



Versatile Treatments For Diverse Patients

OWNER'S MANUAL SECTION 1: ASSEMBLY GUIDE & MAINTENANCE



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I. Introduction

The Shuttle Recovery Owner's Manual has been prepared to help you make full use of all the capabilities of your Shuttle Recovery, whether for efficient rehabilitation or for athletic training and performance. This manual contains instructions about how to assemble, adjust, use, and maintain your Shuttle Recovery. With this knowledge - and your own imagination - the extraordinary features of the Shuttle Recovery will allow you to design a customized workout program to reach all your fitness or rehabilitation goals.

WARRANTY REGISTRATION

Scan the QR code to be directed to the warranty registration form on our website.



LIMITED ORIGINAL EQUIPMENT WARRANTY

Contemporary Design Company ("CDC") makes every effort to assure that its products meet high quality and durability standards and warrants to the original retail consumer/purchaser of our products that each product be free from defects in workmanship and materials under normal and reasonable use and correct assembly (if assembled by consumer/purchaser), as follows. Warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities or to a lack of maintenance.

1. For a period of FIVE YEARS: Bolted metal frames, stands, towers, pulley systems, kickplate frame and board, carriage frame, carriage handles, and wheels.
2. For a period of TWO YEARS: Backrest upholstery, kickplate face, harnesses, and grips.
3. For a period of ONE YEAR: Elasticords, rebound elastics, lock knobs, torque handles, upholstery overlay, headrest, and all other parts.

Thank you for purchasing a Shuttle product, it should give you years of trouble free service. See our website for other accessories or products.

Gary Graham, President

II. Assembly Instructions

Assembly of the Shuttle Recovery requires two people. It is recommended that you begin assembly by opening both box 1 and 2 and familiarizing yourself with the included parts.

Keep in mind that the following images pertain to just one of the four available Shuttle Recovery models, your parts may appear slightly different than those in the included images but, the required steps remain the same.

- [Step 1: Rail Frame Assembly \(Box 1\)](#)
- [Step 2: Attach Footend Bracket \(Box 1\)](#)
- [Step 3: Attach Support Tubes \(Box 2\)](#)
- [Step 4: Attach Left Hand Side Panel](#)
- [Step 5: Add the Plyometric X Brace \(Box 1\)](#)
- [Step 6: Add the Elasticords \(Box 1\)](#)
- [Step 7: Attach the Kickplate Frame \(Box 2\)](#)
- [Step 8: Add the Kickplate \(Box 2\)](#)
- [Step 9: Add the Carriage \(Box 2\)](#)
- [Step 10: Headrest \(Box 2\)](#)
- [Step 11: Inspect the assembly](#)

Tools

Included:

- 1/4" Allen Wrench
- 3/16" Allen Wrench
- 5/32" Allen Wrench
- Sample of Silicone Gel for lubricating Elasticords every 2-3 months

You will need:

- A friend to help with assembly
- 7/16" open end or box wrench
- 1/2" open end or box wrench
- Optional: 7/16" and 1/2" Socket

Step 1: Rail Frame Assembly (Box 1)

1. Locate the right hand (RH) Frame Panel, this panel has labeled holes of RH1, RH2, RH3, and RH4. Place the RH Frame Panel on a flat surface with the assembly labels facing toward you. Support each end with a large cardboard packing block (Box 2).



Step 2: Attach Footend Bracket (Box 1)

1. Locate the two bolts labeled as RH1 in the narrow end of the frame panel. Remove the nuts from the bolts and set aside.
2. Locate Footend Bracket (aluminum bracket with keyholes). Set aside Foam Retainer Strip from inside the bracket for later use. With bracket oriented with the serial number sticker facing away from the narrow end of the machine, line bracket RH1 holes up with the two RH1 bolts on the frame panel. Correct bracket placement will result in the bracket keyholes upright (with the holes toward the top of the frame and the slots toward the bottom).
3. Place the two 5/16 bolts up through the lower and upper holes in the bracket and lightly reattach the 5/16 nuts.



Step 3: Attach Support Tubes (Box 2)

1. Locate the 3 black support tubes.
2. Starting with tube 2 (marked inside of tube end), remove the nut from the RH end of the threaded rod and align in respective hole in frame panel, matching assembly sticker to assembly sticker as shown below. Replace nut. Lightly tighten.
3. Repeat with tube 4 (and tube 5, if assembling a Recovery Senior).
4. Repeat with tube 3, taking note that tube 3 includes a washer and nut.
5. When finished, tube 4's Elasticcord Lanyard Plate should be oriented with labels facing up toward the metal rails of your frame and resting against the stop protruding from the frame.
6. Remove nuts and washers from opposite end (LH) of all tubes.



Step 4: Attach Left Hand Side Panel



1. Remove the two 5/16 bolts and nuts from the two LH1 holes in the LH frame panel.
2. Place the Left Side Panel over the upward facing threaded rods on the support tubes, wiggle the RH tubes to align the three corresponding holes on the side panel.
3. Check to be sure the ends of the RH tubes are flush against the left and right side panels.
4. Add the two 5/16 bolts through the top rail frame into the Footend Bracket, lightly tighten nuts.
5. Replace the nuts and washer (washer to center tube only) on the upward facing threaded rods.

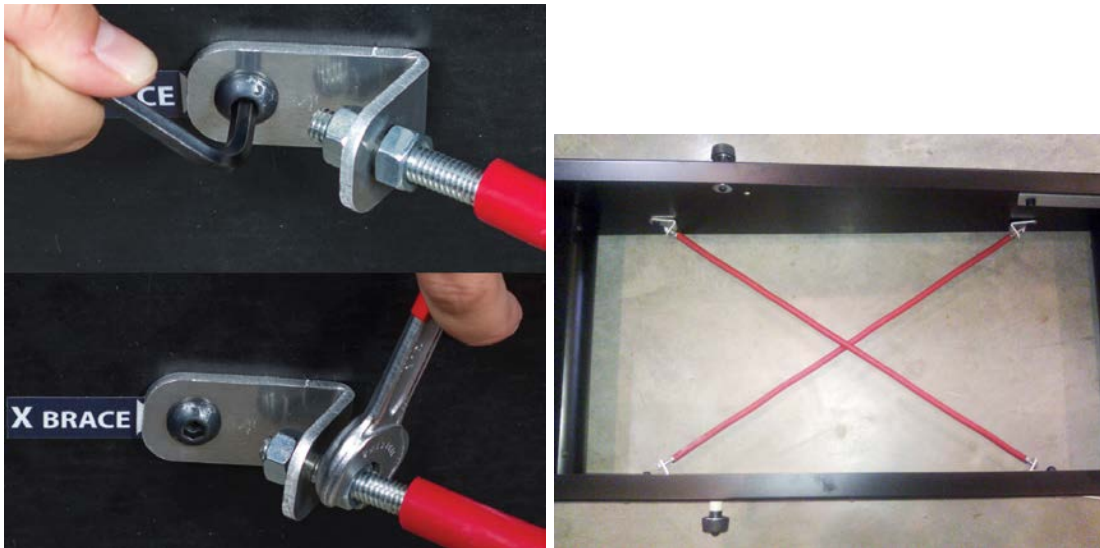


6. Rotate the entire frame assembly and place it on the floor with feet down.
7. Tighten nuts on RH and LH side of outside of frame.

Step 5: Add the Plyometric X Brace (Box 1)

Does not apply to Recovery Standard or Recovery Senior

1. Locate the two red rubber coated rods that will make up the X-brace support system. Please note that only one end of each rod will have a washer in addition to the nut provided.
2. Remove outermost nuts and washers from rod ends (four nuts, and two washers) and set aside.
3. Place the rods in an X configuration between the holes provided on each side of the rail frame and align the rod ends using the stickers on the right side panel as your guide.
4. Secure the rod ends closest to the head-end of the machine using provided nuts and washers. Secure rod ends closest to the foot-end of the machine with nuts.
5. The nuts attaching the angle brace to the rods may be adjusted to make the bolts fit into the holes exactly. Tighten these nuts to lock the rods in place.



Step 6: Add the Elasticords (Box 1)

1. Locate your Elasticords and your 2 barbells (6" threaded rods with rubber caps).
2. Working from the top side, thread the nylon webbing of your Elasticords through the Elasticord Lanyard Plate (RH4) several inches starting with teal cords in the 25 lb slot and ending with the grey in the 12 lb slot (if assembling a Recovery Senior, start with the yellow cord in the 5 lb slot, teal cords in the 25 lb slots, and grey cord in the 12 lb slot).



3. Starting with 4 cords at a time, thread one barbell through the looped ends of the nylon webbing so the 4 nylon loops rest between the black barbell heads. Repeat with any remaining cords (number of cords varies depending on machine model) and second barbell.
4. Pull cords taut so the barbell lays against the underside of the Elastic Lanyard Plate.



5. From the opposite end of the Shuttle, pull the silver end of the grey Elasticord through the corresponding hole in the Footend Bracket and secure at the bottom of the key hole.



6. Repeat with remaining Elasticords.

Step 7: Attach the Kickplate Frame (Box 2)

1. Locate the two Aluminum Kickplate Support Bars.
2. On both sides of the frame, remove the two outermost 5/16 bolts from the external bracket.



3. Place one kickplate support bar with the forked end down and the sloped bar oriented toward the narrow end of the machine.
4. Slide the kickplate support bar down between the frame and the external support plate assembly.
5. Insert the two 5/16 bolts and add the 5/16 nuts.
6. Tighten all the nuts and bolts.
7. Repeat the process with the Kickplate Support on the opposite side.

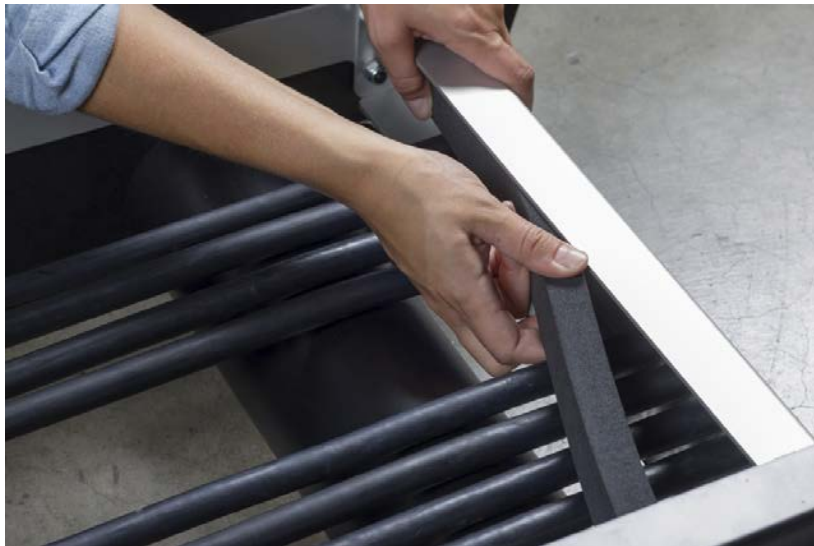


Step 8: Add the Kickplate (Box 2)

1. Remove plastic caps from nuts on back side of kickplate. Remove nuts.
2. Place the kickplate into the four holes on the kickplate bars.
3. Add the nuts and tighten.
4. Replace the plastic caps.



7. Tuck the Foam Retainer Strip inside of the Footend Bracket above the Elasticcords to keep them in place.



Step 9: Add the Carriage (Box 2)

1. Remove the two black rubber bumpers located on top of the head-end of each rail.

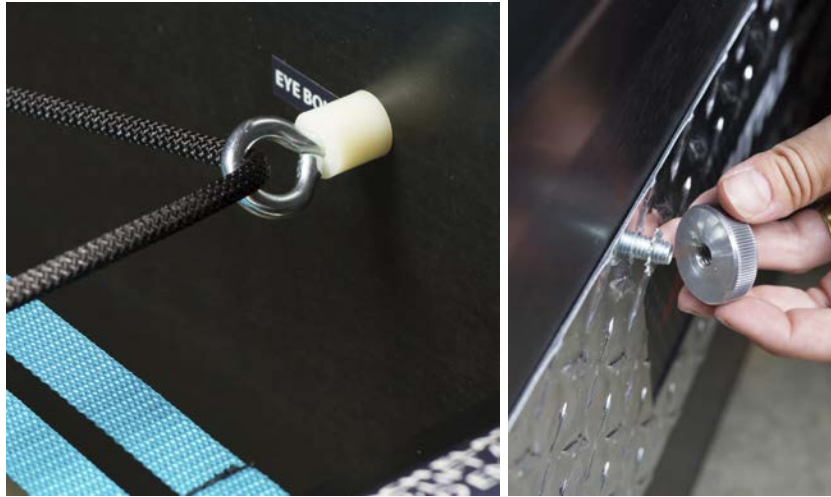


2. Carefully slide the carriage onto the rail frame making sure that the red wheels slide on top of the rails and the white wheels slide under the rails.



3. Standing at the head-end of the machine (opposite the kickplate) detach the ROM rope from the velcro on the carriage and attach to the Velcro on the support tube directly in front of you.
4. Working from either side of the head-end, locate one eye bolt (attached to the ROM rope) and remove the aluminum knurled knob and star washer. Thread eye bolt through

designated hole to outside of machine and secure with star washer and knurled knob. Repeat on the opposite side.



5. The black ROM strap with the blue stripe should fall between the two head-end eye bolts, attach to the velcro strip on Support Tube 4.
6. Pull the carriage toward the head-end of the rail frame exposing the next two eye bolt holes at the foot-end of the frame.
7. Insert and attach the two remaining eye bolts, white plastic bushings, star washers and aluminum knobs in the holes marked for eye bolts about midway in the rail frame.
8. When complete, the Rebound Rope Donut Ring (white cord loop encircling the ROM ropes) should be forward (toward footend) of the eye bolts and behind the attachment points on the carriage. The ropes should not cross but go from the carriage attachment point through the donut ring then to the eye bolt on the same side of the shuttle frame. The ROM ropes should not impede the movement of the Elasticords when the carriage is moved from foot-end to head-end. Watch a brief video of this part operating correctly at:



Video Demonstration: <https://vimeo.com/73888159>



Under-carriage view: Donut Ring not under load



Under-carriage view: Donut Ring under load with carriage pushed toward kickplate

9. Replace the two rubber stops at the head-end of the rail frame.

Step 10: Headrest (Box 2)

1. Add the headrest to the Velcro backrest cover either with the curved shoulder supports forward, which will give the head a slight upward support, or rearward which will allow the head to be lower.



PNF TOWER INSTALLATION INSTRUCTIONS FOR RECOVERY PERFORMANCE AND SENIOR

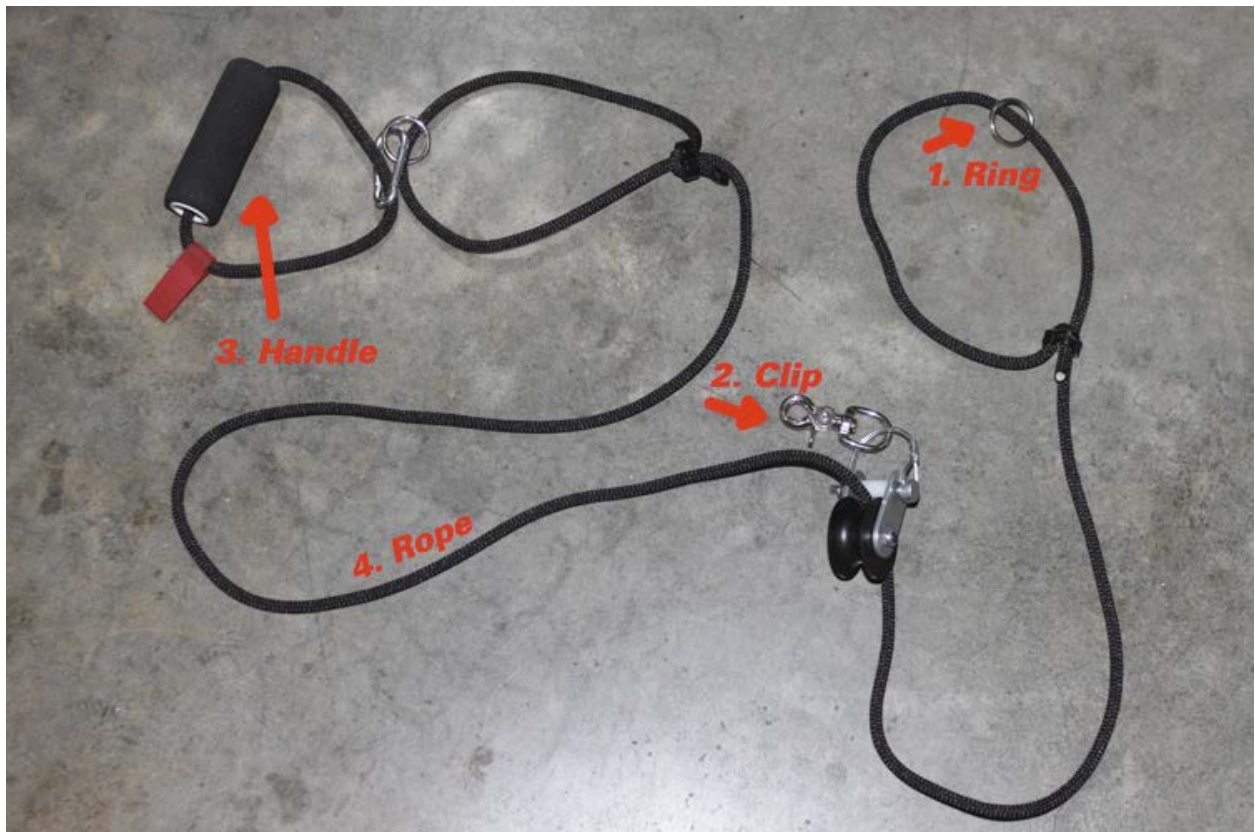
Step 1: Attach Towers to frame

1. Mount tower on frame using included hardware.
2. Turn bolt to drive through mounting bracket if it does not go through easily.





Step 2: Attach Ropes to Towers



1. Connect carabiner to plastic clamp with the end of the rope ring (#1 above).
2. Connect plastic clamp to aluminum rod on side of machine frame.
3. Connect Trigger Snap Carabiner to desired eye bolt.
4. Repeat on opposite side.



Step 3: Use and adjustments

1. Handles - By connecting the handles to the ropes, exercises for the upper extremities and trunk can be performed.
2. Foot Stirrups - The foot stirrup slips under the arch of the foot and around the ankle where it is cinched in place with Velcro®.
3. Rope Adjustments - The ropes can be adjusted at three points.
 - a. Eye Bolts - Moving the pulleys up or down along the multiple eye bolt locations allows for various PNF angles to be achieved.
 - b. Coarse - Feed rope through the 3-hole rope lock near the handles to obtain the desired rope length.
 - c. Fine - Adjust the three-hole rope lock.



Step 11: Inspect the assembly

1. Roll the carriage back and forth several times. The carriage should roll smoothly and quietly and should end in a soft stop at either end of the stroke.
2. Attach an Elasticord by pulling the lanyard toward the head-end of the rail assembly and lift up to attach the Elasticord to the carriage. There should be a soft stop at each end of the stroke. If a hard stop should occur, it is possible that the ROM ropes are crossed, eliminating the donut ring's softening effect. Also, try adjusting the ROM strap at the head-end of the machine to modify the resting position of the carriage.
3. When the Shuttle is in use the machine should be nearly silent, if the user experiences anything but a smooth, quiet glide, please contact our technicians
4. When you are satisfied with the assembly of your Shuttle, add black plastic nut covers as trim to the exposed nuts on the outside of the machine.

III. Maintenance

Your Shuttle Recovery is a high quality rehabilitation and exercise machine and it will function reliably and efficiently for many years. However, some basic maintenance is necessary to keep it in peak operating condition. Should your Shuttle exhibit any performance irregularities, use the following maintenance recommendations to return your machine to peak operation.

Inspect Elasticords

Proper handling and regular maintenance of Elasticords is necessary to prolong the life of your cords.

Lubrication of your Elasticords (using only Shuttle Systems Silicone Gel) is recommended every 2-3 months. Without lubrication, your cords will become brittle and weak and can result in decreased carriage resistance. With regular Elasticord lubrication, your cords can provide proper resistance for 3-5 years.

Lubricating Elasticords:

1. Have an assistant lay on the Carriage and press with one band attached at a time.
2. With a glove, apply a pea-sized amount of Shuttle Systems Silicone Gel to each Elasticord.

Weak Elasticords can also be caused by improper cord storage. Be sure that Elasticords are disengaged after each use. To properly disengage cords, remove cord from slot and let cord gently retract into the machine.

If your Elasticords feel like they are no longer providing enough resistance, replace them.

Part #5011 - SILICONE GEL - 5.3 oz tube

Part #5107A - ELASTICORDS - (7) 25# TEAL & (1) 12.5# SILVER (Set of 8)

Part #5107 - ELASTICORD - 25# TEAL TETHER (Each)

Part #5207 - ELASTICORD - 12.5# SILVER TETHER (Each)

Part #5208 - ELASTICORD - 6# load with YELLOW TETHER (Each)

Part #5209 - ELASTICORDS - (6) 25# TEAL (1) - 12.5# SILVER (1) - 6# YELLOW

Check Kickplate cover for wear

The rubber cover on the kickplate is attached with Velcro® and is easily removed and replaced should it become excessively worn. The rubber surface may be cleaned with spray cleaner or rubbing alcohol. Velcro® around the edge of the kickplate allows for easy attachment of the kickplate cover and accessories such as the Foot Supports and Proprioception Disk.

Part #5436 KICKPLATE COVER REPLACEMENT - (24x30)

Part #5450 KICKPLATE COVER – MULTICOLORED (24x30")

Check Kickplate frame for wobble

1. If the frame wobbles, reinstall kickplate by removing it from the frame, reattach, and tighten all 4 bolts.
2. Test to make sure the kickplate is secure.

Clean surface of rails

1. Use rag and spray cleaner to remove any dust and debris. WD-40 will cut most dust & dirt that can build up on the rails.

Check all wheels for wobble and lubricate bearings

1. If wheels are loose, tighten with ½” wrench and allen wrench to snug, then back off ¼ turn.
2. Lubricate each wheel bearing with one drop of Tri-Flow®.

Carriage Maintenance

1. Push the carriage back and forth a few times to check that it stops at both ends of the rails and is smooth.
2. Check the donut ring elastic for wear. If this is worn or broken, the carriage will make a loud noise at each end of travel.

Part #5109A - DONUT REBOUND ELASTICS (Set of 2)

Check Backrest Velcro®

1. Replace Vinyl Backrest Cover if Velcro® won't hold headrest securely.

Part#5305 - REPLACEMENT VINYL BACKREST COVER - with VELCRO

Check Headrest for cracks

1. Replace if damaged.

Part #5410 - UNIVERSAL HEADREST

Part #5410A - UNIVERSAL HEADREST COVER

Check Handles

1. Each handle consists of a base, stem, and knob.
2. The knob is used to secure the handle in position for stability or as ROM control.
3. If you are missing a knob or stem from the handle replace with the following parts.
Part #5304 - RECOVERY LATERAL HANDLE - HANDLE ONLY with KNOB
& STEM (Each)

Check Towers for wobble (if applicable)

For details regarding the PNF Pulley System, refer to pg. 18

1. Tighten all mounting bolts at end of frame and bolts at base of towers.
2. Each tower should have two pulleys, one rope, handle and foot basket.
3. Secure ropes to carriage.



Versatile Treatments For Diverse Patients

OWNER'S MANUAL SECTION 2: HOW TO USE THE SHUTTLE RECOVERY



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I. Understanding Your Shuttle Recovery

The information contained within this section outlines the general adjustments of the Shuttle Recovery and methods to ensure safe use of the machine. Familiarity with attaching Elasticords and adjusting the kickplate will allow you to adjust the Shuttle Recovery to a wide range of body sizes and physical abilities. In addition, there are several recommended physical techniques, which when employed on a correctly adjusted Shuttle, create a safe exercising environment. A correctly adjusted Shuttle will provide a challenging workout, which you can customize to help achieve your conditioning goals.



Shuttle Recovery Introduction: Parker reviews the basics of the machine including positioning on the carriage, attaching elasticords, range of motion control, and accessories in use.

<https://vimeo.com/72833175>



Shuttle Recovery Introduction: Parker demonstrates a few basic positions on the Shuttle Recovery.

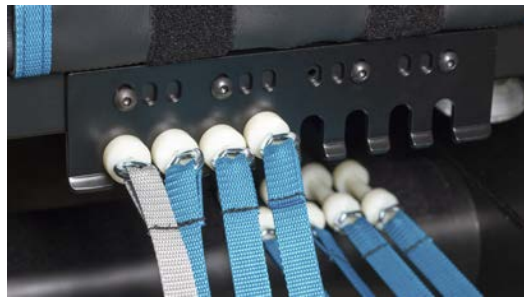
<https://vimeo.com/72833176>

Elasticords

Located within the carriage, under the head-end are eight lanyards. Once attached they engage the Elasticord for resistance.

Elasticord Maintenance - Always detach the Elasticords when machine is not in use. This prevents premature stretching of the Elasticords and greatly extends their life.

Attaching the Elasticords - To increase resistance attach Elasticords one by one to the slotted plate at the head end of the carriage.



Detaching the Elasticords - To decrease resistance, detach Elasticords and gently let them retract into the carriage.

Elasticord Resistance - Each Elasticord provides 6-25 lbs of starting resistance depending on cord type. Resistance increases as Elasticords stretch. As skill and strength improve, more Elasticords may be added. When all Elasticords are attached they will provide up to 300 lbs of resistance at full extension (depending on machine).

Standard Spring Scale Force Monitoring - A bathroom spring scale adjusted to zero while placed vertically on the kickplate under the patient's foot is helpful in verifying kickplate forces generated by the Elasticords.



Kickplate

Kickplate Position - The Shuttle Recovery Kickplate has two positions.



1. Locate the back side of the Kickplate and remove plastic caps from nuts.
2. Using a ½" Wrench remove kickplate from frame.
3. Rotate Kickplate 180° to the low position. PLEASE NOTE: When using the Shuttle Recovery in this position one must watch foot position.
4. Place studs into frame and replace nuts removed in step 1.

Headrest

The headrest is easily adjustable depending on patient size & desired exercise type.



Handles

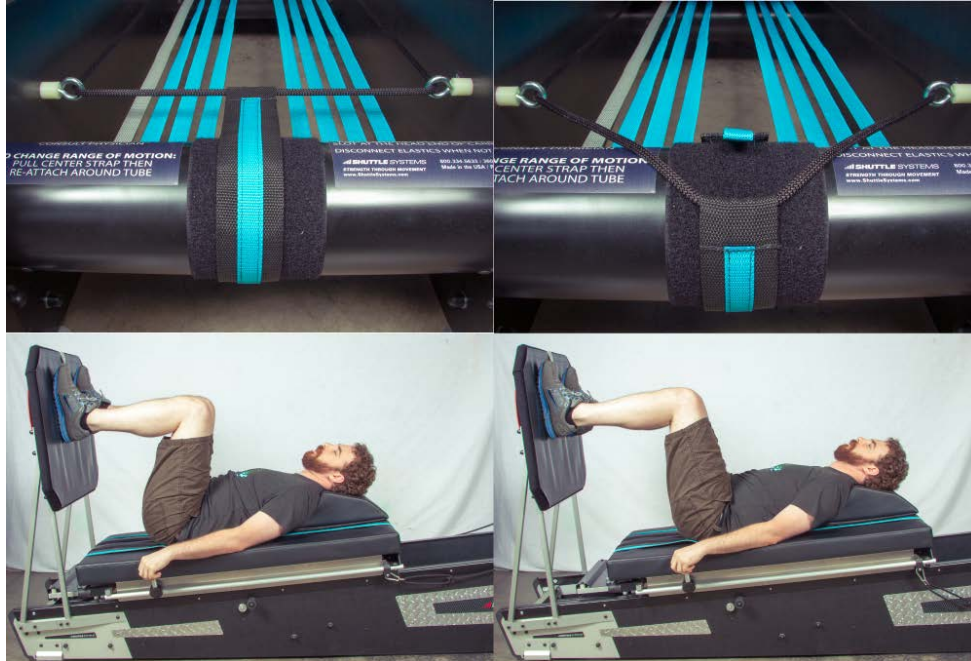
The handles may be adjusted by rotating the black spherical knobs counterclockwise to loosen. After moving the handles to the desired location and angle, lock the knobs by rotating clockwise.



When the carriage is in the resting position and handles are oriented in a downward position (as below), they double as ROM control for ease in mounting the machine.



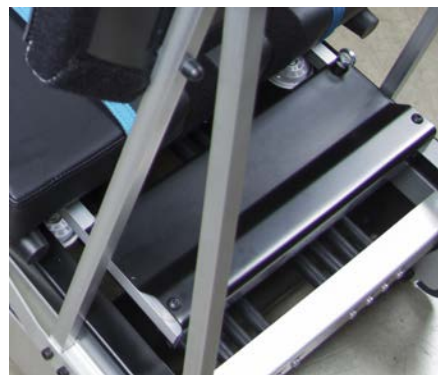
Range of Motion Control



The ROM control system enables the user to increase or decrease the range of motion to customize the carriage starting point according to height and comfort.

Footrest

The footrest is located at the end of the carriage. It provides a surface to rest an uninvolved foot and prevents the body from sliding on the carriage during plyometrics. Most importantly, the footrest promotes a pelvic tilt position for developing abdominals and stabilizing the spine during unilateral activities.



II. Additional Accessories

Foam Backrest Wedge - #5103

The 15 degree 24" wide backrest allows the therapist to assist the patient onto the Shuttle carriage easily. The foam backrest wedge is useful for those patients with lying supine issues. It also helps the therapist to lie down and position the patient before attaching the headrest and Elasticords.

The wedge accessory adds the ability to allow patients to work in a comfortable heads up position. Place the black backrest wedge in place with the Velcro hook strips facing down. This will provide a soft support for those requiring the additional support while affording an attachment for the headrest as well.



Foot Supports - #5003



This accessory attached to the kickplate to suspend your acute and sub conditioned patient's feet against the kickplate. Foot Supports accommodate your debilitated patients who cannot lift and hold their feet against the kickplate and aid patients pulling themselves up from the carriage when egressing the Shuttle.

INSTALLATION INSTRUCTIONS

1. Place the foot supports against the kickplate to desired foot placement height.
2. Attach horizontal Velcro® straps to the outside edge of the kickplate.
3. Bring the two vertical straps over the top edge of the kickplate and secure on the bottom edge of the kickplate.

HOW-TO-ADJUST

1. Place one or both feet into foot supports with heels supported.
2. Secure feet in place using the Velcro® strap.

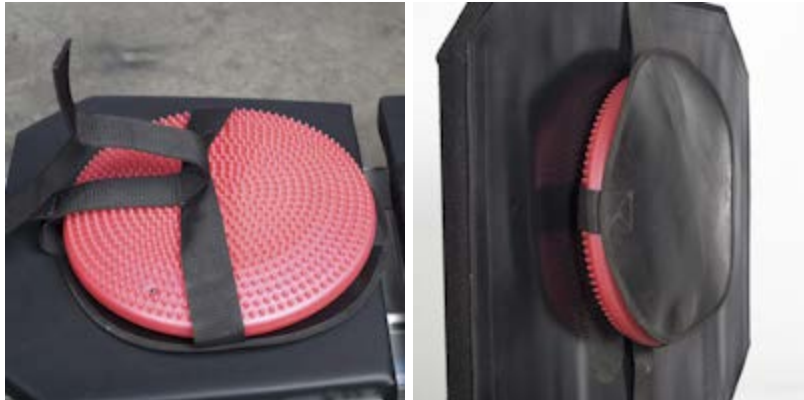
PNF Expansion Tower Upgrade - #5006

The Proprioceptive Neuromuscular Facilitation (PNF) Pulley System is a form of cable column, allowing the patient to do a variety of exercises in a number of positions including supine, sitting, and standing. Activities for strengthening, stabilization, increasing range of motion, and PNF patterns for the upper and lower extremities can be performed. The clinician can determine the appropriate angle of resistance as dictated by the injury, the angle desired can be adjusted by connecting the pulleys to different eye bolts on the towers.



Proprioceptive Disk- #5023 & Holder - #5024

The proprioception disk expands the capabilities of the Shuttle Recovery by providing an unpredictable surface in a microgravity condition for proprioceptive, balancing, stabilization, and strengthening exercises. Sanitize the rubber cover with spray cleaner or rubbing alcohol.



INSTALLATION INSTRUCTIONS

1. Place the holder on its face and insert the proprioception disk.
2. Place the proprioception disk in desired location on the kickplate with cover facing out.
3. Wrap the strap over the top of the kickplate and attach to the Velcro®.
4. Pass the lower strap under the kickplate and attach to the Velcro®.

Shuttle Wobble Board - #5026



Made of aluminum, our wobble board's unique design provides two angles of slope allowing different degrees of flexion. It is easy to adjust both laterally and vertically, and is easy to remove.

INSTALLATION INSTRUCTIONS

1. Hang bracket on the top edge of the kickplate.
2. Attach and select height by using the bracket hole and stud located on the back side of the Wobble Board.
3. Wobble Board can be rotated 90° to change desired angle of tilt.

Treatment Progression - Focus on stabilization of the wobble board utilizing ankle, knee, or pelvic floor.

Lower Body Isolation Belt - #5102

Attaches to the user to isolate the lower extremities from any vertical axial load during plyometrics and closed chain loading. To attach the belt to the Shuttle Recovery secure the two carabiners to the existing eye bolts located on the footplate.



Treatment Table Backrest Extension - #5401

24" x 24" padded attachment for use at the foot or head end of the carriage providing a 2 foot x 6 foot treatment table capability. Useful in small but compact office applications or facilities or where an additional treatment table is useful.



III. GENERAL APPLICATIONS

STRETCHING

Flexibility is an important component of successful physical performance for activities of daily living, enhanced athletic ability, as well as injury prevention. Greater flexibility increases the range of motion of the joints by increasing the extensibility of the musculotendinous units responsible for joint articulation. These units are responsible for the movement and articulation of that joint. Stretching helps prevent injury and increases the overall power of the patient.

STRENGTHENING

Strength is the ability of a muscle to generate force against resistance. Maintaining a certain level of strength is important for activities of daily living as well as preventing injury. Strength is also paramount to developing endurance and power in an athlete.

The resistance provided by the Elasticords of the Shuttle Recovery continues to increase through the range of motion. Therefore, initial settings of the Elasticords and body positioning may be adjusted as the injury or condition of the athlete dictates: as the carriage moves up the rails, the resistance increases as the mechanical advantage increases.

FUNCTIONAL CLOSED CHAIN

The Shuttle Recovery has become an integral part of closed chain therapy. Closed chain motion occurs when both the proximal and distal bone segments are fixed and there is movement on both sides of the joint being evaluated. For example, when performing a squat on the Shuttle Recovery, the feet remain in contact with the kickplate as the patient extends and flexes their knees, moving the bone segments on either side of the knee joint. This form of exercise is functional because most of our daily activities involving the lower extremities are done with our feet in contact with the ground. Muscle contractions that occur in closed chain motions are also different than those occurring in open chain. The advantages to closed chain activities are the following:

1. Exercises for an unstable joint, such as a cruciate deficient knee, can be performed safely with the feet in contact with the ground. The inherent stability of the joint is greater when it is loaded and in a weight bearing position as opposed to being unsupported and free to move.
2. Closed chain activities stimulate mechano-receptors responsible for the joint's sense of proprioception.
3. There is greater muscle activity through muscle co-contractions around the joint in closed chain than open chain.

UNSUPPORTED CLOSED CHAIN



It is sometimes useful to provide a stage of rehabilitation where the patient is required to coordinate the lateral and vertical stabilization of the knee while performing concentric and eccentric closed chain activities. This can be done using the upper extremity towers. By moving the pulley connection up or down on the tower the angle of the loading may be controlled.

PLYOMETRICS

Skill and power are the ultimate goals in many athletic endeavors. Plyometrics training is a technique used to achieve these goals. The principle is simple. In response to rapid loading or stretching of a muscle, a subsequent powerful muscular contraction occurs. This reactive change within the neuromuscular system can be conditioned, through plyometric exercise, to facilitate faster and more powerful changes in the direction of movement.

Plyometric training is used to increase the overall power output of the muscle. This is essentially achieved by decreasing the time between the eccentric contraction (bending leg under tension) and the concentric contraction (extending leg while under tension) within the stretch shortening cycle of the particular muscle. In conjunction with the strength of the muscle, the power output of the concentric contraction is increased (Power being Distance x Force / Time).

The Shuttle Recovery is the ideal tool for sports specific plyometric training. The horizontal positioning and body weight support allows for greater total quantity of exercise within the plyometric sessions, more accurate speed and sports specific exercises, and a greatly reduced potential for injury.

The horizontal position is important in that it makes it easier for the cardiovascular system to work in support of the plyometric activity ie. improved blood return to the heart achieving an easier pay back of the oxygen debt created by the anaerobic plyometric activity. By supporting body weight, the Shuttle Recovery minimizes stress on joints and in conjunction with the resistance bands allows for more appropriate speed control and over speed training. Sports specific movement skills are also easier to refine with the control available utilizing the Shuttle Recovery. In addition, the kickplate vantage point affords the coach an ideal view for skill

correction. But it is its ability to enhance the speed of muscular contraction that makes the Shuttle Recovery unique.

WHEN TO START

The following are recommended guidelines for determining your ability to do plyometrics safely: You may even require a preparatory program for some weeks before you can begin aggressive plyometrics.

LOWER BODY PLYOMETRICS

You should be at least able to push your body weight on a leg press. Jump rope for 30 seconds continuously or perform a horizontal jump equal to your height from a standing start.

UPPER BODY PLYOMETRICS

The ability to perform five Military push ups is a reasonable guideline for readiness to commence upper body plyometrics. (To perform a military push up put your hands in the same position as a regular pushup and keep your elbows against your sides. This will put more pressure on your triceps than a standard push up.)

PRECAUTIONS

In plyometrics, the progression factor is extremely important as is the positioning of the plyometric section within the context of the overall workout. Warm up is essential and the plyometric component should not be placed near the conclusion of the overall training session as muscles may already be nearing fatigue.

THE PROCESS

Warm up well using a closed chain workout on the Shuttle Recovery or a bike followed by low level plyometric drills and stretching. You are now ready to commence plyometric activities on the Shuttle Recovery. The number of sets and repetitions will depend largely on your fitness base and sports specific needs.

EXAMPLE

For most beginners three to four sets of plyometric exercises of around 30 seconds each, would be adequate for the first session. Rest between sets as needed. Progression over the next few workouts would be a lengthening of time for each set followed by an increase in the intensity over proceeding workouts. Once the technique of using the Shuttle and the required level of athleticism has been achieved you are ready to commence a more sports specific routine. Remember after your plyometric session, finish with stretching while muscles are warm. This is an opportune time to work on your flexibility.

PLYOMETRICS INCREASE JUMP HEIGHT

Controlled studies show jump height increases of up to 6 inches in six weeks can be achieved using plyometric techniques on the Shuttle Recovery. The technique used should be specific to the sport concerned. Double leg jumps for volleyball, single leg for long jump, high jump, sprinting etc. Jump technique variations include short ballistic jumps using the ankles, to greater depth jumps with much larger flexion of the knees and hips. Other variations include the sectioning out of one particular component of a sports skill movement IE. isolate specific elements within the sporting movement to correct a problem such as an inappropriate, foot strike, and therefore improve the overall performance of the movement. It is best to conduct plyometric training every other day, three times per week to allow muscle tissue to recover.

SUMMARY

Whether the Shuttle Recovery is being used for the rehabilitation of an injured athlete or for performance enhancement of a sound and fit athlete, the Shuttle Recovery provides a safe gravity eliminated environment in which to execute these exercises. By increasing resistance with the Elasticords and adjusting the degree of ankle, knee, and hip flexion with the kickplate, the athlete can perform plyometric exercises which most closely mimic the dynamic patterns between ground contact and directional rebound, but without the degree of harmful pounding to the joints and back experienced in conventional weight bearing, ballistic exercises. You will find the Shuttle Recovery extremely adaptable to your various needs.

INTERVAL AEROBIC CONDITIONING

Interval aerobic conditioning involves a large muscle mass which sustains low to moderate work output over a minimum period of 3-5 minutes. Resting occurs in intervals of between fifteen seconds and one and one half minutes depending on the patient concerned.

BEGINNERS, UNFIT, AND OLDER PATIENTS

For older or untrained patients the Shuttle Recovery is ideal for use in a sustained aerobic circuit or simply as an aerobic exercise machine in itself. The patient performs aerobic intervals utilizing low to moderate workloads, maintaining constant heart rate and constant blood pressure throughout, with comfortable recovery periods between each aerobic interval. When training for cardiovascular health the total time may be as little as fifteen to twenty minutes a day. As fitness improves the total workout time may increase to thirty minutes or longer depending on the patient.

WEIGHT LOSS AND FAT BURNING

Those patients whose goals include weight loss will need to sustain low to moderate workloads for at least forty minutes to attain any significant level of fat burning. The time necessary to begin significant fat burning will decrease as the fitness level and work intensity increases.

In the beginning it may be necessary to sustain a closed chain format (keeping the feet on the

kickplate at all times) to allow the patient to reach the overall exercise time required. As fitness improves the patient could progress through small double foot jumps to performing a single leg running drill. To reduce any potential buildup of lactic acid or stress on any particular joints or muscle group the aerobic intervals should be made up of a variety of movements. Muscle leaning of the legs and gluteus is also possible using the above format, however, daily workouts (six times a week) may be required.

ATHLETES

If you are an athlete the time of aerobic interval should be tailored to the specific sporting event for which you are training.

As an example, a boxer may choose a vigorous aerobic interval of three minutes with a thirty second rest between intervals. To further mimic the energy expenditure required in the ring the boxer may include short random anaerobic bursts throughout the three minute interval. A middle to long distance runner would sustain anaerobic threshold throughout the interval with very short recoveries and may even choose constant exercise for thirty minutes.

A basketball player may choose a three to five minute interval made up of a series of anaerobic plyometric bursts with very short low level active recoveries. The concept of specificity dictates that you should stress the cardiovascular system in the way that it is used in your sport. Constant same pace aerobic activity actually works against your goals of improving anaerobic power whereas an interval period made up of anaerobic bursts with short active recoveries is more like the way you require the cardiovascular system to perform during the game.

FOOT PLACEMENT

Aerobic exercise for a prolonged time is best done on the Shuttle Recovery utilizing closed chain movements (by remaining on the kickplate without jumping). Changing the foot placement on the kickplate to include.....Up.....Down.....Center.....Outboard.....as well as the external and internal rotation of the feet will provide a variety of muscle recruitment and help avoid local muscular fatigue.

CAUTION: It should be noted that for some patients, internal or external rotation of the feet may be uncomfortable and may need to be avoided.

IV. TREATMENT PROGRESSION

1. Position the patient on the carriage in supine position with feet placed against the kickplate. This is the primary position on the Shuttle Recovery.
 - a. Sitting on the carriage.
 - b. Kneeling on the carriage, and in advanced cases standing on the carriage.
2. Add or subtract elasticcord resistance with patient on the carriage.
3. Apply proper pelvic stabilization and lordotic curve for all exercises.
4. Foot Position will determine angle of flexion in relation to the kickplate.
5. If the patient is not able to hold their feet against the kickplate use the Foot Support accessory.
6. Addition of the PNF Pulley System.
7. Addition of the Wobble Board or Proprioceptive Disk.



Introduction: Part 2

<https://vimeo.com/72833176>

VII. EXERCISE PROTOCOLS

STRETCHING

The Shuttle Recovery can be utilized for all three stretching techniques as dictated by both the injury and the nature of the activity for which an athlete is training: Ballistic (repetitive bouncing motions), Static Stretching (stretching a muscle to the point of discomfort and then holding it at that point for an extended period of time) and PNF (alternating contractions and stretches).

HEEL CORD STRETCH



1. Place both feet on the upper area of the kickplate and fully extend the legs.
2. Walk down the kickplate until the balls of the feet are parallel, shoulder width apart, and the heels are hanging unsupported beneath the bottom edge of the kickplate. Ankles are neutral and relaxed with the weight equally supported by both feet.
3. Gently push the heels toward the foot end of the machine until a stretch is felt.
4. Hold for 5-10 seconds and return to the neutral starting position.
5. Perform 5 sets and rest for 30 seconds between each set.
6. Gradually increase resistance, repetitions, and sets as skill improves.

Variation: Keeping both feet on the kickplate alternate weight from one foot to the other. You should feel a slow sustained stretch.



Variation II: With minimal resistance gently jump off the kickplate. Keep the hips square and the

back flat to maintain a lordotic curve. The knees will need to bend slightly at impact.



PIRIFORMIS STRETCH



1. Position the kickplate close to the carriage. The more flexible the patient, the closer the kickplate.
2. Place both feet up on the kickplate, shoulder width apart, and extend the legs.
3. Keeping one foot in place on the kickplate, cross the ankle of the other leg over the extended leg so that the outside of the ankle rests just above the knee (on the lower thigh). The bent knee should be pointed outward as much as possible and the hip externally rotated. The tibia is perpendicular to the femur.
4. Keep the hips square and the back flat to maintain a lordotic curve.
5. Gradually bend the extended leg until a stretch is felt.
6. Hold for 5-10 seconds, and return to the starting position. Repeat 5 times.
7. Gradually increase resistance, repetitions, and sets as skill improves.

Adjustment: To limit range add ROM Control. Refer to Section IV. Accessories for further information.

HAMSTRING STRETCH - Refer to PNF Exercises on pg. 52

SOLEUS STRETCH



1. Set resistance as injury and condition dictate.
2. Keep the hips square and the back flat to maintain a lordotic curve.
3. Flexing at the hips, draw the knees into the chest.
4. Place one foot (the uninvolved leg) on the upper part of the kickplate. Press back, extending the knee.
5. Place the other foot toward the bottom edge of the kickplate. This leg will be stretched.
6. The feet should be shoulder width apart and approximately one shoe length between the heel of the upper foot and the toes of the bottom foot.
7. Bending both knees, slowly return toward the kickplate until a stretch is felt in the soleus of the lower leg. The gastrocnemius should be in a relaxed condition.
8. Hold for 30-40 seconds and repeat 3 times.
9. Gradually increase resistance, repetitions, and sets as skill improves.

STRENGTHENING

QUAD STRENGTHENING (BILATERAL)



1. Set resistance as injury and condition dictate.
2. Place your feet on the kickplate, parallel and shoulder width apart, flexing 90 degrees at the hip, knee, and ankle.
3. Press back on the kickplate, extending the knees. Do not snap the knees into hyperextension.
4. As strength and condition improve, gradually increase the degree of initial flexion by lowering the position of the feet on the kickplate and/or by positioning the body on the carriage closer to the kickplate. When one side is significantly weaker than the other, the stronger leg may compensate until the weaker side improves.

Variation: Progress on to unilateral squats.



1. Place each foot on the outside edge of the kickplate. Externally rotating from the hips, and tucking the buttox under, turn the feet outward. The entire foot should remain in contact with the kickplate.
2. The degree to which the feet may be safely turned outward is related to the patient's ability to keep the knee in line with the foot and the height at which the feet are placed on the kickplate.

Variation II: Squats with feet turned out - This exercise is designed to working the adductors.



TOE RAISES



1. Place the feet on the upper area of the kickplate and fully extend the legs.
2. Walk the feet down the kickplate until the balls of the feet are parallel, shoulder width apart, and the heels are hanging unsupported beneath the bottom edge of the kickplate. Ankles are neutral and relaxed with the weight equally supported by both feet.
3. Raise up on the toes of both feet.
4. Lower heels to starting position.
5. Complete 3 sets of 10 reps with a 30 second rest in between each set.
6. Gradually increase resistance, repetitions, and sets as skill improves.

Variation: Increase the shifting of weight from one side to the other until using just one leg.

Variation II: Combine both toe raises and heel cord stretch to form a complete range of motion.

SIDE LAYING SQUAT



1. Lie on either side of the body on the carriage.
2. Place the upper foot against the kickplate with foot parallel to the floor. (Rotation of the foot clockwise or counter clockwise will involve different muscle groups.)
3. Press with the upper foot keeping it securely on the kickplate.
4. This exercise may be accomplished without leaving the kickplate.
5. Gradually increase resistance, repetitions, and sets as skill improves.

VASTUS MEDIALIS (VMO)



THIS EXERCISE MAY BE HARMFUL IF DONE WITH TOO GREAT OF RESISTANCE OR INTENSITY. DO NOT USE THIS EXERCISE DURING PLYOMETRICS!

1. Place one foot on the foot rest with the knee vertically oriented above the foot.
2. Keep the hips square and the back flat to maintain a lordotic curve.
3. Place the other foot on the kickplate in the upper corner such that the foot is internally rotated. (This requires the leg to be almost crossed at the knees and the internally rotated foot to be above and outboard of the knee of the uninvolved leg.)
4. Gradually increase resistance, repetitions, and sets as skill improves.

FORWARD BILATERAL HIP EXTENSION



This is good for working the gluteus maximus and hamstrings while requiring body stabilization and balance.

1. Kneel on the carriage facing the kickplate while keeping the back straight, arms outstretched, and elbows locked.
2. Propel the carriage by opening the angle at the hips, this can be done from seated on the heels of the shoes to open and straight from knees as shoulders as shown. Keep back aligned and straight above the waist.
3. Exercise in a slow controlled manner.
4. Gradually increase resistance, repetitions, and sets as skill improves.

FORWARD STANDING BILATERAL HIP EXTENSION



1. Set resistance as injury and condition dictate. The fewer bands, the more difficult this exercise is to do.
2. While standing on the carriage lean forward and position yourself on the top edge of the kickplate.
3. Bend at the waist, maintain flat back, propel the carriage slowly towards the head end of the rail frame.
4. Now using a slow deliberate stroke allow the carriage to move toward the kickplate thus tightening the hamstrings.
5. Again slowly reverse the carriage movement toward the head end of the rail frame and begin the extension of the body against the resistance of the Elasticords.

REVERSE UNILATERAL HIP THRUST



This exercise aids in balance and pelvic stabilization. Builds kinesthetic awareness and strengthens the pelvic structure while working the quads, gluteus, abdominals, and lower back.

1. Kneel on carriage with hands below shoulders and one knee resting on the carriage.
2. With hips parallel to backrest. Place the other leg on kickplate in line with the body and fully extend.

Variation - Add Proprioceptive Disk to aid in balance, core strengthening, and pelvic stabilization. Refer to Section IV. Accessories for further information.



REVERSE BILATERAL HIP THRUST USING A LARGE EXERCISE BALL



1. Position kickplate near the carriage.
2. Kneel on the carriage facing away from the kickplate.
3. Place a large exercise ball on the carriage.
4. Position pelvis and chest on ball using your arms and hips as stabilizers.
5. Raise up on toes, bend knees, place both feet on the kickplate one at a time.
6. Begin performing bilateral squats while maintaining balance on the ball.

PELVIC LIFT AND THRUST



1. While on your back place one foot on the footrest and the other on the kickplate.
2. Press down on handles with arms, lift pelvis, and extend leg.

Variation: Add second leg, while maintaining pelvic stability.



Variation II : Add Wobble Board or Proprioceptive Disk

1. Attach Wobble Board to Kickplate. Refer to Accessories section for further information.

2. Place both feet on the Wobble Board.
3. Alternate pressure in a stepping motion keeping feet in contact with the Wobble Board or disk.



UPPER BODY PRESS



1. Position kickplate near the carriage.
2. Sit on carriage facing the kickplate with feet off the floor.
3. Press off of the kickplate with both hands.

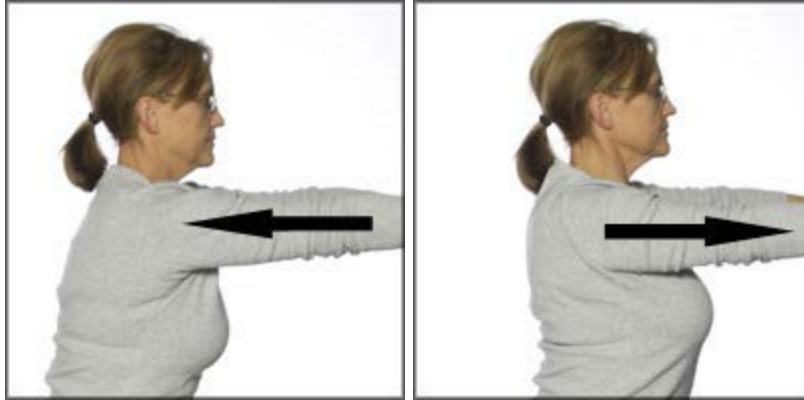
Variation: Shoulder Stabilization

An excellent closed chain proprioception exercise is done by placing a 5 to 6" ball between the hand and the kickplate.

1. Sit on carriage facing the kickplate with feet off the floor.
2. Place both hands on a proprioceptive disk or ball and maintain shoulder and wrist stability through the press.

Variation II: Unilateral Press

PROTRACTION RETRACTION ON THE KICKPLATE



1. Set resistance as injury and condition dictate.
2. Position kickplate near the carriage.
3. Sit on carriage facing the kickplate with feet off the floor.
4. Place hands in line with shoulders.
5. Press with both hands.
6. Alternate between protracting and retracting shoulder blades against resistance.

Variation: Unilateral Press

PNF EXERCISES

The PNF Pulley System allows the patient to incorporate PNF stretching into an exercise or rehabilitation protocol. By using the handles attached the direction of force may be controlled. The resistance is controlled by the number of Elasticords attached. Apply proper pelvic stabilization and lordotic curve for all of the following applications.

CROSS CRAWL



You can aid in establishing communication between the left and right side of the brain using the cross crawl drill.

1. Set resistance as injury and condition dictate.
2. Place one foot on kickplate.
3. Grasp PNF handle with opposite arm. (Adjust PNF rope length to appropriate extension.)
4. Press off kickplate with foot and pull with opposite arm towards body.

Variation:

1. Jump off the kickplate with the right foot and pull down with the left arm.
2. Alternate by jumping with the left foot and pull with the right arm.
3. Keep the hips square and the back flat to maintain a lordotic curve.

Adjustments: Use Foot Supports to support feet against the kickplate and Adjustable Backrest to desired height for patient comfort. Refer to Section IV. Accessories for further information.

HAMSTRING STRETCH



1. Set resistance as injury and condition dictate. Approximately 2-5 Elasticords.
2. Position the patient as close to the kickplate, as flexibility allows. Use the ROM control strap in conjunction with the headrest to adjust proximity. The more flexible the patient, the closer to the kickplate the patient can be placed.
3. Place and fully extend one leg on the kickplate.
4. Place the opposite involved foot in the stirrup with knee bent.
5. Raise the right foot toward the ceiling so that the knee is extended and the leg is straight.
6. Using the fine adjustment on the PNF rope, adjust patients leg to just before the patient begins to feel the stretch.
7. To control the stretch bend the uninvolved leg moving carriage toward the kickplate beginning the stretch.
8. Keep the hips square and the back flat to maintain a lordotic curve.
9. Hold for 10-15 seconds and release. Repeat 5 times on each leg.

Variation: Control the stretch by gently pulling down on the handle that is attached to the stirrup.



Contract-Relax Technique: Push, by contraction, the antagonist (muscle that will be stretched) isotonicly against the resistance of the therapist. The patient then relaxes the antagonist muscle while the therapist moves the limb passively through as much range as possible to the point where limitation is again felt. Alternatively, set the resistance, or engage the ROM Control, so the carriage won't move. When the patient lowers or raises their leg, they contract or relax the hamstring.

HIP ROTATION

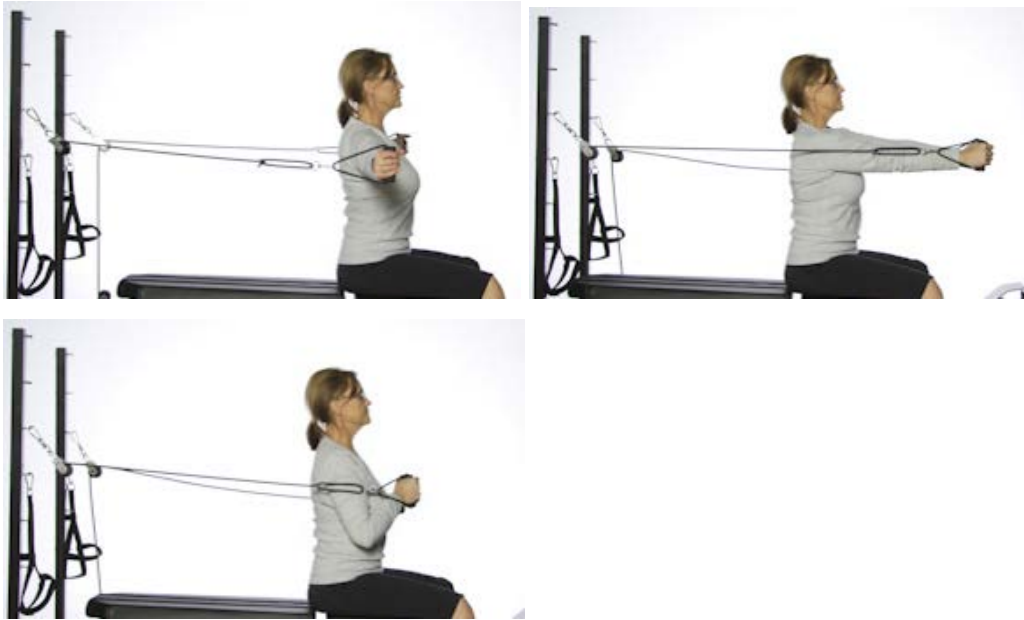


1. Set resistance as injury and condition dictate.
2. Keeping one foot on the footrest, attach foot stirrup to other foot.
3. Extend leg towards ceiling with knee locked but not hyperextended.
4. Rotate leg out, around, and back to starting position.

Variation: Place both feet into the stirrups. Set resistance. Rotate both legs externally then up back together then down.

UPPER BODY PNF PROTOCOLS

THE PEC FLY



1. Set resistance as injury and condition dictate.
2. Sit on carriage facing the kickplate with feet off the floor.
3. Outstretched to the sides, bring the arms straight forward, then bring arms slowly to the chest.
4. Reverse the pattern.

Variation: Face the head end of the machine.



ROWING EXERCISES



This exercise is good for scapular retraction and upper body stabilization.

1. Set resistance as injury and condition dictate. Approximately 1 to 3 Elasticords.
2. Straddle the carriage facing the head end of the machine keeping feet off the floor.
3. Adjust the pulleys on the towers to provide the proper angle.
4. Grasp handles with palms facing down.
5. Pull towards chest maintain proper form.

Variation: Attach the two cords together using the carabiner as a connector thereby bringing the load to a single point. This exercise will require a scapular retraction.



TRICEP PULL



1. Set resistance as injury and condition dictate. Approximately 1 to 3 Elasticords.
2. Straddle the carriage facing the head end of the machine keeping feet off the floor.
3. Adjust the pulleys on the towers to provide the proper angle.
4. Grasp handles with palms facing down.
5. Pull hands down to sides.

Variation:

Have patient sit on proprioception disk. This provides a pulsating force on the spine.



UNSUPPORTED STANDING EXERCISES

A series of standing exercises may be accomplished using the upper extremity towers and the foot stirrups or handles. Set the resistance as injury dictates and place the stirrup around the knee. By orienting the body in various positions a full range of muscles may be exercised.

HIP EXTENSION

Primary muscles: gluteus maximus and hamstrings. Flexing the knee isolates the gluteus maximus.



HIP FLEXION

Primary muscles: psoas major, iliacus, and the secondary muscles are the rectus femoris, sartorius, pectineus, tensor fascia lata, adductor longus and brevis.

HIP ADDUCTION AND ABDUCTION

Primary muscles: gluteus medius, and the secondary muscles are the tensor fascia lata, gluteus medius and maximus.

STANDING SHOULDER EXERCISES

A series of shoulder exercises may be accomplished using the upper extremity towers and the handles. Set the resistance as injury dictates and grasp the handle. By orienting the body in various positions a full range of shoulder and arm muscles may be exercised.

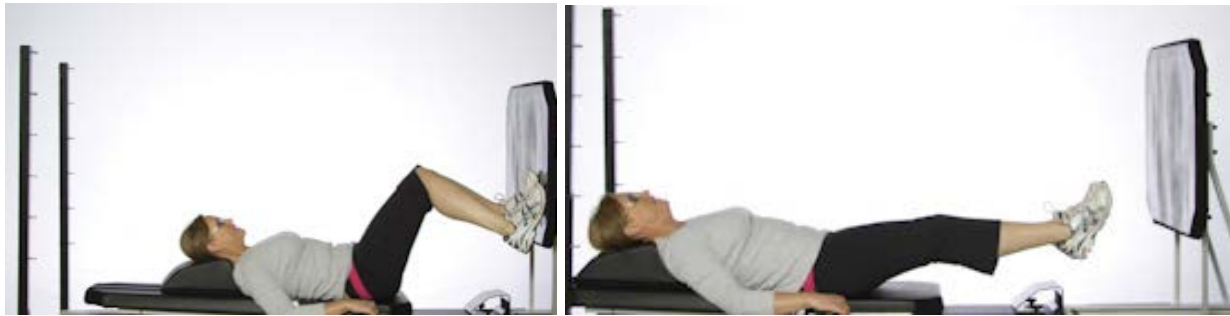
PLYOMETRICS

When performing plyometrics on the Shuttle Recovery the patient should hold onto the carriage handles. The following plyometric exercises are to be executed with maximum effort while avoiding jarring and unnecessary impact with the rebound system located at both the upper and lower ends of the rail frame. It is imperative that the necessary resistance of the Elasticords is initially set to minimize the stress of impact to the shoulders at the head end of the stroke. Conversely, the stress of impact at the foot of the stroke should be absorbed by the active leg(s) and not by the rebound system. This is accomplished through controlled contact with the kickplate as the patient returns to the bottom of the stroke. Normal muscle recruitment time is about 120 milliseconds . This can be decreased to about 85 milliseconds as a result of plyometric training.

CAUTION: If you do too much it can lead to muscle injury or tendonitis. If you have any discomfort two hours after training you have done too much. Decrease the intensity of your next session.

DO NOT OVER FATIGUE THE MUSCLE.
REST APPROPRIATELY BETWEEN SETS.
REST AT LEAST ONE DAY BETWEEN PLYOMETRIC SESSIONS.
USE EXTRA CAUTION IF PATIENT IS OVERWEIGHT.

BILATERAL OR UNILATERAL PLYOMETRICS



1. Set resistance as injury and condition dictate. Maximum of 12" of travel when jumping.
2. Position both feet on the kickplate, parallel and shoulder width apart. The height of the feet on the kickplate will depend on the desired degree of ankle and knee flexion, and the relationship between the hips and feet.
3. Grasp handles for stability.
4. Keep the hips square and the back flat to maintain a lordotic curve.
5. Jump upward, extending fully at the hips and straightening the legs. Keep the back flat and head in a relaxed position on the headrest.
6. Upon return to the kickplate, bend the knees slightly so that they are not straight when the feet make contact with the kickplate.
7. Immediately jump off the kickplate without further bending the knees.
8. Perform 6 to 8 jumps of maximal effort, rest 45 seconds, and repeat for 5 sets.

Variation: Unilateral - Perform jumps with one leg while resting the other on the footrest or pulled into the chest.



OVERSPEED PLYOMETRICS

In conventional vertical plyometrics, the athlete may land with two to three times his/her body

weight, thus requiring additional time for the body to decelerate in order to prepare to jump again. Strength also becomes an issue. However, since plyometrics is utilized to train the neuromuscular system to respond more quickly to ground impact, use of the Shuttle Recovery can be focused on muscle recruitment and firing instead of strength. By reducing the weight of the body at impact, reaction to ground contact can be increased since the body does not have to take so much time to slow itself down.

IMPROVING SPEED



The combination of alternating feet and decreasing foot contact time on the kickplate while equally involving the hips, knees, and ankles in a kinetic chain can be important factors in improving speed.

1. Set resistance as injury and condition dictate. Approximately 2 to 5 Elasticords.
2. Perform high speed running drills on the kickplate. (gradually decreasing contact time on the kickplate)
3. Bring the knees right up to the chest.
4. Keep the hips square and the back flat to maintain a lordotic curve.
5. The carriage should virtually remain in place while the workout is performed.

CALF PLYOMETRICS



This exercise isolates the gastrocnemius (calf) and reduces the involvement of the quadriceps.

1. Set resistance as injury and condition dictate.
2. Place feet parallel on the kickplate, shoulder width apart.
3. Extend the legs, keeping the knees soft, but not stiff or locked.
4. Push off the kickplate with the toes, using the foot and ankle.
5. When the feet return to the kickplate, the feet should be flat.

UPPER BODY PLYOMETRICS



1. Attach 1 to 3 Elasticords.
2. Use arms to propel and stop the carriage while keeping the feet off the floor.
3. Keep elbows slightly bent to absorb load when landing.

Variation: Hand Positioning - As with the feet, a variety of hand positions are possible when propelling off and landing on the kickplate.



AGILITY TRAINING

Excellent for injury prevention by virtue of unilateral jump training with random eccentric loading helps train the patient to handle emergency conditions.

1. Mark with tape or chalk, five or six locations on the kickplate.
 - a. Take a look at the Color Kickplate. Part #5450
2. Jump away from the kickplate and select a landing target as you descend toward the kickplate. Land on one leg each time reversing the resting leg up toward the chest.
3. Select a different target on each jump. This will help train your proprioceptive skills, strengthen, and speed up the response of the lateral support muscles of the leg.

SKI JUMP TRAINING



This exercise will simulate a vigorous downhill mogul training program building dynamic strength and endurance.

1. Start this exercise at low resistance and gradually work up to near body weight over a period of sessions.
2. Place feet parallel on the kickplate, shoulder width apart. Turn both feet to the left.
3. Put more weight on the left foot than the right, jump and rotate the feet to the right. Keep the knees in alignment with the feet.
4. Upon impact with the kickplate, jump off putting more weight on the right foot more than the left.

Variation: While laying supine with legs in a flexed position on the kickplate, have an assistant push the carriage or handles toward the kickplate with varying loads in a random pattern.