

The CFES Weight Training Instructor Course Student Resource Manual





The CFES Weight Training Instructor Course Student Resource Manual (6TH EDITION)®

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Weight Training Instructor Course, Level 1

Chapter 2



Exercise Techniques and Teaching Tips

✱ Exercise Performance Principles

✱ Postural Stabilization

✱ Training the Core Muscles

✱ Weight Training Exercises

✱ Stretching Exercises

Sample Pages Chapter 2
These are only some of the pages in the
CFES Weight Training Instructor Course Student Manual Ch 2



Exercise Performance Principles

To ensure the best results and to minimize the risk of injury, the following performance principles should be applied to all resistance exercises.

Quality vs Quantity — It is better to do a few exercises properly, than to do many exercises improperly, whether that be in terms of repetitions (it's better to do six good abdominal curl-ups than 20 poor abdominal curl-ups) or in terms of volume of exercises (1-3 sets with good exercise technique is better than 5-6 sets in which technique starts to falter).

Breathing — Breath-holding should be avoided during exercise because it can temporarily increase blood pressure and cause dizziness. It's best to exhale during exertion and inhale during recovery.

Speed of Movement — Always use slow controlled movements to maximize the amount of muscular work being done (by minimizing momentum) and to minimize the risk of injury.

Range of Motion — Always use a full range of motion to ensure that strength is developed through the full range and that joint flexibility is maintained. Avoid limiting range of motion by lifting too much weight.

Mind to Muscle Concentration — Exercise is more effective with proper mental focus or concentration on the working muscles during the exercise.

Grip Variations — A change in grip can provide variety to weight training exercises by slightly changing the angle of pull or range of motion, or line of contraction. Grips can vary between pronated (palm down), supinated (palm up), narrow and wide.

Load or Resistance — The weight should be sufficient to fatigue the muscle within the desired number of repetitions, while maintaining proper technique throughout the set.

Lifting Weights — To maintain constant resistance throughout the set, do not let the weights rest or touch down on the weight stack between repetitions. Never drop weights once a set is completed.

Correct Postural Alignment — Always strive to maintain proper postural alignment during weight training. This helps to:

- stabilize the body
- improve the breathing
- improve the joints ability to move freely
- improve the effectiveness of exercise
- enhance the body's ability to generate force
- encourage muscle balance during training
- reduce the risk of injury during training

Proper Postural Alignment

Postural Stabilization

The idea behind postural stabilization is that one *consciously* sets the body into proper (neutral) postural alignment and then actively contracts the body's *core muscles* to maintain that alignment during exercise (or at rest). Ideal posture is critical because it:

- reduces the force of gravity on the body
- maximizes the joints' potential range of motion
- enhances the body's ability to generate force
- enhances proper muscle balance during training, and
- reduces the risk of injury during training.

Head directly over trunk.

Ears over shoulders.

Scapula flat against back.

Feet are only some of the pages in the
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These are dropped
lengthen the spine.
Buttocks relaxed.

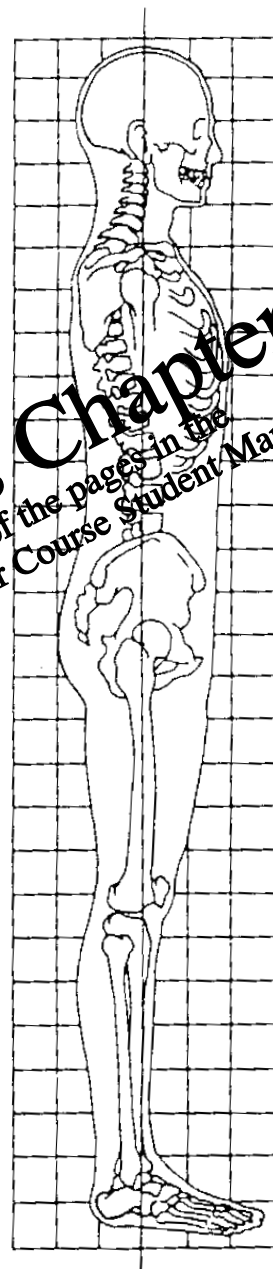
Chin level with ground.

Shoulder in line with hips.

Neutral pelvis.

Knees "soft".

Feet parallel and shoulder width apart; weight evenly balanced on both legs and feet.



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Training the Core Muscles

Any time the body is actively working to maintain its alignment, the core muscles will be contracted and working. This can be done using stability/fitness ball exercises, mat exercises, resistance training exercises or yoga and stretching exercises.

Simply by becoming aware of one's position in space, an individual can begin to control the postural muscles and involve them during any exercise or activity.

“Lengthen the spine” and *“pull the belly”* in are instructional cues which can help encourage postural stabilization.

Neck Extensors and Flexors — hold head and neck in a neutral position

Erector Spinae — extends and lengthens the spine.

Lower and Mid-Trapezius and Rhomboids — stabilize the scapula by pulling the shoulder blades back and down.

Transverse Abdominis and Deep Internal Obliques — stabilize the pelvis and low back and provide support to the internal organs by *pulling the belly in*.

Training the Abdominal Muscles

A Note about Abdominal Training
During all spinal flexion exercises the transverse abdominis should be contracted to stabilize the pelvis and low back.

During spinal flexion (in the supine position) the rectus abdominis works maximally at approximately 30 - 40 degrees of flexion. Past this point, the hip flexors become the prime mover.

The legs should not be anchored during abdominal training because this allows more leverage from the legs and hip flexors, which increases the risk of low back injury because the hip flexors insert into the lumbar spine.

It is important to give the abdominal muscles adequate rest and stretching, especially following intensive training (just as you would other muscle groups).

Spinal Stabilization Exercises

(Isometric muscle contraction of core muscles)

For the following exercise if you feel any pain or discomfort in the lower back stop the exercise and stretch the area.

Single Leg Lift — Seated on the Ball



Movement description

- sit on the ball with a neutral pelvis and spine
- transverse abdominis contracted
- heels slightly wider than the shoulders
- heels resting on the floor
- arms extended to the side of the body to help with balance
- slowly raise one foot off the floor
- do not lift the knee higher than the hip
- do not rest the foot on the floor in between repetitions

Modifications/Modification

- lift and hold each leg off the floor for 10-60 seconds
- alternate leg lifts
- do sets of repetitions (i.e. 10 reps) per leg
- hold each leg off the floor for 10-30 seconds

The goal of the exercise: To maintain neutral pelvis alignment throughout the leg lifts, no lateral movement of the pelvis. 10 repetitions two sets on each leg. To challenge the exercise perform it with the eyes closed.

Muscles used	Joints/Joint action	Stretch
Agonist — Hip flexors Synergist — Rectus femoris Stabilizers — Core muscles	Hip and knee flexion	

Hamstring Curl Machine



Movement description

- lay prone so the knee just clears the edge of the bench
- adjust the machine so the ankle padding is located behind the ankle and not the heel
- hips should remain in contact with the bench
- flex the knees by drawing the heels towards the hips

Specific safety tips

- do not hyper-extend the back during this exercise
- do not hyper-extend the knee during this exercise
- do not hyper-extend the neck during this exercise

Variations/Modifications

- standing hamstring curl machine
- hamstring curl on physio ball
- hamstring curl at low pulley station
- single leg curl
- with plantar flexed ankle
- with hip external or internal rotation

Sample Pages Chapter 2
These are only some of the pages in the
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Muscles used	Joints/Joint action	Stretch
Agonist — Hamstrings	Knee flexion	
Synergist — Gastrocnemius		
Stabilizers — Core muscles, Gluteus maximus		

Hamstring Curl at Low Pulley



Movement description

- attach the ankle strap with the hook to the front of the ankle
- back away from the stack enough that cable slack is eliminated and the weight is off the stack
- hold on to the machine for support and balance while standing on one foot
- flex the knee by drawing the heel towards the hip
- hold the upper thigh still by keeping the knees together

Specific safety tips

- keep the supporting knee soft
- stabilize the trunk with the abdominal, low back and hip muscles
- do not hyperextend the knee
- keep hips level

Variations/Modifications

- hamstring curl machines

Tibialis Pull

Sample Pages Chapter 2
 These are only some of the pages in the
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Muscles used	Joints/Joint action	Stretch
Agonist — Hamstrings	Knee flexion	
Synergist — Gastrocnemius		
Stabilizers — Core muscles		

Tibialis Pull



Movement description

- sit on the floor, attach the ankle strap to the ball of the foot with the hook next to the sole of the shoe
- back away from the stack enough that cable slack is eliminated and the weight is off the stack with toes pointed
- place a rolled towel under the ankle
- maintain a soft knee on the working leg
- point toe slightly, then dorsi flex ankle
- provide support and stability with the hand and flex toe leg

Specific safety tips

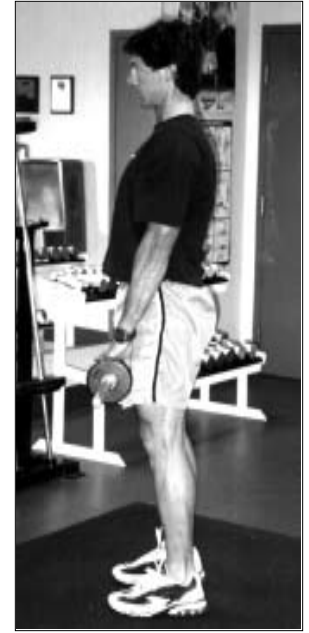
- place weight on the wrists of the supporting hands

Variations/Modifications

- if no cable station is available; one may attach a weight to the ankle strap; sit on a high bench and lift the toes vertically from the floor
- elastic tubing attached to a stable object and the foot

Muscles used	Joints/Joint action	Stretch
Agonist — Tibialis anterior Stabilizers — Core Muscles	Dorsi flexion	

Modified Dead Lift



Movement description

- grip the bar slightly wider than shoulder width apart
- position feet shoulder width apart
- start with neutral posture/keep eyes level with horizon
- begin the descent by moving the hips back while maintaining a neutral spine
- flex at the hips, moving the bar downward close to the thighs, stopping just past the knees
- extend knees, hips and spine to return to standing
- extend knees/hip and spine

Specific safety tips

- maintain a neutral spine throughout the exercise
- do not hyper-extend the spine at the top of the movement
- keep bar close to legs throughout movement

Variations/Modifications

- perform the exercise with barbell or dumbbells
- stand with the ball of the left foot on a raised block or step
- more advanced move — barbell just above ankle

Muscles used	Joints/Joint action	Stretch
Agonist — Erector Spinae, Gluteus Maximus	Spinal extension	
Synergists — Hamstrings, Quadriceps	Hip extension	
Stabilizers — Core Muscles	Knee extension	

Flat Bench Dumbbell Fly



Movement description

- position yourself on the bench so that feet are flat on the floor and under the knees, or on the bench
- maintain a neutral spine
- with arms extended the dumbbells will be balanced over the chest, close together
- palms facing inward
- lower the dumbbells outward in an arc, maintaining slightly bent elbows
- do not lower the dumbbells lower than the shoulders
- the dumbbells, elbows and shoulders should be aligned
- return the dumbbells to the starting position, keeping the elbows slightly bent

Specific safety tips

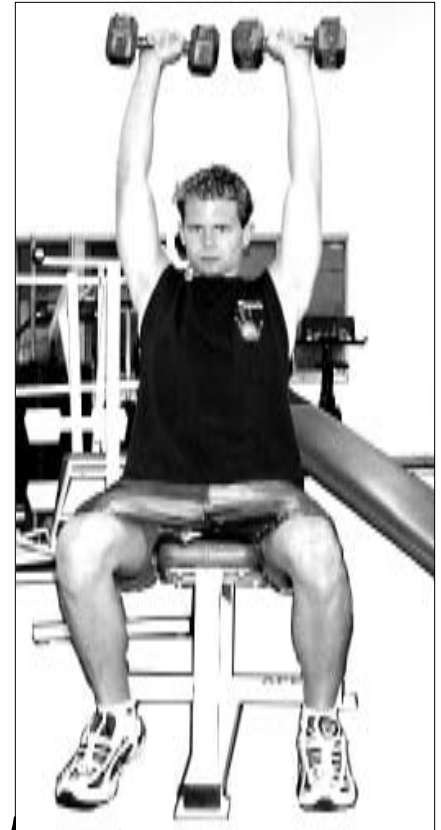
- elbows remain soft throughout the movement
- if there is pain in the shoulder joint discontinue or limit the range of motion
- do not bounce off the bottom of the fly
- stabilize the trunk with the abdominal and back muscles
- do not lift the head off the bench during the fly

Variations/Modifications

- use an incline bench
- use low cables and a flat or incline bench
- cable cross over
- internal rotation of shoulder joint (pronated grip)
- perform on pec-deck

Muscles used	Joints/Joint action	Stretch
Agonist — Pectoralis Major	Shoulder Transverse Adduction	
Synergist — Anterior Deltoids		
Stabilizers — Core Muscles		

Shoulder Press



Movement description

- sit or stand holding dumbbells palms forward; lower dumbbells to just above shoulder height, then press up over head keeping the dumbbells slightly forward (peripheral vision) in order to avoid arching the back.
- stabilize and maintain neutral spine
- press dumbbells overhead to straight arm position
- option to bring dumbbells together at the top

Specific safety tips

- maintain neutral neck and spine
- exhale while pressing overhead
- individuals with high blood pressure may need to avoid overhead lifts

Variations/Modifications

- exercise can be done with barbell in a shoulder press machine
- dumbbells can be brought closer together at the top by turning palms in

Sample Pages Chapter 2
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Muscles used	Joints/Joint action	Stretch
Agonist — Lateral deltoids	Shoulder Abduction	
Synergist — Triceps	Tricep Extension	
Stabilizers — Core mMuscles		

Alternating Dumbbell Curl



Movement description

- grip the dumbbells with semisupinated/semipronated forearm
- stand with knees soft and elbows extended
- maintain neutral scapular position throughout the exercise
- curl the dumbbell upward by first supinating the wrist and then flexing the elbow
- elbows remain slightly ahead of the ribs throughout this exercise

Specific Safety Tips

- those with low back weakness may perform this exercise seated
- do not allow the shoulders to lift during the exercise or protrude
- maintain a neutral spine throughout (not movement in the hips)

Variations/Modifications

- use the low cable system (stand with your back to the cables, use a single hand attachment from behind the body and curl the arm forward and up)
- use supinated, pronated, semi-pronated/semi-supinated (hammer) grip variations

Muscles used	Joints/Joint action	Stretch
Agonist — Biceps Stabilizers — Core Muscles	Elbow Flexion	

Barbell Wrist Curl



Movement description

- grip the barbell with an underhand grip, hands 10 - 12 inches (25-30 cm) apart
- sit on a flat bench with the full forearms supported on the bench
- extend the wrists allowing the barbell to roll out to the fingers (optional)
- flex the wrists curling the barbell upward

Specific Safety Tips

- maintain neutral scapular position throughout the exercise

Variations/Modifications

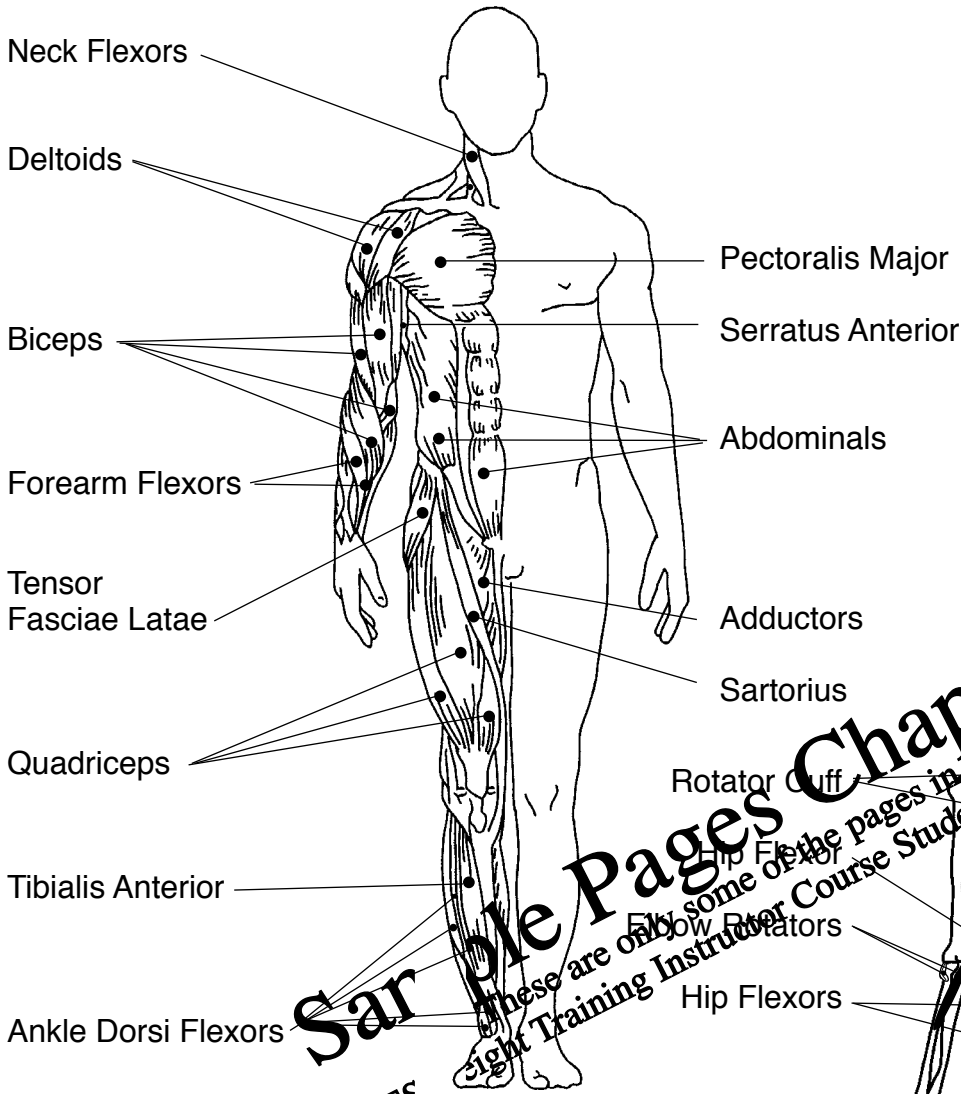
- use dumbbells
- use the low cable station
- use pronated grip to work wrist extensors

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 CFES Weight Training Instructor Course Student Manual Ch 2

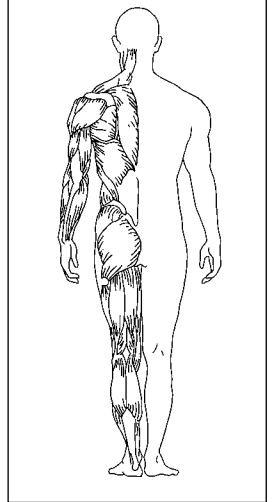
Muscles used	Joints/Joint action	Stretch
Agonist — Wrist Flexors Stabilizers — Core Muscles	Wrist Flexion	

The Anterior Skeletal Muscles

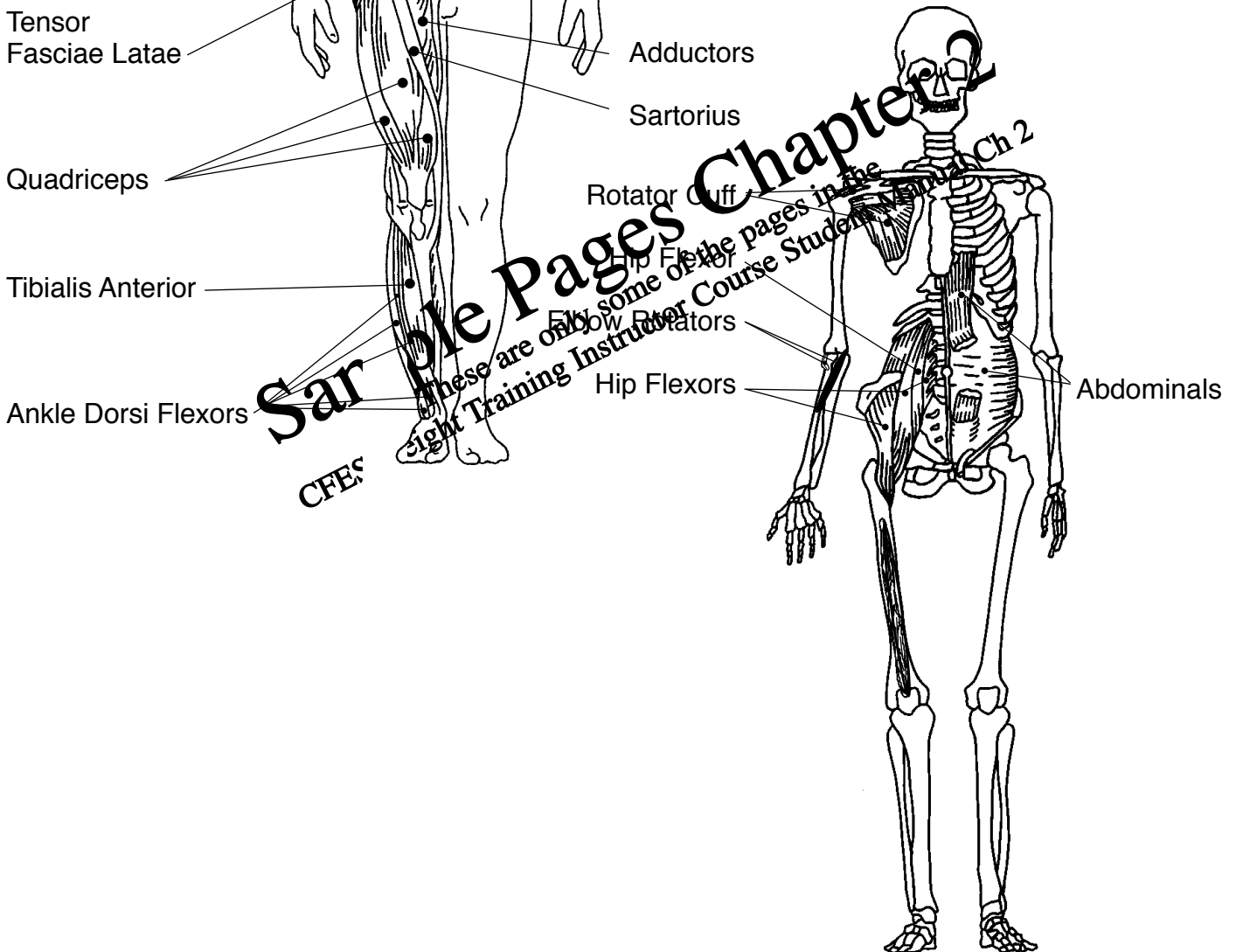
Anterior Superficial View



Posterior Superficial View

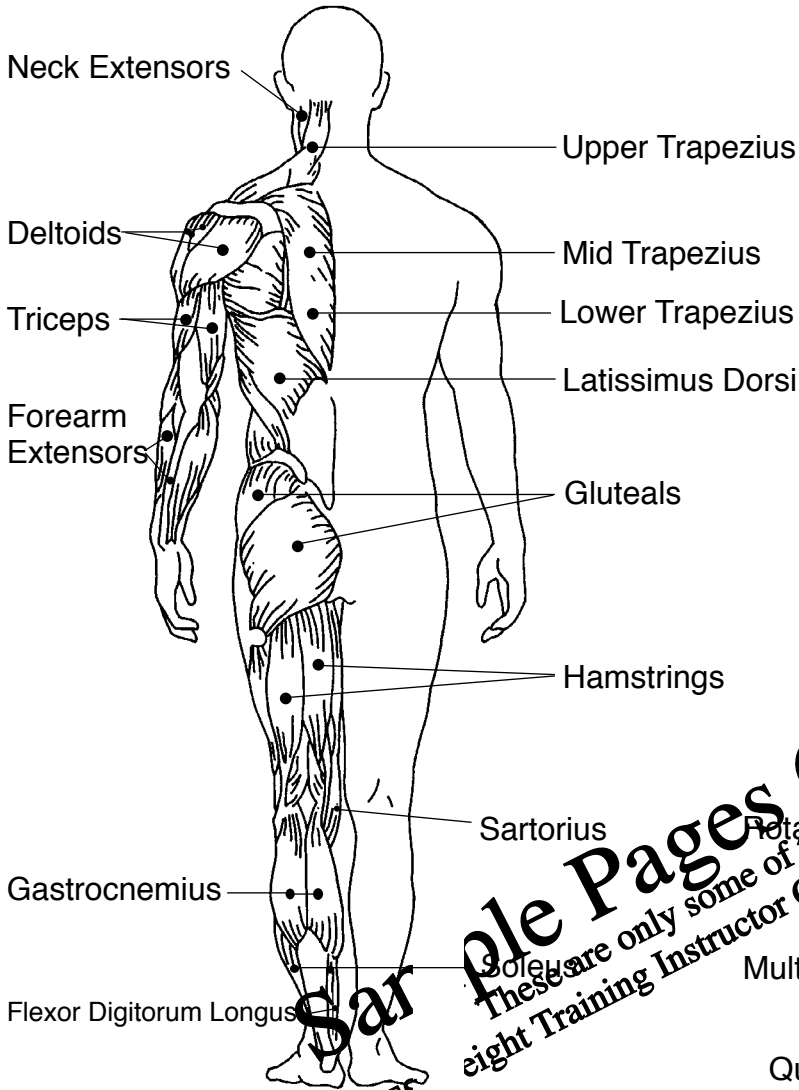


Anterior Deep View

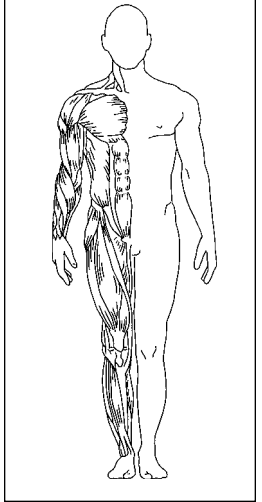


The Posterior Skeletal Muscles

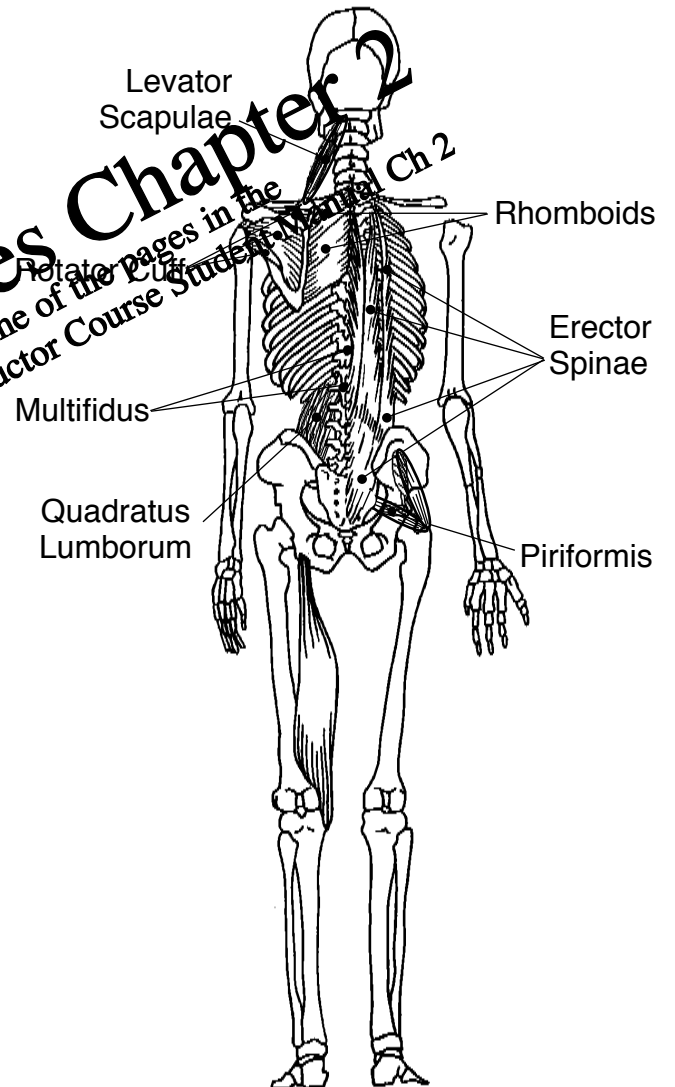
Posterior Superficial View



Anterior Superficial View

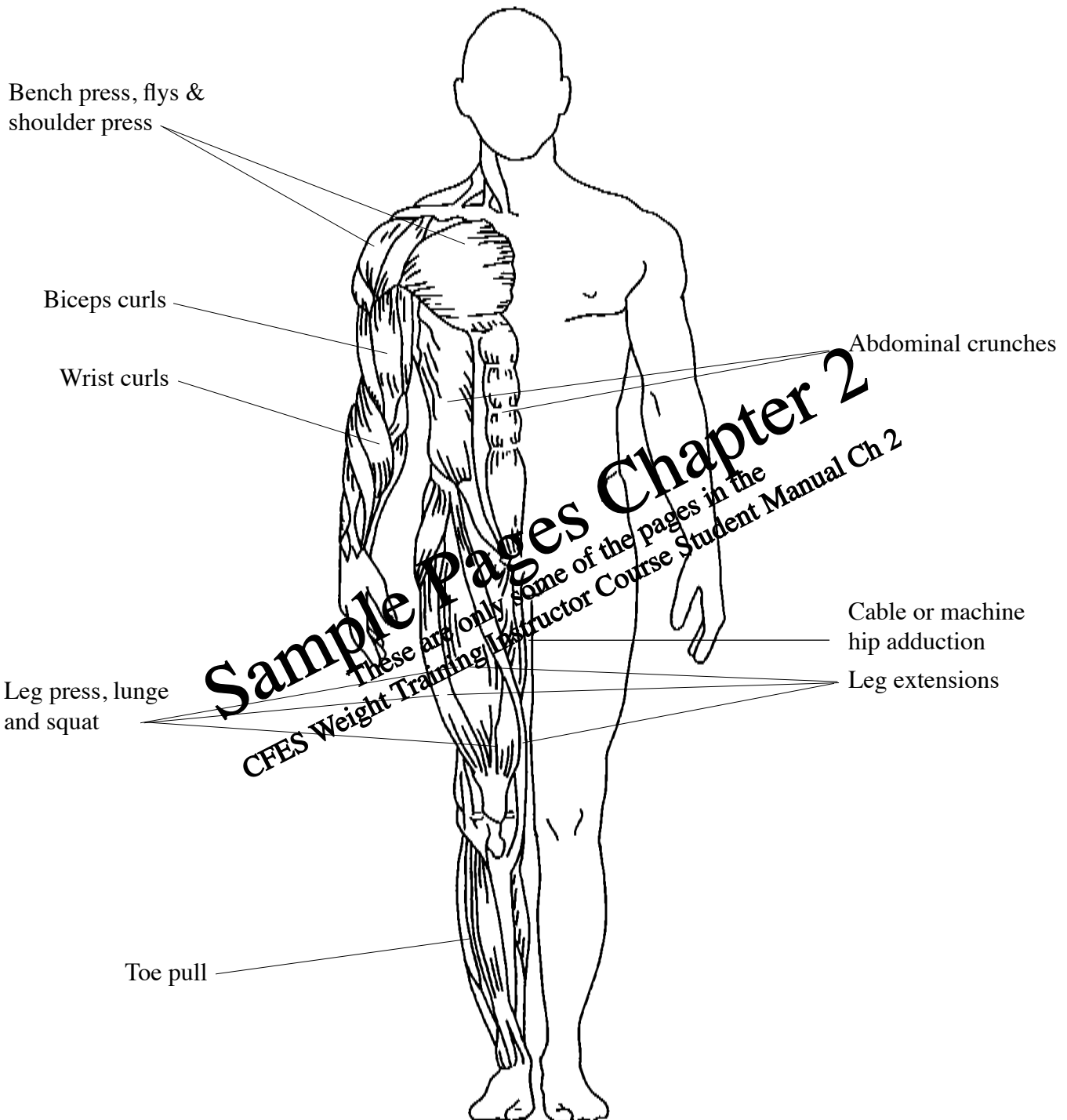


Posterior Deep View

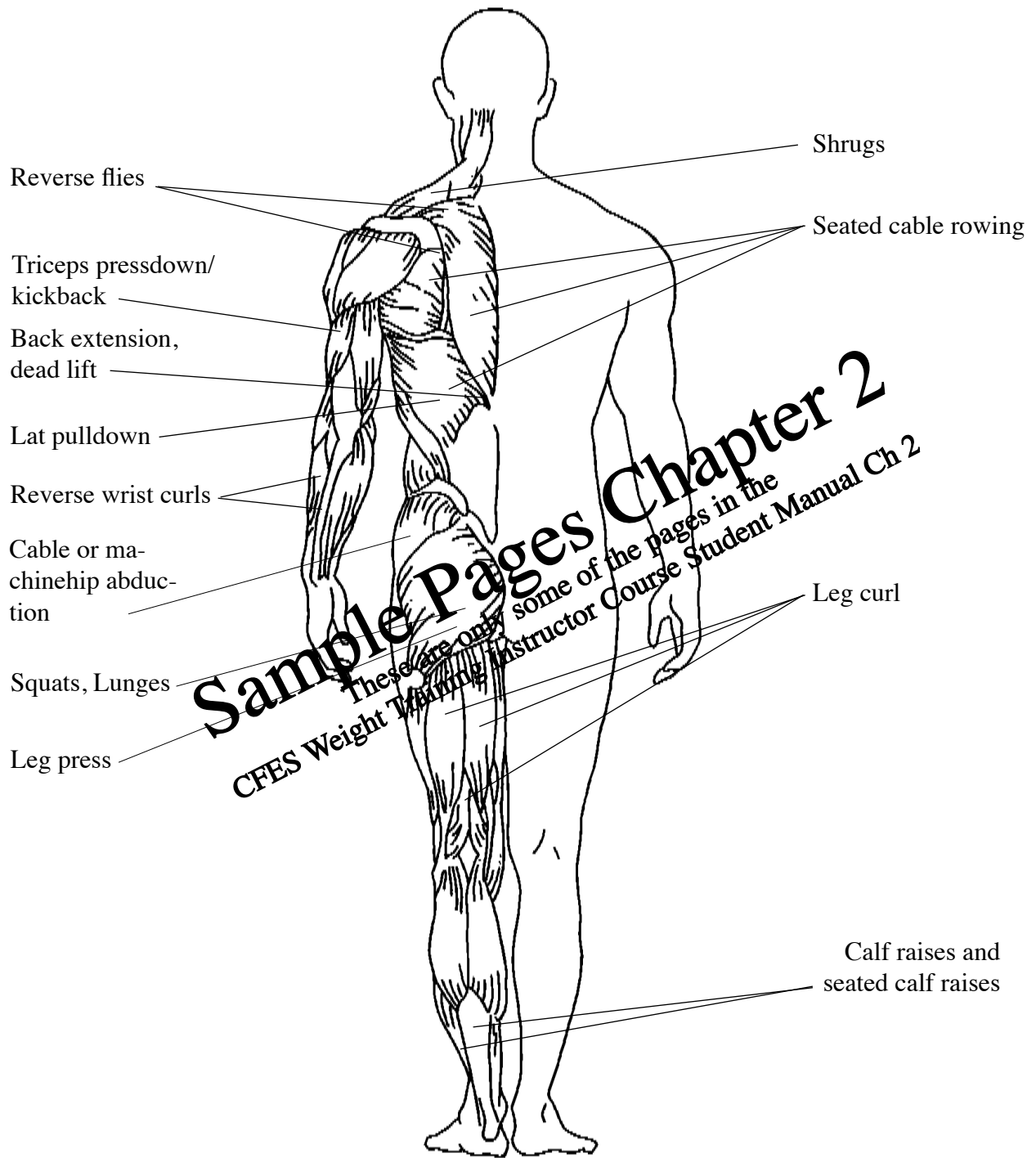


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Weight Training Exercises for the Major Muscle Groups



Weight Training Exercises for the Major Muscle Groups



Choice of Exercise Mode

Muscle	Body Weight	Free Weight*	Machine
Gastrocnemius	Standing Toe Press	Standing weighted Toe Press	Toe Press Machine
Soleus	Seated Toe Press	Seated Weighted Toe Press	Seated Toe Press Machine
Tibialis Anterior	Standing or Seated Toe Pull	Weighted Toe Pull	Toe Pull with Cable
Quadriceps	Squat/Lunge	Weighted Squat/Lunge	Leg Extension Machine
Hamstrings	Standing Leg Curl	Tubing Leg Curl	Leg Curl Machine
Hip Adductors	Inner Thigh Leg Lift	Weighted Inner Thigh Leg Lift	Adductor Machine Adductor Cable Pull
Hip Abductors	Outer Thigh Leg Lift	Weighted Outer Thigh Leg Lift	Abductor Machine Abductor Cable Pull
Gluteus Maximus	Squat/Lunge Prone Leg Lift	Weighted Squat/Lunge	Low Cable Glut Pull
Erector Spinae	Superman (on ball or floor)	Modified Dead Lift	Back Extension Machine
Rectus Abdominus	Crunch	Weighted Crunch	Abdominal Machine
Obliques	Oblique Crunch	Weighted Oblique Crunch	Kneeling Oblique Cable Crunch
Iliopsoas	Hanging Knee Raise	Weighted Hanging Knee Raise	Cable Knee Raise Total Hip Machine
Pectoralis Major	Push Up	Bench Press/Dumbbell Flys	Cable Flys/Pec Deck
Latissimus Dorsi	Chin Up	Dumbbell or Barbell Bent Over Row	Lat Pull Down Seated Cable Row
Deltoids	Inverted Push Ups	Dumbbell or Barbell Shoulder Press DB Front Raise/Lateral Raise/ Reverse Fly	Shoulder Press Cable Front Raise Cable Lateral Raise Reverse Pec Dec
Biceps		Dumbbell or Barbell Arm Curls	Cable Curl
Triceps		Dumbbell or Barbell Arm Extnsions/DB Kickback	Cable Pushdown
Forearm Flexors		Dumbbell or Barbell Wrist Curl	
Forearm Extensors		Dumbbell or Barbell Wrist Curl	

*Free weight resistance can be provided with dumbbells, barbells, plates, or tubing

Compound Exercises vs. Isolation

Muscle	Compound Exercise	Isolation Exercise
Gastrocnemius		Standing Toe Press (free weight or machine)
Soleus		Seated Toe Press (free weight or machine)
Tibialis Anterior		Toe Pull (free weight or machine)
Quadriceps	Squat/Lunge/Leg Press	Leg Extension
Hamstrings	Squat/Lunge/Leg Press (as an assisting muscle)	Leg Curl
Hip Adductors		Adductor Machine Adductor Cable Pull Inner Thigh Leg Lift
Hip Abductors		Abductor Machine Abductor Cable Pull Outer Thigh Leg Lift
Gluteus Maximus	Squat/Lunge	Cable Gluteal Pull Prone Leg Lift
Erector Spinae	Superman on Ball (or on floor)	Back Extension (ball, floor, or machine)
Rectus Abdominus	Plank Sit Up	Crunch
Obliques		Oblique Crunch
Iliopsoas	Knee Raise (standing or "hanging")	Straight Leg Lift
Pectoralis Major	Bench Press Push Ups	Flys Cable, dumbbell, pec deck
Latissimus Dorsi	Lat Pull Down Chin Up	Standing Cable Flys (pulling down)
Deltoids	Shoulder Press	Front Raise/Lateral Raise Reverse Flys
Biceps		Arm Curls
Triceps		Arm Extensions (kickbacks, pushdowns)
Forearm Flexors		Wrist Curls
Forearm Extensors		Reverse Wrist Curls

Weight Lifting Belts

Spotting

Weight Belts

Are weight belts necessary? For most individuals, weight belts are not necessary. Without them, the postural stabilizers are strengthened and are better able to support the back. For individuals doing extremely heavy lifting, however, weight belts are advisable for reducing the risk of back injury. Weight belts do give extra protection and stability to the back, but they should only be used for intensive training involving near-maximum or maximum effort.

Spotting Techniques

Position of the Spotter

In order for the spot to be effective, the spotter must assume a safe, stable body position, paying close attention to stability and support of his/her lower back, stability of the foot position and grip of the bar or partner.

Communication

Before beginning the set the participant and the spotter should communicate as to the number of repetitions to be done, whether or not assistance will be given when racking the weight, etc.

Spotting Techniques for Various Exercises

Squat

- Stand close behind lifter, with feet wide apart
- Place forearms well under lifter's arms
- Squat with the lifter
- Assist lifter by lifting under the arms
- Use your legs to lift
- Assist lifter in racking the bar

Bench Press

Position yourself as close to the bar as possible
Ensure feet are firmly planted

- Knees bent
- Follow movement of the bar with hands under, but not touching the bar
- Keep the back in neutral position

Incline Bench Press

- Same as bench press, however you will need to stand on the spotter's platform provided, or on a bench if there is no platform
- Maintain neutral spine

Dumbbell Flies

- Kneel at the head of the bench
- Grip the lifter's wrists

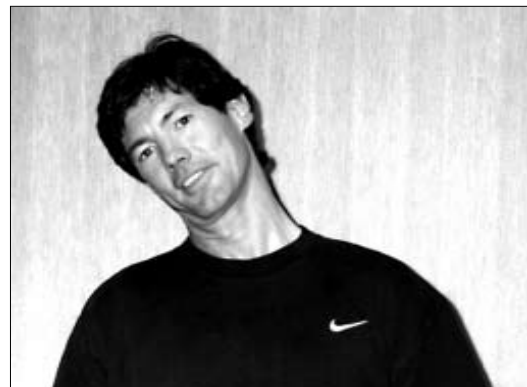
Spotting for Forced Reps

- Apply enough assistance only to keep the bar moving without the lifter breaking proper form.

Sample Pages Chapter 2
CFES Weight Training Instructor Course Student Manual Ch 2
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Stretching Exercises

Neck



Upper Arm Triceps Stretch



Starting Position



Stretch Position

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for Course Student Manual



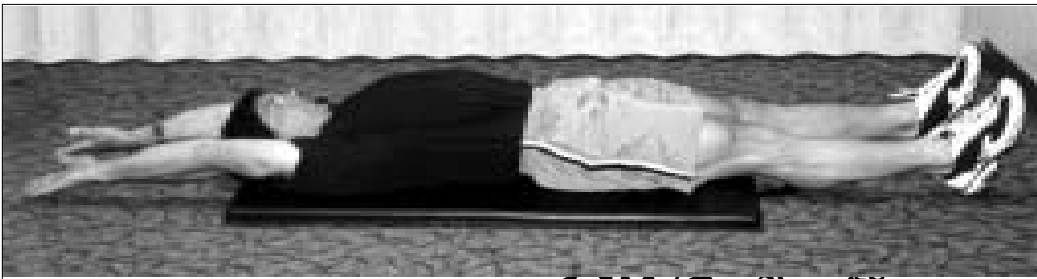
Stretching Exercises

Torso

Gluts/Erector spinae —
back extensor *cat stretch*



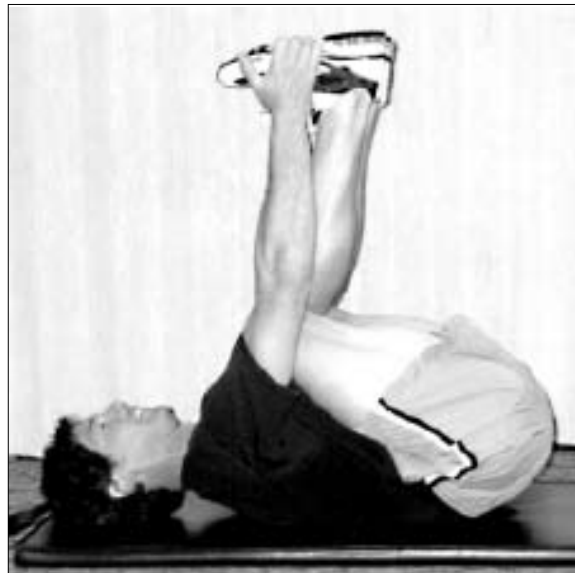
Full body stretch — abdominals



Gluts/Erector spinae —
beginner's stretch



Gluts/Erector spinae — more advanced
stretch. Need good flexibility



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Stretching Exercises

Hips

Hip Adductors



Hip Flexors



Hip Abductors and Glutes

Sam
CFES W/



Quadriceps



Stretching Tips

Stretching Tips

1. Wear comfortable, unrestrictive clothing.
2. Warm up before stretching.
3. Try to stretch in proper postural alignment, along the muscle's line of pull.
4. Learn to focus on the muscle being stretched and concentrate on relaxing it.
5. Exhale into the stretch, then relax and deepen the breathe while holding the stretch.
6. Stretching should be slow, gentle and free of pain. Avoid bouncing because this causes muscle contraction, not relaxation.
7. Gradually increase the duration of each stretch. The longer a stretch is held, the more the muscle will relax and lengthen.
8. Incorporate both passive and active stretching into flexibility training.
9. Never continue doing a stretch if it causes abnormal discomfort; if the pain is extreme, seek medical advice.

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