSIMUS DORSI



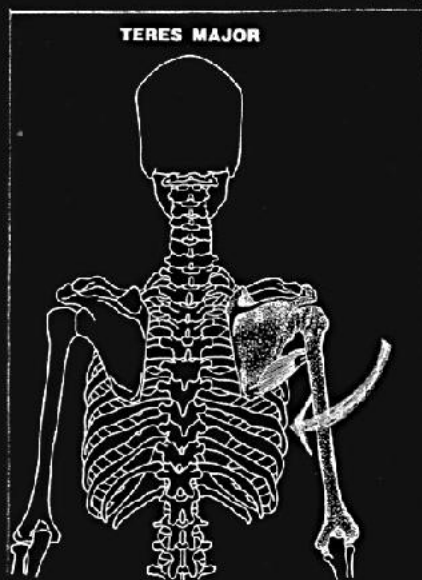
Posterior view

**Origin** Spinous processes of the lower six thoracic vertebrae, lumbar vertebrae, sacral vertebrae, supraspinal ligament, and posterior part of the iliac crest through the lumbar (thoracolumbar) fascia, lower three or four ribs, inferior angle of the scapula.  
**Insertion** Floor (bottom) of the bicipital groove of humerus.

**Action** Extends, adducts, and medially rotates the arm, draws the shoulder downward and backward, keeps inferior angle of scapula against the chest wall, accessory muscle of respiration.  
**Nerve** Thoracodorsal nerve. (C5-C8)

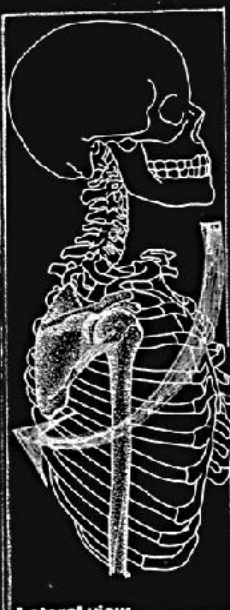


(NOTE: BICEPS IN 'STRONGEST' POSITION)



Posterior view

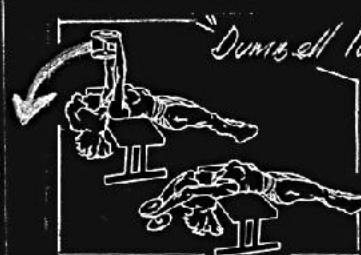
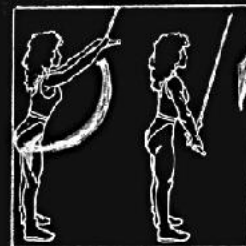
**Origin** Lower third of the posterior surface of the lateral border of the scapula, near the inferior angle.  
**Insertion** Medial lip of the bicipital groove of the humerus.  
**Action** Medially rotates arm, adducts arm, extends arm.  
**Nerve** Lower subscapular nerve (C5, C6).



Lateral view

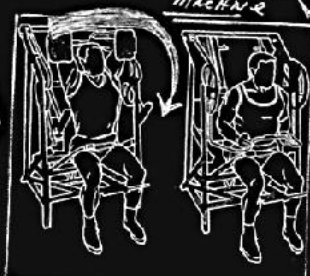
### TERES MINOR

**Origin** Upper two-thirds of the dorsal surface of the axillary border of the scapula.  
**Insertion** The capsule of the shoulder joint, the lower facet of the greater tuberosity of the humerus.  
**Action** Laterally rotates arm, weakly adducts arm, draws humerus toward glenoid fossa, stabilizes the shoulder girdle (rotator cuff).  
**Nerve** Axillary nerve (C5).



NOTE: use of Biceps 'Bi-Phase' WITH NAUTILUS MACHINE

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## PECTORALIS MAJOR/MINOR or 'pecs'

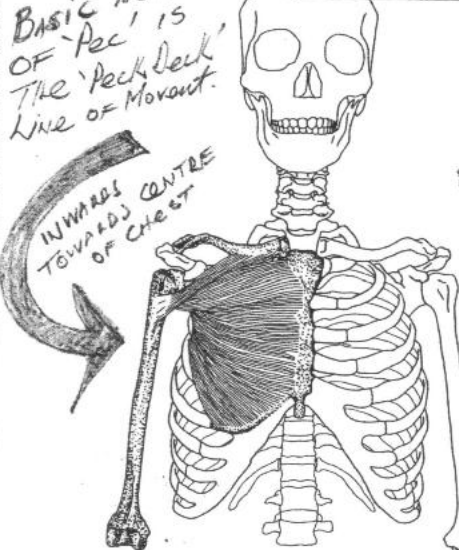
Basically the 'pecs' perform the 'inward' movement of the 'humerus bone' or upper arm. So, the 'pecs' prime movement is in a 'pec deck' like fashion. The weak point in doing 'pecs' is always the 'triceps' when doing any 'pressing movements' ie various bench presses, incline, decline etc (notice I leave out flat bench press? why? Because I believe the focus is more triceps and front deltoid(shoulder) with minimal stretch on the 'pecs' so, I basically recommend INCLINE, DECLINE and the various form of 'pec' deck or cable flys etc.

Even when doing so call 'flat bench' in the case of dumbbell presses, I always decline the bench by putting a couple of 'plates' under the front thereby maximizing the 'stretched' position of the chest. With all this in mind we basically combine a 'pressing' movement (incline or decline) with a flying movement, using the techniques of pre-exhaustion, forced reps, descending sets etc (all of this is explained in the training program)

BASIC ACTION OF 'Pec' IS THE 'Pec Deck' LINE OF MOVEMENT.

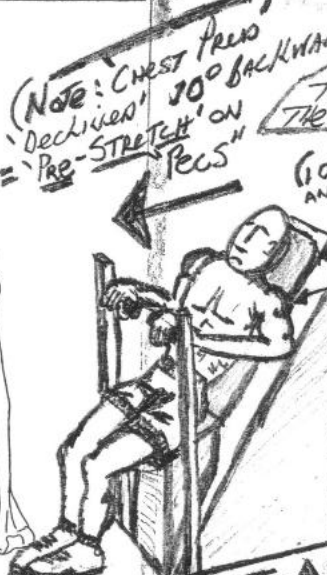
INWARD CENTRE TOWARDS OF CHEST

### PECTORALIS MAJOR



Anterior view

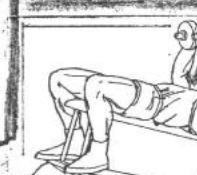
Origin	Medial half of the clavicle, sternum, first six costal cartilages, aponeurosis of the external oblique	Action	Adducts the arm, flexes arm, rotates the arm medially, depresses the arm and shoulder
Insertion	Lateral lip of intertubercular (bicipital) groove of humerus, crest below greater tubercle of the humerus	Nerve	Medial and lateral pectoral nerves (C5-C8, T1)



TRICEPS INVOLVED THEREFORE THE 'WEAK LINK'

DECLINE BENCH STRETCH VERY IMPORTANT

(PRE-STRETCH)



Decline Flys Note: STRETCH VERY IMPORTANT

By using 'Dumbbells' & 'The Decline' POSITION, THE 'STRETCH' AROUND THE SHOULDER, IS MAXIMIZED

Note: THE 'Pre-STRETCH' IS VERY IMPORTANT THIS IS WHY SOME PREFER 'Dumbbells' GOOD 'COMMERCIAL' MACHINES

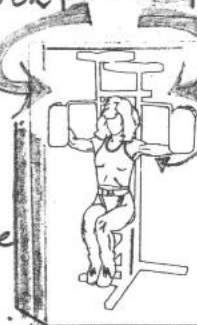
### PECTORALIS MINOR



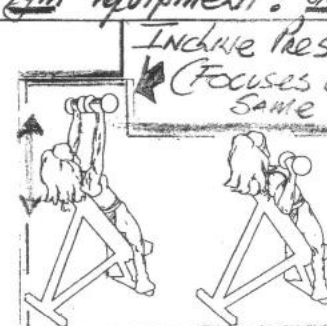
Anterior view

Origin	External surfaces of the third, fourth, and fifth ribs	Action	Draws scapula forward and downward, raises ribs in forced inspiration
Insertion	Coracoid process of the scapula	Nerve	Medial pectoral nerve (C8, T1)

SHOULDER FACTOR THIS IN TO THE DESIGN HOWEVER, THIS IS NOT ALWAYS THE CASE .... CARE MUST BE TAKEN WHEN SELECTING A 'SYM' ESPECIALLY HOME GYM EQUIPMENT! GET 'PROFESSIONAL' ADVICE



Pec Deck, Cables etc Note: TRICEPS NOT INVOLVED



Incline Press, Dumbbells, Cables (Focuses on 'upper Pecs' in SAME FASHION THAT Decline Focused on LOWER Pecs)



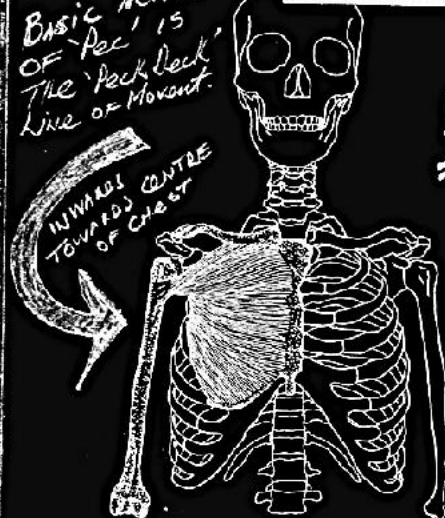
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BASIC ACTION OF Pec 1 IS The 'Pec Deck' Line of Movement.

### PECTORALIS MAJOR

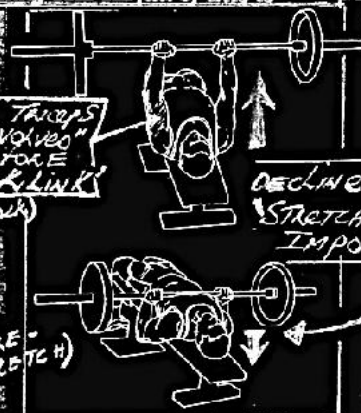


Anterior view

Origin	Medial half of the clavicle, sternum, first six costal cartilages, epicondyles of the humerus	Action	Adducts the arm, flexes arm, rotates the arm medially, depresses the arm
Insertion	Lateral lip of intertubercular (tuberosity) groove of humerus, costal below greater tubercle of the humerus	Nerve	Muscular and lateral pectoral nerves (C5-C8, T1)



CHEST PRESS



DECLINE BENCH STRETCH VERY IMPORTANT!



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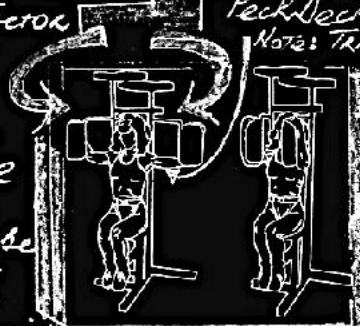
### PECTORALIS MINOR



Anterior view

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Pec Deck, Cables etc Note: TRAPPS NOT INVOLVED

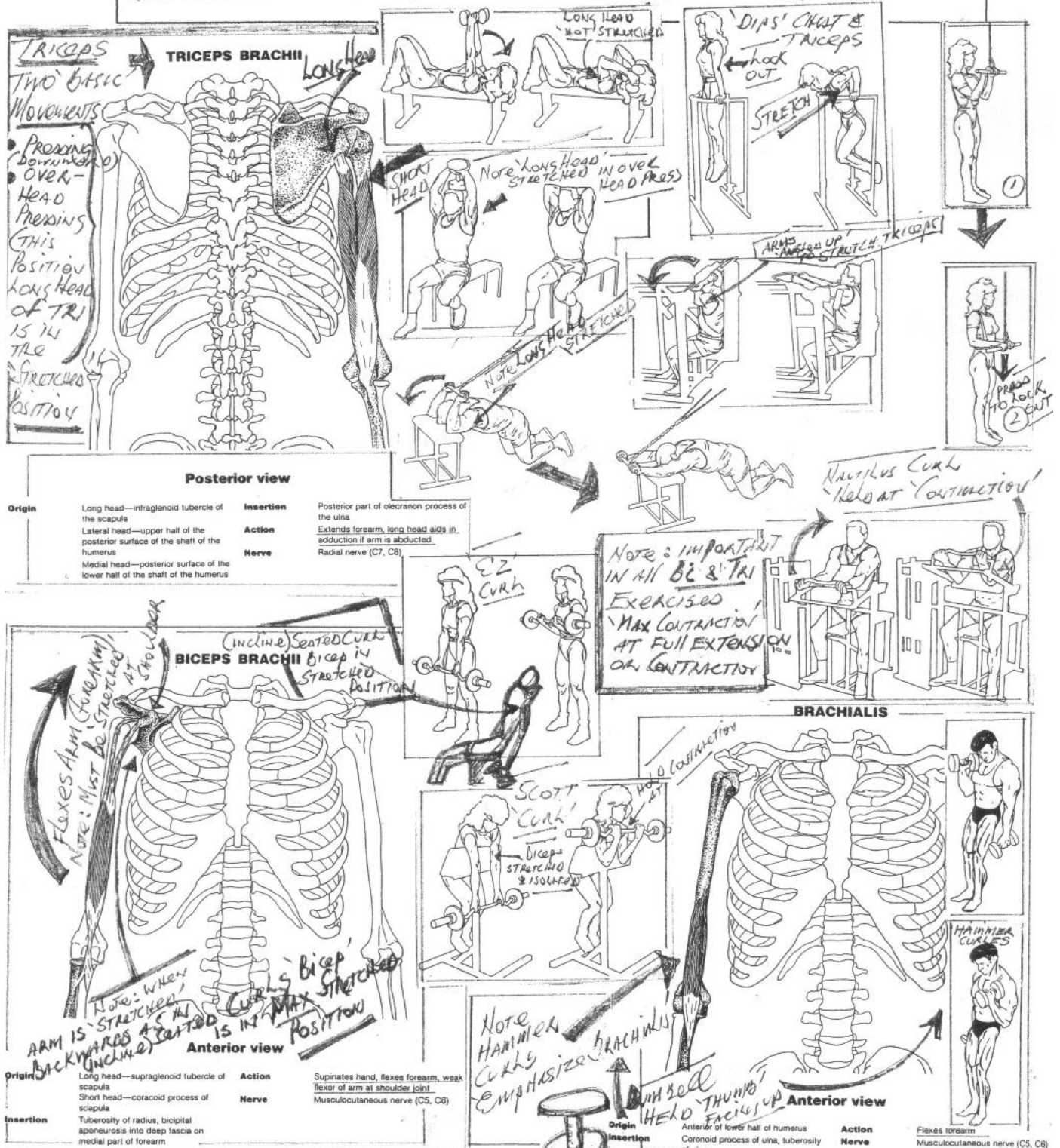


Incline Press, Dumbbells, Cables (Focuses ON 'UPPER Pecs' IN SAME FASHION THAT Decline Focused ON LOWER Pecs)



# ARMS BICEPS & TRICEPS ...Bi & Tri's

The problem with the 'arms' is that they are always involved in any movement with CHEST & BACK & SHOULDERS accordingly they are the 'weak link' in most exercises involving all three mentioned. Generally they suffer from 'overuse' as most 'bodybuilding' programs are set up to treat each body part as 'separate' ? I find that the 'trick' is to separate the BPS & TRP'S away from the chest & Back days or when doing Chest (tri's automatically used in pressing movements) Do BICEPS ie Chest & Bi's Likewise, Back & tri's (as back exercises are primarily 'pulling' ie use of Biceps...or shoulders/traps /triceps seems to work well (3 to 4 sets of shoulders seems to act as a 'warm up' for FOCUSED tri's. Also, I find that Bi's & Tri's respond very well to 'super setting' or Bi-tri exercises back to back. \*note if you want to increase POWER/POUNDAGE in PRESSING movements ie chest/shoulders, 'blitz' the tri's as above and see the pressing improve, likewise the 'Blitzing'Bi's will improve BACK pulling strength automatically. At the 'end of the day RECOVERY is the KEY and more isn't better ! so, in my opinion 'BLITZ the ARMS' seperately once per week...let them recover and watch your power improve on all your Chest pressing movements, and your BACK pulling movements ( also for the ladies the 'concern' is always FAT build-up on triceps...train this way and watch those TRP'S firm up...and of course your Nutrition plan applies as always to ultimately 'control' Fat -Level build-ups again 'Bottom Line' is INTENSITY,RECOVERY.....= RESULTS (increased strength/tone)





ARMS BICEPS & TRICEPS ...Bi & Tri's

The problem with the 'arms' is that they are always involved in any movement with CHEST & BACK & SHOULDERS accordingly they are the 'weak link' in most exercises involving all three mentioned. Generally they suffer from 'overuse' as most 'bodybuilding' programs are set up to treat each body part as 'separate' ? I find that the 'trick' is to separate the Bi's & Tri's away from the chest & Back days or when doing Chest (tri's automatically used in pressing movements) Do BICEPS ie Chest & Bi's Likewise, Back & tri's(as back exercises are primarily 'pulling' is use of Biceps...or shoulders/traps /triceps seems to work well /3 to 4 sets of shoulders seems to act as a 'warm up' for FOCUSED tri's. Also, I find that Bi's & Tri's respond very well to 'super setting' or Bi-tri exercises back to back. "note if you want to increase POWER/POUNDAGE in PRESSING movements ie chest/shoulders, 'blitz' the tri's as above and see the pressing improve, likewise the 'Blitzing'Bi's will improve BACK pulling strength automatically. At the 'end of the day RECOVERY is the KEY and more isn't better ! so, in my opinion 'BLITZ' the ARMS' seperately once per week...let them recover and watch your power improve on all your Chest pressing movements, and your BACK pulling movements ( also for the ladies the 'concern' is always FAT build-up on triceps...train this way and watch those TRPS firm up...and of course your Nutrition plan applies as always to ultimately 'control' Fat -Level build-ups again 'Bottom Line' is INTENSITY,RECOVERY.....= RESULTS (increased strength/size)

**TRICEPS**  
Two basic Movements

Pressing (downward) OVER-HEAD flexing THIS POSITION LONG HEAD OF TRI IS IN THE STRETCHED POSITION

**TRICEPS BRACHII**

LONG HEAD NOT STRETCHED

SHOULDER HEAD

NOTE: LONG HEAD 'STRETCHED' IN OVER HEAD PRESS

**DIPS' CHEST & TRICEPS**

HOOK OUT

STRETCH

ARM UP STRETCH TRICEPS

HEAD TO KNEE 2nd

**Posterior view**

<b>Origin</b>	Long head—inferior end of the scapula Lateral head—upper half of the posterior surface of the shaft of the humerus Medial head—posterior surface of the lower half of the shaft of the humerus	<b>Insertion</b>	Posterior part of olecranon process of the ulna
<b>Action</b>		<b>Action</b>	Extends forearm, long head aids in adduction if arm is abducted
<b>Nerve</b>		<b>Nerve</b>	Radial nerve (C5, C6)

**SCOTT'S CURB**

SCOTT'S CURB

**BRACHIALIS**

BRACHIALIS

NOTE: IMPORTANT IN ALL Bi & Tri EXERCISES 'MAX CONTRACTION' AT FULL EXTENSION OR CONTRACTION

**BICEPS BRACHII**

(Incline) Seated Curl

ARM IS STRETCHED BACKWARDS AS IN (Incline) STARTED IS IN MAX POSITION

FLARES ARM (FORWARD) NOTE: MUST BE STRETCHED AT SHOULDER

NOTE: WHEN ARM IS STRETCHED BACKWARDS AS IN (Incline) STARTED IS IN MAX POSITION

**SCOTT'S CURB**

SCOTT'S CURB

Biceps STRETCHED & ISOLATED

NOTE: HANDED CURLS EMPHASIZES BRACHIALIS

ARM BALL HELD THUMB UP

**Anterior view**

Anterior view

Origin: Long head—supraglenoid tubercle of scapula; Short head—coracoid process of scapula

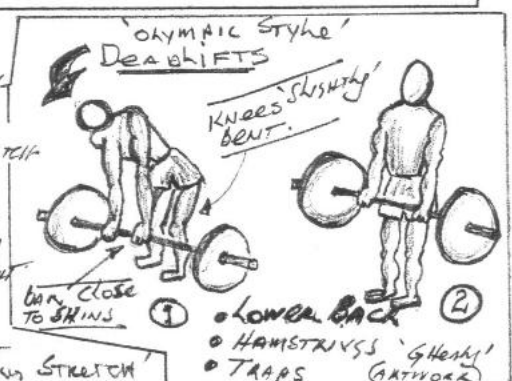
Insertion: Tuberosity of radius; distal humerus into deep fascia on medial part of forearm

Action: Supinates hand; flexes forearm, weak flexor of arm at shoulder joint

Nerve: Musculocutaneous nerve (C5, C6)

# Arms Biceps & Triceps.



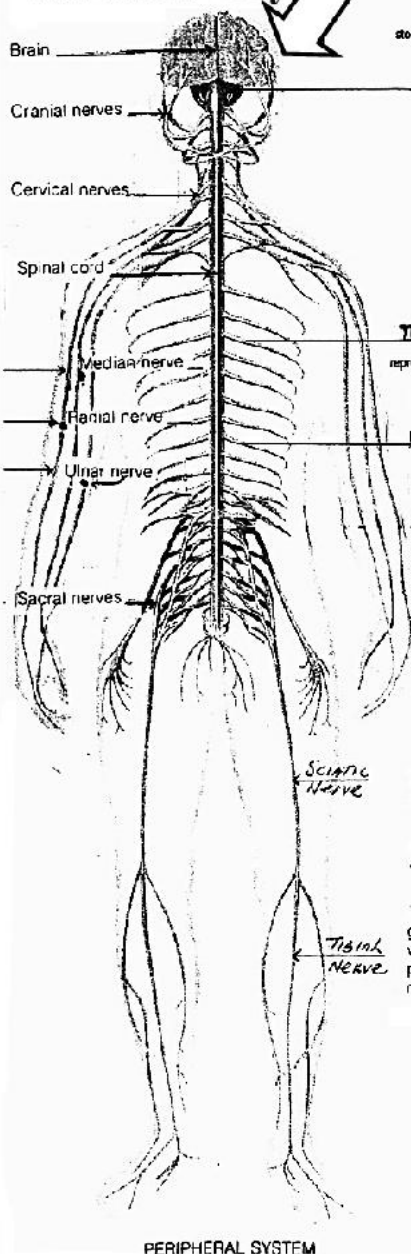




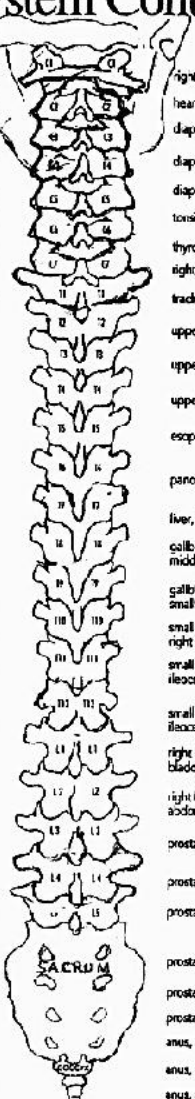
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## Your Nervous System Controls Everything

### Nervous System 'Network in Human Body



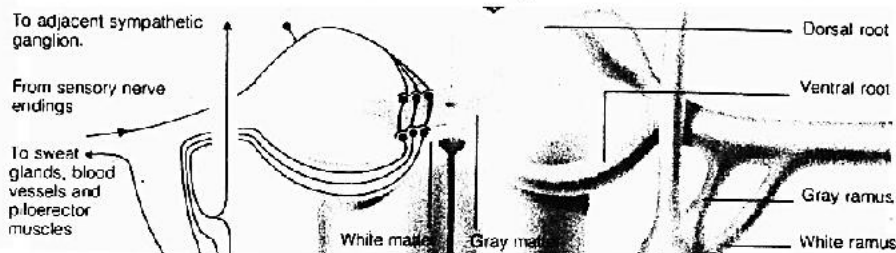
pituitary gland, scalp, brain, left ear, left eye  
head, eyes, tongue, left ear, left eye, heart  
face, left side of neck, left ear, left shoulder, diaphragm  
face, left side of neck, left chest, diaphragm  
neck, vocal cords, left shoulder and upper arm, diaphragm  
left shoulder, left arm, tonsils  
left shoulder, left arm, left wrist, left hand, thyroid  
left shoulder, left arm, left elbow, left wrist, left hand  
head, neck, heart, thyroid, esophagus, trachea, left hand and elbow  
head, neck, heart, left lung, upper left arm  
head, neck, heart, left lung, chest, upper left arm  
head, neck, heart, lungs, gallbladder, upper left arm  
head, neck, heart, liver, esophagus, blood circulation, upper left arm  
esophagus, stomach, spleen, pancreas, duodenum, middle back  
stomach, spleen, pancreas, duodenum, liver, gallbladder, middle back  
stomach, spleen, pancreas, liver, gallbladder, middle back  
stomach, spleen, pancreas, adrenal glands, gallbladder, middle back  
stomach, spleen, pancreas, small intestine, reproductive organs, liver, small intestine  
stomach, spleen, pancreas, small intestine, reproductive organs, appendix, large intestine, left leg  
left kidney, reproductive organs, left leg, small intestine, large intestine, bladder, adrenal glands, ileocecal valve  
left kidney, reproductive organs, left leg, small intestine, large intestine, bladder, upper and lower back, ileocecal valve  
abdomen, reproductive organs, left leg and foot, large intestine, bladder  
reproductive organs, left leg and foot, intestine, bladder, appendix, abdomen  
reproductive organs, bladder, prostate, large intestine, left leg and foot  
left buttocks, left leg and foot, prostate, muscles of the lower back  
left buttocks, left leg, foot and toes, prostate  
left buttocks, left leg and foot, bladder, prostate  
left buttocks, left leg, reproductive organs, bladder, prostate  
left buttocks, left leg, reproductive organs, bladder, prostate  
reproductive organs, anus  
rectum, anus  
rectum, anus



right eye, right ear, brain, scalp, pituitary gland  
heart, right eye, right ear, tongue, eyes, head  
diaphragm, right shoulder, right ear, right side of neck, face  
diaphragm, right chest, right side of neck, face  
diaphragm, right shoulder and upper arm, vocal cords, neck  
tonsils, right arm, right shoulder  
thyroid, right hand, right wrist, right arm, right shoulder  
right hand, right wrist, right elbow, right arm, right shoulder  
trachea, esophagus, thyroid, heart, neck, head, right hand and elbow  
upper right arm, right lung, heart, neck, head  
upper right arm, chest, right lung, heart, neck, head  
upper right arm, gallbladder, lungs, heart, neck, head  
esophagus, liver, heart, neck, head, upper right arm, blood circulation  
pancreas, spleen, stomach, esophagus, middle back, duodenum  
liver, duodenum, pancreas, spleen, stomach, middle back, gallbladder  
gallbladder, liver, pancreas, spleen, stomach, middle back, adrenal glands  
gallbladder, adrenal glands, pancreas, spleen, stomach, small intestine, liver, reproductive organs  
small intestine, pancreas, spleen, stomach, right leg, large intestine, appendix, reproductive organs  
small intestine, right leg, reproductive organs, right kidney, ileocecal valve, adrenal glands, bladder, large intestine  
small intestine, right leg, reproductive organs, right kidney, ileocecal valve, upper and lower back, bladder, large intestine  
right leg and foot, reproductive organs, abdomen, bladder, large intestine  
right leg and foot, reproductive organs, abdomen, appendix, bladder, large intestine  
prostate, bladder, reproductive organs, right leg and foot, large intestine  
prostate, right leg and foot, right buttocks, muscles of the lower back  
prostate, right leg, foot and toes, right buttocks  
prostate, bladder, right leg and foot, right buttocks  
prostate, bladder, reproductive organs, right leg, right buttocks  
prostate, bladder, reproductive organs, right leg, right buttocks  
anus, reproductive organs  
anus, rectum  
anus, rectum

The nervous system is complex. Only the most significant neurological relationships are shown. Many organs and tissues have multiple nerve supplies.

### Cross-Section of Spine Demonstrating Nerve 'Extrusions' = Body's Electrical Circuit



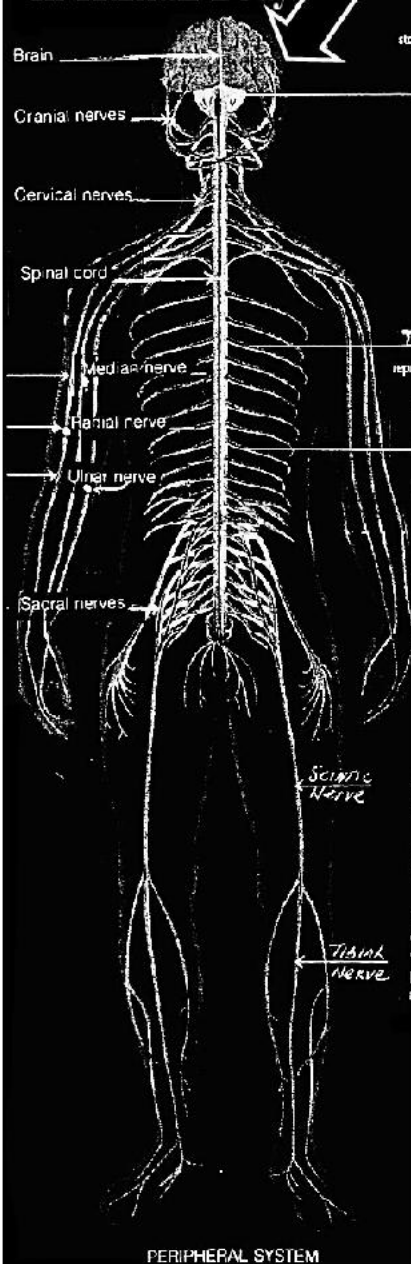
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Involved in 'Total Health' We must  
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Every Bodily Organ has 'specific nerves'  
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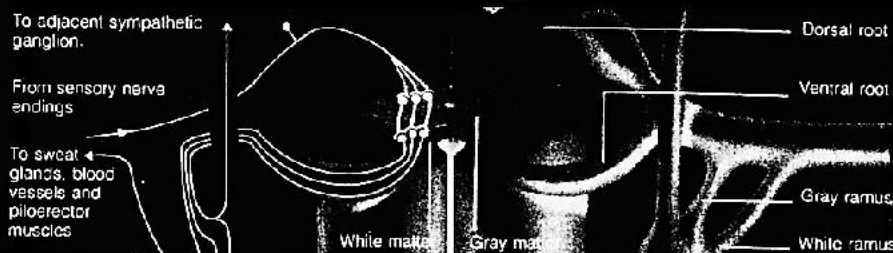
pituitary gland, scalp, brain, left ear, left eye  
head, eyes, tongue, left ear, left eye, head  
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face, left side of neck, left chest, diaphragm  
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left shoulder, left arm, tonsils  
left shoulder, left arm, left wrist, left hand, thyroid  
left shoulder, left arm, left elbow, left wrist, left hand  
head, neck, heart, thyroid, esophagus, trachea, left hand and elbow  
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head, neck, heart, left lung, chest, upper left arm  
head, neck, heart, lungs, gallbladder, upper left arm  
head, neck, heart, liver, esophagus, blood circulation, upper left arm  
esophagus, stomach, spleen, pancreas, duodenum, middle back  
stomach, spleen, pancreas, duodenum, liver, gallbladder, middle back  
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stomach, spleen, pancreas, adrenal glands, gallbladder, reproductive organs, liver, small intestine  
stomach, spleen, pancreas, small intestine, reproductive organs, appendix, large intestine, left leg  
left kidney, reproductive organs, left leg, small intestine, large intestine, bladder, adrenal glands, ileocecal valve  
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left buttocks, left leg, foot and toes, prostate  
left buttocks, left leg and foot, bladder, prostate  
left buttocks, left leg, reproductive organs, bladder, prostate  
left buttocks, left leg, reproductive organs, bladder, prostate  
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rectum, anus  
rectum, anus



right eye, right ear, brain, scalp, pituitary gland  
head, right eye, right ear, tongue, eyes, head  
diaphragm, right shoulder, right ear, right side of neck, face  
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trachea, right arm, right shoulder  
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right hand, right wrist, right elbow, right arm, right shoulder  
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gallbladder, adrenal glands, pancreas, spleen, stomach, small intestine, liver, reproductive organs  
small intestine, pancreas, spleen, stomach, right leg, large intestine, appendix, reproductive organs  
small intestine, right leg, reproductive organs, right kidney, ileocecal valve, adrenal glands, bladder, large intestine  
small intestine, right leg, reproductive organs, right kidney, ileocecal valve, upper and lower back, bladder, large intestine  
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prostate, bladder, reproductive organs, right leg and foot, large intestine  
prostate, right leg and foot, right buttocks, muscles of the lower back  
prostate, right leg, foot and toes, right buttocks  
prostate, bladder, right leg and foot, right buttocks  
prostate, bladder, reproductive organs, right leg, right buttocks  
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anus, rectum  
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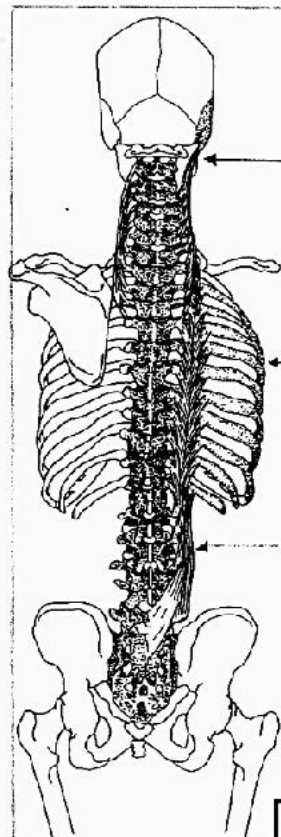
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Trunk—dorsal view

### LONGISSIMUS THORACIS\*

<b>Origin</b>	Medial and lateral sacral crests, spinous processes and supraspinal ligament of lumbar and eleventh and twelfth thoracic vertebrae, and medial part of iliac crests
<b>Insertion</b>	Transverse processes of all thoracic vertebrae, between tubercles and angles of lower nine or ten ribs
<b>Action</b>	Extension, lateral flexion of vertebral column, rotates ribs for forceful inspiration
<b>Nerve</b>	Dorsal primary divisions of spinal nerves

### LONGISSIMUS CERVICIS\*

<b>Origin</b>	Transverse processes of upper four or five thoracic vertebrae
<b>Insertion</b>	Transverse processes of second to sixth cervical vertebrae
<b>Action</b>	Extension, lateral flexion of vertebral column
<b>Nerve</b>	Dorsal primary divisions of spinal nerves

### LONGISSIMUS CAPITIS\*

<b>Origin</b>	Transverse processes of upper five thoracic vertebrae, articular processes of lower three cervical vertebrae
<b>Insertion</b>	Posterior part of mastoid process of temporal bone
<b>Action</b>	Extends and rotates head
<b>Nerve</b>	Dorsal primary divisions of middle and lower cervical nerves

Diagrams Display the 'Delicate' Interconnections of the Vertobral Column & Back Muscles 'Attached' to the Spine (Erector Spinae) and the Nervous System that 'extrudes' out of the spine to all parts of the Body

### ILIOCOSTALIS LUMBORUM\*

<b>Origin</b>	Medial and lateral sacral crests and medial part of iliac crests
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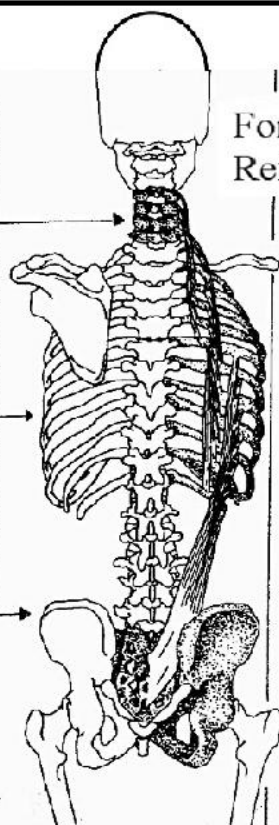
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<b>Origin</b>	Angles of lower six ribs medial to iliocostalis lumborum
<b>Insertion</b>	Angles of upper six ribs and transverse process of seventh cervical vertebra
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<b>Nerve</b>	Dorsal primary divisions of spinal nerves

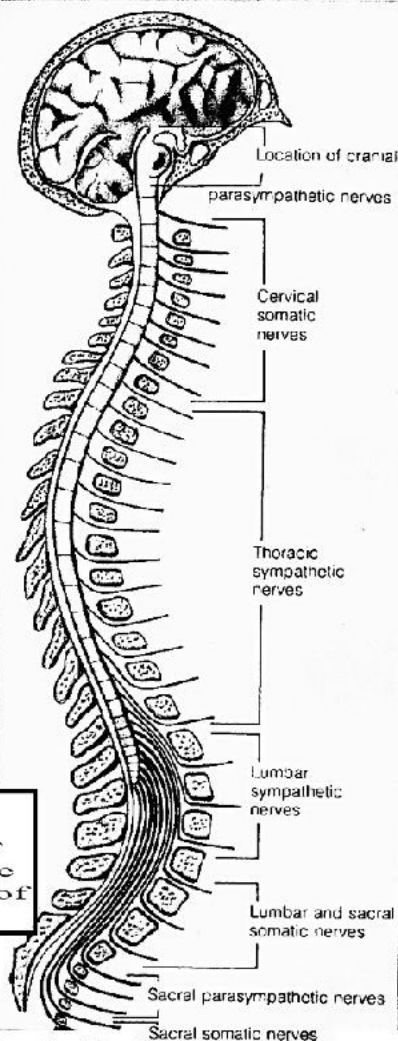
### ILIOCOSTALIS CERVICIS\*

<b>Origin</b>	Angles of third through sixth ribs
<b>Insertion</b>	Transverse processes of fourth, fifth, and sixth cervical vertebrae
<b>Action</b>	Extension, lateral flexion of vertebral column
<b>Nerve</b>	Dorsal primary divisions of spinal nerves

\*Part of erector spinae along with spinalis and longissimus muscles. The complete origin of erector spinae is: medial and lateral sacral crests and medial part of iliac crests, spinous processes and supraspinal ligament of lumbar, and eleventh and twelfth thoracic vertebrae.



Trunk—dorsal view



For in Depth Studies please Refer to Reference Book List

at End of this Booklet

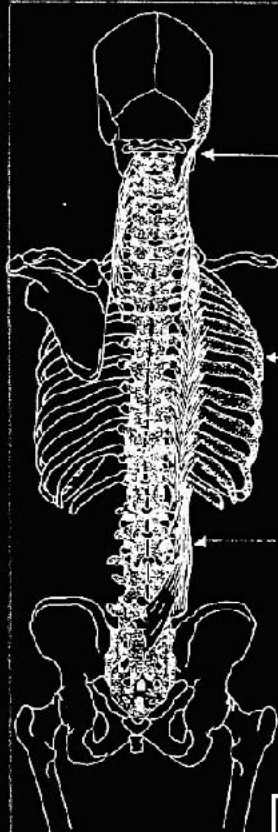


Sympathetic nerves leave the spinal cord via various roots and ganglia. They control automatic functions such as breathing, heart rate and even sweating. The diagram shows part of the cord in the thoracic region (black on the human profile). The ganglia act as relay stations that can sort and redirect nervous impulses as required. The same nerves carry signals in both directions — from the brain or to it — all connected to the gray matter at the center of the spinal cord.

If Subluxation (Mis-alignment) of 'one' vertebra causes Pressure on 'one' Nerve 'Extrusion' it can cause pain or a 'Shut-down' of a 'response' elsewhere in the body (for Example pressure on nerves inbetween the shoulder blades cause s Headaches simple 'chiro-practic' 'adjustment' stops the headache instantly)

The Complex System of Nerves & Muscles surrounding the Spine The Back especially 'lower back' must be treated Holistically





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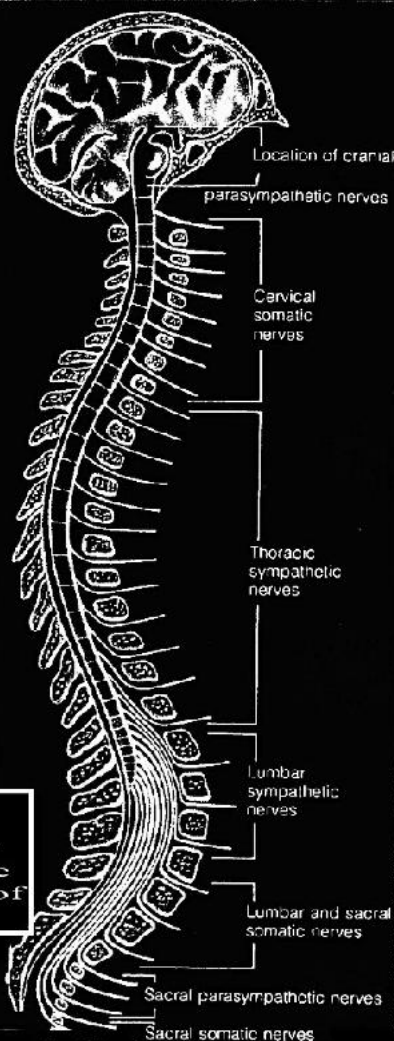
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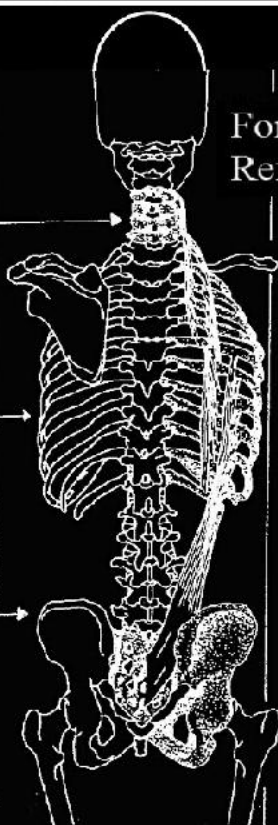
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- Origin** Angles of lower six ribs medial to iliocostalis lumborum
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The Complex System of Nerves & Muscles surrounding the Spine  
The Back especially 'lower back' must be treated Holistically



## LEGS

Legs are a complicated and large body part. Some of the Quads (front of the leg above the knee) and Hamstrings (rear of the leg above the knee) are interconnected to the hip and therefore it is difficult To not include COMPOUND EXERCISES in a leg routine which of course involves ALL of the interconnections with emphases on 'certain parts' depending on the exercise. Accordingly, I would have to say that the KING of the lower body exercises is the SQUAT (if your lower back is in good order) and this exercise is the basis that all other exercises are planned from.

Through experience I recommend the following to my clients: a) SQUATS for overall benefit emphasizing QUADS and lower back and Glutes/hamstrings b) LUNGES ..emphasizes GLUTES and hamstrings c) HACK SQUAT for smith machine squat with legs forward emphasizes Quads d) LEG PRESS emphases (back) of legs /hamstrings /glutes..legs position fairly high e) DEADLIFT lower back/glutes/hamstrings ..... The leg extension & Leg curl machines are used as a 'preparatory' warm up or 'pre-exhaustion' for the compound exercises mentioned above.

I have systematically planned the ROTATION of these exercises over a 2 to 4 week cycle (refer to Training program) A hard Squat routine can take 7 days to recover from, however each leg routine has its benefits and 'emphasis' according to 'other activities' (for example self-defence 'kicking' Requires much 'leg energy' and the weights routine for LEGS has to be adjusted from a complete

Body-building mentality taking into account 'recovery for 'explosive kick training'!

Generally speaking, explosive sprint 'type' training 'blends' in very well with 'strength/Leg training' For example say you train Legs in the morning and do 'explosive kicks/sprints/interval training PM You will be 'amazed' that your legs 'fire up' no problems, same with the opposite ie Sprints AM Then weights legs PM it works! ....however the classic 3 day soreness 'catches up' AFTERWARDS, And I plan this 'within' the rotation of the exercises in the training matrix (refer training plan)

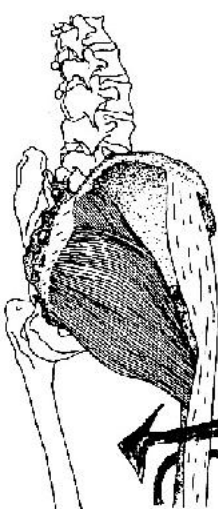
This 3 day delayed 'soreness' can be minimized by appropriate 'supplements', but must 'accounted For in the big picture' (I cover this in booklets on supplements & training matrix) For those wishing Simply 'reduce body-fat' on the legs/thighs/hips the above 'principles apply' the PROGRAM is simply 'adjusted' to suit your fitness GOALS. And yes it is a 'balancing act' that requires an 'experienced eye' REMEMBER 'horses for Courses' means we must tailor the work outs to suit defined GOALS at the same time 'achieving' our MEASURED RESULTS! if we follow the plan we achieve LEGS and other body parts that are lean, strong, flexible, and FUNCTIONAL!

### VASTUS MEDIALIS

(One of quadriceps femoris)

**Origin** Intertrochanteric line, medial to of linea aspera of femur, medial intermuscular septum, medial supracondylar line  
**Insertion** Medial border of the patella then by patellar ligament into tibia: tuberosity, medial condyle of tibia  
**Action** Extends leg at knee joint  
**Nerve** Femoral nerve (L2-L4)

### GLUTEUS MAXIMUS



Hip and thigh—lateral view

Outer surface of femur behind posterior iliac line, adjacent posterior surface of sacrum and coccyx, sacrotuberous ligament, aponeurosis of erector crinis (sacrospinalis)

**Insertion** Bipolar facet of femur into gluteal tuberosity of femur  
**Action** Extends and laterally rotates hip joint  
**Nerve** Inferior gluteal nerve (L5, S1, S2)

TOP OF MUSCLE ATTACHMENT TO HIP

NOTE: LEG RAISING INVOLVES RECTUS FEMORIS CARE WITH 'SIT-UPS' THAT 'HIP IS COULDER RATHER THAN THIGH' BEING USED

FLXES TRIGLY UP IN BACK

### RECTUS FEMORIS

(One of quadriceps femoris)

**Origin** Anterior head—anterior inferior iliac spine  
Posterior head—tub. above acromion  
**Insertion** Patella then by patella ligament to tuberosity of the tibia  
**Action** Extends leg at knee joint, flexes thigh at hip joint  
**Nerve** Femoral nerve (L2-L4)

### VASTUS LATERALIS

(One of quadriceps femoris)

**Origin** Intertrochanteric line, medial border of greater trochanter, greater tuberosity, lateral tip of linea aspera of femur  
**Insertion** Lateral margin of patella then by patellar ligament to tuberosity of tibia  
**Action** Extends leg at knee joint  
**Nerve** Femoral nerve (L2-L4)

### VASTUS INTERMEDIUS

(One of quadriceps femoris)

**Origin** Anterior and lateral surfaces of upper two-thirds of femur, lateral intermuscular septum, linea aspera, and lateral supracondylar line  
**Insertion** Deep aspect of quadriceps tendon then through patella in tibia: tuberosity  
**Action** Extends leg at knee joint  
**Nerve** Femoral nerve (L2-L4)

Legs includes Quads(front) and Hamstrings (rear of Leg)  
Hamstring 'flexibility' plays an important role in Back and Spine Alignment



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Legs are a complicated and large body part. Some of the Quads (front of the leg above the knee) and Hamstrings (rear of the leg above the knee) are interconnected to the hip and therefore it is difficult **To not include COMPOUND EXERCISES** in a leg routine which of course involves ALL of the interconnections with emphases on 'certain parts' depending on the exercise. Accordingly, I would have to say that the **KING** of the lower body exercises is the **SQUAT** (if your lower back is in good order) and **this exercise is the basis that all other exercises are planned from.**

Through experience I recommend the following to my clients: a) **SQUATS** for overall benefit emphasizing **QUADS** and lower back and **Glutes/hamstrings** b) **LUNGES** ..emphasizes **GLUTES** and hamstrings c) **HACK SQUAT** (or smith machine squat with legs forward) emphasizes **Quads** d) **LEG PRESS** emphases (back) of legs /hamstrings /glutes..legs position fairly high e)**DEADLIFT** lower back/glutes/hamstrings .....The leg extension & Leg curl machines are used as a 'preparity' warm up or 'pre-exhaustion' for the compound exercises mentioned above.

I have systematically planned the **ROTATION** of these exercises over a 2 to 4 week cycle (refer to Training program) A hard Squat routine can take 7 days to recover from , however each leg routine Has its' benefits' and 'emphasis' according to 'other activities' (for example self-defence 'kicking' Requires much 'leg energy' )and the weights routine for **LEGS** has to be adjusted from a complete

Body-building mentality taking into account 'recovery for 'explosive kick training' !

Generally speaking, explosive sprint 'type' training 'blends' in very well with 'strength/Leg training' For example say you train Legs in the morning and do 'explosive kicks/sprints/interval training PM You will be 'amazed' that your legs 'fire up' no problems , same with the opposite ie Sprints AM Then weights legs PM it works ! ....however the classic 3 day soreness 'catches up' **AFTERWARDS**, And I plan this 'within' the rotation of the exercises in the training matrix (refer training plan) This 3 day delayed 'soreness' can be minimized by appropriate 'supplements' , but must 'accounted For in the big picture' (I cover this in booklets on supplements & training matrix) For those wishing Simply 'reduce body-fat' on the legs/thighs/hips the above 'principles apply' the **PROGRAM** is simply 'adjusted' to suit your fitness **GOALS**. And yes it is a 'balancing act' that requires an 'experienced eye' **REMEMBER** 'horses for Courses' means we must tailor the work outs to suit defined **GOALS** at the same time 'achieving ' our **MEASURED RESULTS** ! If we follow the plan we achieve **LEGS** and other body parts that are lean, strong, flexible, and **FUNCTIONAL** !

### VASTUS MEDIALIS

(One of quadriceps femoris)

**Origin** Intercondylar line, medial lip of linea aspera of femur, medial intermuscular septum, medial supracondylar line  
**Insertion** Medial border of the patella, then by patellar ligament into fibula, tuberosity, medial condyle of tibia  
**Action** Extends leg at knee joint  
**Nerve** Femoral nerve (L2-L4)

### GLUTEUS MAXIMUS

(One of quadriceps femoris)

**Origin** Anterior superior iliac spine  
**Insertion** Greater trochanter of femur  
**Action** Extends leg at hip joint  
**Nerve** Sciatic nerve (L5-S2)

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**Action** Extends leg at hip joint  
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### RECTUS FEMORIS

(One of quadriceps femoris)

**Origin** Anterior head—anterior inferior iliac spine  
Posterior head—Bum above acetabulum  
**Insertion** Patella then by patellar ligament to tuberosity of the tibia  
**Action** Extends leg at knee joint, flexes thigh at hip joint  
**Nerve** Femoral nerve (L2-L4)

### VASTUS LATERALIS

(One of quadriceps femoris)

**Origin** Intercondylar line, inferior border of greater trochanter, glutes, latissimus, distal lip of linea aspera of femur  
**Insertion** Lateral margin of patella then by patellar ligament to tuberosity of tibia  
**Action** Extends leg at knee joint  
**Nerve** Femoral nerve (L2-L4)

### VASTUS INTERMEDIUS

(One of quadriceps femoris)

**Origin** Anterior and lateral surfaces of upper two-thirds of femur, lateral intermuscular septum, linea aspera, and lateral supracondylar line  
**Insertion** Deep aspect of quadriceps tendon then through patella to tibia  
**Action** Extends leg at knee joint  
**Nerve** Femoral nerve (L2-L4)

### Hip and thigh—lateral view

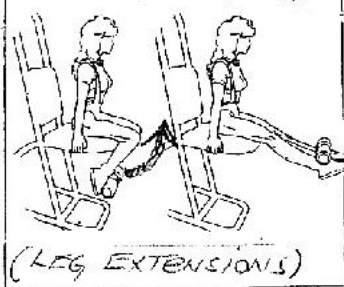
**Origin** Anterior surface of ilium behind posterior iliac line, adjacent posterior surface of ilium and coccyx, sacrotuberous ligament, aponeurosis of erector pinos (sacrospinous)  
**Insertion** Iliotibial tract of fascia lata, greater trochanter of femur  
**Action** Extends and laterally rotates hip joint, extends trunk  
**Nerve** Inferior gluteal nerve (S1-S2)

Legs includes Quads(front) and Hamstrings (rear of Leg)

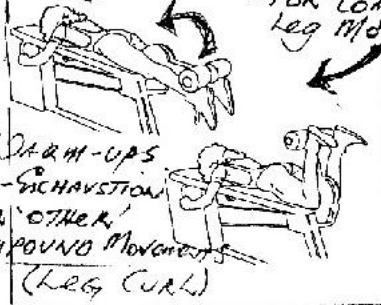
Hamstring 'flexibility' plays an important role in Back and Spine Alignment



(Leg Press/ Leg Curls basically WARM-UP OR 'PRE-EXHAUSTION')



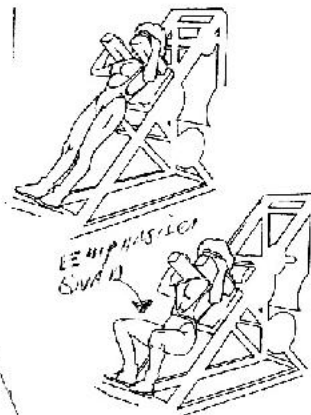
(LEG EXTENSIONS)



(LEG CURL)

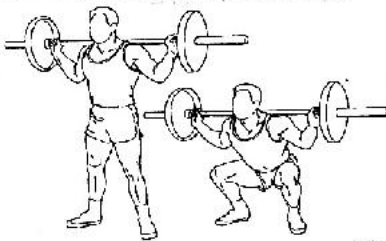
• WARM-UPS  
• PRE-EXHAUSTION  
FOR OTHER  
COMPOUND MOVEMENTS

FOR 'COMPOUND' Leg Movements (Hack Squat)

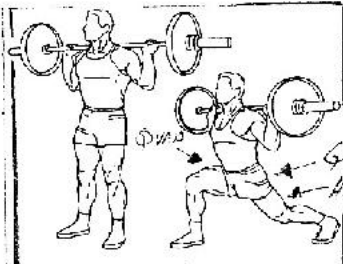


EMPHASIS ON  
SMALL

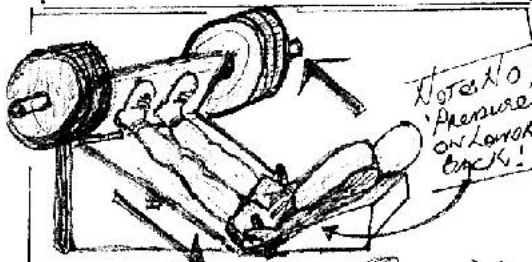
(Hack Squat can also be done on Smith Machine Feet Forward)



SQUATS 'KING of Leg Exercises'



LUNGES • (Emphasis on 'Glutes' / Hamstrings Stretch)



45° Leg Press (Emphasis)  
Back of Legs (Hamstrings)

NOT A  
'Pressure  
ON LOWER  
BACKS!

The System I have created for the legs  
Is on a ROTATION over a 2,4,& 6 week Cycle.  
Just picture the Body being Rotated in a circle  
and each rotation 'emphasizes' a different part  
of the legs.....

- lunges(back of legs especially Glutes/hamstrings)
- leg press(back of legs especially hamstrings)
- hack squat(quads-front of legs)
- SQUATS (definitely QUADS & Glutes/ lower back)
- Deadlift(refer section on back..however, emphasizes h'strings/lower back)

SQUATS are the most demanding exercise and the 'KING'  
of leg exercises however, if you have any lower back  
problems you must be careful !.... you can substitute  
a 'combination' of the 'other' exercises

(REFER to training Matrix/program for details on rotations)

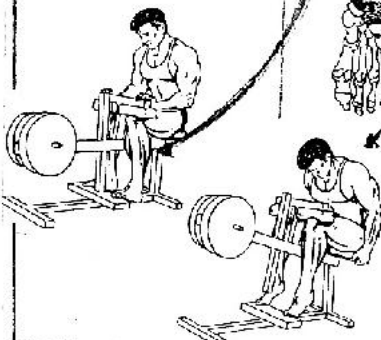
NOTE: ATTACHED  
'Above' back of  
Knee therefore  
Helps 'Bend' the  
Leg at Knee

(CALVES ARE VERY 'BASIC' A COMBINATION OF STANDING  
& SEATED IS ENOUGH!)

#### GASTROCNEMIUS

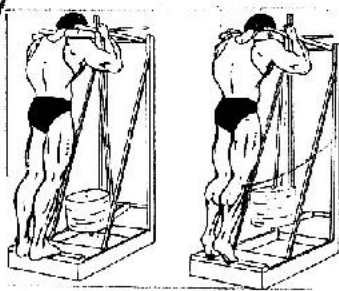
Origin: Lateral head—lateral condyle and posterior surface of femur  
Medial head—popliteal surface of femur above medial condyle  
Insertion: Posterior surface of the calcaneus  
Action: Plantar flexes foot, flexes leg at knee  
Nerve: Tibial nerve (S1, S2)

Calves Seated



SEATED Calve  
Raise Emphasizes  
THE 'GASTROCNEMIUS'  
PART OF THE CALVE  
Muscle

STANDING Calves



#### SOLEUS

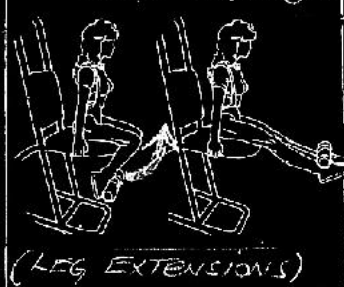
Origin: Posterior surface of the tibia (just below upper third of posterior surface of tibia, knees from between tibia and fibula)  
Insertion: Posterior surface of the calcaneus  
Action: Plantar flexes foot  
Nerve: Tibial nerve (S1, S2)

STANDING Calve  
Raise Works  
Primarily THE  
'SOLEUS' Calve  
Muscle





(Leg Ext/ Leg Curl basically WARM-UP OR 'PRE-EXHAUSTION')



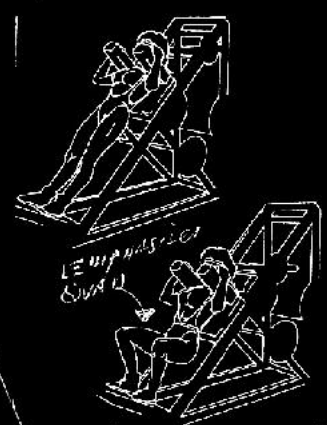
(LEG EXTENSIONS)



(LEG CURL)

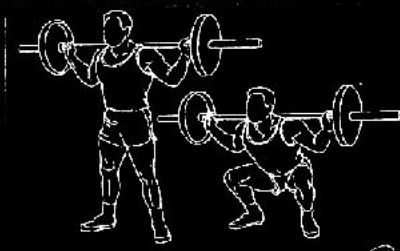
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FOR 'COMPOUND'  
Leg Movements (Hack Squat)

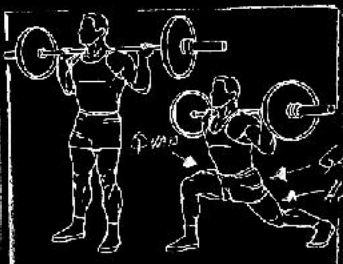


LE UP/ HAMSTRINGS  
SQUAT

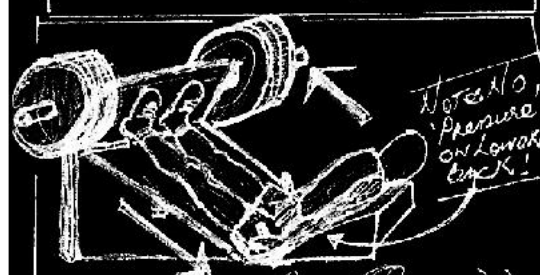
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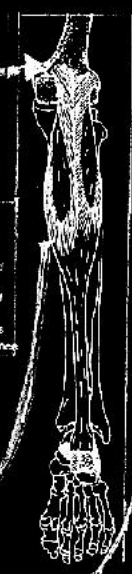
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'Above' back of  
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Helps Bend the  
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**GASTROCNEMIUS**

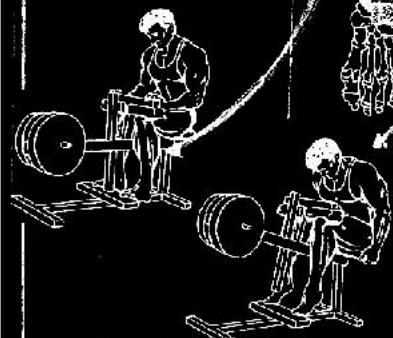
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SEATED CALVE  
RAISE EMPHASIZES  
THE 'GASTROCNEMIUS'  
PART OF THE CALVE  
MUSCLE

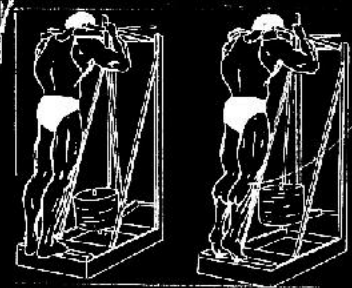
**SOLEUS**

**Origin** Posterior surface of the tibia (lower two upper third of posterior surface of tibia, fibula) such between tibia and fibula  
**Insertion** Posterior surface of the calcaneus  
**Action** Plantar flexes foot  
**Nerve** Tibial nerve (S1, S2)

Calves Seated



STANDING CALVES



STANDING CALVE  
RAISE WORKS  
PRIMARILY THE  
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MUSCLE



## ABDOMINALS .... 'ABS'

Everybody wants the 'six pack' abs and there is so much 'mis-information' 'out there' trying to convince people of this 'secret' or 'that'.....the simple reality is that the 'abs' are a muscle like any other and they have to be 'strengthened' like any other muscle group.

I recommend 'ab' exercises 3 times per week....with 'strength type' exercises ...for example 'weight' bearing exercises such as 'crunch' machines where you use 'resistance' to exercise the 'abs' against ....I personally prefer the 'Nautilus Crunch' machine , or Cable crunches, hanging raisers, or incline situps/with reverse crunches or hip flexers.

ENDURANCE 'ab' workouts are like the type that 'say boxers' would use ...where they haven't got any RESISTANCE equipment to use and use just BODYWEIGHT.

Again its all relevant to INTENSITY and RESISTANCE used .

Low resistance = more reps to get INTENSITY / High RESISTANCE =lower reps to get INTENSITY (refer training program for details)

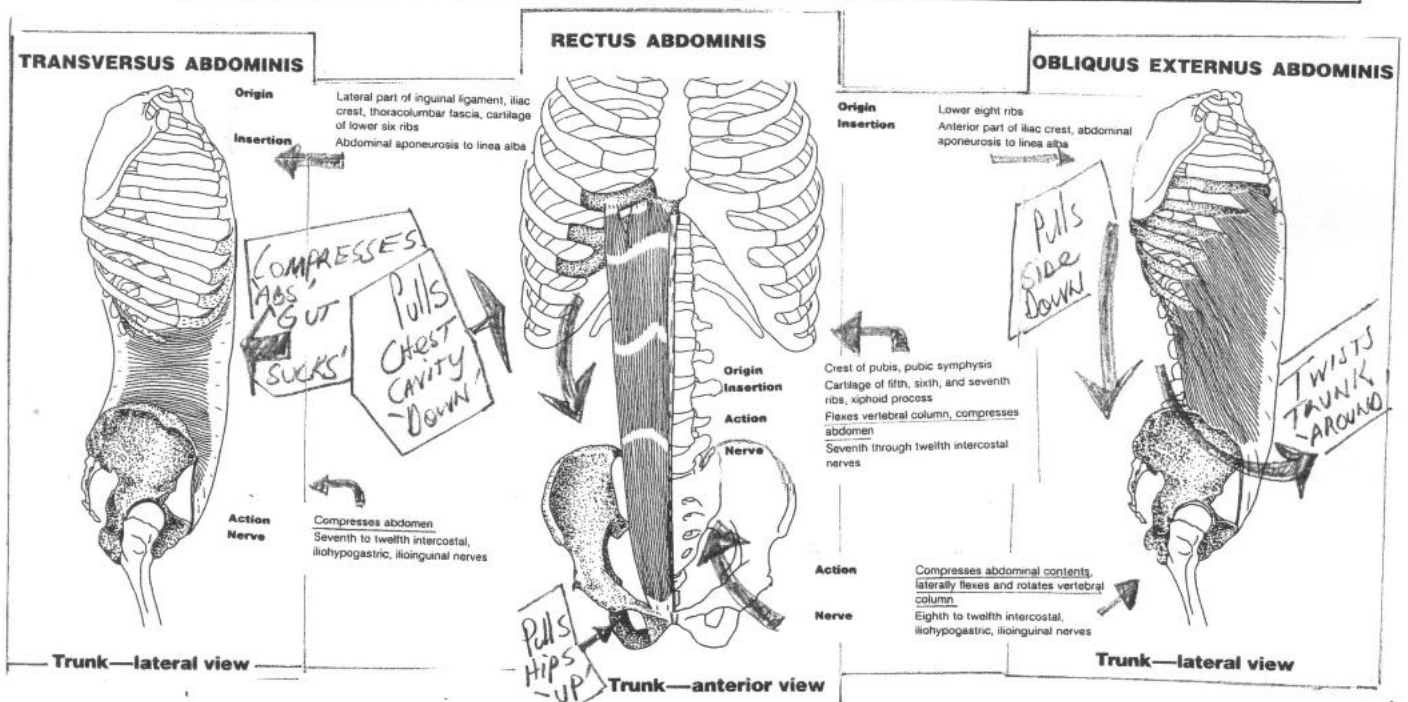
SIX PACK ABS ? after you have trained the ABS as above .....all you have to do is REMOVE THE 'BODY-FAT' ! ....this is simply done by dieting correctly as per the nutrition plan It's as SIMPLE AS THAT !

Generally I find the LOW CARB'S at nighttime is the KEY here (refer Nutrition plan) also, we have slow and fast metabolisms , if you store body fat easily ....obviously its slow ( 90% of us) or if you 'built' like a 'greyhound'.....obviously its fast (10 % of us).

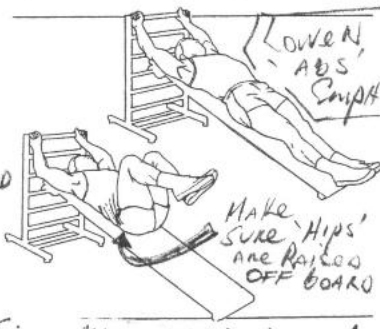
The objective is to generally 'reduce' the waistline and 'unfortunately' it's the 'LAST TO GO' If we 'Systematically' approach the body holistically we get a 'total package' trim, taut & terrific in balance !

The 'Abs' are like any other muscle group I find it is best to train at least 3 times per week If (strength weights resistance type training) If endurance /bodyweight high rep training then Greater frequency and be 'endured' 5 or 6 days a week 'as a boxer would train' is ok.

Regarding the 'illusive' six pack (or 4 pack in some cases) it's a simple matter of diet while Keeping your strength levels up , and high protein low glycemic carbs down (especially at night) This is where 'supplements' come into their own as they can 'satisfy' the hunger/nutrient needs without increasing the volume of food. Also, 'abs' are the main 'stabilizers' for the trunk of the body and some 'weights trainers' can get away with doing less 'abs' say twice per week because of the 'heavy duty' back up the abs perform during the course of 'heavy weights training' as a 'supporting' muscle group, however , I find 3 times per week is a good frequency regardless.



Make SURE 'HIPS' ARE LIFTED FORWARD = ABS NOT 'Hip Flexors' (THIGH MUSCLES)



Make SURE 'HIPS' ARE RAISED OFF BOARD



BETTER WITH KNEES BENT



DO NOT HAVE TO LOWER UPPER BODY ALL THE WAY DOWN

'FEEL THE STRETCH' IN THE 'ABS' DO NOT 'TEAR UP' (CONTROL MOVEMENTS)

BASIC 'ABS' = CRUNCHES (WITH OR WITHOUT WEIGHTS) + LEG RAISES (HIP RAISES = EMPHASISE LOWER ABS)



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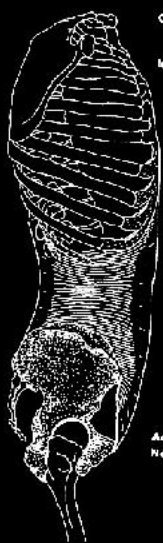
Generally I find the LOW CARB'S at nighttime is the KEY here (refer Nutrition plan) also, we have slow and fast metabolisms, if you store body fat easily ....obviously its slow ( 90% of us) or if you 'built' like a 'greyhound'.....obviously its fast (10 % of us).

The objective is to generally 'reduce' the waistline and 'unfortunately' it's the 'LAST TO GO' If we 'Systematically' approach the body holistically we get a 'total package' trim, taut & terrific in balance !

The 'Abs' are like any other muscle group I find it is best to train at least 3 times per week If (strength weights resistance type training) if endurance/bodyweight high rep training then Greater frequency and be 'endured' 5 or 6 days a week 'as a boxer would train' is ok.

Regarding the 'illusive' six pack (or 4 pack in some cases) it's a simple matter of diet while Keeping your strength levels up, and high protein low glycemic carbs down (especially at night) This is where 'supplements' come into their own as they can 'satisfy' the hunger/nutrient needs without increasing the volume of food. Also, 'abs' are the main 'stabilizers' for the trunk of the body and some 'weights trainers' can get away with doing less 'abs' say twice per week because of the 'heavy duty' back up the abs perform during the course of 'heavy weights training' as a 'supporting' muscle group, however, I find 3 times per week is a good frequency regardless.

### TRANSVERSUS ABDOMINIS



**Origin**  
12th rib part of ligament, sac crest, thoracolumbar fascia, parasternal part of lower six ribs

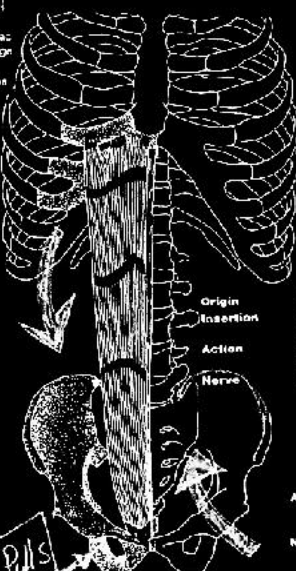
**Insertion**  
Abdominal aponeurosis to linea alba

**Action**  
Compresses abdomen  
Seventh to twelfth intercostal  
Iliohypogastric, iliohypogastric nerves

**Nerve**

Trunk—lateral view

### RECTUS ABDOMINIS



**Origin**  
Xiphoid process, pubic symphysis

**Insertion**  
Cartilage of 11th, 12th, and seventh ribs, xiphoid process

**Action**  
Flexes vertebral column, compresses abdomen  
Seventh through twelfth intercostal nerves

**Nerve**

Trunk—anterior view

### OBLIQUUS EXTERNUS ABDOMINIS



**Origin**  
Lower eight ribs

**Insertion**  
Anterior part of Asc crest, abdominal aponeurosis to linea alba

**Action**  
Compresses abdominal contents  
laterally flexes and rotates vertebral column  
Eighth to twelfth intercostal  
Iliohypogastric, iliohypogastric nerves

**Nerve**

Trunk—lateral view



MAKE SURE 'HIPS' ARE UP TO FLEXING = ABS NOT 'HIP FLEXORS' (THIGH MUSCLES)



MAKE SURE 'HIPS' ARE RAISED OFF GROUND



Basic 'ABS' = CRUNCHES (with or without weights) + Leg Raises (Hip Raisers = Emphasize Lower, Abs)

DO NOT HAVE TO LOWER UPPER BODY ALL THE WAY BACK

'FEEL THE STRAIN' IN THE 'ABS' DO NOT 'TEAR UP' (CANNOT MOVE)

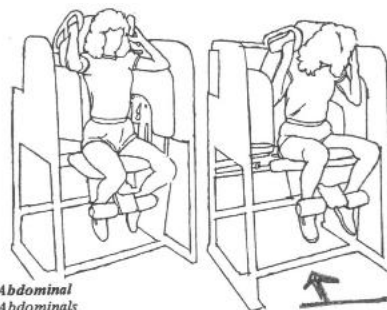
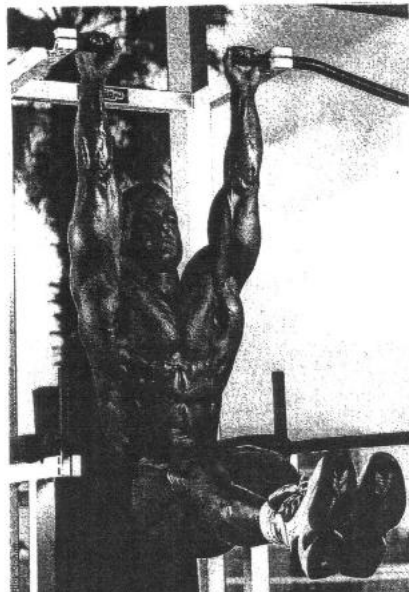
BETTER WITH KNEES BENT



## Cable Crunch

Higher Intensity

Reps Lower



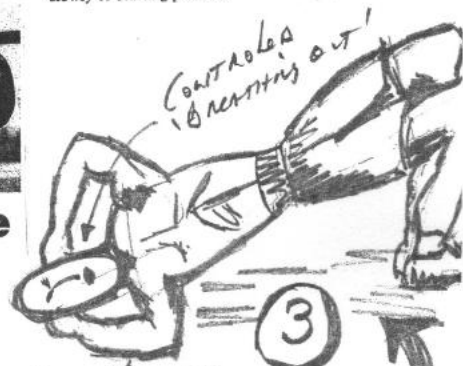
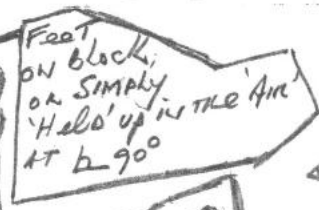
### Abdominal Abdominals

- Sit, hold bars at sides of head, palms in.
- Hook feet under pads.
- Move upper body forward and down.
- Pause in contracted position, then return slowly to starting position.

NAUTICAL AB CRUNCH

## Hanging Leg Raise

Endurance Style 'AB' Exercises



1 CRUNCH  
(Higher Reps, Lower Intensity)



3  
GUT SUCKS  
DIAPHRAM CONTRACTION, BREATHING

## KNEE RAISERS

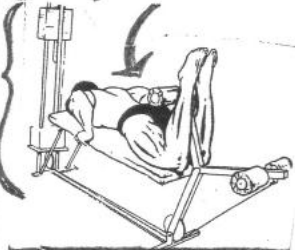
Origin	Long head—ischial tuberosity, sacrotuberous ligament
Insertion	Short head—linea aspera, lateral supracondylar ridge, lateral intermuscular septum
Action	Flexes leg at knee joint, long head also extends thigh at hip joint
Nerve	Long head—tibial part of sciatic nerve (S1-S3) Short head—common peroneal part of sciatic nerve (L5, S1, S2)

Origin	Ischial tuberosity
Insertion	Posterior part of medial condyle of tibia
Action	Flexes and slightly medially rotates leg at knee joint after flexion, extends thigh at hip joint
Nerve	Tibial portion of sciatic nerve (L5, S1, S2)

Origin	Ischial tuberosity
Insertion	Medial surface of shaft of tibia
Action	Flexes and slightly medially rotates leg at knee joint after flexion, extends thigh at hip joint
Nerve	Tibial portion of sciatic nerve (L5, S1, S2)

Refer PHE on Legs' HAMSTRINGS  
Involved in • SQUATS, • LEG CURL, • LUNGED • BACK SQUATS • DEADLIFTS

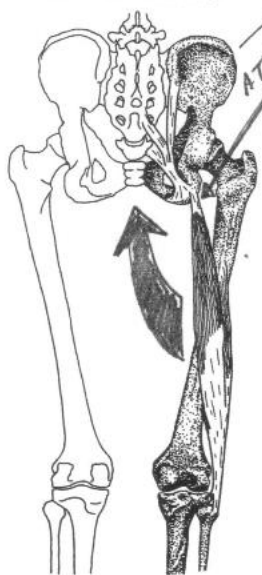
HAMSTRINGS (BACK OF LEGS)  
Bends Leg up (Bending Knee)



EXTENDS THIGH AT 'HIP' JOINT (Keep Leg STRAIGHT - Move Leg BACKWARDS AT HIPS)

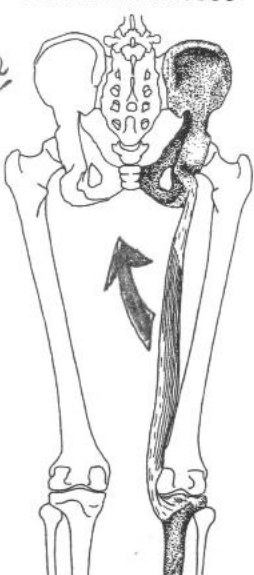


### BICEPS FEMORIS

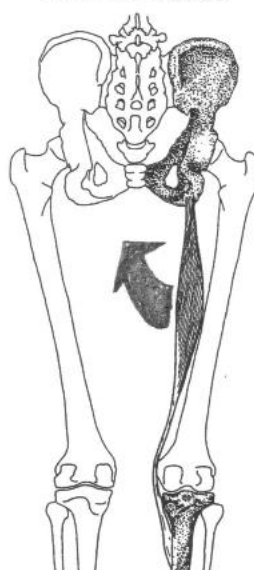


ATTACHED TO HIP GIRDLE

### SEMIMEMBRANOSUS



### SEMITENDINOSUS



Hip and thigh—posterior view

Hip and thigh—posterior view

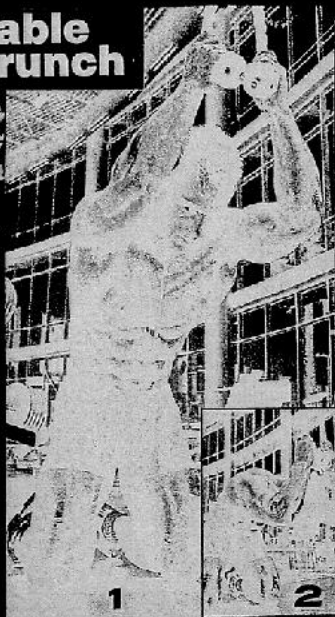
Hip and thigh—posterior view



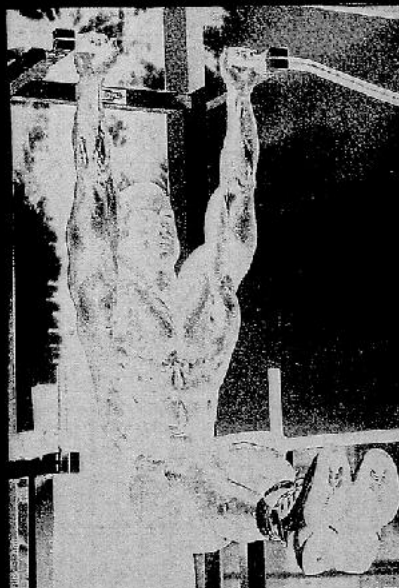
## Cable Crunch

HIGHER INTENSITY

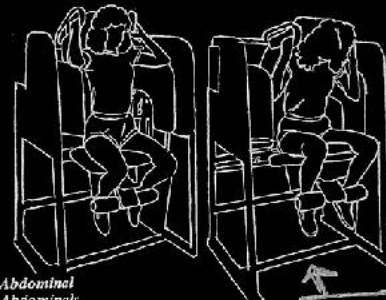
Reps LOWER



STRENGTH AB EXERCISES



## Hanging Leg Raise

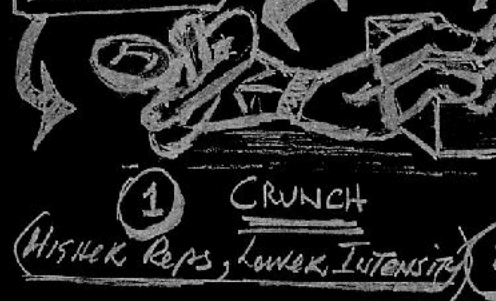


Abdominal Abdominals

- Sit, hold bars at sides of head, palms in.
- Hook feet under pads.
- Move upper body forward and down.
- Pause in contracted position, then return slowly to starting position.

NAUTILUS AB CRUNCH

ENDURANCE STYLE AB EXERCISES



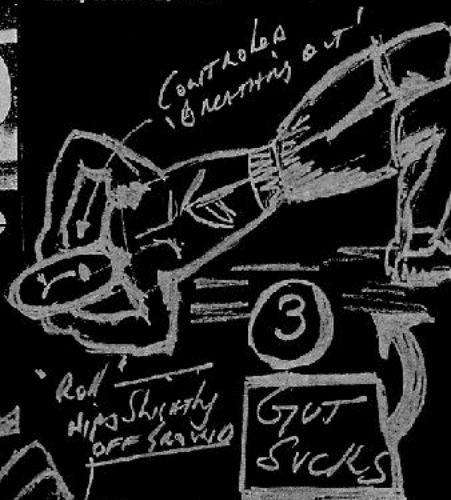
1 CRUNCH

(HIGHER REPS, LOWER INTENSITY)

Feet on block, or simply held up in the air at 90°



KNEE RAISERS



3

GUT SUCKS

DIAPHRAM CONTRACTION, BREATHING

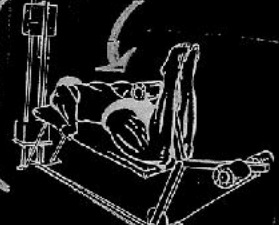
Origin	Long head—ischial tuberosity, sacrotuberous ligament
Insertion	Short head—linea aspera, lateral supracondylar ridge, lateral intermuscular septum
Action	Flexes hip at knee joint, lifts, bends also extends thigh at hip joint
Nerve	Long head—tibial part of sciatic nerve (S1-S2) Short head—common peroneal part of sciatic nerve (L5, S1, S2)

Origin	Ischial tuberosity
Insertion	Posterior part of medial condyle of tibia
Action	Flexes and slightly medially rotates leg at knee joint after flexion, extends thigh at hip joint
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Origin	Ischial tuberosity
Insertion	Medial surface of shaft of tibia
Action	Flexes and slightly medially rotates leg at knee joint after flexion, extends thigh at hip joint
Nerve	Tibial portion of sciatic nerve (L5, S1, S2)

REFER PAGE ON LEGS HAMSTRINGS INVOLVED IN: SQUATS, LEG CURL, LUNGES, BACK SQUATS, DEADLIFTS

HAMSTRINGS (BACK OF LEGS) BENDS LEG UP (BENDING KNEE)



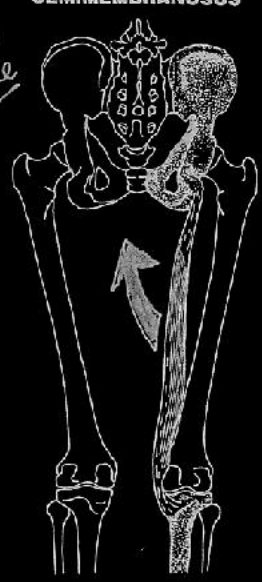
EXTENDS THIGH AT HIP JOINT (KEEP LEG STRAIGHT - MOVE LEG BACKWARDS AT HIP)

## BICEPS FEMORIS

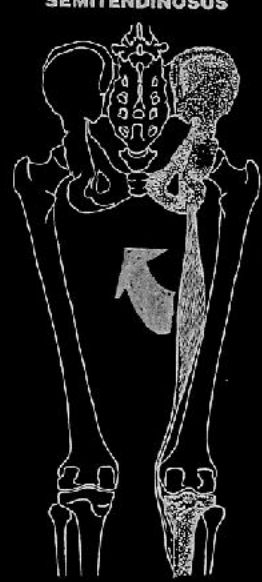


ATTACHED TO HIP SPINALE

## SEMIMEMBRANOSUS



## SEMITENDINOSUS



Hip and thigh—posterior view

Hip and thigh—posterior view

Hip and thigh—posterior view



**Conclusion** regarding 'functional Anatomy' in general it always Helps to have a 'working' knowledge of the 'exercises' relevant to the 'specific training' requirements.

*I have found in my 25 years of experience that the 'Martial Arts' training has taught me the 'finer points' of 'stretching techniques' and training under two 'oriental' Masters helped develop this aspect.*

*Also, having been and 'Olympic style' weightlifter helped me understand the 'strength' and 'technique' aspects of training.*

*What I notice that 'few people' really know how to 'put it all together'*

*Thus this is the purpose of the FREE BOOKLET to do just that 'put it all together' and give you the 'reference sources' should you require additional 'self-study'.*

**ARTWORK** and pencil drawings were done by Graham Healy

Purchase of the Below List of Books from your Local Bookstore is highly recommended

Graham Healy

RECOMMENDED READING LIST

- 1) **ATLAS OF THE SKELETAL MUSCLES**  
by Robert J. Stone & Judith A. Stone  
(WBC C Brown publishers USA )
- 2) **The NAUTILUS BODYBUILDING BOOK**  
By Ellington Darten  
(Contemporary Books Inc ,Chicago USA)
- 3) **The HUMAN BODY** by 'Marshall Editions ltd, London)
- 4) **GETTING STRONGER** by Bill Pearl  
(Shelter publications USA)
- 5) **FITNESS A SYSTEMATIC APPROACH** by Tony Shields & Leo Young  
(Pub by Fitlink Australia Brisbane)
- 6) **UNLEASHING THE WILD PHYSIQUE**  
by Vince Giornda & Robert Kennedy  
(Sterling Pub Co New York)
- 7) **A Portrait of Dorian Yates** By Peter MCGough & Dorian Yates  
(Dorian Yates ltd England)

All of these concepts and methods of training are a reflection of Graham Healy's 30 years plus of 'completely drug Free' Physical training - including my Olympic weightlifting days  
(Queensland State Titles )

Conclusions are gained only by 'experience' 'Trial & Error' and learning by what some of the 'Masters' of Health & Fitness & Bodybuilding have 'experienced' before and laid down the foundation for us. Interpretation of these methods can only be understood by people of similar experience -If you do not have that 'experience' yourself.. I encourage you to seek the advise of an 'experienced' Personal Trainer/Coach that has , such as Healy's Affordable personal training so that you can 'fast track' to your desired results .

Enjoy the Journey but, please do not try to 're-discover' the wheel in the process.

[www. healyshealth.com](http://www.healyshealth.com)

Your success Coach in Health & Fitness Graham Healy