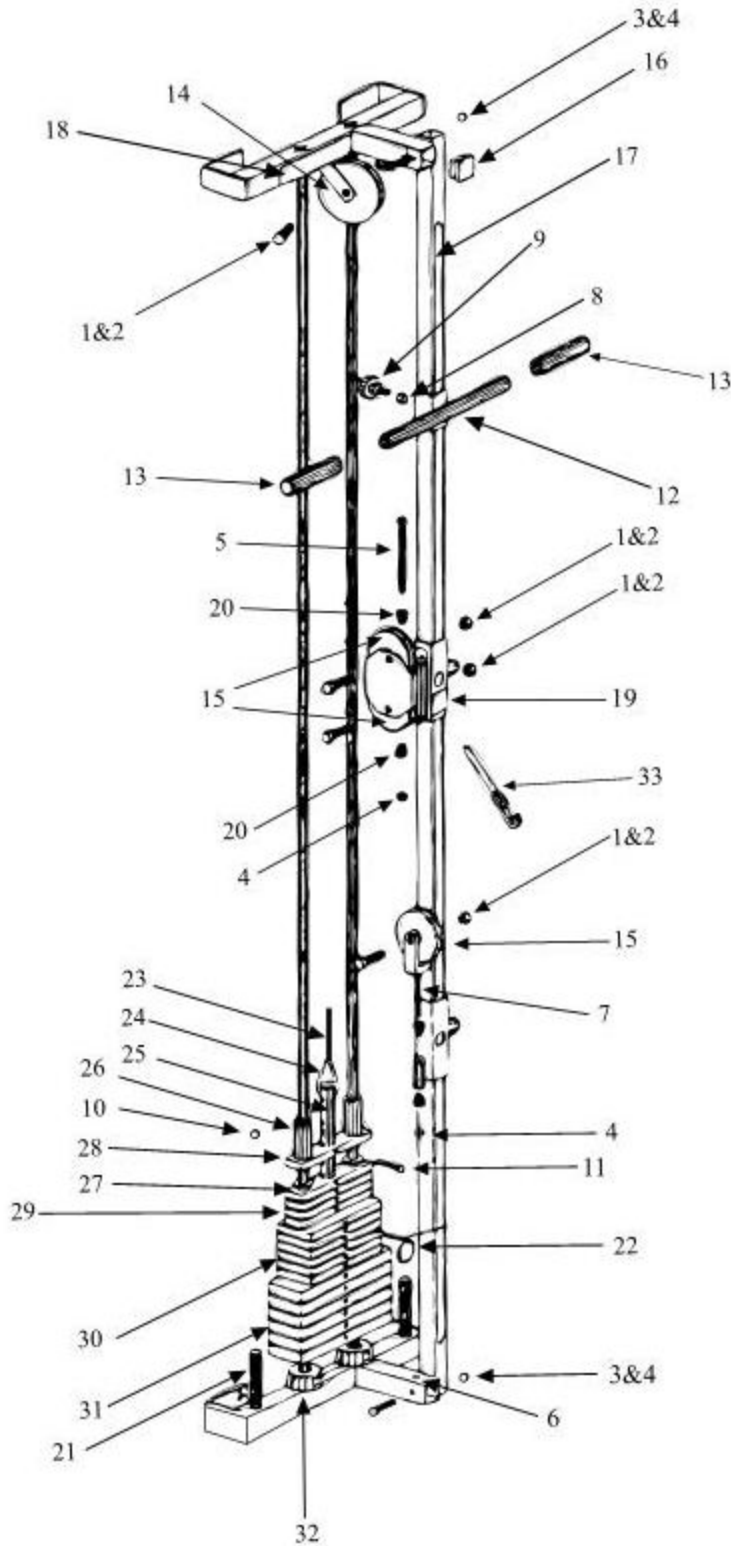


# Unilateral & Bilateral PULLEY SYSTEMS

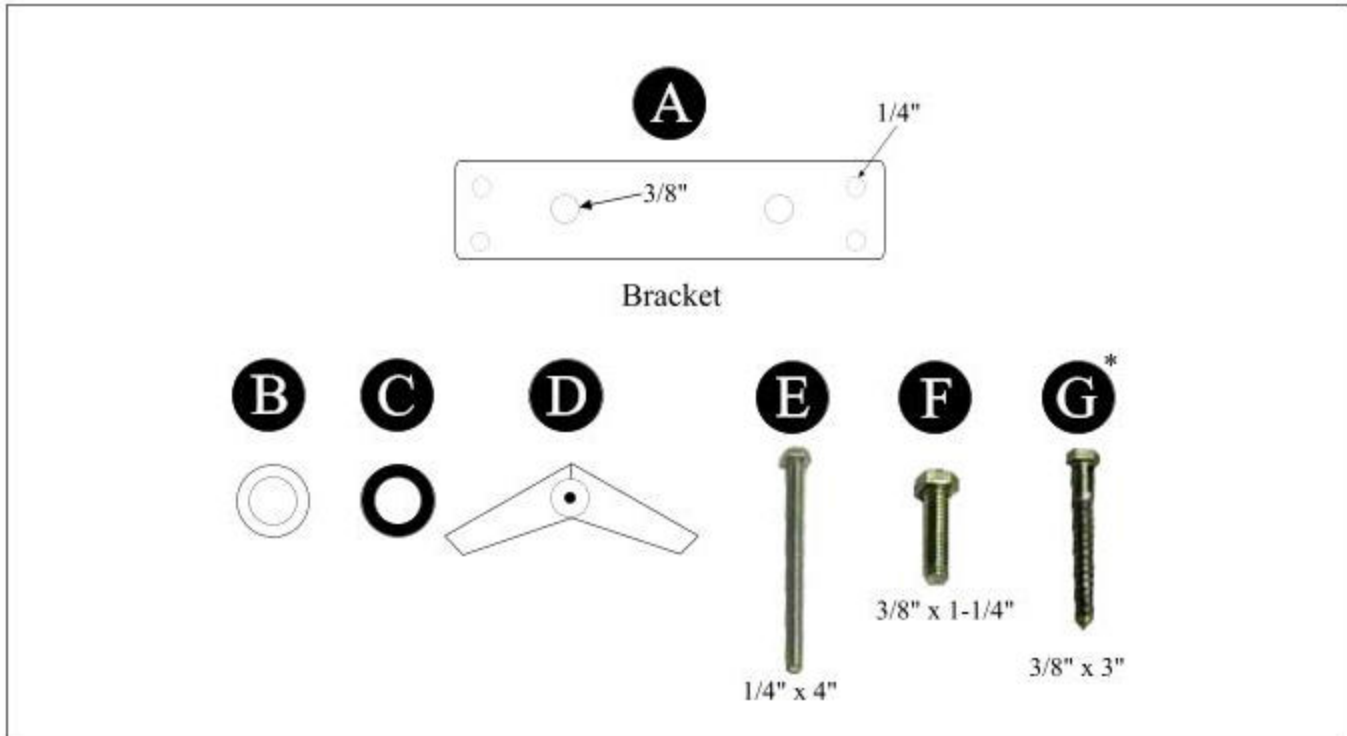
<b>Part #</b>	<b>Description</b>
1	1/2"-13 x 2" Hex bolt
2	1/2"-13 Hex nut
3	3/8"-16 x 3.5" Hex bolt
4	3/8"-16 Hex lock nut
5	3/8"-16 x 5" Hex bolt
6	5/6" Hex nut
7	3/8"-16 x 3" Hex bolt
8	5/16" Hex nut
9	Bar knob
10	5/16" Hex lock nut
11	5/16" x 2" Hex bolt
12	Stabilizer handle
13	Foam hand grips
14	4.5 Pulley
15	3.5 Pulley
16	1.5 x 1.5 Plastic cup
17	1 to 40" Tape measure
18	Sticker
19	"Left hole" sticker
20	1/2" x 3/8" Flanage bushing
21	Chrome pin
22	Weight stack pin
23	Rope L=182
24	Rope clip
25	Plastic shaft (short)
26	Top plate bushing
27	Weight stack bushing
28	1 lb. Top plate
29	1 lb. Weight plate
30	2.5 lb. Weight plate
31	5 lb. Weight plate
32	Weight stack rubber
33	Hook

# Unilateral & Bilateral PULLEY SYSTEMS



# Unilateral Pulley System

## HARDWARE IDENTIFICATION



Item	Description	Qty
A	Bracket	2
B	3/8" Washer-Zinc	4
C	1/4" Washer-Black	8
D	1/4" Toggle Wing	9
E	1/4" x 4" Round Slot	9
F	3/8" x 1-1/4" Bolt	4
G*	3/8" x 3" Lag Bolt	9

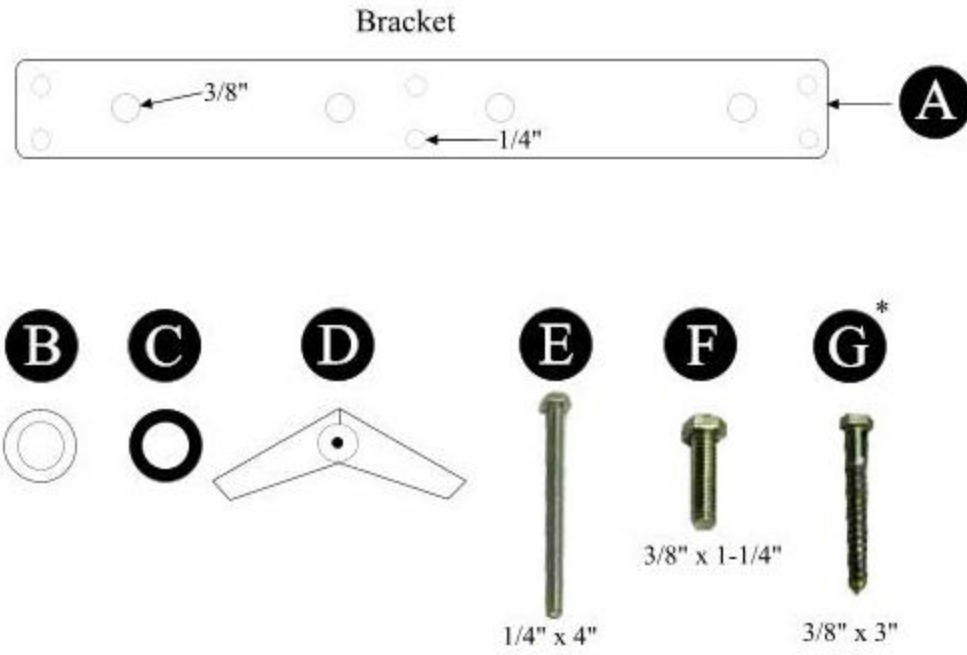
### Tools Required

Magnetic Level	9/16" Wrench	7/16" Socket Wrench
1/4" Drill Bit	9/16" Socket Wrench	1/2" Drive Electrical Drill
5/8" Drill Bit	Hammer	5' Ladder
11/16" Drill Bit	7/32" Allen Key	

\* Optional

# Bilateral Pulley System

## HARDWARE IDENTIFICATION



Item	Description	Qty
A	Bracket	2
B	3/8" Washer-Zinc	8
C	1/4" Washer-Black	12
D	1/4" Toggle Wing	13
E	1/4" x 4" Round Slot	13
F	3/8" x 1-1/4" Bolt	8
G*	3/8" x 3" Lag Bolt	13

### Tools Required

- |                  |                     |                             |
|------------------|---------------------|-----------------------------|
| Magnetic Level   | 9/16" Wrench        | 7/16" Socket Wrench         |
| 1/4" Drill Bit   | 9/16" Socket Wrench | 1/2" Drive Electrical Drill |
| 5/8" Drill Bit   | Hammer              | 5' Ladder                   |
| 11/16" Drill Bit | 7/32" Allen Key     |                             |

\* Optional

# Assembly Instructions

## Step #1

Define the area of installation - ensure that the space along the wall will accommodate the position and length of the upper and lower brackets. Allow approximately 8 feet of space for completing exercises. Obtain the bottom bracket (A) and place it along the assigned area for installation.



From the wall, you need to remove carpet, vinyl, or wood baseboards where the bottom bracket (A) is going to be mounted. Use the bracket as a guide for approximate removal length.



## Step #2

Place the bottom bracket (A) on the bare wall and use the 1/4" pre-drilled holes on the bracket as a guide for drilling. Drill pilot holes into the wall with a 1/4" drill bit. When drilling **each pilot hole**, you may encounter 3 different types of material:

- A. Wood**
- B. Drywall**
- C. Drywall & steel stud**

Please follow the specific instructions for each type listed below:

**A. Wood** - Use the 3/8" x 3" Lag bolts (F).

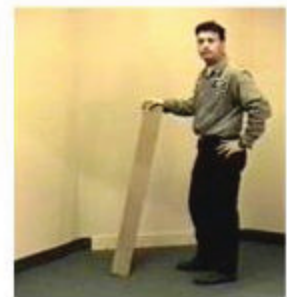
**Note:** Do not make the holes any larger than the 1/4" pilot holes.

**B. Drywall** - Use the 1/4" x 4" Round Slot bolt / Toggle Wing (G\* & H).

**Note:** Where the wall is hollow only drill a 5/8" hole using the pilot holes drilled previously. This procedure typically applies to the top 3 pilot holes on the bottom bracket (A).

**C. Drywall & steel stud** - Use the 1/4" x 4" Round Slot bolt / Toggle Wing (G\* & H).

**Note:** When drilling into a steel stud, make sure the 1/4" pilot hole is completely through the stud, then drill a 5/8" hole and finally drill an 11/16" hole. This will allow the toggle wing (G\*) to go through the stud easily. This procedure typically applies to the bottom 3 pilot holes on the bottom bracket (A).

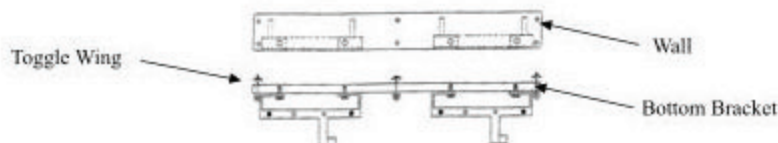


\* Optional

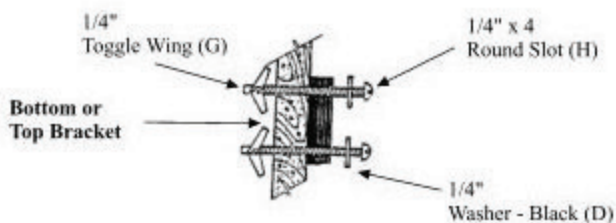
# Assembly Instructions

## Step #3

Take the bottom bracket (A) and begin putting the 1/4" x 4" round slot bolts (H), 1/4" black washers (D), and 1/4" toggle wings (G\*) on the bottom bracket. Line up the toggles on the bracket with the holes on the wall.



Use a hammer to push the toggles through the wall. Make sure that the toggles are completely through and open. Pull on the bracket, if any toggles come out then they must be re-inserted until secure.



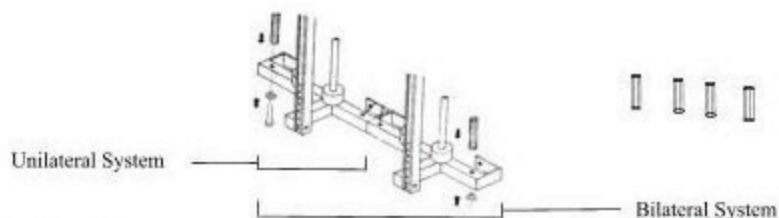
## Step #4

Begin to tighten the bolts by using a 7/16" socket.

**Note:** You may have to hold the bracket while tightening to ensure that the toggle wing (G\*) does not spin.

Once all of the bolts are tightened on the bracket, you are ready to install the unilateral or bilateral systems onto the bracket.

**Note:** Do not pick-up the pulley system by the guide rods - they could bend and cause additional friction with the weight plates during operation.

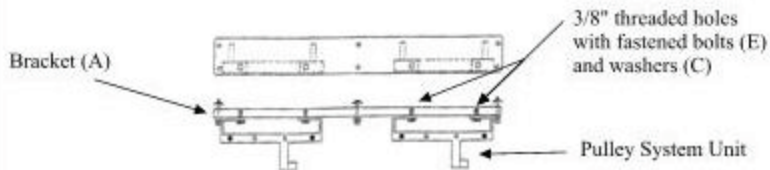


\* Optional

# Assembly Instructions

## Step #5

Line up the holes on the pulley system with the 3/8" pre-drilled and threaded holes on bracket (A).



Fasten using the 3/8" x 1-1/4" bolts (E) and 3/8" zinc washers (C) with a 9/16" wrench.



## Step #6

Take the top bracket (B) and the 3/8" x 1-1/4" bolts (E) and install the bracket to the top of the pulley system.

**Note:** Only hand tightened bolts to the unit.

Push the system against the wall and adjust level - use a magnetic level on the chrome upright that houses the tape measure.

Once level, drill 1/4" pilot holes using the 1/4" pre-drilled holes on the top bracket (B).



# Assembly Instructions

## Step #7

Remove the top bracket (B) from the pulley system and drill 5/8" holes using the pilot holes in the wall as a guide.

**Note:** If you drill into drywall, wood or a steel stud follow the instructions for Step #2 installation.

Install top bracket (B) on the system again and tighten the 3/8" x 1-1/4" bolts (E) using the 3/8" zinc washer (C) provided.

Using **Step #3**, install the remaining hardware provided and push the bolts through the wall with a hammer.

Once the brackets are installed, tighten the 3/8" x 1-1/4" bolts.

**Note:** Using the magnetic level, align both unilateral units along the wall.



## Step #8

Installation of overhead and lower extensions

**Note:** For bilateral pulley systems, installation of upper and lower extensions can be on the same machine or on the either unilateral units depending on your preference.

Remove black end cap at the top of the system and remove 3/8" x 3-1/2" bolt and nut using a 9/16 wrench and socket.

### WP15 - Overhead Extension Accessory



Insert overhead extension and firmly tighten 3/8" x 3-1/2" bolt and nut.





# Assembly Instructions

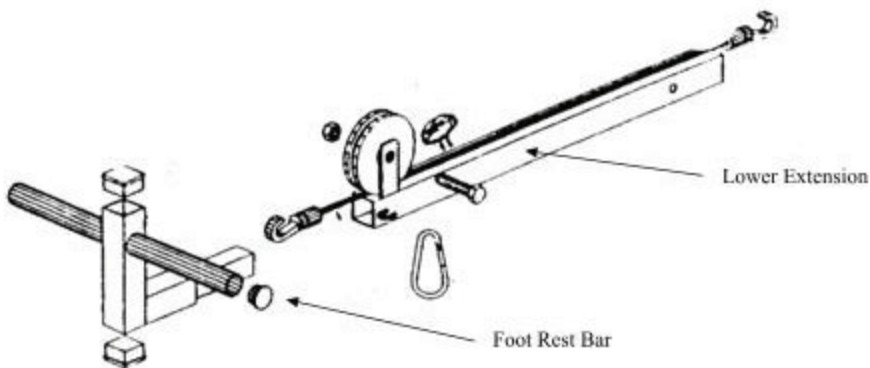
## Step #9

Remove black end cap at the bottom of the system.

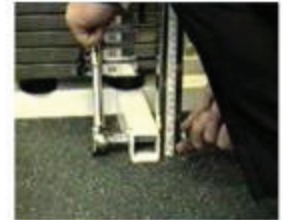
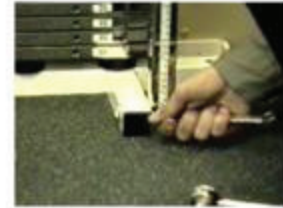
Remove  $3/8"$  x  $3-1/2"$  bolt and nut using a  $9/16"$  wrench and socket.

Insert lower extension and firmly tighten  $3/8"$  x  $3-1/2"$  bolt and nut.

### WP16 - Lower Extension Accessory



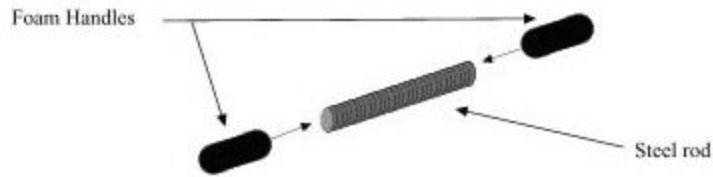
Tighten lower extension with  $5/16"$  knob provided.



# Assembly Instructions

## Step #10

Install steel rod and foam handles into the stabilizer housing.



## Step #11

Test system - Remove weight stack pin and pull on the cable ends.

Make sure the 1 lb. top plate goes up and down smoothly.

Insert weight-stack pin at 50 lb. and test the entire system.

Make sure the bracket is firmly placed on the wall and there is no movement. If there is any movement, check and tighten all bolts to securely fasten the top and bottom brackets and the pulley system unit(s).

Congratulations - the installation is complete.



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# Operation Instructions

The Athena Manufacturing & Design Inc. Pulley Systems provide training for all the major muscle groups in a safe and biomechanically correct pattern. Each feature is designed from a therapeutic and conditioning perspective to provide the treating therapist with the ability to select the most appropriate exercise for each individual.

## Upper and Lower Pulley Adjustment

The Pulley Systems utilize a dual pulley design to facilitate greater control during exercise set-up. The dual pulley is free pivoting to account for changes in the angle of direction during the exercise range of motion. Each pulley is fully independent in action and allows simple adjustment as explained below:

1. Remove weight stack pin.
2. Pull out the pin located on the side of the lower pulley.

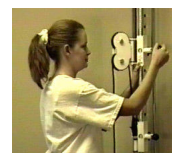


Step 1



Step 2

3. Pull out the black pin and move the upper pulley to the desired height as indicated by the calibrated height measurements.
4. Release pin at desired location ensuring that it locks into place.



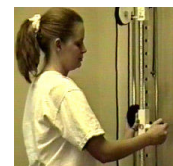
Step 3

5. To determine the starting travel range, move the lower pulley to the desired position and insert pin ensuring that it locks into place.

**Note:** Adjustment of the pulleys will also determine the starting length for the cable. Moving the upper and lower pulleys closer together will provide additional cable length while moving the pulleys apart will reduce the length of the free cable.



Step 4



Step 5

6. Tighten the safety dial on back of the lower pulley.
7. The upper and lower pulleys are now set-up to begin exercise. Insert the weight stack pin into the desired resistance level and begin exercise.



Step 6



Step 7

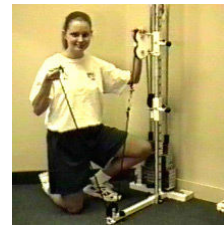
## Overhead and Lower Extensions

The Athena Manufacturing & Design Inc. bilateral Pulley Systems also come with an overhead extension (optional for unilateral pulley system) to allow for increased exercise applications including lat pull-downs, unilateral cable crossovers, shoulder joint extension and triceps press-down.



To use the overhead attachment, simply link the spring safety clip from the overhead cable with the main cable on the pulley system.

The lower extension accommodates exercises such as biceps curls, lifting over a specified range of motion, and upright rows by increasing clearance from the pulley guide rods. Also, provided with the lower extension is a footrest bar to accommodate low pulley rows and calf raises.



To use the lower extension, simply link the spring safety clip from the lower cable with the main cable on the pulley system.

## Support Bars

The Athena Manufacturing & Design Inc. Pulley Systems have body support bars to increase exercise comfort and safety.

**Stabilizer Bar** – To adjust the stabilizer bar, simply loosen the safety dial and move the bar to the desired position. Upon selecting the desired height, simply tighten the safety dial to ensure that the support bar stays in the proper position.



Treatment Application – The stabilizer bar is designed to provide support during unilateral upper body exercises. During the movement, the user simply grasps the support bar with the free hand while performing the exercise.

# Maintenance

Limited maintenance is required to keep the Athena Manufacturing & Design Inc. Pulley Systems functioning to manufactured specifications.

## Lubrication

The system is designed to function as a dry operating system. However, should you experience any static build up due to humidity, or wear, apply a thin film of lubricant on the guide rods.

Every 3 to 4 months wipe the existing lubricant off the weight stack guide rods. Clean using any oiled based solvent. Allow the solvent too completely dry. Apply a new film of lubricant to the entire length of the guide rod.

## Cords

Visually inspect all cords MONTHLY to locate any deterioration. If you notice peeling or tearing on any part of the cord, contact Athena Manufacturing & Design Inc. Adjust the cord tension by loosening or tightening the cable-connecting bolt fastened to the top of the weight stack center shaft. The cord will have a normal tendency to stretch over time. Cords should be replaced every 5 years or if any deterioration is evident.

## Pads

Wipe all seat and back pads regularly with a mild soap and water solution. Salt from perspiration will corrode the material coating and eventually break down the surface.

## Exterior Finish

All metal frames and components have been coated with high-density electrostatic powder coating. This process is durable and easy to clean. Use any mild soap and water solution to clean the frame.

## Bolts

Check all bolts regularly. Loose bolts MUST be tightened immediately. Bolts that remain loose for prolonged periods of time may cause product damage and can result in personal injury.

# General Guidelines for Exercise

The aim of this training manual is to provide a collection of exercises that therapists can use in designing therapeutic conditioning programs. The training manual consists of general and specific resistance exercises that are designed to improve specific and overall body function. Specific exercises consist of active movements that are designed to restore function and strengthen local muscle groups, mobilize joints, and re-educate neuromuscular coordination. General exercises are those that provide movement for the body as a whole. For optimal results, specific exercises should be combined with general exercises to coordinate movements of the injured part with the rest of the locomotor system.

## **Basic Principles for Exercise Conditioning:**

1. Exercises must be based on biomechanically correct starting positions.
2. Exercises must be performed in a smooth and rhythmical manner.
3. Exercises should provide the widest range of movement as possible.
4. Programs must provide smooth progression from the acute phase of injury to full recovery.

## **Starting Position**

The starting positions for the upper and lower pulleys are indicated for an average male and female. These recommendations act as a general guide. The actual height for the upper and lower pulleys should be individually assessed according to the patient's anatomical characteristics, range of motion and physical capabilities. For clarification, the accessories are also listed for each illustrated exercise.

The exercise starting position should facilitate muscular work and be suitable for the phase of recovery. To strengthen weak muscles or mobilize stiff joints, the starting positions for exercise should be as steady as possible. To facilitate a firm origin from which to work, a large base of support will provide a steadier body position. In general, the nearer the center of gravity to the base of support, the steadier the base of support.

Throughout some exercises, additional stability is achieved by arranging the base to be enlarged in the direction of movement.

For example: Staggered forward standing is a steadier position than stride standing for exercises in which the arms are moved in the sagittal plane.

The therapist must observe each exercise to limit the work of compensatory muscle groups and isolate the affected area in a stable, steady position. Illustrations for each exercise provide a

guide for the starting and final positions, but each application should be prescribed according to the patient's individual capabilities.

## **Performance**

### **Resistance:**

Resistance should be individually assessed and monitored according to the patient's capacity throughout limited and full range of motion. The pulley systems provide small weight increments to elicit progressive loading for muscular adaptations.

### **Exercise Repetitions:**

The number of repetitions depends on the patient's capability. Resistance should be chosen so that a minimum of 15 – 20 repetitions and 2 – 3 sets can be performed in one exercise.

### **Training Rate:**

The training rate should maintain a constant velocity throughout the entire range of motion and limit transfer time during flexion and extension phases of movement.

### **Relaxation Phase:**

Performing muscular contractions against a resistance must be followed by relaxation, and the relaxation period must be long enough to allow normal circulatory conditions to be restored. The rest period between individual sets of exercises normally last between 30 seconds to 1 minute.

## **Wide Range Movements**

Except in the early phase of recovery when the muscles are very weak, all exercises which aim at strengthening muscles should provide as wide a range of movement as possible, and each movement should be taken to its limit. This process ensures that all muscle fibers responsible for the specific phases of movement will be exercised normally.

## **Principle of Progression**

The resistance program should focus on increasing small increment loads over a gradual period of time to recondition normal physical capabilities. The interval for therapeutic conditioning should normally be 2 – 3 times per week to elicit improvement in muscular strength, endurance, coordination and range of motion.



# Guidelines for Abdominal Exercises

## General Considerations

### **Position:**

Standing exercises should be carried out with the knees and hip slightly flexed, and the lumbar spine in a stabilized position.

When working across the body in a standing position, slightly bend the knees and arrange the feet shoulder width apart in a slightly staggered stride stance.

Lower extremity exercises in a seated position bring the lumbar spine into slight extension through the pelvis - this extended position should be maintained throughout the exercise.

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## Specific Considerations

Maintain full contraction on abdominals during exercise.

Keep elbows in the starting position throughout the entire range of motion.

Maintain feet on floor at all times.

# Abdominals

Starting Position

Final Position

Average Male    Average Female

**A**

**B**

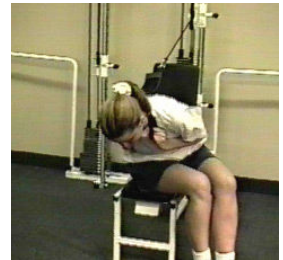
## Abdominal Crunch

Upper Pulley Starting Position:    43        41  
 Lower Pulley Starting Position:    23        21  
 Accessories:    Shoulder Strap  
                     Multi Position Bench



## Oblique Crunch

Upper Pulley Starting Position:    43        41  
 Lower Pulley Starting Position:    23        21  
 Accessories:    Shoulder Strap  
                     Multi Position Bench



## Side Bend

Upper Pulley Starting Position:    31        29  
 Lower Pulley Starting Position:    19        17  
 Accessories:    Single Arm Handle



# Guidelines for Ankle Exercises

## **General Considerations**

### **Position:**

Lower extremity exercises in a seated position bring the lumbar spine into slight extension through the pelvis - this extended position should be maintained throughout the exercise.

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## **Specific Considerations**

Allow no rotation of the knee through the hip during exercise.

Maintain the popliteal fossa against the surface – do not elevate throughout exercise.

During inversion/eversion – concentrate movement on the entire foot and not just the forefoot.



# Guidelines for Back Exercises

## General Considerations

### **Position:**

Standing exercises should be carried out with the knees and hip slightly flexed, and the lumbar spine in a stabilized position.

When working across the body in a standing position, slightly bend the knees and arrange the feet in a slightly staggered stride stance.

When working in line with the body in a standing position, slightly bend the knees and arrange the feet shoulder width apart in a staggered, forward standing stance.

Lower extremity exercises in a seated position bring the lumbar spine into slight extension through the pelvis - this extended position should be maintained throughout the exercise.

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## Specific Considerations

Starting lumbar angle should remain constant throughout exercise.

Focus total movement on arms.

Do not protract the cervical spine throughout exercise.

Do not rotate the shoulders throughout exercise.

Maintain the back in a straight, supported position.

Avoid flexion/extension of the wrists throughout exercise.

# Back

Starting Position

Final Position

Average  
Male

Average  
Female

A

B

## Front Lateral Pull-down

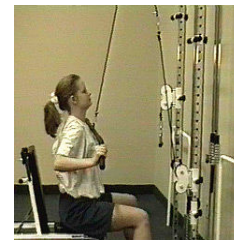
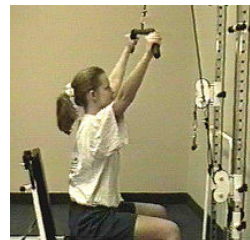
Upper Pulley Starting Position: 45

43

Lower Pulley Starting Position: 25

23

Accessories: Lat Pull-down Bar  
Overhead Extension  
Multi Position Bench



## Reverse Grip Front Lateral Pull-down

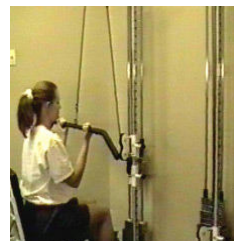
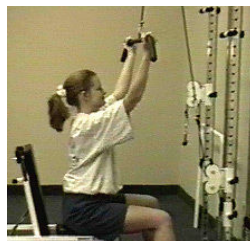
Upper Pulley Starting Position: 45

43

Lower Pulley Starting Position: 25

23

Accessories: Lat Pull-down Bar  
Overhead Extension  
Multi Position Bench



## Rear Lateral Pull-down

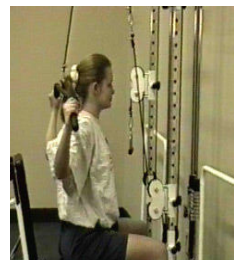
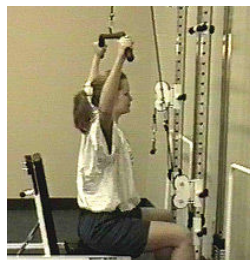
Upper Pulley Starting Position: 45

43

Lower Pulley Starting Position: 25

23

Accessories: Lat Pull-down Bar  
Overhead Extension  
Multi Position Bench



## Dual Close Grip Pull-down

Upper Pulley Starting Position: 45

43

Lower Pulley Starting Position: 25

23

Accessories: Rowing Handle  
Overhead Extension  
Multi Position Bench



## Cable Crossover Pull-down

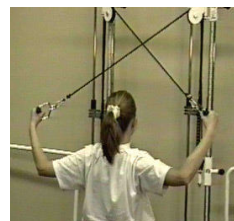
Upper Pulley Starting Position: 61

59

Lower Pulley Starting Position: 33

31

Accessories: Single Arm Handle  
Multi Position Bench



# Back

Starting Position

Final Position

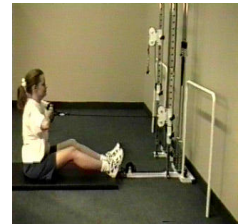
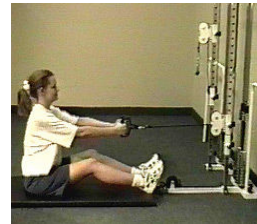
Average Male    Average Female

A

B

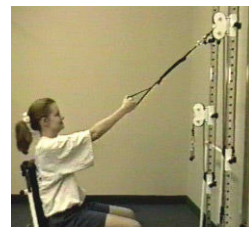
## Seated Row

Upper Pulley Starting Position:    21        19  
 Lower Pulley Starting Position:    15        13  
 Accessories:    Rowing Handle  
                     Lower Extension/Foot Block



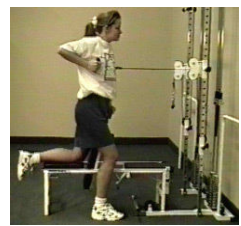
## Mid-Pulley Row

Upper Pulley Starting Position:    73        71  
 Lower Pulley Starting Position:    37        35  
 Accessories:    Shoulder Strap  
                     Multi Position Bench



## Standing One Arm Mid-Row

Upper Pulley Starting Position:    29        27  
 Lower Pulley Starting Position:    17        15  
 Accessories:    Single Arm Handle  
                     Multi Position Bench



## Bent-Over Wide Row

Upper Pulley Starting Position:    29        27  
 Lower Pulley Starting Position:    17        15  
 Accessories:    Wide Lifting Handle



# Back

Starting Position

Final Position

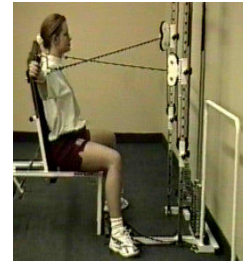
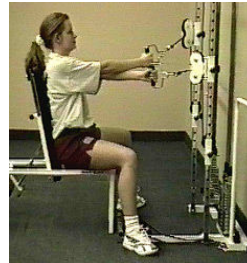
Average Male    Average Female

A

B

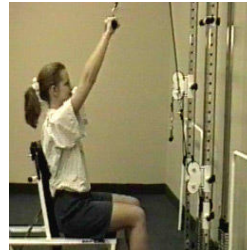
## Scapular Crossovers

Upper Pulley Starting Position:    41        39  
 Lower Pulley Starting Position:    23        21  
 Accessories:    Single Arm Handles  
                      Multi Position Bench



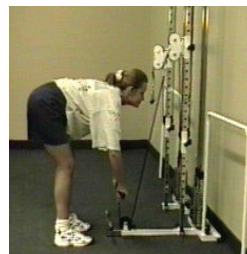
## Scapular Rotations

Upper Pulley Starting Position:    45        43  
 Lower Pulley Starting Position:    25        23  
 Accessories:    Biceps/Triceps Bar  
                      Overhead Extension  
                      Multi Position Bench



## Straight Leg Dead-lift

Upper Pulley Starting Position:    65        63  
 Lower Pulley Starting Position:    33        31  
 Accessories:    Biceps/Triceps Bar





# Guidelines for Biceps Exercises

## General Considerations

### **Position:**

Standing exercises should be carried out with the knees and hip slightly flexed, and the lumbar spine in a stabilized position.

When working across the body in a standing position, slightly bend the knees and arrange the feet in a slightly staggered stride stance.

When working in line with the body in a standing position, slightly bend the knees and arrange the feet shoulder width apart in a staggered, forward standing stance.

Lower extremity exercises in a seated position bring the lumbar spine into slight extension through the pelvis - this extended position should be maintained throughout the exercise.

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## Specific Considerations

Maintain elbows at side throughout entire range of movement.

Do not support elbows on body for leverage.

Maintain wrists in a straight, neutral position throughout entire range of movement.

Movement of the forearms should be directed throughout the sagittal plane.

# Biceps

Starting Position

Final Position

Average  
Male      Average  
Female

**A**

**B**

## Biceps Curl

Upper Pulley Starting Position:      55      53  
 Lower Pulley Starting Position:      29      27  
 Accessories:    Biceps/Triceps Bar  
                          Lower Extension (Optional)



## Reverse Biceps Curl

Upper Pulley Starting Position:      55      53  
 Lower Pulley Starting Position:      29      27  
 Accessories:    Biceps/Triceps Bar  
                          Lower Extension (Optional)



## Concentration Curl

Upper Pulley Starting Position:      21      19  
 Lower Pulley Starting Position:      13      11  
 Accessories:    Single Arm Handle  
                          Lower Extension (Optional)



# Guidelines for Cervical Exercises

## **General Considerations**

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## **Specific Considerations**

Shoulders should remain level in the coronal and transverse planes throughout exercise.

Isolate motion along one plane during movement.

Avoid flexion/extension during protraction/retraction.

Maintain back in a straight, upright position.

# Cervical

Starting Position

Final Position

Average Male    Average Female

A

B

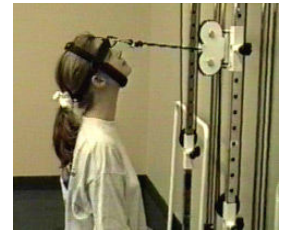
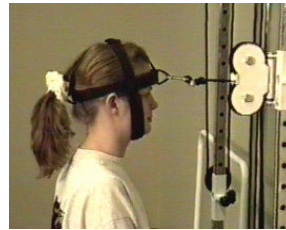
## Seated Cervical Flexion

Upper Pulley Starting Position:    49    47  
 Lower Pulley Starting Position:    29    27  
 Accessories:    Cervical Strap  
                     Multi Position Bench



## Seated Cervical Extension

Upper Pulley Starting Position:    49    47  
 Lower Pulley Starting Position:    29    27  
 Accessories:    Cervical Strap  
                     Multi Position Bench



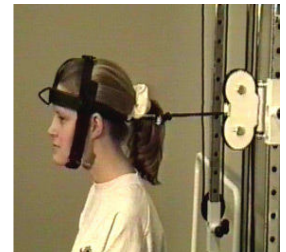
## Seated Cervical Lateral Flexion

Upper Pulley Starting Position:    49    47  
 Lower Pulley Starting Position:    29    27  
 Accessories:    Cervical Strap  
                     Multi Position Bench



## Seated Cervical Protraction

Upper Pulley Starting Position:    49    47  
 Lower Pulley Starting Position:    29    27  
 Accessories:    Cervical Strap  
                     Multi Position Bench



# Cervical

Starting Position

Final Position

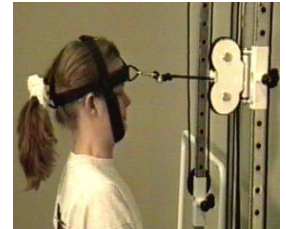
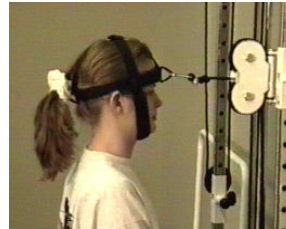
Average  
Male      Average  
Female

**A**

**B**

## Seated Cervical Retraction

Upper Pulley Starting Position:	49	47
Lower Pulley Starting Position:	29	27
Accessories:	Cervical Strap Multi Position Bench	



# Guidelines for Chest Exercises

## General Considerations

### **Position:**

Standing exercises should be carried out with the knees and hip slightly flexed, and the lumbar spine in a stabilized position.

When working across the body in a standing position, slightly bend the knees and arrange the feet in a slightly staggered stride stance.

When working in line with the body in a standing position, slightly bend the knees and arrange the feet shoulder width apart in a staggered, forward standing stance.

Lower extremity exercises in a seated position bring the lumbar spine into slight extension through the pelvis - this extended position should be maintained throughout the exercise.

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## Specific Considerations

Avoid protraction of the cervical spine during exercise.

Avoid rotation of shoulders throughout exercise.

Avoid shrugging the shoulders throughout exercise

# Chest

Starting Position

Final Position

Average Male    Average Female

**A**

**B**

## Chest Press

Upper Pulley Starting Position:    41        39  
 Lower Pulley Starting Position:    27        25  
 Accessories:    Single Arm Handles  
                          Multi Position Bench



## Seated Pec Flys

Upper Pulley Starting Position:    49        47  
 Lower Pulley Starting Position:    27        25  
 Accessories:    Ankle/Wrist Straps  
                          Multi Position Bench



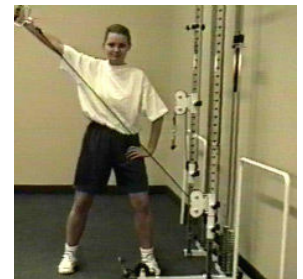
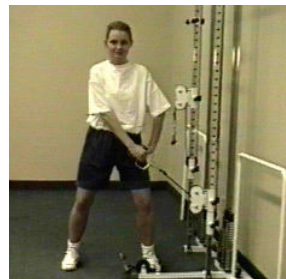
## Single Arm Chest Fly

Upper Pulley Starting Position:    17        15  
 Lower Pulley Starting Position:    9         7  
 Accessories:    Single Arm Handle



## Low Cable Crossover

Upper Pulley Starting Position:    31        29  
 Lower Pulley Starting Position:    19        17  
 Accessories:    Single Arm Handle



# Chest

Starting Position

Final Position

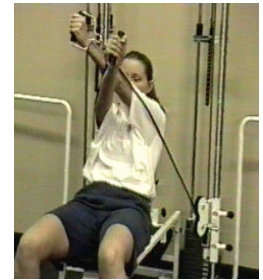
Average Male    Average Female

## Incline Cable Crossover

Upper Pulley Starting Position:    21      19  
 Lower Pulley Starting Position:    11      9  
 Accessories:    Single Arm Handles  
                     Multi Position Bench

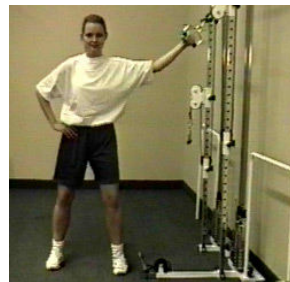
**A**

**B**



## High Cable Crossover

Upper Pulley Starting Position:    71      69  
 Lower Pulley Starting Position:    39      37  
 Accessories:    Single Arm Handle





# Guidelines for Hip Exercises

## General Considerations

### **Position:**

Standing exercises should be carried out with the knees and hip slightly flexed, and the lumbar spine in a stabilized position.

When working across the body in a standing position, slightly bend the knees and arrange the feet in a slightly staggered stride stance.

When working in line with the body in a standing position, slightly bend the knees and arrange the feet shoulder width apart in a staggered, forward standing stance.

Lower extremity exercises in a seated position bring the lumbar spine into slight extension through the pelvis - this extended position should be maintained throughout the exercise.

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## Specific Considerations

Contralateral leg must remain in a constant position (no movement) throughout exercise.

Avoid movement of ipsilateral hip joint during exercise – Concentrate movement on leg and maintain hip in a constant position.

Maintain lumbar spine in a vertical position with no flexion/extension/rotation during movement.

- Exception: Prone internal/external hip rotation

# Hip

Starting Position

Final Position

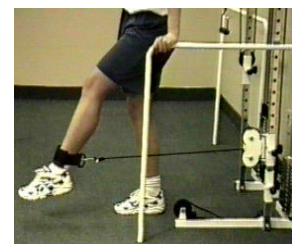
Average Male    Average Female

**A**

**B**

## Hip Flexion

Upper Pulley Starting Position:    15    13  
 Lower Pulley Starting Position:    9    7  
 Accessories:    Ankle/Wrist Strap



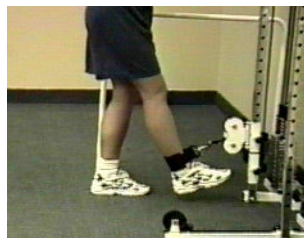
## Bent Leg Hip Flexion

Upper Pulley Starting Position:    29    27  
 Lower Pulley Starting Position:    19    17  
 Accessories:    Thigh Strap  
 Optional:    Place thigh strap below knee joint



## Hip Extension

Upper Pulley Starting Position:    15    13  
 Lower Pulley Starting Position:    9    7  
 Accessories:    Ankle/Wrist Strap



## Hip Abduction

Upper Pulley Starting Position:    15    13  
 Lower Pulley Starting Position:    9    7  
 Accessories:    Ankle/Wrist Strap  
                          Stabilizer Bar



Please, note that the handrails are discontinued.

# Hip

Starting Position

Final Position

Average Male    Average Female

**A**

**B**

## Hip Adduction

Upper Pulley Starting Position:    15    13  
 Lower Pulley Starting Position:    9    11  
 Accessories:    Ankle/Wrist Strap  
    Stabilizer Bar



## Prone Internal Hip Rotation

Upper Pulley Starting Position:    17    15  
 Lower Pulley Starting Position:    9    7  
 Accessories:    Ankle/Wrist Strap



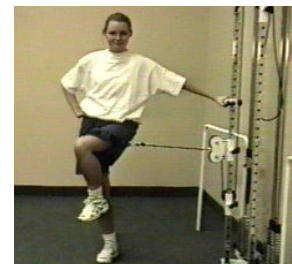
## Prone External Hip Rotation

Upper Pulley Starting Position:    17    15  
 Lower Pulley Starting Position:    9    7  
 Accessories:    Ankle/Wrist Strap



## Standing Internal Hip Rotation

Upper Pulley Starting Position:    37    35  
 Lower Pulley Starting Position:    21    19  
 Accessories:    Thigh Strap  
    Stabilizer Bar



# Hip

Starting Position

Final Position

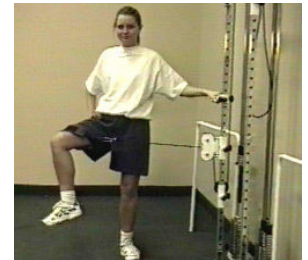
Average Male    Average Female

**A**

**B**

## Standing External Hip Rotation

Upper Pulley Starting Position:	37	25
Lower Pulley Starting Position:	21	19
Accessories:	Thigh Strap Stabilizer Bar	



# Guidelines for Leg Exercises

## General Considerations

### **Position:**

Standing exercises should be carried out with the knees and hip slightly flexed, and the lumbar spine in a stabilized position.

When working across the body in a standing position, slightly bend the knees and arrange the feet in a slightly staggered stride stance.

When working in line with the body in a standing position, slightly bend the knees and arrange the feet shoulder width apart in a staggered, forward standing stance.

Lower extremity exercises in a seated position bring the lumbar spine into slight extension through the pelvis - this extended position should be maintained throughout the exercise.

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## Specific Considerations

Back remains straight throughout the entire range of motion.

During lunges, the forward flexed knee should not go beyond the big toe.

During leg curls, knees should remain parallel to one another.

# Legs

Starting Position

Final Position

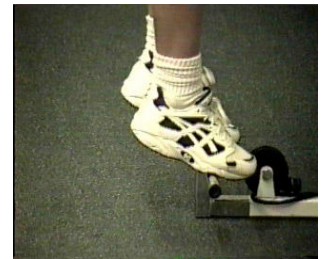
Average Male    Average Female

**A**

**B**

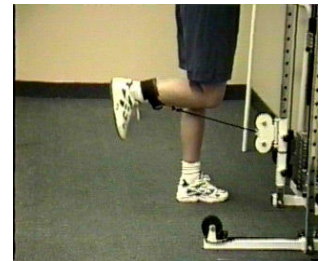
## Calf Raises

Upper Pulley Starting Position:    N/A        N/A  
 Lower Pulley Starting Position:    N/A        N/A  
 Accessories:    Lower Extension/Foot Block  
                          Stabilizer Bar



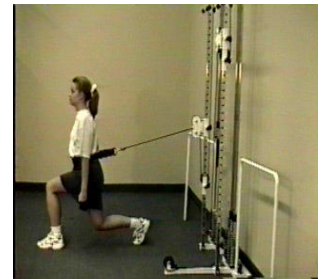
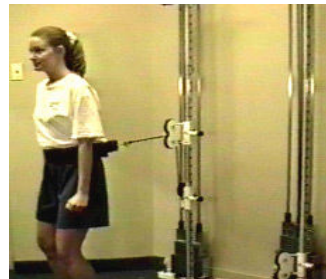
## Standing Leg Curl

Upper Pulley Starting Position:    15        13  
 Lower Pulley Starting Position:    9         7  
 Accessories:    Ankle/Wrist Strap  
                          Stabilizer bar



## Lunges

Upper Pulley Starting Position:    43        41  
 Lower Pulley Starting Position:    27        25  
 Accessories:    Waist Strap



## Assisted Negative Squat

Upper Pulley Starting Position:    35        33  
 Lower Pulley Starting Position:    19        17  
 Accessories:    Negative Body Weight Bar  
                          Overhead Extension



# Legs

Starting Position

Final Position

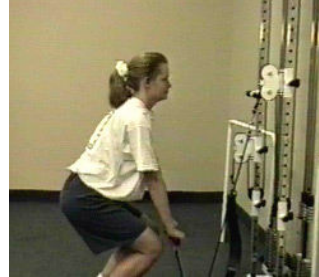
Average  
Male      Average  
Female

**A**

**B**

## Dead-lift

Upper Pulley Starting Position:	63	61
Lower Pulley Starting Position:	33	31
Accessories:	Biceps/Triceps Bar Lower Extension	



# Guidelines for Shoulder Exercises

## General Considerations

### **Position:**

Standing exercises should be carried out with the knees and hip slightly flexed, and the lumbar spine in a stabilized position.

When working across the body in a standing position, slightly bend the knees and arrange the feet in a slightly staggered stride stance.

When working in line with the body in a standing position, slightly bend the knees and arrange the feet shoulder width apart in a staggered, forward standing stance.

Lower extremity exercises in a seated position bring the lumbar spine into slight extension through the pelvis - this extended position should be maintained throughout the exercise.

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## Specific Considerations

Shoulders should maintain a constant position – limit bilateral rotation.

During internal/external rotation, elbows should remain in a constant position.

Maintain back in a straight, supported position.

Maintain wrists in a neutral position at all times – limit flexion/extension during movement.



# Shoulder

Starting Position

Final Position

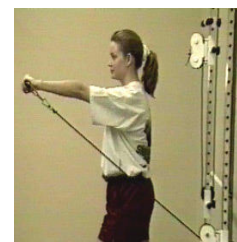
Average Male    Average Female

**A**

**B**

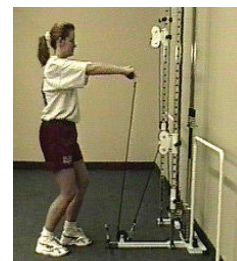
## Single Grip Front Shoulder Raise

Upper Pulley Starting Position:    33    31  
 Lower Pulley Starting Position:    19    17  
 Accessories:    Single Arm Handle



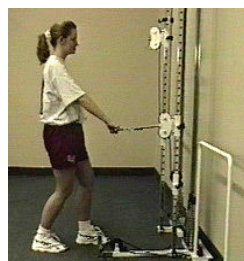
## Dual Grip Front Shoulder Raise

Upper Pulley Starting Position:    65    63  
 Lower Pulley Starting Position:    39    37  
 Accessories:    Bicep/Tricep Bar  
                          Lower Extension



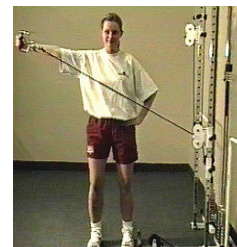
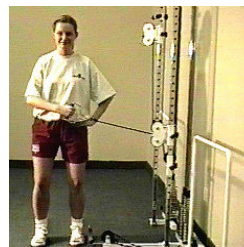
## Shoulder Extension

Upper Pulley Starting Position:    35    33  
 Lower Pulley Starting Position:    19    17  
 Accessories:    Single Arm Handle



## Lateral Raise

Upper Pulley Starting Position:    49    47  
 Lower Pulley Starting Position:    27    25  
 Accessories:    Single Arm Handle



# Shoulder

Starting Position

Final Position

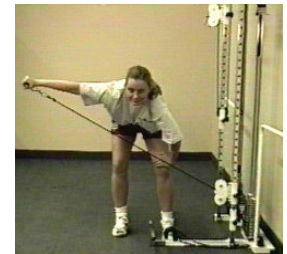
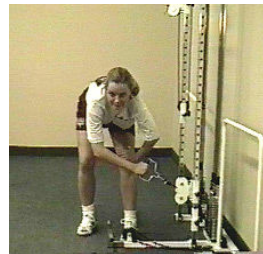
Average Male    Average Female

A

B

## Bent-Over Raise

Upper Pulley Starting Position:    17        15  
 Lower Pulley Starting Position:    9         7  
 Accessories:    Single Arm Handle



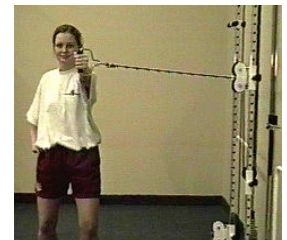
## Horizontal Shoulder Abduction

Upper Pulley Starting Position:    59        57  
 Lower Pulley Starting Position:    41        39  
 Accessories:    Single Arm Handle



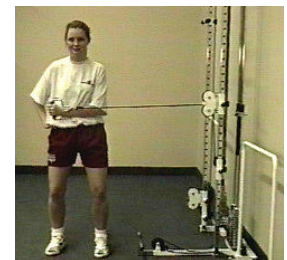
## Horizontal Shoulder Adduction

Upper Pulley Starting Position:    59        57  
 Lower Pulley Starting Position:    31        29  
 Accessories:    Single Arm Handle



## Internal Rotation

Upper Pulley Starting Position:    45        43  
 Lower Pulley Starting Position:    29        27  
 Accessories:    Single Arm Handle



# Shoulder

Starting Position

Final Position

Average Male    Average Female

**A**

**B**

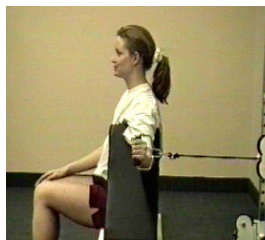
## External Rotation

Upper Pulley Starting Position:    45        43  
 Lower Pulley Starting Position:    29        27  
 Accessories:    Single Arm Handle



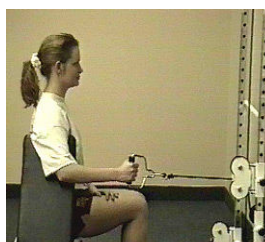
## Angle Specific Internal Rotation

Upper Pulley Starting Position:    33        31  
 Lower Pulley Starting Position:    25        23  
 Accessories:    Single Arm Handle  
                     Multi Position Bench



## Angle Specific External Rotation

Upper Pulley Starting Position:    33        31  
 Lower Pulley Starting Position:    25        23  
 Accessories:    Single Arm Handle  
                     Multi Position Bench



## Assisted Internal Rotation

Upper Pulley Starting Position:    27        25  
 Lower Pulley Starting Position:    17        15  
 Accessories:    Shoulder Rotation Apparatus  
                     Multi Position Bench



# Shoulder

Starting Position

Final Position

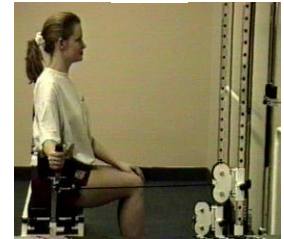
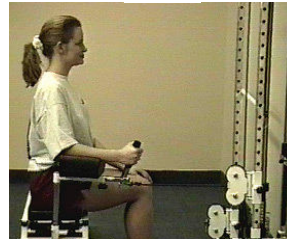
Average Male    Average Female

A

B

## Assisted External Rotation

Upper Pulley Starting Position:    27    25  
 Lower Pulley Starting Position:    17    15  
 Accessories:    Shoulder Rotation Apparatus  
                     Multi Position Bench



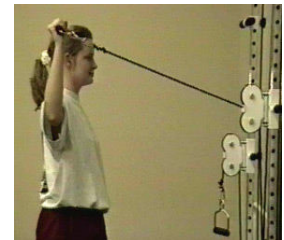
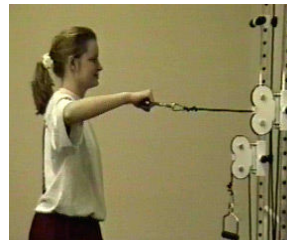
## Horizontal Abduction With Internal Rotation

Upper Pulley Starting Position:    65    63  
 Lower Pulley Starting Position:    27    25  
 Accessories:    Single Arm Handle



## Horizontal Abduction With External Rotation

Upper Pulley Starting Position:    57    55  
 Lower Pulley Starting Position:    31    29  
 Accessories:    Single Arm Handle



## Seated Horizontal Abduction With Internal Rotation

Upper Pulley Starting Position:    45    43  
 Lower Pulley Starting Position:    29    27  
 Accessories:    Single Arm Handle  
                     Multi Position Bench



# Shoulder

Starting Position

Final Position

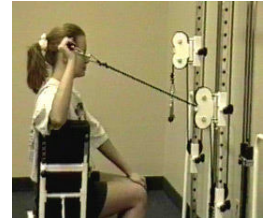
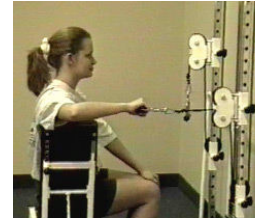
Average  
Male      Average  
Female

**A**

**B**

## Seated Horizontal Abduction With External Rotation

Upper Pulley Starting Position:      35      33  
 Lower Pulley Starting Position:      19      17  
 Accessories:    Single Arm Handles  
                     Multi Position Bench



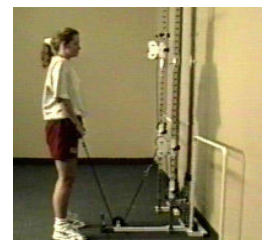
## Dual Horizontal Abduction With Internal/External Rotation

Upper Pulley Starting Position:      49      47  
 Lower Pulley Starting Position:      29      27  
 Accessories:    Single Arm Handles  
                     Multi Position Bench



## Shoulder Shrug

Upper Pulley Starting Position:      65      63  
 Lower Pulley Starting Position:      39      37  
 Accessories:    Biceps/Triceps Bar  
                     Lower Extension



## Upright Row

Upper Pulley Starting Position:      65      63  
 Lower Pulley Starting Position:      39      37  
 Accessories:    Biceps/Triceps Bar  
                     Lower Extension (Optional)



# Shoulder

Starting Position

Final Position

Average  
Male      Average  
Female

**A**

**B**

## Assisted Passive Shoulder ROM

Upper Pulley Starting Position:      N/A      N/A  
Lower Pulley Starting Position:      N/A      N/A  
Accessories:      Single Arm Handles  
                         Overhead Extension



# Guidelines for Tricep Exercises

## General Considerations

### **Position:**

Standing exercises should be carried out with the knees and hip slightly flexed, and the lumbar spine in a stabilized position.

When working across the body in a standing position, slightly bend the knees and arrange the feet in a slightly staggered stride stance.

When working in line with the body in a standing position, slightly bend the knees and arrange the feet shoulder width apart in a staggered, forward standing stance.

Lower extremity exercises in a seated position bring the lumbar spine into slight extension through the pelvis - this extended position should be maintained throughout the exercise.

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## Specific Considerations

Maintain elbow(s) in a fixed position throughout the entire range of movement.

Keep elbows in towards the sides of the body without any physical contact.

Maintain wrists in a neutral, straight position at all times.

Avoid cervical protraction.

# Triceps

Starting Position

Final Position

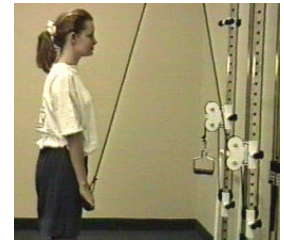
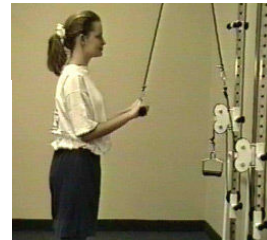
Average Male    Average Female

A

B

## Tricep Pushdown

Upper Pulley Starting Position:    53    51  
 Lower Pulley Starting Position:    33    31  
 Accessories:    Bicep/Tricep Bar  
                           Overhead Extension



## Tricep Kick-Back

Upper Pulley Starting Position:    19    17  
 Lower Pulley Starting Position:    11    9  
 Accessories:    Shoulder Strap  
                           Stabilizer Bar



## Overhead Tricep Extension

Upper Pulley Starting Position:    53    51  
 Lower Pulley Starting Position:    29    27  
 Accessories:    Shoulder Strap  
                           Multi Position Bench



## Seated Tricep Press

Upper Pulley Starting Position:    41    39  
 Lower Pulley Starting Position:    27    25  
 Accessories:    Single Arm Handles  
                           Multi Position Bench





# Guidelines for Wrist Exercises

## General Considerations

### **Position:**

Standing exercises should be carried out with the knees and hip slightly flexed, and the lumbar spine in a stabilized position.

When working across the body in a standing position, slightly bend the knees and arrange the feet in a slightly staggered stride stance.

When working in line with the body in a standing position, slightly bend the knees and arrange the feet shoulder width apart in a staggered, forward standing stance.

Lower extremity exercises in a seated position bring the lumbar spine into slight extension through the pelvis - this extended position should be maintained throughout the exercise.

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## Specific Considerations

Elbows should remain fixed and supported at all times.

# Wrists

Starting Position

Final Position

## Wrist Curl

Average Male      Average Female

**A**

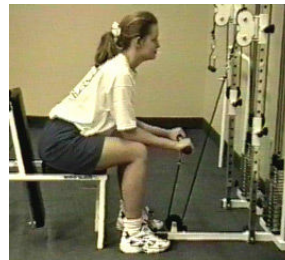
**B**

Upper Pulley Starting Position: 61      59  
 Lower Pulley Starting Position: 31      29  
 Accessories: Biceps/Tricep Bar  
 Lower Extension



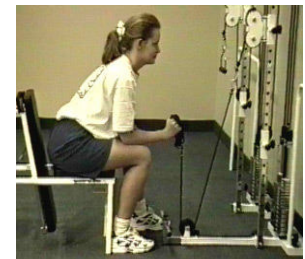
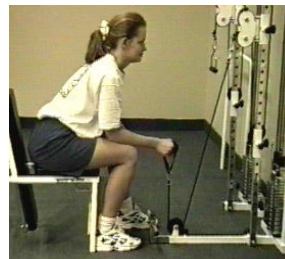
## Reverse Grip Wrist Curl

Upper Pulley Starting Position: 61      59  
 Lower Pulley Starting Position: 31      29  
 Accessories: Biceps/Tricep Bar  
 Lower Extension  
 Multi Position Bench



## Upright Side Wrist Curl

Upper Pulley Starting Position: 61      59  
 Lower Pulley Starting Position: 31      29  
 Accessories: Ankle/Wrist Strap  
 Lower Extension  
 Multi Position Bench



## Beginner Wrist Roller Curls

Upper Pulley Starting Position: 77      75  
 Lower Pulley Starting Position: 41      39  
 Accessories: Wrist Conditioner  
 Lower Extension



# Wrists

Starting Position

Final Position

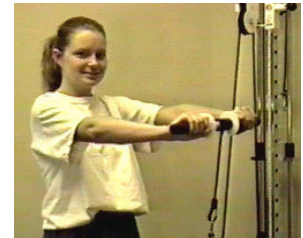
Average  
Male      Average  
Female

**A**

**B**

## Advanced Wrist Roller Curls

Upper Pulley Starting Position:      77      75  
 Lower Pulley Starting Position:      45      43  
 Accessories:    Wrist Conditioner  
                     Lower Extension



## Assisted Closed Hand Wrist Abduction

Upper Pulley Starting Position:      31      29  
 Lower Pulley Starting Position:      21      19  
 Accessories:    Ankle/Wrist Strap  
                     Shoulder Rotation Apparatus



## Assisted Closed Hand Wrist Adduction

Upper Pulley Starting Position:      31      29  
 Lower Pulley Starting Position:      21      19  
 Accessories:    Ankle/Wrist Strap  
                     Shoulder Rotation Apparatus



## Assisted Open Hand Wrist Abduction

Upper Pulley Starting Position:      31      29  
 Lower Pulley Starting Position:      21      19  
 Accessories:    Ankle/Wrist Strap  
                     Shoulder Rotation Apparatus



# Wrists

Starting Position

Final Position

Average Average  
Male Female

**A**

**B**

## Assisted Open Hand Wrist Adduction

Upper Pulley Starting Position: 31 29

Lower Pulley Starting Position: 21 19

Accessories: Ankle/Wrist Strap  
Shoulder Rotation Apparatus  
Multi Position Bench



# Guidelines for Workmed Exercises

## General Considerations

### **Position:**

Standing exercises should be carried out with the knees and hip slightly flexed, and the lumbar spine in a stabilized position.

When working across the body in a standing position, slightly bend the knees and arrange the feet in a slightly staggered stride stance.

When working in line with the body in a standing position, slightly bend the knees and arrange the feet shoulder width apart in a staggered, forward standing stance.

Lower extremity exercises in a seated position bring the lumbar spine into slight extension through the pelvis - this extended position should be maintained throughout the exercise.

### **Technique:**

Maintain a controlled, continual movement at a constant speed throughout the entire range of motion.

Allow minimal holding time between flexion/extension transfer.

Exhale during exertion and inhale during relaxation phases of muscular contractions.

Isolate and focus the exercise throughout the desired movement plane and utilize full range of motion.

## Specific Considerations

Work hardening programs must direct a particular emphasis towards the patient's specific occupational situation and personal requirements. The conditioning regime should focus on improving the patient's ergonomic positioning, motor abilities, physical capabilities and static/dynamic postures.

The therapist is required to identify the specific requirements for correction and adapt exercises on the pulley systems to elicit overall improvement. The Workmed accessory components provide additional attachments to identify explicit movement patterns in simulated occupational positions and provide specific resistance exercises.

# Workmed

Starting Position

Final Position

Average Male    Average Female

**A**

**B**

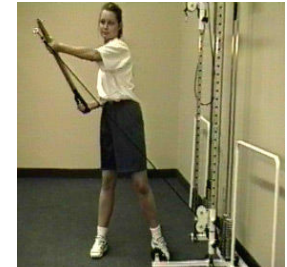
## Shoveling Front to Back

Upper Pulley Starting Position: 15    13  
 Lower Pulley Starting Position: 9    7  
 Accessories: Shovel Handle



## Shoveling Front to Side

Upper Pulley Starting Position: 15    13  
 Lower Pulley Starting Position: 9    7  
 Accessories: Shovel Handle



## Shoveling with Rotation

Upper Pulley Starting Position: 15    13  
 Lower Pulley Starting Position: 9    7  
 Accessories: Shovel Handle



## Sweeping

Upper Pulley Starting Position: 15    13  
 Lower Pulley Starting Position: 9    7  
 Accessories: Broom Handle



# Workmed

Starting Position

Final Position

Average Male    Average Female

**A**

**B**

## Vacuuming

Upper Pulley Starting Position:    15    13  
Lower Pulley Starting Position:    9    7  
Accessories: Vacuum Handle

