

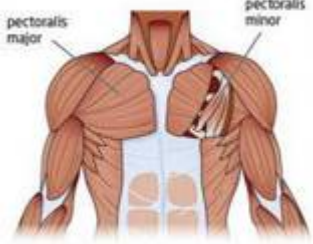


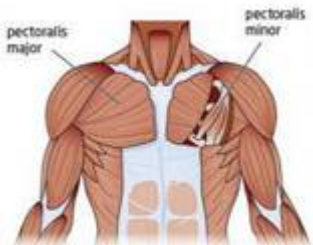


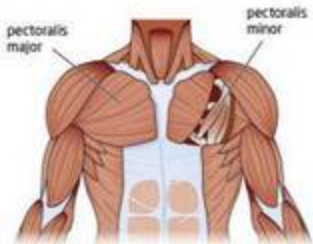


Appendix H

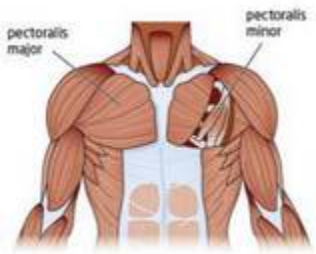


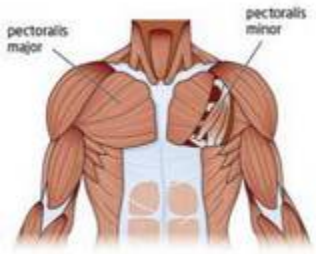








Appendix H: Exercise Library

Appendix H

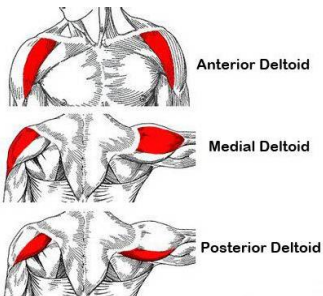


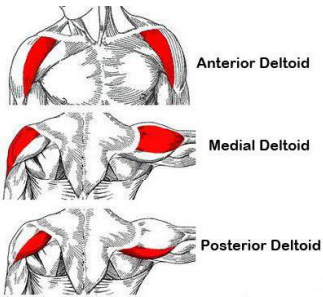


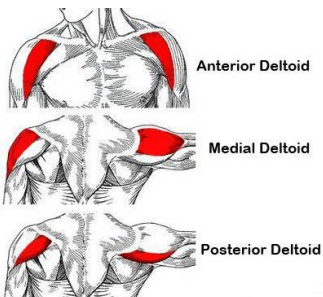


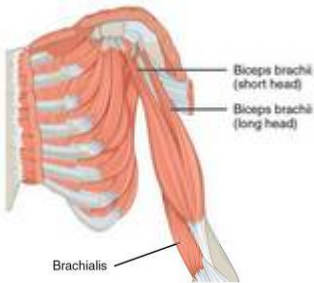


Exercise Library

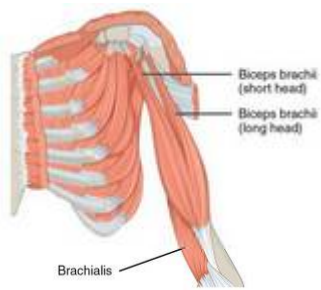


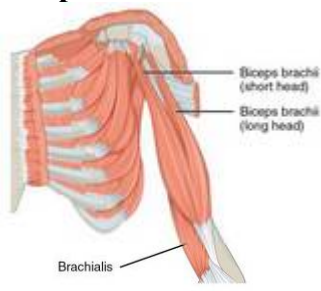


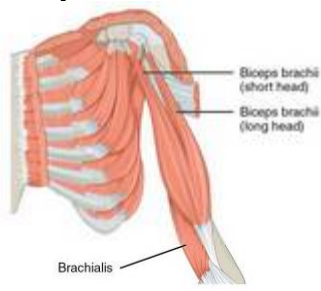


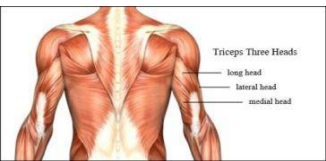


Each exercise is categorized by the muscle group being trained. Each muscle group can be trained using different pieces of equipment. For the most part, each exercise demonstrated in the library shows different versions of the exercise using an exercise band, suspension strap, machine, dumbbells, and exercise ball.

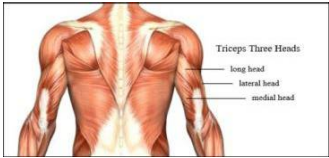


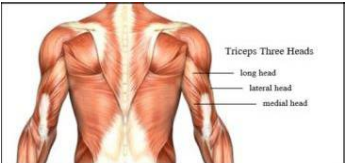


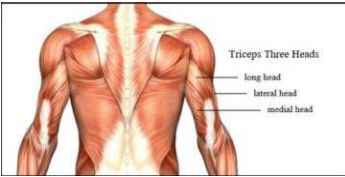


Upper Body Exercise	Equipment	Start Position	Contraction Position
Chest Pectorals 	Chest Press Bands		
Chest Pectorals 	Chest Fly Bands		
Chest Pectorals 	Push Up Suspension Strap		

Upper Body Exercise	Equipment	Start Position	Contraction Position
Chest Pectorals 	Chest Press Machine		
Chest Pectorals 	Incline Bench Chest Press Dumbbells		
Upper Back Rhomboids 	Upper Back Low Row Bands		
Upper Back Rhomboids 	Upper Back Low Row Suspension Strap		




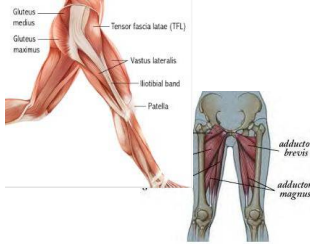






Upper Body Exercise	Equipment	Start Position	Contraction Position
Upper Back Rhomboids 	Upper Back Seated Row Cable Machine		
Upper Back Rhomboids 	Back Bent Over Row Dumbbells		
Back Latissimus Dorsi 	Back Lat Pulldown Bands		
Back Latissimus Dorsi 	Back Lat Pulldown Machine		













Upper Body Exercise	Equipment	Start Position	Contraction Position
Shoulders Deltoids 	Medial Deltoid Shoulder Press Bands		
Shoulders Deltoids 	Overhead Shoulder Press Machine		
Shoulders Deltoids 	Overhead Shoulder Press Dumbbells		
Biceps 	Bicep Curl Bands		




Upper Body Exercise	Equipment	Start Position	Contraction Position
Biceps 	Bicep Curl Suspension Strap		
Biceps 	Bicep Curl Machine		
Biceps 	Bicep Curl Dumbbells		
Triceps 	Overhead Triceps Extension Bands		

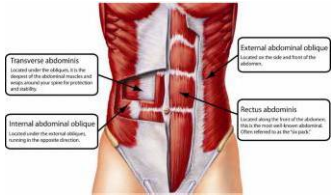

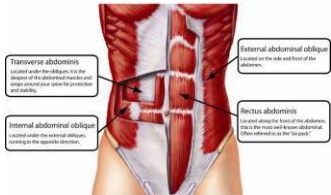


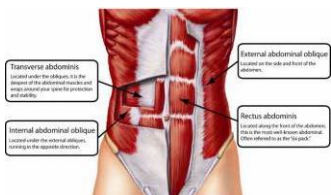

Upper Body Exercise	Equipment	Start Position	Contraction Position
Triceps 	Overhead Triceps Extension Suspension Strap		
Triceps 	Triceps Press Down Machine		
Triceps 	Triceps Kick Back Dumbbells		

Lower Body Exercise	Equipment	Start Position	Contraction Position
Quadriceps 	Seated Leg Extension with Ankle Weight		
Quadriceps 	Seated Leg Extension Machine		
Hamstrings 	Seated Leg Curl Machine		
Abductors 	Abductor Machine		

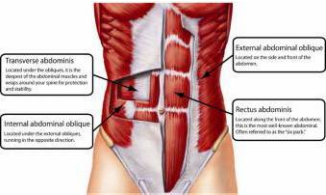
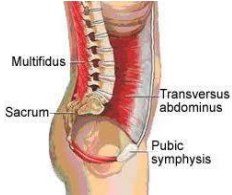


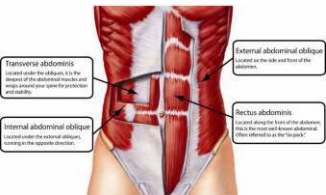
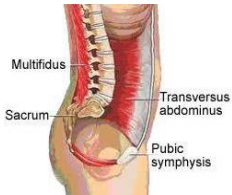


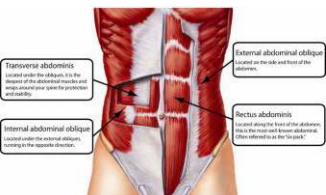
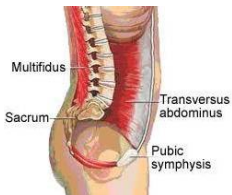


Lower Body Exercise	Equipment	Start Position	Contraction Position
Adductors 	Adductor Machine		
Abductors and Adductors 	Side Lunge Disc Wall or Post		
Gastrocnemius 	Calf Extension Machine		
Gastrocnemius 	Standing Calf Raise		

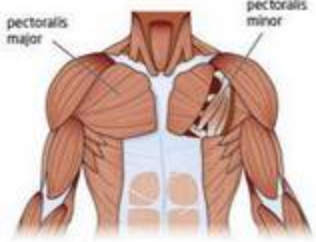


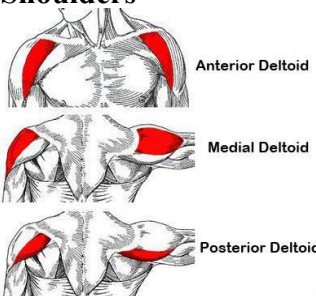
Lower Body Exercise	Equipment	Start Position	Contraction Position
Glutes, Quads, & Hamstrings 	Squat Stand to Sit to Stand Box		
Glutes, Quads, & Hamstrings 	Squat Bands		
Glutes, Quads, & Hamstrings 	Squat Suspension Strap		
Glutes, Quads, & Hamstrings 	Seated Leg Press Machine		

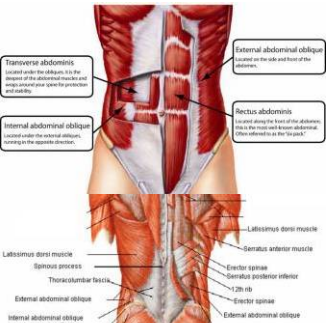


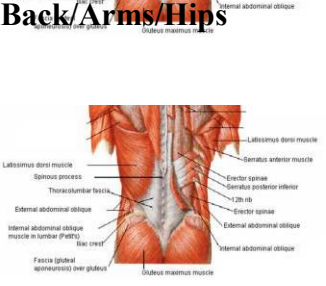

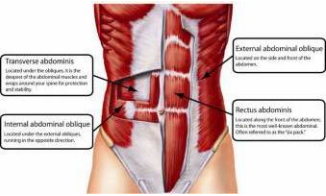



Lower Body Exercise	Equipment	Start Position	Contraction Position
Glutes, Quads, & Hamstrings 	Lunge Disc with Wall or Post		




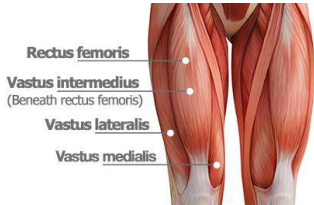





Core and Balance	Equipment	Start Position	Contraction Position
Balancing Core 	Standing Balancing Bosu 		
Balancing Core 	Forearm Plank 	Knees 	Toes 
Balancing Core 	Forearm Plank Bosu 	Knees 	Toes 
Balancing Core 	High Plank Bosu 	Dome Side Up 	Flat Side Up 




Core and Balance	Equipment	Start Position	Contraction Position
Balancing Core 	Four Point Bridge 		
Balancing Core 	Four Point Bridge Bosu 	Fist 	Palm 
Balancing Core 	Abdominal Crunch Bosu 		
Balancing Core 	Oblique Crunch Bosu 		

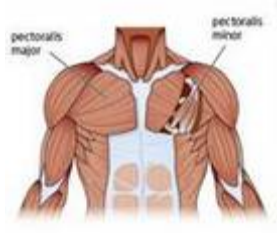


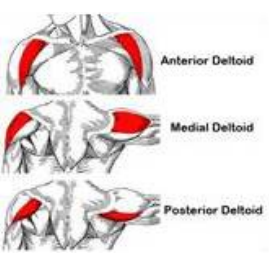


Core and Balance	Equipment	Start Position	Contraction Position
Balancing Core 	Abdominal Crunch Ball 		
Balancing Core 	Oblique Crunch Ball 		
Balancing Core 	Back Extension Ball 		

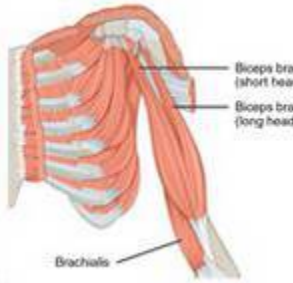





Stretch	Equipment	Start Position	End Position
Chest/Pectorals/Biceps 	Body Weight or Wall or Post		
Upper Back/Lats/Triceps 	Body Weight or Wall or Post		
Shoulders 	Body Weight		
Lower Back 	Body Weight		

Stretch	Equipment	Start Position	End Position
Back and Abs 	Cat/Cow Body Weight		
Back/Arms/Hips 	Child's Pose Body Weight		
Abs 	Modified Cobra Body Weight		
Lower Back 	Knee Hug Body Weight		

Stretch	Equipment	Start Position	Other Option
Hamstrings 	Body Weight		
Quadriceps/Hip Flexors 	Body Weight		
Adductors 	Body Weight		
Abductors 	Body Weight		

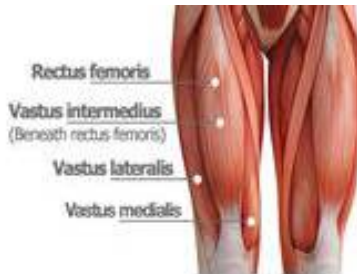
Stretch	Equipment	Start Position	End Position
Abductors 	Body Weight		

Specific MS Adaptations			
Strength	Description	Start Position	Contraction Position
Wheelchair Adaptation Using Bands Chest Press Chest Pectorals 	<p>Loop the band around the back of the wheelchair and grasp the handles of the band in each hand at chest level. Grasp the band handles back far enough so you are able to feel the resistance. Next, press the bands forward until the arms are straight out in front of you. Do not lock the arms. You want to keep the tension throughout the movement and not relax in a locked position. Slowly return to the starting position.</p>		
Wheelchair Adaptation Using Bands Shoulder Press Deltoids 	<p>Secure the band, looping under the wheelchair wheels. Grasp the band handles and position them around the shoulder area. Keep your forearms straight and your hands at ear level. Next, press the bands over your head. The arms should extend just short of locking the elbows. Slowly lower the bands back to the starting position and repeat the movement.</p>		

<p>Wheelchair Adaptation Using Bands Bicep Curl</p> <p>Biceps</p> 	<p>With the band in the same secured position as shoulder press, and arms down at sides, grab the resistance band handles. Keeping elbows at the side, palms facing outward, slowly raise hands toward the shoulder and slowly return to starting position. Make sure to keep your wrists in line with the forearms, not bent.</p> <p>With a slight variation of turning the palms in towards your legs, the bicep curl now becomes a seated hammer curl. This movement is used to target primarily the biceps, however because the wrist remains perpendicular to the ground rather than parallel, the forearm also gets a workout.</p>		
<p>Wheelchair Adaptation Using Bands Overhead Triceps Extension</p> <p>Triceps</p> 	<p>With the band secured under the wheels grasp both handles of the bands and pull the arms close to the sides of your head, elbows pointing forward. Extend the arms up, lifting that handle toward the ceiling and slowly release back down to the start position.</p> <p>The only movement should be the elbows bending and straightening. Keep the elbows pointed forward, not out to the sides depending on person's range of motion.</p>		

Wheelchair Adaptation Using Bands Seated Leg Extension

Quadriceps



Place the band's handle on your right foot, making sure it's secure. Place the band under the right wheel or connected to back wheelchair handle for resistance. Sit tall in your wheelchair without leaning into the back of the wheelchair if possible or lean back for support if needed. Lift your right leg up so that the back of your thigh comes off the wheelchair. Keeping your leg elevated, extend your leg out, straightening at the knee and then bend the knee.

The only movement should come from bending and extending the knee. Keep your right thigh lifted off of your wheelchair the entire time if possible. Now switch the band to your left foot and move to the left leg extensions.



Wheelchair Adaptation Seated Abdominal Crunch

Rectus Abdominis



Sit at the edge of your wheelchair. With feet on the floor, slowly tighten your abdominal muscles "crunching" them forward. Do not lean your body forward more than slightly during the movement. The object is to compress the ab muscles, flexing them downwards. Release the crunch position and repeat for 20 reps.



Other Wheelchair Strength Exercises

Chest Pull

Fold your resistance band in half and grip each end in front of your chest, arms away from your body and elbows bent. Pull the band apart, bringing it closer to your chest and straightening your arms, and then slowly release it back to the start position.

Bent Over Row

Place the resistance band under wheels and grasp each handle. Bend forward from the waist until your back is parallel to the floor, stretching your arms down toward the floor. Pull the handles upward, evenly pulling your shoulder blades together and your elbows toward the ceiling and slowly stretch to the start position. Keep your abs engaged to protect your lower back. Move your feet closer to the handles to make it harder; closer to the center of the band to make it easier.

Lower Back Extensions

Place the resistance band under wheels and grasp each handle. Bend forward from the waist until your back is parallel to the floor. Keep your elbows bent and tucked into the sides of the waist. Keeping your spine as straight as possible, bend backward from the waist to sit back up and then slowly lower back down to the start position. Keep your abs and your spine lengthened. Move your feet closer to the handles to make it harder; closer to the center of the band to make it easier. Remember to avoid back injury you must do these exercises slowly without a jerking motion with your back.

Inner Thigh Adduction

Sit tall in your wheelchair without leaning into the back of the wheelchair. Place the band under the right wheel for resistance. Extend your left leg. Slowly bring your left leg toward the center of the body and then return back to the starting position while keeping your toes pointed towards the ceiling. Keep the band on your left foot and move to the next exercise.

Outer Thigh Abduction







Sit tall in your wheelchair without leaning into the back of the wheelchair. Place the band under the right wheel for resistance. Extend your left leg. Slowly bring your left leg outward and then return back to the starting position. Keep your toes pointed towards the ceiling. Next, do these 3 exercises (Seated Leg Extensions, Inner Thigh Adduction, Outer Thigh Abduction) with the right leg positioning the band under the left wheel.

Calf Raises

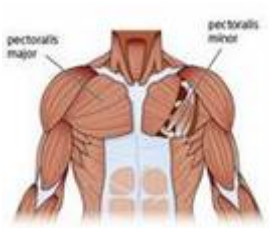
Place the middle of the band around your left foot, holding the handles in both hands securely with your elbows at your sides. Extend your leg. Point the toes forward and then slowly return to the starting position. Keep the band tight and concentrate on flexing and pointing the toes. Repeat on the opposite side.

Seated Abs Stretch

Sit at the edge of your wheelchair. Extend your legs out and your arms up overhead, stretching through the abs. Hold for 10 to 30 seconds.

Total Body Strength Exercises	Equipment	Demonstration	Demonstration
<p>Seated Inner Thigh Ball Squeeze</p> 	<p>Bench and Inflatable Ball</p> <ul style="list-style-type: none"> • 4 sets of 12 repetitions holding for 5 seconds at mid-point. • 5th set as fast as possible for 15 repetitions. 		
<p>Bench Squat Press/Ball Squeeze Combo</p> 	<p>Bench, Inflatable Ball, & Dumbbells</p> <ul style="list-style-type: none"> • Sets of 15, 12, 10, 8, 15 with dumbbells. • Dumbbells to increase in weight each set. Last set should be performed with the same weight performed on the second set. • While sitting on a bench with legs hip width apart and feet firmly planted on ground and parallel, lift dumbbells to each shoulder. Stand as your press dumbbells over your head, while squeezing ball and repeat. Breathe in before you begin and out as you perform the movement. 		

Smith Machine Rack Push-Up



Smith Machine

- Sets of 15, 12, 10, 8-15
- Begin with bar at a height between your navel and chest. Lower the bar one notch each set. The last is a drop set in which you perform 8 and 15 repetitions, consecutively, while raising the bar to the height of the second set while performing the last 15 repetitions as fast as you can while remaining in control.



Modified Bench Pulldown/Mid Row with Leg Press (to improve Muscle Sequencing)



Incline Bench, Cable Machine, & Square Balancing Pad

- Slide an adjustable bench to the front center of a lat pulldown machine or one side of a crossover cable machine.
- Set bench to a 30- or 40-degree angle.
- Put a soft 2-inch-thick square foam pad at foot of bench. This will help improve feeling at bottom of feet and through hips and buttocks as you perform exercise.
- Attach a short straight bar to cable and possibly, a small chain may be needed to lower handle.
- Sit upright on bench reach for handle while planting feet firmly on pad approx. 10 inches apart and parallel.
- With the following sequence of:
 - ☐ Press with legs into pad firmly
 - ☐ Pull with back into bench
 - ☐ Pull bar to lower chest with elbows neutral.
- Perform sets of 12, 10, 8, 6-12 while increasing weight until last set of 12, in which tempo is increased to fast/controlled.



Sit Up Stand Up



Bench and Step

- Adjust an adjustable bench to the 45-degree angle.
- Lie back and firmly place feet on ground shoulder width apart.
- Cross arms in front of chest.
- Sit up and stand up as fast as possible for 4 sets of 12.

Note: as you get stronger you can lower bench to 30 degrees and hold weighted plates. The key is to balance speed and resistance, as you are trying to change the pathway as to how the mind controls the motion from thought through the feet, back, abdominals, shoulders, hips and legs.



Supine Knee Raise with Leg Extension



Bench and Possible Partner

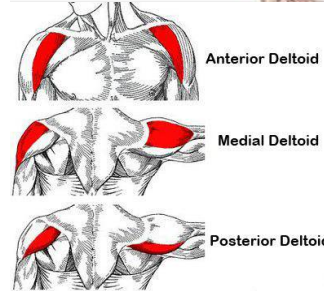
- Lying on a flat bench or floor face up with hands holding back of bench or to the side on the floor, bring knees towards chest as you pull on bench or push into floor. As your knees come just past 90 degrees to your body, extend legs straight towards ceiling, while keeping both hips, knees, calves, ankle, feet and toes in line and even. (Very important and will help drop foot, if performed correctly.) Lower feet and then knees and feet again towards bench/floor and repeat.

- Perform 4 sets of 12-15 reps

Note: placing and squeezing a small rubber air filled ball between your calves or knees will help focus energy, maintain even tracking of both legs and improve your ability to straighten your legs.



One Arm Kettle Bell Swing



Incline Bench and Kettle Bell

- Using an adjustable bench raised to a 90-degree angle as a balance point, grab top of bench with hand of one arm.

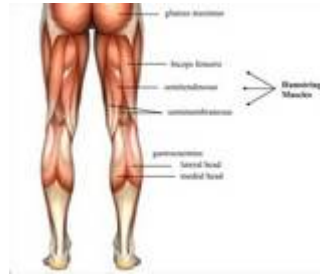
- While keep back flat, bend down with one hand and grab kettle bell, keeping lat muscle stretched out and slightly contracted. You must visualize holding the kettle bell with your lat, not your hand and arm.

- Keeping your feet flat, planted and a few inches wider than shoulder width, rock weight forward with hips, while planting feet into ground and swing kettle bell upward to just above the height of your eyes and thrust hips forward at top of motion. Inhale as you return, head slightly up, keeping back flat and lat contracted. Repeat.

- Perform sets of 12, 10, 8, 6-12 with each arm. Increase weight each set, accordingly, until last set, in which you finish with the same weight as your second set.



Leg Curl with Supported Chain or Wrap (seated or prone)



Leg Curl Machine, Strap or Chain

- Perform sets of 15, 12, 10, 8-15. Increase weight each set, accordingly, until last set in which you use the weight of the second set and increase tempo.

Note: If you use a seated leg curl and cannot curl one leg, you must use a flat stretch band or towel/rope as sling to hold up the leg. If you keep the thigh from falling, you will be able to curl the leg.



Leg Press with Adduction



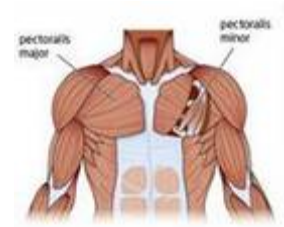
Leg Press Machine and Inflatable Ball

- Using a seated leg press or decline sled. Place small air-filled rubber ball between knees. Place feet hip width apart on platform. While pressing legs forward, squeeze rubber ball. Do not lock out legs and return about 2 inches before plates touch, maintaining tension in quads, hamstrings and buttocks, while letting tension off rubber ball. Repeat.

- Perform sets of 15, 12, 10, 8-15, changing weight upward, accordingly, until last set in which weight is decreased to the weight of the second set and increase tempo of each rep.



Incline Dumbbell Bench Press with Rotation



Incline Bench and Possible Partner

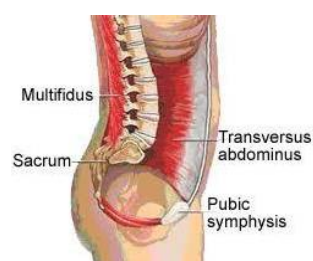
- Set bench at 30-degree angle.
- Lie back on bench while holding dumbbells and plant feet firmly into ground and even.
- Bring each dumbbell to shoulders while stretching chest out slightly with palms facing out. Press dumbbells up, while turning counter-clockwise until bells are parallel and just before touching. Squeeze chest and keep hands in line and even.
- Perform sets of 12, 10, 8, 6-12 while increasing weight, accordingly, until last set in which you lower weight to that of the second set and increase tempo.

Note: by rotating and focusing on keeping hands in line, while barely touching each weight together, you help retrain your brain to control have movement and the result is better mind/muscle control and communication, which may help to improve total body movement.



Balance

Marching Front and Sidestep with Pole or Rod



Pole or Rod

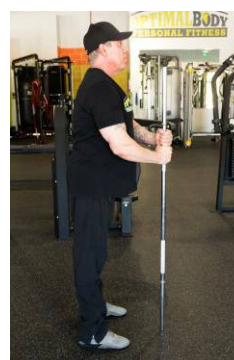
• Using a 1 1/2 diameter by 6 ft. High wooden closet pole. Hold rod vertically in front of you with arms partially extended at chest height. March each leg, simultaneously to each side of pole and back, just past buttocks. Repeat for a total of 24 repetitions.

Rest for 20 seconds and then with feet together, still holding pole in front, extend right leg laterally to the right just past shoulder width and back to start. Repeat 10 times and the switch to left, repeat 10 times.

Then perform same motion simultaneously (left/right) for a total of 20 repetitions.

• Perform the above sequence for 3-4 sets.

Note: As you gain speed, strength and coordination, you can add ankle weights, accordingly.



MS Specific Stretches

Hip/Knee/Back



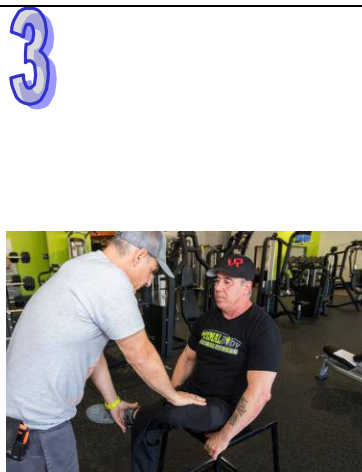
1. Sit upright on a bench or chair.
2. Cross one leg over the other with the planted foot pointed straight forward and hip width apart.



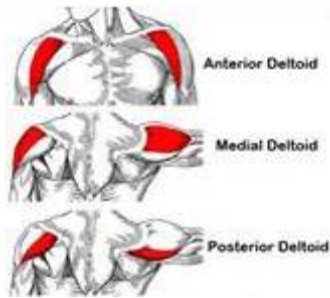
Hip/Knee/Back with Partner



3. Have a partner or trainer support the knee of leg crossed with one hand and with other hand placed flat on the knee apply pressure downward as you resist upward with 30% of your relative strength. Hold for 5 seconds. Repeat five times while increasing resistance to 50%, 80%, 100%, 100%, 100%, respectively holding for 5 seconds and then relaxing.
4. Switch legs and follow the same procedure.



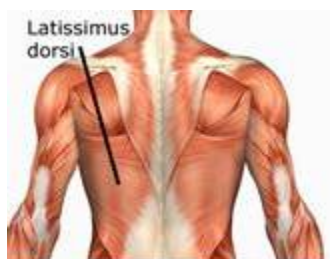
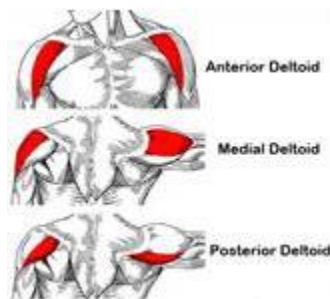
Shoulders



1. Lying supine on a bench or the floor, let arms fall stretched out behind your head.
2. Starting with the arm that the elbow is the highest, have your partner/trainer support your elbow with arm stretched out and pressure downward while you resist upward with 30% of your strength and hold for five seconds. Bring arm over shoulder then repeat while applying pressure upward at 50%, 80%, 100%, 100%, 100% of your strength, respectively, while holding for 5 seconds.



Shoulders/Back/Neck



1. While lying supine on a mat, extend your arms at right angle to your torso at shoulder level and hands and forearm pointing up.
2. Let arms fall to each side.
3. Have your partner or trainer start with the arm in which the hand is furthest from the floor and apply pressure downward at the forearm, while supporting the shoulder. Resist upward at 30% of strength and hold for 5 seconds. Repeat at 50%, 80%, 100%, 100%, 100% respectively, while holding for 5 seconds.

Note: you should practice this 2x daily in am and pm when pain or tightness is present or 1x every other day for maintenance.

