



SERVICE THROUGH INNOVATION



UPPERTONE Exercise Manual

Index

Introduction	3
The Major Muscles	4
Definitions of muscle movement terms.....	4
UPPERTONE’s exercises and their benefits	5
Anterior muscles and their function	6
Posterior muscles and their function.....	6
Some general guidelines.....	7
Resistance adjustment	8
Deltoid lat pull station adjustment.....	9
Rear height adjustment.....	10
Tri-pin system adjustment.....	11
Front station height adjustment.....	12
Front station width adjustment.....	13
Palm Down Bicep Curl.....	14
Palm Up Bicep Curl.....	16
Narrow Grip Chest Press.....	18
Wide Grip Chest Press.....	19
Deltoid Press	20
Lat Pull.....	21
Rickshaw	22
Narrow Grip Rowing	23
Wide Grip Rowing.....	24
Palm Up Lateral Shoulder Raise.....	25
Palm Down Lateral Shoulder Raise.....	26
Shoulder External Rotation	27
Shoulder Extensions	28
Shoulder Shrugs	29
Tricep Extensions	30
Wrist Supination	31
Wrist Pronation	33
Seated Crunches.....	35
Weight Chart	36

Introduction

Thank you for purchasing the UPPERTONE, the only physical therapy, muscle strengthening and conditioning, system designed for people with quadriplegia.

This manual describes the various exercises that you can perform with the UPPERTONE. In addition, the included video-tape and CD provide further detail on each exercise.

However, while the manual describes the various exercises, we strongly suggest that you consult a physician or physical therapist before beginning any exercise program.

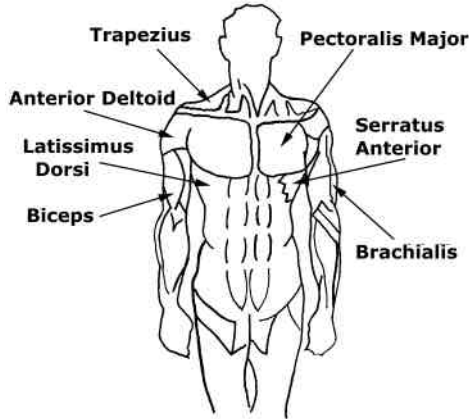
The physician or physical therapist can help you design and develop the most appropriate and SAFE exercise program for your level of injury and needs.

In addition, while we give some general guidelines on proper posture and exercising methods, we strongly recommend that you consult a professional to help you develop the exercise habits that will provide the most benefit and least likelihood of injury.

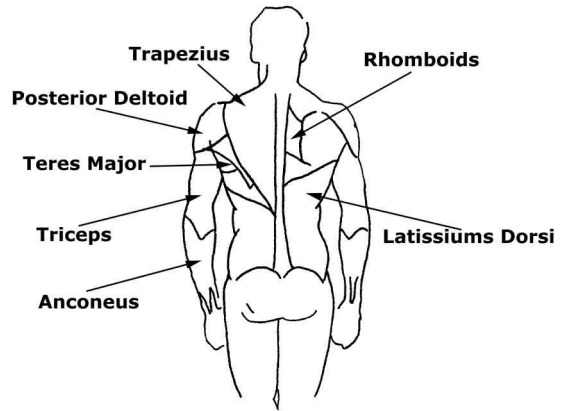
Finally, while we describe all the exercises that people with quadriplegia can do on the UPPERTONE, the particular exercises you will be able to do depend on your level and type of injury.

The Major Muscle Groups

Anterior Muscles



Posterior Muscles



Definitions of Terms Used to Describe Muscle Function

Term	Meaning/Definition
Abduction	Moving a body part away from the center of the body (e.g., rotating a stretched arm from the front to the side)
Adduction	Moving a body part toward the center of the body (e.g., moving a stretched arm from the side to the front)
Extension, Extend	Move a body part so as to straighten it or increase the angle between the bending parts (e.g., moving the palm away from the wrist)
Flexion, Flex	Moving a body part so as to bend it (e.g. bending the wrist), or decrease the angle between the bending parts
Horizontal abduction	Moving the shoulder joint towards the body's back while the arm is parallel to the ground
Horizontal adduction	Moving the shoulder joint toward the body's front while the arm is parallel to the ground
Pronate	Rotating the forearm inward or turning the palm face down.
Rotation	Moving a body part around its own axis
Scapular upward rotation	Moving the shoulder joint so it is pointing more upwards
Scapular downward rotation	Moving the shoulder joint so it is pointing more downwards
Supinate	Rotating the forearm outward or turning the palm face up.

Muscles Strengthened and The Benefits of UPPERTONE's Various Exercises

Exercise	Muscles Strengthened	Benefits
Palm Down Bicep Curl ²	Brachioradialis ¹ , Biceps, Pronator teres	Transfer activities such as repositioning legs.
Palm Up Bicep Curl ²	Biceps , Brachialis, Pronator Teres, Brachioradialis	Self care activities, loading and unloading wheelchair, lifting objects
Narrow Grip Chest Press ³	Triceps , Anterior deltoid, Coracobrachialis, Serratus anterior, Pectoralis major and minor, Subscapularis	Driving, braking, wheelchair propulsion, transfers, pressure relief
Wide Grip Chest Press ³	Pectoralis major , Anterior deltoid, Coracobrachialis, Serratus anterior, Pectoralis minor, Subscapularis	Broad chest
Deltoid Press ²	Deltoid , Supraspinatus, Upper and lower trapezius	Self care activities, loading and unloading wheelchair, lifting objects
Lat Pull ³	Latissimus dorsi , Pectoralis major (sternal portion), Pectoralis minor, Posterior deltoid, Teres major.	Pressure relief, transfers, V-shaped upper body, reduced slouch.
Rickshaw ³	Latissimus dorsi , Lower trapezius, Pectoralis minor, Subclavius, Teres major, Triceps	Transfers, pressure relief
Narrow Grip Rowing ²	Biceps , Latissimus Dorsi, Posterior deltoid, Rhomboids, Infraspintus, Teres major and minor	Wheelchair sports, pulling activities (e.g., opening doors)
Wide Grip Rowing ²	Posterior deltoid , Rhomboids, Infraspintus, Biceps	Same as above
Palm Up Lateral Shoulder Raise ²	Anterior deltoid , Pectoralis major (clavicular), Middle deltoid, Biceps, Supraspinatus, Upper and lower trapezius	Defines and isolates neck
Palm Down Lateral Shoulder Raise ²	Middle deltoid , Pectoralis major (clavicular), Supraspinatus, Upper and lower trapezius	
Shoulder External Rotation ³	Infraspintus , Posterior deltoid, Rhomboids, Teres minor	Counteract tight internal rotators
Shoulder Extensions ³	Latissimus dorsi , Pectoralis, Posterior deltoid, Teres major, Serratus anterior	Wheelchair sports, pulling activities, transfers
Shoulder Shrugs ³	Levator scapulae , Upper trapezius	Transfers, pressure relief, wheelchair propulsion
Tricep Extensions ⁴	Triceps , Anconeus	Reaching overhead, transfers, pressure relief, wheelchair propulsion
Wrist Supination ⁴	Flexor carpi radialis , Flexor carpi ulnaris, Flexor digitorum superficialis, Palmaris longus	Opening doors, pulling, wiping
Wrist Pronation ⁴	Extensor carpi radialis brevis , Extensor carpi radialis longus, Extensor carpi ulnaris, Extensor digitorum	Writing, lifting, wiping, increase functional tenodesis
Seated crunches ⁴	Rectus Abdominus , External Obliques, Internal Obliques	Posture, balance, flat abdomen

1. Highlighting indicates the major muscles emphasized. 2. Most C5 and all C6's and below should be able to perform this exercise. 3. Some C5, most C6, and all C7's and below should be able to perform this exercise. 4. Some C6, most C7, and all C8's and below should be able to perform this exercise.

Anterior Muscles, Their Major Function, & The Exercises That Strengthen Them

Muscles	Action	Exercise
Biceps brachii	Supinates forearm, Flexes elbow, helps flex shoulder	Palm up bicep curl
Brachialis	Flexes elbow	Palm up bicep curl
Brachioradialis	Flexes arm and pronates it.	Palm down bicep curl
Anterior Deltoid	Horizontal abduction, shoulder flexion, internal rotation of the shoulder	Palm up deltoid press, palm up lateral shoulder raise, narrow and wide grip chest press
Middle deltoid	Shoulder abduction	Palm down deltoid press, palm down lateral shoulder raise
Obliques (external and internal)	Support abdominal wall, rotate and abduct trunk	Seated crunch
Posterior deltoid	Extends the shoulder and externally rotates the shoulder	Rowing, shoulder external rotation
Pectoralis major	Adducts arm and rotates it.	Wide grip chest press
Pectoralis minor	Elevates the ribs, helps serratus anterior to protract the scapula.	Rickshaw, wide and narrow grip chest press.
Pronator teres	Pronates the forearm, helps in flexing the elbow	Palm up and palm down bicep curls
Rectus abdominis	Flexes trunk	Seated crunches
Serratus anterior	Abducts and rotates scapula in a upward direction,	Narrow and wide grip chest press
Supraspinatus	Abducts the arm and supports shoulder	Palm up and down deltoid press
Teres minor	Same as above	External shoulder rotation
Flexor carpi radialis	Flexes wrist towards palm	Wrist curls (flexion)
Flexor carpi ulnaris,	Flexes wrist towards palm	Wrist curls (flexion)
Flexor digitorum superficialis	Flexes wrist towards palm	Wrist curls (flexion)
Palmaris longus	Flexes wrist towards palm	Wrist curls (flexion)

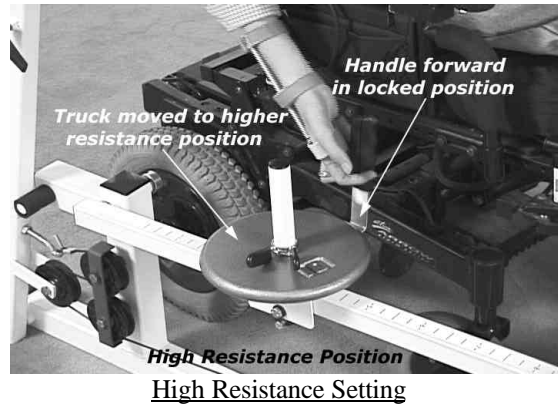
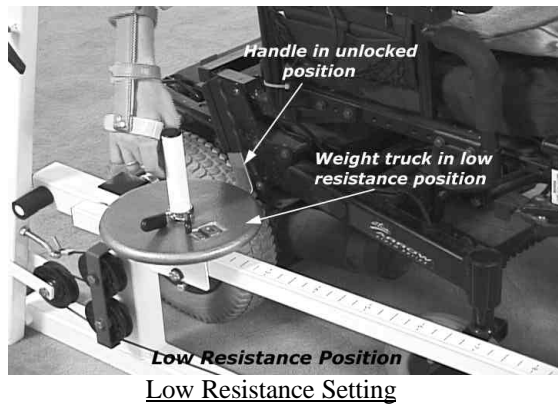
Posterior Muscles, Their Major Function, & The Exercises That Strengthen Them

Muscles	Major Function	Exercises
Infraspinatus	Rotates arm laterally, supports shoulder joint	External shoulder rotation
Latissimus dorsi	Adducts, extends, and medially rotates arm	Lat pull, Rickshaw
Rhomboids	Adducts, elevates, and rotates scapula downward	Rowing, Lat pull, Shoulder external rotation
Teres major	Medially rotates and adducts arm	Front shoulder pull, Rowing
Upper Trapezius	Upwardly rotates, elevates, laterally flexes, and rotates head.	Deltoid press, Palm up and palm down lateral shoulder raise
Middle trapezius	Adducts scapula	Palm down lateral shoulder raise
Lower trapezius	Rotates scapula upwards and depresses it.	Deltoid press, Palm up and down lateral shoulder raise, rickshaw
Triceps	Extends elbow	Tricep extensions, Narrow grip chest press
Anconeus	Extends elbow	Tricep extensions
Extensor carpi radialis	Extends wrist away from palm	Wrist extension
Extensor carpi ulnaris	Extends wrist away from palm	Wrist extension

Some General Guidelines

1. Consult a physical therapist or physiatrist to help you develop an exercise program that is most appropriate for you.
2. Before exercising, warm up by doing some stretching and light cardiovascular exercise (e.g., rapid rowing).
3. Control your breathing so that you exhale while exerting force, and inhale while returning to the starting position.
4. Control the movement both while exerting force and returning to the starting position.
5. Unless otherwise suggested by a professional, we suggest that you do not exercise more frequently than every other day. This gives your muscles time to recover between workouts.
6. Do not overexert. Stop exercising if you feel faint, dizzy, or weak.
7. **If you can do so**, try and tighten your stomach muscles while exercising. Or you may want to consult your physical therapist regarding the use of an abdominal binder or support while exercising.
8. The particular muscles an exercise strengthens is determined by posture and movement. Consequently, maintaining the correct posture and movement for each exercise is very important.
9. Proper posture and slow controlled movement not only gives the best results, but also prevents injury.
10. Proper posture and movement occurs when the only the muscles the exercise is meant to strengthen move.
11. Do not slouch or lean forward while exercising.
12. Keep your head and back as straight as possible when exercising.
13. Use the UPPERTONE's dual resistance system to correct for any imbalances in strength between the two sides.
14. Other than for the shoulder shrugs, never lock your arms or elbows.
15. For each exercise the range of motion should be within the extreme positions. That is, your muscles should remain under tension during the entire set of repetitions.
16. As a general rule, the pushing motion should last about 4 seconds, while the return motion should last about 7 seconds.
17. Set the resistance so that you can do 10 to 12 repetitions while maintaining good posture and controlled, smooth movement.
18. Follow proper nutritional guidelines for best results and to minimize injury.
19. These are general guidelines and may not meet your particular needs. Consequently it is important that you consult with a professional who can design an exercise program that meets your needs, and will prevent injury.

Resistance Adjustment



Adjusting the Resistance

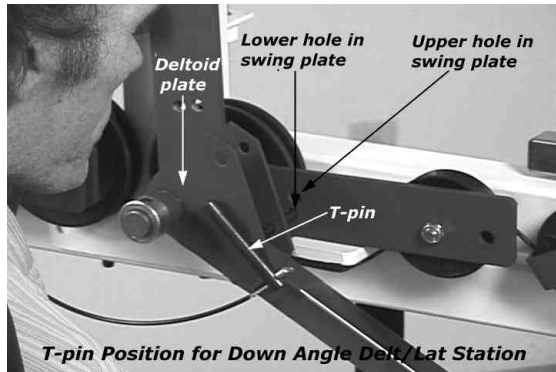
Changing the resistance on each side of the UPPERTONE is extremely simple.

1. For either side, unlock the weight truck by moving the handle towards the front of the machine.
2. Slide the truck towards the UPPERTONE's back to increase the resistance, and towards the front to decrease it.
3. Then lock the truck in position by moving the handle towards the back of the UPPERTONE.

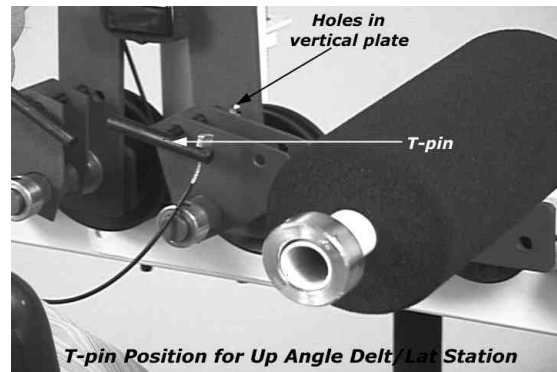
This adjustment applies to: All exercises.

It is important to remember that the UPPERTONE's dual resistance system not only allows you to compensate for any differences in strength between your two sides, but also allows you to exercise just one side at a time.

Deltoid Lat Pull Station Adjustment



Delt Station in Down Angle Position



Delt Station in Up Angle Position

Deltoid Station in Down Angle Position

In order to use the UPPERTONE for the palm up and down deltoid as well as lateral shoulder raises, the deltoid station needs to be adjusted in the down angle position.

As the picture above on the left shows, the lower hole in the deltoid plate needs to be fixed to one of the holes in the horizontal swing plates. The particular hole you use depends on your needs as described in the each exercise.

Deltoid Station in Up Angle Position

In order to use the UPPERTONE for the rickshaw, shoulder pulls, lat pulls, and tricep exercises, the deltoid station needs to be adjusted in the up angle position.

As the picture above on the right shows, the upper hole in the deltoid plate needs to be fixed to one of the holes in the vertical swing plate. The particular hole you use depends on your needs as described in the each exercise.

These adjustments apply to:

Up Angle Position

- (a) Rickshaw exercise
- (b) Tricep extensions
- (c) Front shoulder pull
- (d) Lat pull
- (e) Shoulder depressors
- (f) Shoulder shrugs

Down Angle Position

- (a) Palm down deltoid press
- (b) Palm up deltoid press
- (c) Palm down lateral shoulder raise
- (d) Palm up lateral shoulder raise

Rear Height Adjustment



Rear Station at a Low Height



Rear Station at a High Height

Rear Height Adjustment

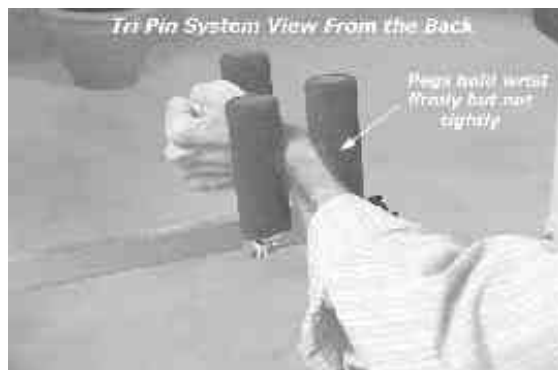
In order to change the height of the rear station:

Use the handle shown in the pictures above to turn the acme rod system clockwise to raise the height, and turn it counter clockwise to lower the height.

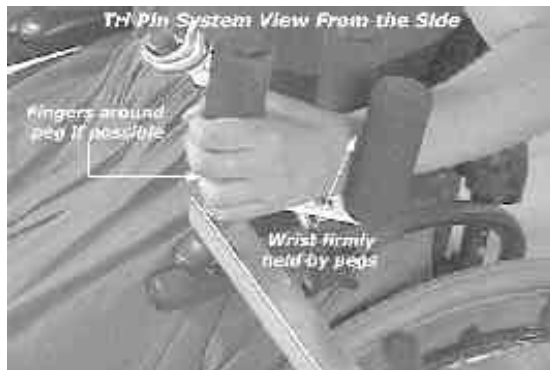
This adjustment applies to:

- (a) Palm down bicep curl
- (b) Palm up bicep curl
- (c) Palm down deltoid press
- (d) Palm up deltoid press
- (e) Lat pull
- (f) Rickshaw
- (g) Palm up lateral shoulder raise
- (h) Palm down lateral shoulder raise
- (i) Shoulder external rotation
- (j) Front shoulder pull
- (k) Shoulder depressors
- (l) Shoulder shrugs
- (m) Tricep extensions
- (n) Wrist Curls
- (o) Wrist reverse curls

Tri-Pin System Adjustment



Tri-Pin System View From the Back



Tri-Pin System View From the Side

Tri-pin System Adjustment:

Your UPPERTONE's front station should have a single user or multi-user trip-pin system used for the rowing and chest press exercises.

Use the tri pin system by placing your hand so that your wrist is between the two rear pegs with your fingers around the front peg, if possible.

For both systems the two rear pegs should be adjusted so that they grip the wrist firmly, but not too tightly.

For the multi-user model, the distance between the pegs can be adjusted by turning the knob. For the single user-model you should have someone adjust the pegs to fit your wrist. Once adjusted, you should not have to adjust them again.

When the tri-pin system is correctly adjusted, you should be able to do the chest press and rowing exercises without your hand slipping out from between the pegs.

This adjustment applies to:

- (a) Narrow grip chest press
- (b) Wide grip chest press
- (c) Narrow grip rowing exercise
- (d) Wide grip rowing exercise

Front Station Height Adjustment



Front Station Set at a Low Height



Front Station Set At a High Height

Front Station Adjustment

In order to adjust the height of the front station:

1. Loosen the wing handle
2. Raise, or lower the row adjuster to the desired height.
3. Tighten the wing handle.

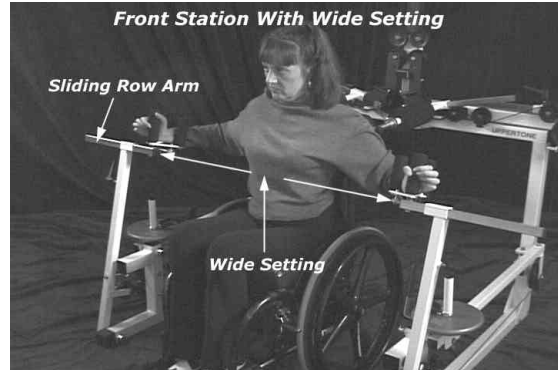
This adjustment applies to:

- (a) Narrow Grip Chest Press
- (b) Wide Grip Chest Press
- (c) Narrow grip Rowing
- (d) Wide Grip Rowing

Front Station Width Adjustment



Front Station With Narrow Setting



Front Station With Wide Setting

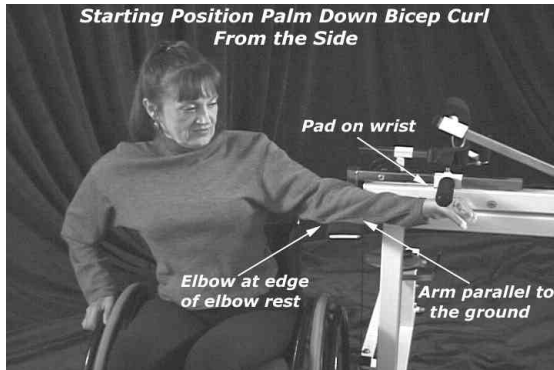
Front Station Width Adjustment

In order to adjust the front station width, simply slide the row arm inwards for a narrow setting and outwards for a wide setting.

This adjustment applies to:

- (e) Narrow grip chest press
- (f) Wide grip chest press
- (g) Narrow grip rowing exercise
- (h) Wide grip rowing exercise

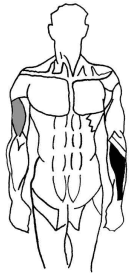
Palm Down Bicep Curls



Palm Down Bicep Curl From the Side



Palm Down Bicep Curl From the Back



Bicep Curls

You can do the palm down bicep curls from either the side or the back of the UPPERTONE. Use the position that is most comfortable for you. If you do the exercise from the side you can exercise both arms from the same side, by simply switching the direction you are facing. If you do the exercise from the back, the left arm will have to be exercised from the left side and the right arm from the right side.

Palm Down Bicep Curls (from the side):

1. Adjust the resistance to the desired level.
2. Adjust the slider height so that your stretched arm is parallel to the ground, when your elbow is on the elbow rest. That is, you should be able to stretch your arm without bending your elbow.
3. Position the wheelchair so that you are close and parallel to the UPPERTONE's side and your shoulder is aligned with the elbow rest.
4. Place your elbow on the elbow rest with its tip close to the edge next to you. This is important. It allows the elbow rest to pivot when you flex your arm.
5. Extend your arm, palm down, and position the wrist handle so that the pad rests on your wrist.
6. Begin exercising by flexing the arm at the elbow. Make sure that the elbow rest pivots with, and supports, your arm throughout the entire movement.
7. Lift the arm to the top most position and then return it to the starting position. Control your arm's movement both while lifting and returning to the starting position.
8. Do not allow the arm to slip relative to the elbow or wrist pad.
9. Use the same motion for the desired number of repetitions.
10. Then reposition yourself to the opposite side for exercising the other arm.

Palm Down Bicep Curls (from the back):

1. Adjust the resistance to the desired level.
2. Adjust the slider height so that your stretched arm is parallel to the ground, when your elbow is on the elbow rest. That is, you should be able to stretch your arm without bending your elbow.
3. Position the wheelchair so that:
 - (a) You are close and parallel to the curl station.
 - (b) Your shoulder is behind the elbow rest by a distance equal to the length of your upper arm.
4. Place your elbow on the elbow rest with its tip close to the edge next to you. This is important. It allows the elbow rest to pivot when you flex your arm.

5. Extend your arm, palm down, and position the wrist handle so that the pad rests on your wrist. Begin exercising by flexing the arm at the elbow. Make sure that the elbow rest pivots with and supports your arm throughout the entire movement.
6. Lift the arm to the top most position and then return it to the starting position. Control your arm's movement both while lifting and returning to the starting position.
7. Do not allow the arm to slip relative to the elbow or wrist pad.
8. Use the same motion for the desired number of repetitions.
9. Then reposition yourself to the opposite side for exercising the other arm.

Palm Up Bicep Curls



Palm Up Bicep Curls From The Side

Bicep Curls

You can do the palm up bicep curls from either the side or the back of the UPPERTONE. Use the position that is most comfortable for you. If you do the exercise from the side you can exercise both arms from the same side, by simply switching the direction you are facing. If you do the exercise from the back, the left arm will have to be exercised from the left side and the right arm from the right side.

Palm up Bicep Curls (from the side):

1. Adjust the resistance to the desired level.
2. Adjust the slider height so that your stretched arm is parallel to the ground, when your elbow is on the elbow rest. That is, you should be able to stretch your arm without bending your elbow.
3. Position the wheelchair so that you are close and parallel to the UPPERTONE's side and your shoulder is aligned with the elbow rest.
4. Place your elbow on the elbow rest with its tip close to the edge next to you. This is important. It allows the elbow rest to pivot when you flex your arm.
5. Extend your arm, palm up, and position the wrist handle so that the pad is close to your hand's heel.
6. Begin exercising by flexing the arm at the elbow. Make sure that the elbow rest pivots with and supports your arm throughout the entire movement.
7. Lift the arm to the top most position and then return it to the starting position. Control your arm's movement both while lifting and returning to the starting position.
8. Do not allow the arm to slip relative to the elbow or wrist pad.
9. Use the same motion for the desired number of repetitions.
10. Then reposition yourself to the opposite side for exercising the other arm.

Palm up Bicep Curls (from the back):

1. Adjust the resistance to the desired level.
2. Adjust the slider height so that your stretched arm is parallel to the ground, when your elbow is on the elbow rest. That is, you should be able to stretch your arm without bending your elbow.
3. Position the wheelchair so that:
 - (a) You are close and parallel to the curl station.
 - (b) Your shoulder is behind the elbow rest by a distance equal to the length of your upper arm.
4. Place your elbow on the elbow rest with its tip close to the edge next to you. This is important. It allows the elbow rest to pivot when you flex your arm.

5. Extend your arm, palm up, and position the wrist handle so that the pad is close to your hand's heel.
6. Begin exercising by flexing the arm at the elbow. Make sure that the elbow rest pivots with and supports your arm throughout the entire movement.
7. Lift the arm to the top most position and then return it to the starting position. Control your arm's movement both while lifting and returning to the starting position.
8. Do not allow the arm to slip relative to the elbow or wrist pad.
9. Use the same motion for the desired number of repetitions.
10. Then reposition yourself to the opposite side for exercising the other arm.

Narrow Grip Chest



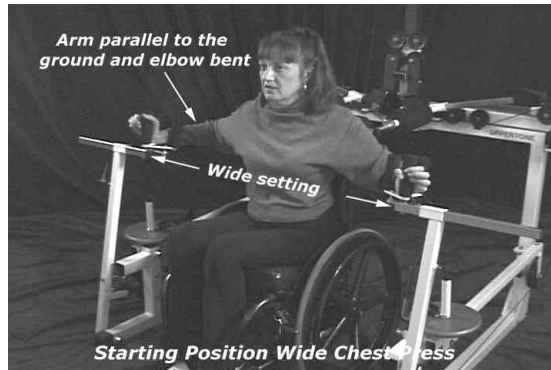
Narrow Grip Chest Press



Chest Press (narrow)

1. Adjust the resistance on the left and right sides to the desired level.
2. Position the wheelchair, facing out, and behind the row station so that when your hands are in the tri-pin system your upper arms are at your side and the lower arm is bent at the elbow. This will give you the maximum range of motion. Make sure you are sitting up straight and are not leaning or hunching.
3. Adjust the height of the row station so that when your hands are in the tri-pin system your arms are parallel to the ground. The hands should be just below shoulder level.
4. Then adjust the row station width so that when fully extended the arms are perpendicular to the chest.
5. To do the chest press, push the rowing station out by straightening your arms in a motion parallel to your legs. Then return your arms to the starting position.
6. You should push smoothly only moving your arms, not your shoulders or body. Throughout the exercise you should be sitting up straight without leaning or slouching.
7. It is also important that you maintain control throughout the entire range of motion. The return motion too should be under your control.
8. Use the same motion for the desired number of repetitions.
9. You should usually do this exercise both arms at a time. However, if you have balance problems and find that it helps to do so, you can do this exercise one arm at a time with low resistance.
10. Advance users may want to do this exercise one arm at a time with high resistance.
11. You may also want to start with a low resistance and a smaller range of motion, increasing both gradually as you become stronger and more flexible.
12. You may also want to start with a low resistance and a smaller range of motion, increasing both gradually as you become stronger and more flexible.
13. If you use a manual chair and find that you tend to tip over backwards when you do the chest press, you will need to use the optional back rest to prevent you from tipping over.
14. Finally, in this exercise if you would like to increase the emphasis on the chest and back muscles raise the elbow to slightly below shoulder level.

Wide Grip Chest Press

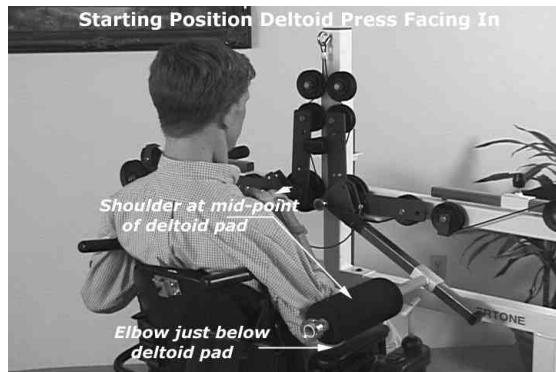


Wide Grip Chest Press

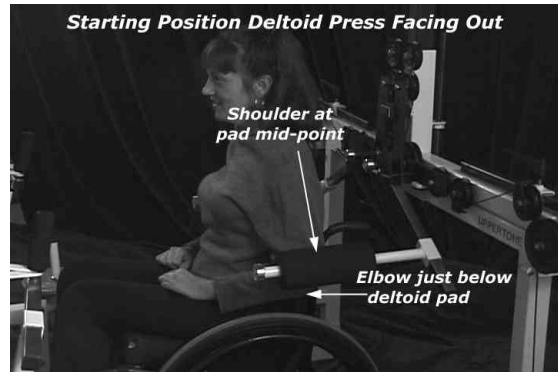
Chest Press (Wide)

1. Adjust the resistance on the left and right sides to the desired level.
2. Position the wheelchair, facing out, and behind the row station so that when your hands are in the tri-pin system your upper arms are at your side and the lower arm is bent at the elbow. This will give you the maximum range of motion. Make sure you are sitting up straight and are not leaning or hunching.
3. Adjust the height of the row station so that when your hands are in the tri-pin system your arms are parallel to the ground. The hands should be just below shoulder level.
4. Adjust the row station to be as wide as comfortably possible. The angle between the arms and the chest should be between 120 to 135 degrees.
5. To do the chest press, push the rowing station out by straightening your arms in a motion parallel to your legs. Then return your arms to the starting position.
6. You should push smoothly only moving your arms, not your shoulders or body. Throughout the exercise you should be sitting up straight without leaning or slouching.
7. It is also important that you maintain control throughout the entire range of motion. The return motion too should be under your control.
8. Use the same motion for the desired number of repetitions.
9. You should usually do this exercise both arms at a time. However, if you have balance problems and find that it helps to do so, in the beginning you can do this exercise one arm at a time with low resistance.
10. Advance users may want to do this exercise one arm at a time with high resistance.
11. In the beginning you may want to start with a low resistance, and a medium width setting, and gradually increase both the width and resistance as you become stronger and more flexible.
12. If you use a manual chair and find that you tend to tip over backwards when you do the chest press, you will need to use the optional back rest to prevent you from tipping over.

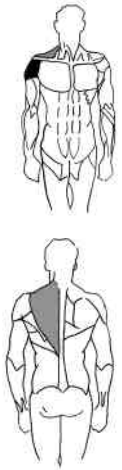
Deltoid Press



Deltoid Press Facing In



Deltoid Press Facing Out

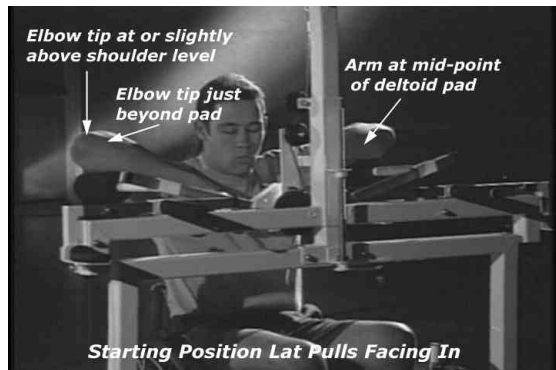


Deltoid Press

You can do the deltoid press facing in, or out, of the UPPERTONE. Use the direction most comfortable for you. If you use a power chair with a high back and find it difficult to back into the UPPERTONE, do the exercise facing in.

1. Adjust the resistance on the left and right sides to the desired level.
2. Adjust the height of the UPPERTONE so that the deltoid pivot points (the pegs) are just below your shoulders.
3. Pin the deltoid arms in the down angle position. The foam pads on the deltoid arms should be at upper waist level or slightly higher.
4. Use the lower hole for the pin for the most range of motion. Use the upper hole for lower range of motion, or if you can not use the lower hole for some other reason.
5. Position your wheelchair so that your shoulders line up with the middle of the deltoid pads.
6. Sit up as straight as possible. Do not lean or hunch forward.
7. Position the deltoid pads so that, when your arms are at your side, the elbow tips are about an inch below the deltoid pads.
8. Now do the deltoid press. Bend your arms at the elbow, and raise your arms till the tip of your elbow is slightly above shoulder level. Then return your arm to the starting position. Do not shrug your shoulders.
9. The lifting and return motion should be smooth and controlled with only your arms moving up and down. Your arms should not slip on the deltoid pads.
10. Throughout the entire movement you should sit up straight. Do not lean or slouch.
11. Use the same motion for the desired number of repetitions.
12. You should usually do this exercise both arms at a time. However, if you have balance problems and find that it helps to do so, in the beginning you can do this exercise one arm at a time with low resistance.
13. Advance users may want to do this exercise one arm at a time with high resistance.
14. You may also want to start with a low resistance and a smaller range of motion, increasing both gradually as you become stronger and more flexible.

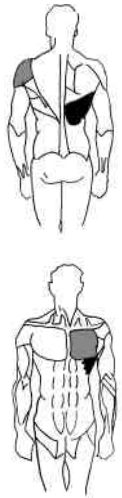
Lat Pulls



Lat Pulls Facing In



Lat Pulls Facing Out



Lat Pulls

You can do the lat pulls facing in, or out, of the UPPERTONE. Use the direction most comfortable for you. If you use a power chair with a high back and find it difficult to back into the UPPERTONE, do the exercise facing in.

1. Adjust the resistance on the left and right sides to the desired level.
2. Adjust the height of the UPPERTONE so that the deltoid pivot points (the pegs) are just below your shoulders.
3. Pin the deltoid arms in the up angle position. The foam pads on the deltoid arms should be at shoulder level or slightly higher.
4. Use the higher hole for the pin for the most range of motion. Use the lower hole for a lower range of motion, or if you can not use the higher hole for some other reason. Overall, when you place your arms on the deltoid pads, the elbow tips should be just above shoulder level.
5. Position your wheelchair so that your shoulders are in the middle of the deltoid pads.
6. Position the deltoid pads so that when your bent arms are on the pads the elbow tips extend just beyond them and the wheelchair does not interfere with the pads movement.
7. Bend your arms at the elbow and place them on the pads.
8. If possible, pull your shoulder back so that the elbows are slightly behind your shoulders. This will help isolate the lat muscles.
9. Now do the lat pulls. Push straight down almost, but not quite, as far as you can go. Then raise your arms back up almost, but not quite, to the topmost position.
10. You should push down in a smooth motion without shrugging your shoulders. In other words the movement should be in the arms.
11. The pressing down and return motion should be smooth and controlled with only your arms moving up and down. Your arms should not slip on the deltoid pads.
12. Throughout the entire movement you should sit up straight. Do not lean or slouch.
13. Use the same motion for the desired number of repetitions.
14. You should usually do this exercise both arms at a time. However, if you have balance problems, and find that it helps to do so, in the beginning you can do this exercise one arm at a time with low resistance.
15. Advance users may want to do this exercise one arm at a time with high resistance.
16. You may also want to start with a low resistance and a smaller range of motion, increasing both gradually as you become stronger and more flexible.

Rickshaw



Rickshaw Facing Out

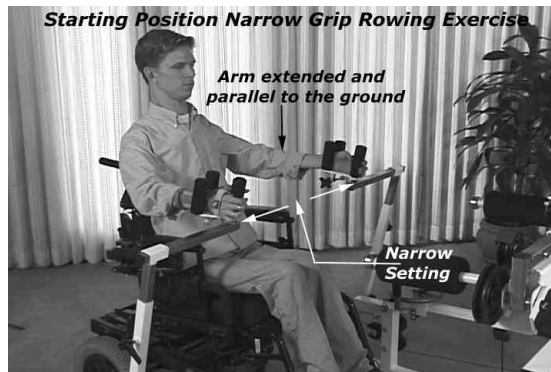


Rickshaw Exercise

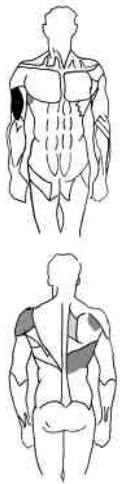
You can do the rickshaw exercise facing in, or out, of the UPPERTONE. Use the direction most comfortable for you. If you use a power chair with a high back and find it difficult to back into the UPPERTONE, do the exercise facing in.

1. Adjust the resistance on the left and right sides to the desired level.
2. Adjust the height of the UPPERTONE so that the deltoid pivot points (the pegs) are just below your shoulders.
3. Pin the deltoid arms in the up angle position. The foam pads on the deltoid arms should be at shoulder level or slightly higher.
4. Use the higher hole for the pin for the most range of motion. Use the lower hole for lower range of motion, or if you can not use the lower hole for some other reason.
5. Hang the top or bottom rickshaw loop on the deltoid arm between the collar and the foam pad so that the heel pad on the rickshaw handle is at about waist level.
6. Position the deltoid handles so that you are in a comfortable position and the wheelchair does not interfere when you push down on the rickshaw handles.
7. Position the wheelchair so that when your hands are on the rickshaw handle pads, your elbows are slightly bent and you can push straight down without leaning or slouching. In other words, the hands should be in the position you would use if you were trying to lift yourself straight up using the wheelchair arm rests.
8. Place the heel of the hand on the pad, with the fingers hanging over the pad. This will avoid putting too much pressure on the fingers, or bending the wrist. But, if you are more comfortable doing so, place your palm on the rickshaw handle.
9. Now do the rickshaw exercise. Push downward extending the arms and shoulders straight down. Do not shrug your shoulders.
10. It is important that you push straight down in a controlled motion. That is, the arm should become straight without moving around or swinging. This will both strengthen the shoulder and arm muscles, and help you develop a sense of balance.
11. Throughout the entire movement you should sit up straight. Do not lean or slouch.
12. Use the same motion for the desired number of repetitions.
13. You should usually do this exercise both arms at a time. However, if you have balance problems, and find that it helps to do so, in the beginning you can do this exercise one arm at a time with low resistance.
14. Advance users may want to do this exercise one arm at a time with high resistance.
15. You may also want to start with a low resistance and a smaller range of motion, increasing both gradually as you become stronger and more flexible.

Narrow Grip Rowing



Narrow Grip Rowing



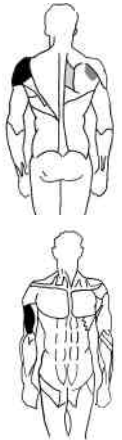
Rowing Exercise (Narrow)

1. Adjust the resistance on the left and right sides to the desired level.
2. Position the wheelchair in front of the row station so that when your hands are in the tri-pin system your arms are fully extended. This will give you the maximum range of motion. Make sure you are sitting up straight and are not leaning or hunching.
3. Adjust the height of the row station so that when your hands are in the tri-pin system your arms are parallel to the ground. The hands should be just below shoulder level.
4. Then adjust the row station width so that when fully extended the arms are perpendicular to the chest.
5. To do the rowing exercise pull the rowing handles straight back in a motion parallel to your legs. Then return your arms to the starting position.
6. You should pull smoothly only moving your arms, not your shoulders or body. Throughout the exercise you should be sitting up straight without leaning or slouching.
7. It is also important that you maintain control throughout the entire range of motion. The return motion too should be under your control.
8. Use the same motion for the desired number of repetitions.
9. You should usually do this exercise both arms at a time. However, if you find that you are being pulled forward, and find that it helps to do so, in the beginning you can do this exercise one arm at a time with low resistance.
10. Advance users may want to do this exercise one arm at a time with high resistance.
11. If required, you can do this exercise one arm at a time.
12. You may also want to start with a low resistance and a smaller range of motion, increasing both gradually as you become stronger and more flexible.
13. Doing the rowing exercise rapidly with a low resistance is an excellent aerobic exercise.
14. Finally, in this exercise if you would like to increase the emphasis on the chest and back muscles raise the elbow to slightly below shoulder level.

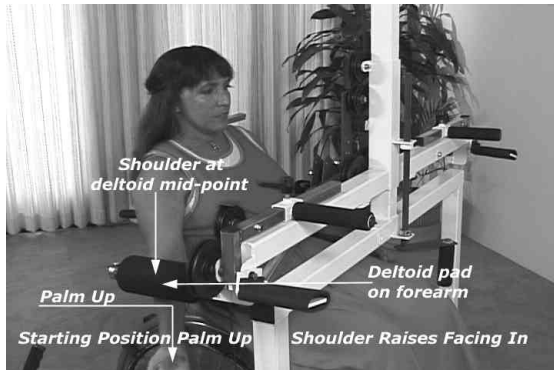
Wide Grip Rowing

Rowing Exercise (wide)

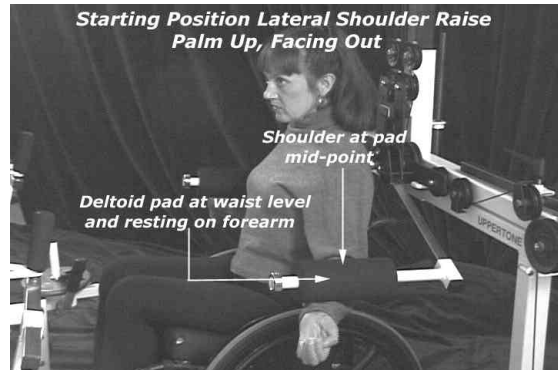
1. Adjust the resistance on the left and right sides to the desired level.
2. Position the wheelchair in front of the row station so that when your hands are in the tri-pin system your arms are fully extended. This will give you the maximum range of motion. Make sure you are sitting up straight and are not leaning or hunching.
3. Adjust the height of the row station so that when your hands are in the tri-pin system your arms are parallel to the ground. The hands should be just below shoulder level.
4. Adjust the row station to be as wide as comfortably possible. The angle between the arms and the chest should be between 120 to 135 degrees.
5. To do the rowing exercise pull the rowing handles straight back in a motion parallel to your legs. Then return your arms to the starting position.
6. You should pull smoothly only moving your arms, not your shoulders or body. Throughout the exercise you should be sitting up straight without leaning or slouching.
7. It is also important that you maintain control throughout the entire range of motion. The return motion too should be under your control.
8. Use the same motion for the desired number of repetitions.
9. You should usually do this exercise both arms at a time. However, if you find that you are being pulled forward, and find that it helps to do so, in the beginning you can do this exercise one arm at a time with low resistance.
10. Advance users may want to do this exercise one arm at a time with high resistance.
11. You may also want to start with a low resistance and a smaller range of motion, increasing both gradually as you become stronger and more flexible.
12. Finally, doing the rowing exercise rapidly with a low resistance is an excellent aerobic exercise.



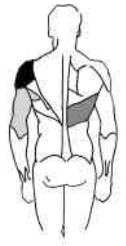
Palm Up Lateral Shoulder Raise



Palm Up Lateral Shoulder Raise Facing In



Palm Up Lateral Shoulder Raise Facing Out

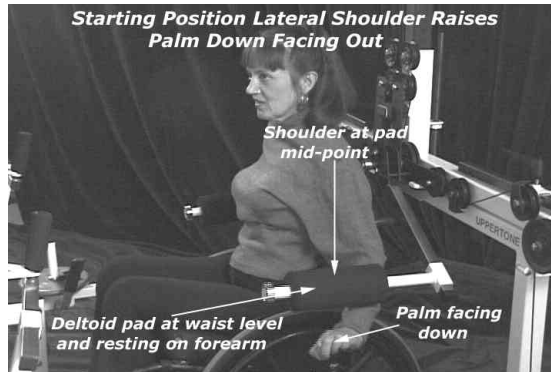


Later shoulder raise (palm up):

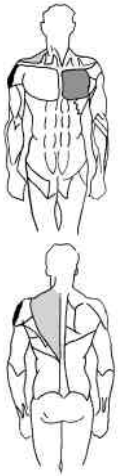
You can do the palm up lateral shoulder raises facing in, or out, of the UPPERTONE. Use the direction most comfortable for you. If you use a power chair with a high back and find it difficult to back into the UPPERTONE, do the exercise facing in.

1. Adjust the resistance on the left and right sides to the desired level.
2. Adjust the height of the UPPERTONE so that the deltoid pivot points (the pegs) are just below your shoulders.
3. Pin the deltoid arms in the down angle position. The foam pads on the deltoid arms should be at the upper waist level or slightly higher.
4. Use the lower hole for the pin for the most range of motion. Use the upper hole for lower range of motion, or if you can not use the lower hole for some other reason.
5. Position your wheelchair so that your shoulders line up with the middle of the deltoid pads.
6. Sit up as straight as possible. Do not lean or hunch forward.
7. Position the deltoid pads so that, when your arms are at your side, the elbow tips are about an inch below the deltoid pads.
8. Now do the lateral shoulder raise. Straighten your arms out, palms facing up, and raise your arms as far as possible. Then return your arm to the starting position. Do not shrug your shoulders.
9. The lifting and return motion should be smooth and controlled with only your arms moving up and down. Your arms should not slip on the deltoid pads.
10. Throughout the entire movement you should sit up straight. Do not lean or slouch.
11. Use the same motion for the desired number of repetitions.
12. You should usually do this exercise both arms at a time. However, if you have balance problems, and find that it helps to do so, in the beginning you can do this exercise one arm at a time with low resistance.
13. Advance users may want to do this exercise one arm at a time with high resistance.
14. You may also want to start with a low resistance and a smaller range of motion, increasing both gradually as you become stronger and more flexible.

Palm Down Lateral Shoulder Raise



Palm Down Lateral Shoulder Raise Facing Out

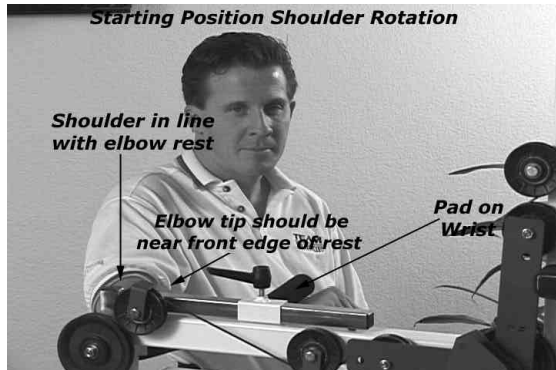


Later shoulder raise (palm down):

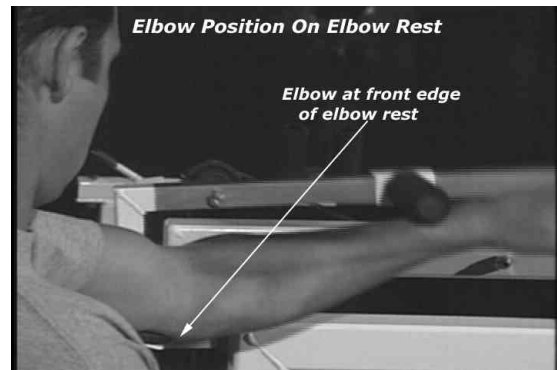
You can do the palm up lateral shoulder raises facing in, or out, of the UPPERTONE. Use the direction most comfortable for you. If you use a power chair with a high back and find it difficult to back into the UPPERTONE, do the exercise facing in.

1. Adjust the resistance on the left and right sides to the desired level.
2. Adjust the height of the UPPERTONE so that the deltoid pivot points (the pegs) are just below your shoulders.
3. Pin the deltoid arms in the down angle position. The foam pads on the deltoid arms should be at the upper waist level or slightly higher.
4. Use the lower hole for the pin for the most range of motion. Use the upper hole for lower range of motion, or if you can not use the lower hole for some other reason.
5. Position your wheelchair so that your shoulders line up with the middle of the deltoid pads.
6. Sit up as straight as possible. Do not lean or hunch forward.
7. Position the deltoid pads so that, when your arms are at your side, the elbow tips are about an inch below the deltoid pads.
8. Now do the lateral shoulder raise. Straighten your arms out, palms facing down, and raise your arms as far as possible. Then return your arm to the starting position. Do not shrug your shoulders.
9. The lifting and return motion should be smooth and controlled with only your arms moving up and down. Your arms should not slip on the deltoid pads.
10. Throughout the entire movement you should sit up straight. Do not lean or slouch.
11. Use the same motion for the desired number of repetitions. You should usually do this exercise both arms at a time. However, if you have balance problems, and find that it helps to do so, in the beginning you can do this exercise one arm at a time with low resistance.
12. Advance users may want to do this exercise one arm at a time with high resistance.
13. You may also want to start with a low resistance and a smaller range of motion, increasing both gradually as you become stronger and more flexible.

Shoulder External Rotation



Shoulder External Rotation



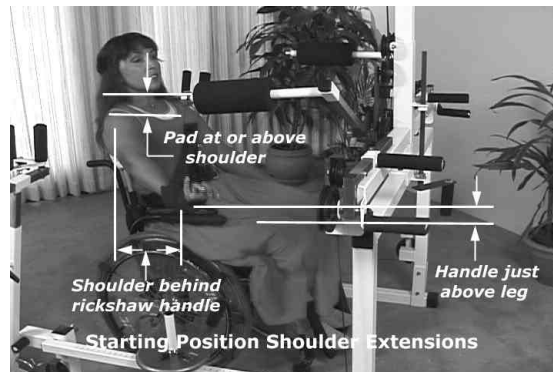
Elbow Position



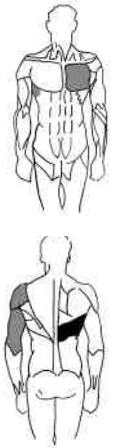
Shoulder External Rotation

1. Adjust the resistance to the desired level.
2. Position the wheelchair so that:
 - (a) You are close and parallel to the curl station.
 - (b) Your shoulder is next to the elbow rest.
3. Adjust the slider height so that your arm is bent at 90 degrees when your elbow is on the elbow rest and the wrist is under the wrist pad
4. Place your elbow on the elbow rest with its tip close to the edge in front of you. This is important. It allows the elbow rest to pivot when you flex your arm.
5. Position the wrist handle so that the pad rests on your wrist.
6. Now do the shoulder rotation by rotating the arm at the shoulder, but keeping the angle between the upper and lower arms at 90 degrees. In other words, all the movement should be at the shoulders, with no movement at the elbow.
7. Lift the arm to the top most position and then return it to the starting position. Control your arm's movement both while lifting and returning to the starting position.
8. Do not allow the arm to slip on the elbow or wrist pad.
9. Use the same motion for the desired number of repetitions.
10. Then reposition yourself to the opposite side for exercising the other arm.

Shoulder Extensions



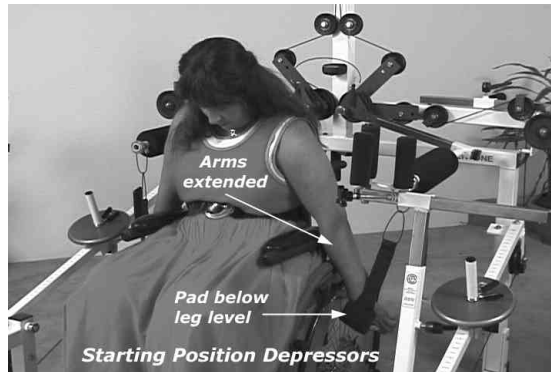
Shoulder Extensions



Shoulder Extensions

1. Adjust the resistance on the left and right sides to the desired level.
2. Adjust the height of the UPPERTONE so that the deltoid pivot points (the pegs) are just below your shoulders. The foam pads on the deltoid arms should be at shoulder level or slightly higher.
3. Hang the bottom or top rickshaw loop on the deltoid arm between the collar and the foam pad. Use the bottom loop for maximum range and the higher loop to limit the range or be more comfortable. The pad on the rickshaw handle should be just above leg level.
4. Use the higher hole in the deltoid station for greater range of motion. Use the lower hole for smaller range of motion, or for greater comfort.
5. Position the wheelchair so that the distance between your shoulder and the rickshaw handles is equal to the length of your upper arm. When your hands are on the pad, the arms should extend out parallel to and a few inches above your legs, with the rickshaw handle pads being near the knee.
6. Position the deltoid handles so that you are in a comfortable position and the wheelchair does not interfere when you pull the rickshaw handles straight back.
7. To do the exercise, keep your arm straight, and pull the rickshaw handle straight back in a motion parallel to your legs. Then return your arm to the starting position.
8. You should pull in a smooth motion without bending your arm. In other words the movement should be at the shoulder and not the elbow.
9. Throughout the entire movement you should sit up straight. Do not lean or slouch.
10. It is also important that you maintain control throughout the entire range of motion without bending or swinging your arm. The return motion too should be under your control.
11. Use the same motion for the desired number of repetitions.
12. We recommend that in order to develop the proper technique and sense of balance you do this exercise one arm at a time.
13. You may also want to start with a low resistance and a smaller range of motion, increasing both gradually as you become stronger and more flexible.

Shoulder Shrugs



Shoulder Shrugs Facing Out

Shrugs

You can do the shoulder shrugs facing in, or out, of the UPPERTONE. Use the direction most comfortable for you. If you use a power chair with a high back and find it difficult to back into the UPPERTONE, do the exercise facing in.

1. Adjust the resistance on the left and right sides to the desired level.
2. Adjust the height of the UPPERTONE so that the deltoid pivot points (the pegs) are just below your shoulders.
3. Pin the deltoid arms in the up angle position. The foam pads on the deltoid arms should be at shoulder level or slightly higher. Use the higher hole for the pin for the most range of motion. Use the lower hole for lower range of motion, or if you can not use the lower hole for some other reason.
4. Hang the top or bottom rickshaw loop on the deltoid arm between the collar and the foam pad so that the heel pad on the rickshaw handle is at the bottom of the rib cage.
5. Position the deltoid handles so that you are in a comfortable position and the wheelchair does not interfere when you push down on the rickshaw handles.
6. Position the wheelchair so that when your hands are on the rickshaw handle pads, your elbows are bent around 90 degrees, and you can push straight down without leaning or slouching.
7. Place the heel of the hand on the pad, with the fingers hanging over to avoid pulling with the fingers and to avoid bending the wrist. But, if you are more comfortable doing so, place your palm on the rickshaw handle.
8. Then push down on the pad as far as you can go locking your elbow.
9. Now do the shoulder shrugs by moving your shoulders up and down while keeping your arms straight.
10. Throughout the entire movement you should sit up straight. Do not lean or slouch.
11. Use the same motion for the desired number of repetitions.

Tricep Extensions



Tricep Extensions Facing In



Tricep Extensions

You can do the tricep extensions facing in, or out, of the UPPERTONE. Use the direction most comfortable for you. If you use a power chair with a high back and find it difficult to back into the UPPERTONE, do the exercise facing in.

1. Adjust the resistance on the left and right sides to the desired level.
2. Adjust the height of the UPPERTONE so that the deltoid pivot points (the pegs) are just below your shoulders.
3. Pin the deltoid arms in the up angle position. The foam pads on the deltoid arms should be at shoulder level or slightly higher.
4. Use the higher hole for the pin for the most range of motion. Use the lower hole for lower range of motion, or if you can not use the lower hole for some other reason.
5. Hang the top or bottom rickshaw loop on the deltoid arm between the collar and the foam pad so that the heel pad on the rickshaw handle is at the bottom of the rib cage.
6. Position the deltoid handles so that you are in a comfortable position and the wheelchair does not interfere when you push down on the rickshaw handles.
7. Position the wheelchair so that when your hand is on the rickshaw handle pad, your elbow is bent at 90 degrees, and you can push straight down without leaning or slouching.
8. Place the heel of the hand on the pad, with the fingers hanging over to avoid pulling with the fingers and to avoid bending the wrist. But, if you are more comfortable doing so, place your palm on the rickshaw handle.
9. Then do the tricep extensions, by unbending and bending the arm at the elbow. The upper arm and elbow should remain stationary.
10. It is important that you push straight down in a controlled motion. That is, the lower arm should become straight without moving around or swinging. Doing so will not only strengthen the tricep muscles but also help you develop a sense of balance.
11. Throughout the entire movement you should sit up straight. Do not lean or slouch.
12. Use the same motion for the desired number of repetitions.
13. We recommend that in order to develop the proper technique and sense of balance you do this exercise one arm at a time.
14. You may also want to start with a low resistance and a smaller range of motion, increasing both gradually as you become stronger and more flexible.

Wrist Supination



Wrist Supination From the Side

Wrist Supination

You can do the wrist supination exercise from either the side or the back of the UPPERTONE. Use the position that is most comfortable for you. If you do the exercise from the side you can exercise both arms from the same side, by simply switching the direction you are facing. If you do the exercise from the back, the left arm will have to be exercised from the left side and the right arm from the right side.

Wrist Supination (from the side):

1. Adjust the resistance to the desired level.
2. Adjust the slider height so that your stretched arm is parallel to the ground, when your elbow is on the elbow rest. That is, you should be able to stretch your arm without bending your elbow.
3. Position the wheelchair so that you are close and parallel to the UPPERTONE's side and your shoulder is aligned with the elbow rest.
4. Place your elbow on the elbow rest with its tip close to the edge next to you.
5. Extend your arm, palm up, and position the wrist handle so that the pad rests on your palm.
6. Begin exercising by curling your wrist while keeping your arm steady. In other words only your hand should move while the rest of the arm stays stationary. Curl the wrist as far as you can and then return it to the starting position.
7. Control your hand's movement both while lifting and returning to the starting position.
8. Use the same motion for the desired number of repetitions.
9. Then reposition yourself to the opposite side for exercising the other arm.

Wrist Supination (from the back):

1. Adjust the resistance to the desired level.
2. Adjust the slider height so that your stretched arm is parallel to the ground, when your elbow is on the elbow rest. That is, you should be able to stretch your arm without bending your elbow.
3. Position the wheelchair so that:
 - (a) You are close and parallel to the curl station.
 - (b) Your shoulder is behind the elbow rest by a distance equal to the length of your upper arm.
4. Place your elbow on the elbow rest with its tip close to the edge next to you.
5. Extend your arm, palm up, and position the handle so that the pad rests on your palm.

6. Begin exercising by curling your wrist while keeping your arm steady. In other words only your hand should move while the rest of the arm stays stationary.
7. Curl the wrist as far as you can and then return it to the starting position. Control your hand's movement both while lifting and returning to the starting position.
8. Use the same motion for the desired number of repetitions.
9. Then reposition yourself to the opposite side for exercising the other arm.

Wrist Pronation



Wrist Pronation

You can do the wrist pronation exercise from either the side or the back of the UPPERTONE. Use the position that is most comfortable for you. If you do the exercise from the side you can exercise both arms from the same side, by simply switching the direction you are facing. If you do the exercise from the back, the left arm will have to be exercised from the left side and the right arm from the right side.

Wrist Pronation (from the side):

1. Adjust the resistance to the desired level.
2. Adjust the slider height so that your stretched arm is parallel to the ground, when your elbow is on the elbow rest. That is, you should be able to stretch your arm without bending your elbow.
3. Position the wheelchair so that you are close and parallel to the UPPERTONE's side and your shoulder is aligned with the elbow rest.
4. Place your elbow on the elbow rest with its tip close to the edge next to you.
5. Extend your arm, palm down, and position the wrist handle so that the pad rests on the back of your hand.
6. Begin exercising by flexing your wrist while keeping your arm steady. In other words only your hand should move while the rest of the arm stays stationary.
7. Flex the wrist as far as you can and then return it to the starting position. Control your hand's movement both while lifting and returning to the starting position.
8. Use the same motion for the desired number of repetitions.
9. Then reposition yourself to the opposite side for exercising the other arm.

Wrist Pronation (from the back):

1. Adjust the resistance to the desired level.
2. Adjust the slider height so that your stretched arm is parallel to the ground, when your elbow is on the elbow rest. That is, you should be able to stretch your arm without bending your elbow.
3. Position the wheelchair so that:
 - (a) You are close and parallel to the curl station.
 - (b) Your shoulder is behind the elbow rest by a distance equal to the length of your upper arm. Place your elbow on the elbow rest with its tip close to the edge next to you.
4. Extend your arm, palm down, and position the handle so that the pad rests on the back of your hand.

5. Begin exercising by flexing your wrist while keeping your arm steady. In other words only your hand should move while the rest of the arm stays stationary.
6. Flex the wrist as far as you can and then return it to the starting position. Control your hand's movement both while lifting and returning to the starting position.
7. Use the same motion for the desired number of repetitions.
8. Then reposition yourself to the opposite side for exercising the other arm.

Seated Crunches



Seated Crunches

In order to do the seated crunches, you must be able to pull yourself into the UPPERTONE sideways between the two deltoid pads. In addition, your chair must be high enough so that you can put one of the deltoid pads against your chest, with your arms folded across your chest and resting on the pad. Finally, in order to do this exercise you must have adequate trunk control.

Consequently, only people with C7 and below injuries who use manual chairs, may be able to do this exercise.

Seated Crunches

1. Adjust the resistance on the left and right sides to the desired level.
2. Adjust the height of the UPPERTONE so that the deltoid pivot points (the pegs) are just below your shoulders.
3. Pin the deltoid arms in the up angle position and slide the foam pads on the deltoid arms so that they are at chest level.
4. Use the higher hole for the pin for the most range of motion. Use the lower hole for lower range of motion, or if you can not use the lower hole for some other reason.
5. Now position yourself sideways so that your chest is against the deltoid pad, and cross and place both your arms on the deltoid pad.
6. Now to do the crunches push down with your chest till you are almost as far as you can go. Then return to the starting position.
7. Throughout the entire movement your back should remain straight. Do not lean or slouch.
8. It is also important that you maintain control throughout the entire range of motion.
9. Use the same motion for the desired number of repetitions.

UPPERTONE

ACTUAL RESISTANCE ON EACH ARM AT VARIOUS WEIGHTS AND TRUCK POSITIONS

Weight on Left Or Right Arm In Pounds

(Total Resistance = Resistance on Left Arm + Resistance on Right Arm)

T R U C K P O S I T I O N		0.0	10.0	20.0	30.0	40.0	54.0	50.0	55.0	60.0	65.0
	Min	5.3	5.8	6.3	6.8	7.0	7.3	7.5	7.8	8.0	8.3
	0.0	5.5	6.8	7.8	9.0	10.0	10.8	11.3	11.8	12.5	13.0
	1.0	5.8	8.0	10.3	12.5	15.0	16.0	17.3	18.3	19.5	20.5
	2.0	6.0	9.5	12.8	16.3	19.8	21.5	23.3	24.8	26.5	28.3
	3.0	6.3	10.8	15.5	20.0	24.5	26.8	29.0	31.3	33.8	36.0
	4.0	6.5	12.3	18.0	23.8	29.3	32.3	35.0	38.0	40.8	43.5
	5.0	6.8	13.5	20.5	27.3	34.3	37.5	41.0	44.5	47.8	51.3
	6.0	7.0	15.0	23.0	31.0	39.0	43.0	47.0	51.0	55.0	59.0
	7.0	7.3	16.5	25.5	34.8	43.8	48.3	53.0	57.5	62.0	66.5
	8.0	7.5	17.8	28.0	38.3	48.5	53.8	58.8	64.0	69.0	74.3
	9.0	7.8	19.3	30.5	42.0	53.5	59.0	64.8	70.5	76.3	82.0
	Max	8.0	20.5	33.0	45.8	58.3	64.5	70.8	77.0	83.3	89.5

N The cells represent the actual resistance (to the nearest quarter pound), for each arm, for various weights and truck positions on either arm.

Actual resistance for intermediate positions and weights can be estimated by interpolation.

UPPERTONE
TOTAL ACTUAL RESISTANCE AT VARIOUS WEIGHTS AND TRUCK POSITIONS

Total Weight on ***Both*** Trucks in Pounds
 (Assuming The Same Weight and Position For Both Trucks)

T		0.0	20.0	40.0	60.0	80.0	90.0	100.0	110.0	120.0	130.0
R	Min	10.5	11.5	12.5	13.5	14.0	14.5	15.0	15.5	16.0	16.5
U	0.0	11.0	13.5	15.5	18.0	20.0	21.5	22.5	23.5	25.0	26.0
C	1.0	11.5	16.0	20.5	25.0	30.0	32.0	34.5	36.5	39.0	41.0
K	2.0	12.0	19.0	25.5	32.5	39.5	43.0	46.5	49.5	53.0	56.5
	3.0	12.5	21.5	31.0	40.0	49.0	53.5	58.0	62.5	67.5	72.0
P	4.0	13.0	24.5	36.0	47.5	58.5	64.5	70.0	76.0	81.5	87.0
O	5.0	13.5	27.0	41.0	54.5	68.5	75.0	82.0	89.0	95.5	102.5
S	6.0	14.0	30.0	46.0	62.0	78.0	86.0	94.0	102.0	110.0	118.0
I	7.0	14.5	33.0	51.0	69.5	87.5	96.5	106.0	115.0	124.0	133.0
T	8.0	15.0	35.5	56.0	76.5	97.0	107.5	117.5	128.0	138.0	148.5
I	9.0	15.5	38.5	61.0	84.0	107.0	118.0	129.5	141.0	152.5	164.0
O	Max	16.0	41.0	66.0	91.5	116.5	129.0	141.5	154.0	166.5	179.0

N The cells represent the actual resistance (to the nearest quarter pound), for various weights and truck positions on both arms.
 Actual resistance for intermediate positions and weights can be estimated by interpolation.

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