



**Knee
Therapy Kit**

K.T.K.[®] **Instruction Booklet**





K.T.K. Knee Therapy Kit

CONTENTS:

Warnings and Notes	1
Special Instructions	3
Range of Motion	4
Stretching	6
Strengthening	9
Functional	17
Exercise Schedule	22
Warranty	24

WARNINGS:

Federal law restricts this device to sale by or on the order of a licensed health care practitioner and should only be used under the supervision of a licensed health care practitioner.

CAREFULLY READ ALL INSTRUCTIONS PRIOR TO USE.

The K.T.K. is a tool provided to the health care practitioner to be used as appropriate in the treatment of patients. While certain features are incorporated in the design of the device to provide for its safe use, it is strongly suggested that its use be directly controlled and monitored by the health care practitioner.

PRIOR TO EACH USE, CAREFULLY INSPECT FOR ANY WORN OR BROKEN COMPONENTS. Parts will deteriorate with age and use.

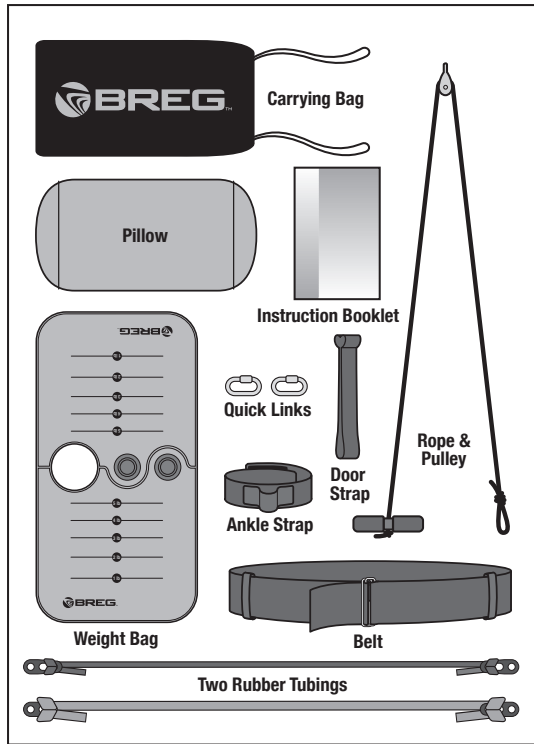


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K.T.K. Knee Therapy Kit



PLEASE NOTE:

Do exercises only as instructed by your therapist.

Use pain as an exercise guideline. If a specific exercise increases pain, discontinue that exercise and notify your therapist.

Do exercises slowly and carefully.

PRIOR TO EACH USE, CAREFULLY INSPECT FOR ANY WORN OR BROKEN COMPONENTS. Parts will deteriorate with age and use.

Not all exercises shown are appropriate to every patient. Some may be contra indicated for specific knee instabilities or injuries. A licensed health care practitioner must specifically assign both the appropriate exercises to perform as well as the frequency and number of repetitions for each patient.

Exercises illustrated are for the **right** leg.



HOLD-RELAX STRETCHING

Hold-Relax Stretching, one of the most effective ways to increase range of motion and enhance muscle relaxation, can be easily accomplished with the Knee Therapy Kit. Many of the stretching and range of motion exercises in this booklet can be performed using the Hold-Relax technique described below:

1. Actively move the muscle you wish to stretch to the end of its range.
2. Contract the tightened muscle firmly, while preventing motion by holding your leg with your hand or with the Rope and Pulley.
3. Hold for 5 to 10 seconds then relax.
4. Now again actively move the muscle to the end of its range. The range will have increased.
5. Repeat the above steps until no more range of motion can be achieved.

The following example, using the Hamstring Stretch exercise on page 8 in this booklet, will further illustrate the proper technique for Hold-Relax Stretching:

1. Attach the Door Strap and Ankle Strap as shown and lie on your back with your leg straight.
2. Raise your leg toward your chest as far as it will go.
3. Contract your Hamstrings by trying to move your leg back toward the floor, but resisting any motion with the Rope and Pulley.
4. Hold for 5 to 10 seconds then relax.
5. Now raise your leg toward your chest again. It will have an increased range of motion indicating increased muscle stretch.
6. Repeat the process several times until no more range of motion can be achieved.

PATELLOFEMORAL DYSFUNCTION

During the rehabilitation of P-F Dysfunction several points should be emphasized. Patients with P-F Dysfunction usually show consistent symptoms. Most often these patients have; (1) poor patellar tracking (primary lateral deviation), (2) poor quadriceps control, strength and endurance, (3) tight hamstrings, (4) tight hip flexors, and (5) poor hip control, strength and endurance. During the rehabilitation process, these areas must be targeted without causing high patellofemoral shearing and loading forces. **The exercises with the "PF" symbol in the lower right corner of the illustrations address the needs and restrictions associated with P-F Dysfunction rehabilitation.** Patients should advance in their exercise programs gradually, using pain and swelling as their guide to progression.

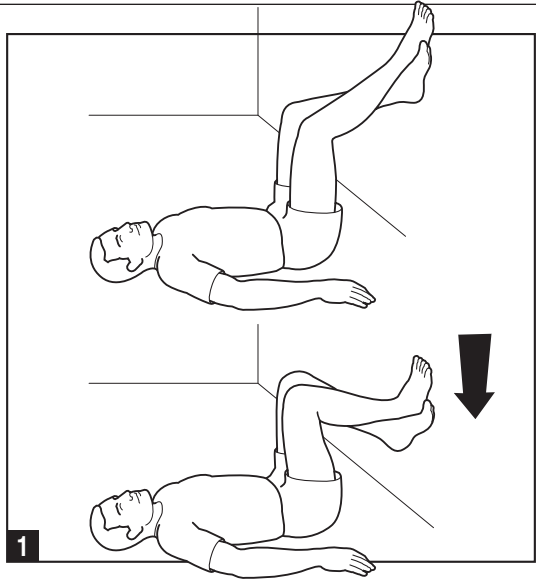
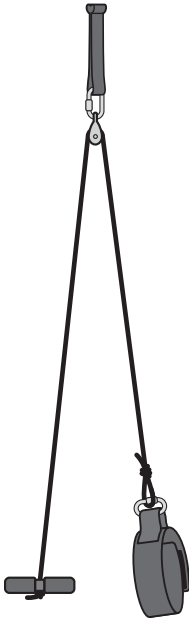


K.T.K. Range of Motion Exercises:

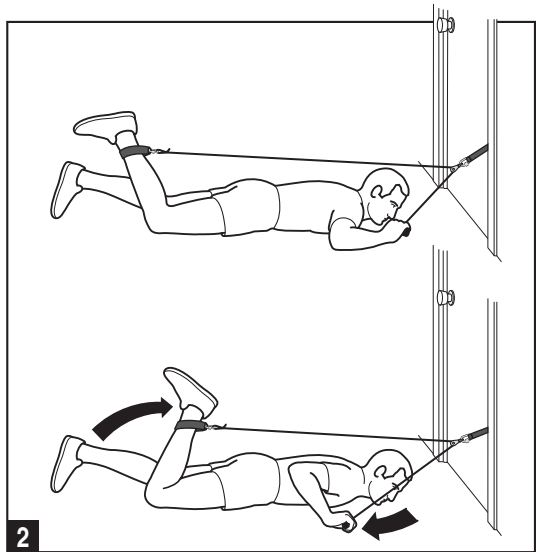
Assemble the **Rope and Pulley** to the **Door Strap** and **Ankle Strap** with **Quick Links**, as shown. Position the **Door Strap** as shown for each exercise.

Make sure the rolled end of the **Door Strap** is placed in the door jamb so that when pulled, the door will pull closed rather than open.

When positioning the **Door Strap** at the bottom of the door, place a bar, stick or similar object through the strap to prevent inadvertent release.



1 **Wall Slides:** lie on the floor as shown. Slowly slide your affected leg down the wall by bending your knee as far as possible. Hold for 5-10 seconds. Use your unaffected leg to help raise your affected leg back to the starting position.



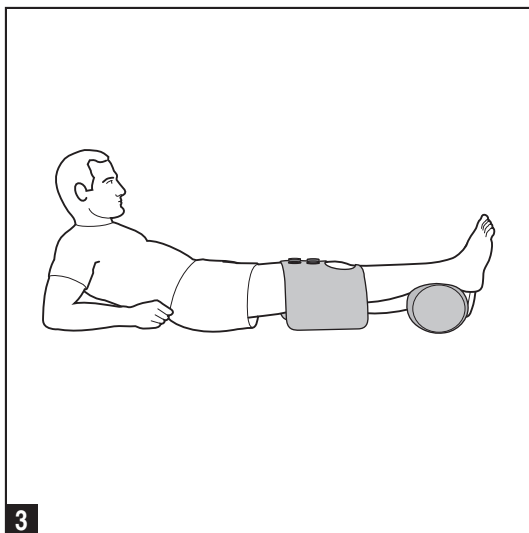
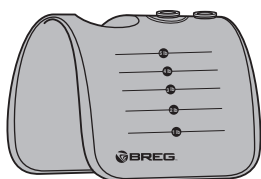
2 **Passive Knee Flexion:** Position yourself on the floor as shown; gently pull the rope handle until your knee is flexed to the point of tightness. Hold for 5-10 seconds, and then relax.

Range of Motion Exercises continued:

Before use, fully inflate **Pillow**.

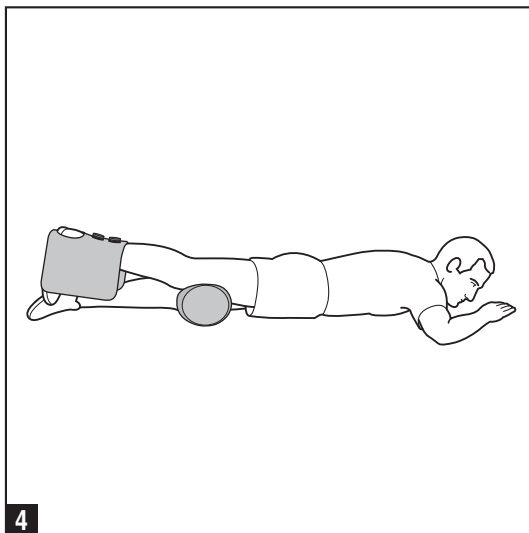


Using warm water, fill each half of the **Weight Bag** equally to the desired weight as indicated on the bag. When not in use, leave the fill plugs open.



3

Passive Knee Extension: Lying on a firm surface with the inflated pillow under your ankle, place the Weight Bag over your knee. Relax leg muscles as much as possible allowing full extension.

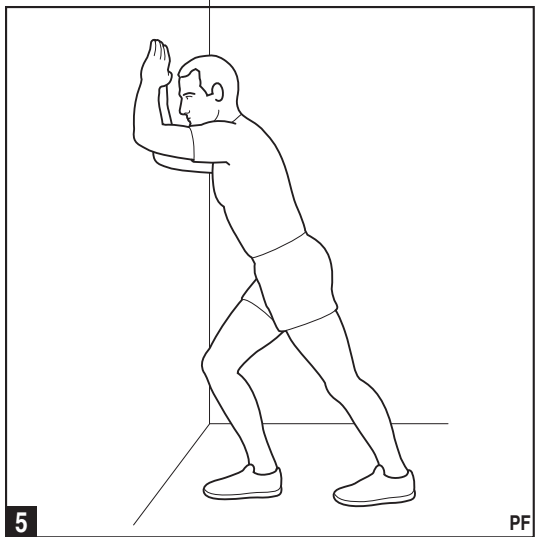


4

Prone Leg Hang: Lying with your legs hanging off the end of a bed or on the floor using the Pillow as shown, allow your lower leg to hang freely. To assist in gaining full extension, the Weight Bag may be hung over your heel.



K.T.K. Stretching Exercises:



Calf Stretch: Stand against the wall with feet positioned as shown. With rear leg straight and heel on the floor, lean toward the wall until the calf is tight. Do not bounce. Hold for 10 seconds, and then relax. Repeat until loose.



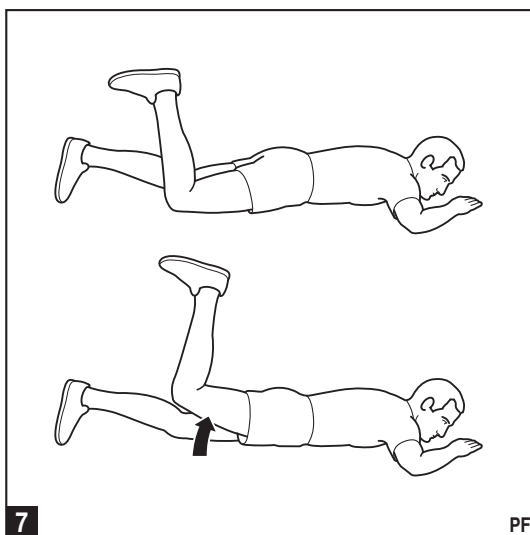
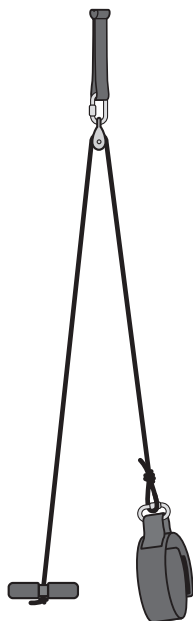
Groin Stretch: Positioned as shown, push your knees inward against your elbows firmly, hold 10 seconds, and then relax. Actively spread your knees farther apart and repeat until loose.

Stretching Exercises continued:

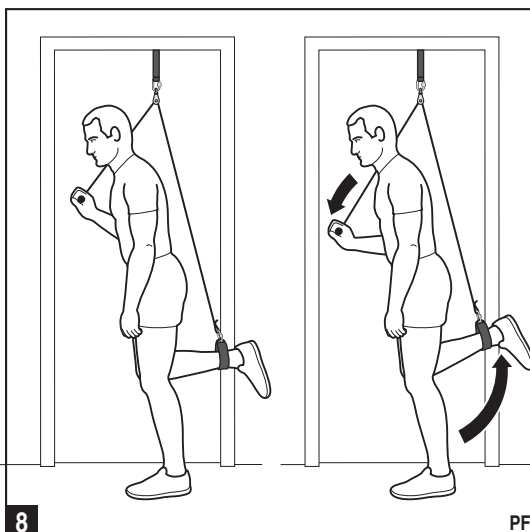
Assemble the **Rope and Pulley** to the **Door Strap** and **Ankle Strap** with **Quick Links**, as shown. Position the **Door Strap** as shown for each exercise.

Make sure the rolled end of the **Door Strap** is placed in the door jamb so that when pulled, the door will pull closed rather than open.

When positioning the **Door Strap** at the bottom of the door, place a bar, stick or similar object through the strap to prevent inadvertent release.



Hip Flexor Stretch: Lying on the floor as shown, bend your knee 90 degrees. Lift your thigh off the floor until tight. Hold for 5-10 seconds, and then relax. Repeat until loose.



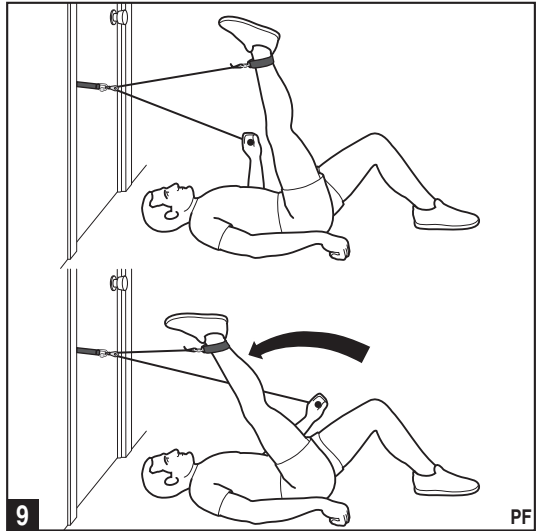
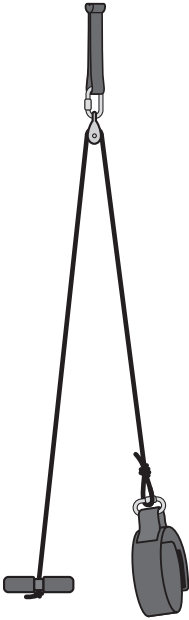
Quadriceps Stretch: Positioned as shown, or while holding your ankle by hand, bend your knee until tight and perform the Hold-Relax technique as described on page 3. Alternatively, perform the same exercise without the Rope and Pulley by lifting your ankle until tight and holding for 10 seconds, then relax. Repeat until loose.

Stretching Exercises continued:

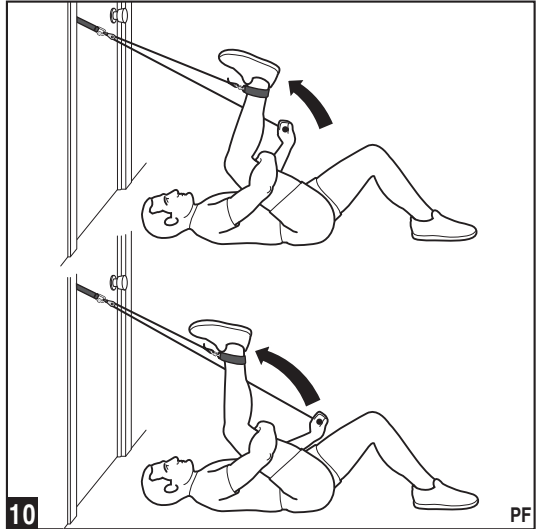
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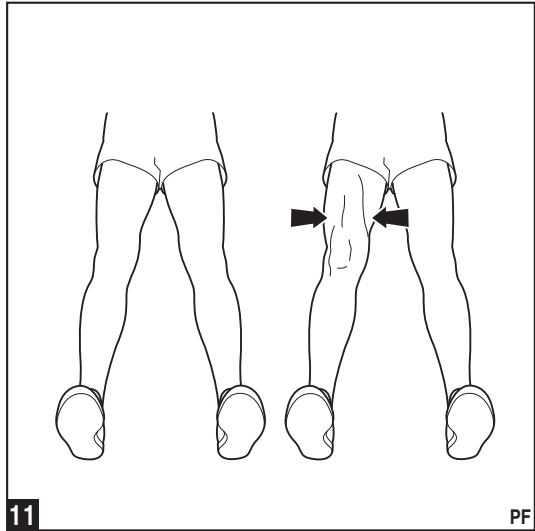
When positioning the **Door Strap** at the bottom of the door, place a bar, stick or similar object through the strap to prevent inadvertent release.



Hamstring Stretch: Positioned as shown and with your leg straight, lift your leg until tight and perform the Hold-Relax technique as described on page 3. Alternatively, perform the same exercise without the Rope and Pulley by lifting your ankle until tight and holding for 10 seconds, then relax. Repeat until loose.



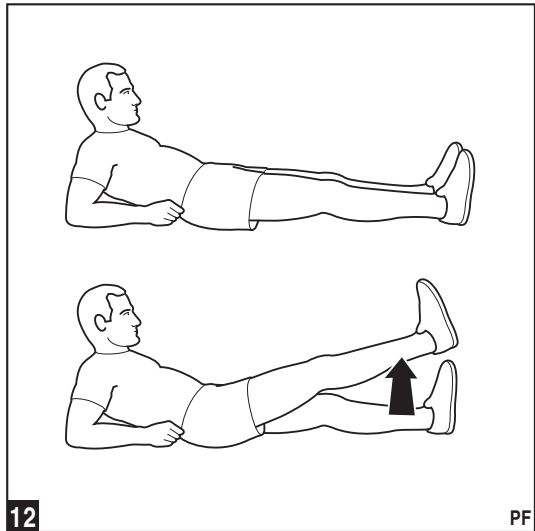
Bent Knee Hamstring Stretch: Positioned as shown and with your knee bent 90 degrees, straighten your leg until tight and perform the Hold-Relax technique as described on page 3. Alternatively, perform the same exercise without the Rope and Pulley by lifting your ankle until tight and holding for 10 seconds, then relax. Repeat until loose.



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Quad Set: Sit on the floor with your legs out straight and your toes pulled back toward you. Tighten the muscles on the front of your thigh as tightly as possible. Hold for 10 seconds while attempting to increase the tightness each second, then relax.

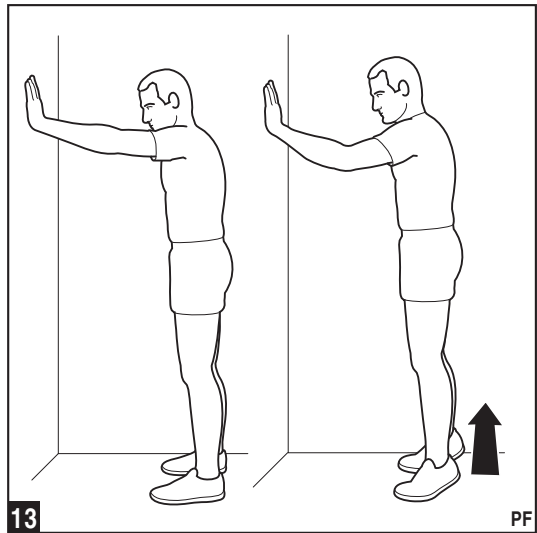


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PF

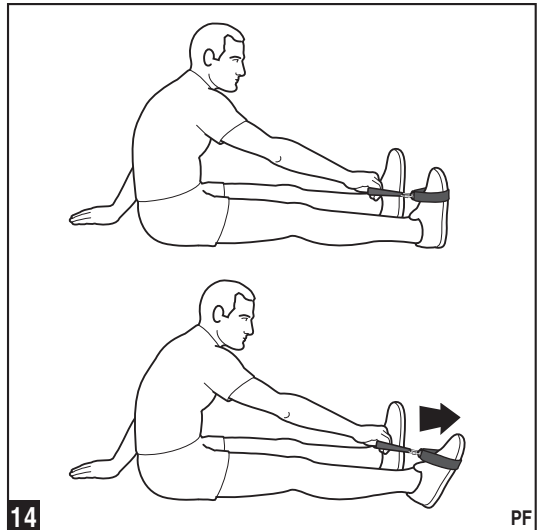
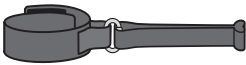
Straight Leg Raises: Lie on the floor with your legs extended and toes pulled back toward you. Tighten the muscles on the front of your leg as much as tight as possible, then raise your leg 6 inches above the floor, keeping your muscles contracted tightly while holding for 5-10 seconds, then relax.

Strengthening Exercises continued:



Toe Raises: Stand with your feet shoulder length apart and raise up on your toes as high as possible. Hold for 5-10 seconds, and then relax.

Connect the **Ankle Strap** and **Door Strap** as shown. Wrap the **Ankle Strap** securely around your forefoot and use the **Door Strap** as a handle.



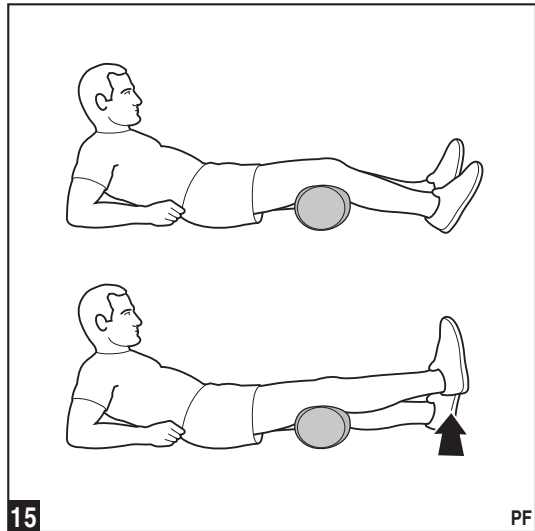
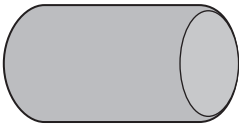
Calf Strengthening: While seated as shown and with the Ankle Strap around your forefoot, point your toe away from you while resisting with your hand.

Strengthening Exercises continued:

WARNING

Not all exercises shown are appropriate to every patient. Some may be contra indicated for specific knee instabilities or injuries. As an example, patients with Anterior Cruciate Ligament instabilities or reconstructions should not do **Knee Extensions** exercises 15-20 without physician approval.

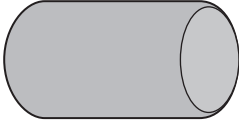
Before use, fully inflate **Pillow**.



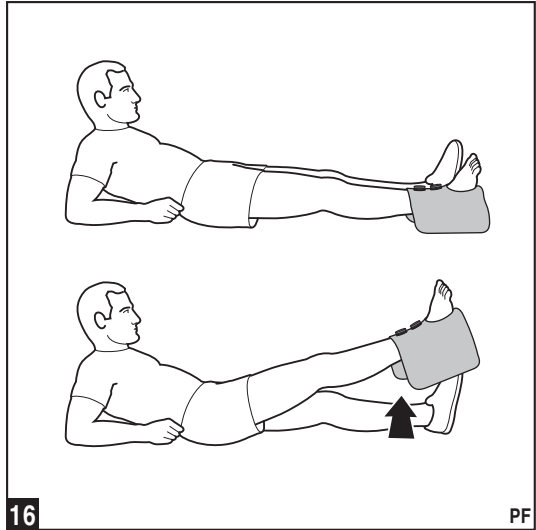
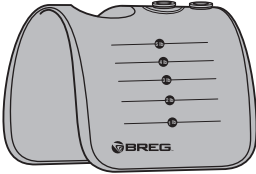
Short Arc Knee Extensions w/o Resistance: Sitting on the floor with the pillow under you knee as shown, pull your toes toward you, tighten your quadriceps and extend your leg to a fully straight position. Hold for 5-10 seconds, and then relax.

Strengthening Exercises continued:

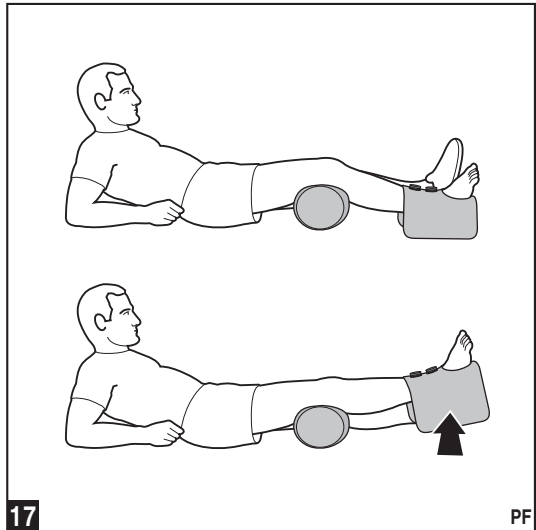
Before use, fully inflate **Pillow**.



Using warm water, fill each half of the **Weight Bag** equally to the desired weight as indicated on the bag. When not in use, leave the fill plugs open.



Straight Leg Raises with Weight: Lie on the floor as shown, tighten the muscles on the front of your leg as tight as possible, then raise your leg 6 inches above the floor. Tighten your muscles harder while holding for 5 seconds, and then relax.



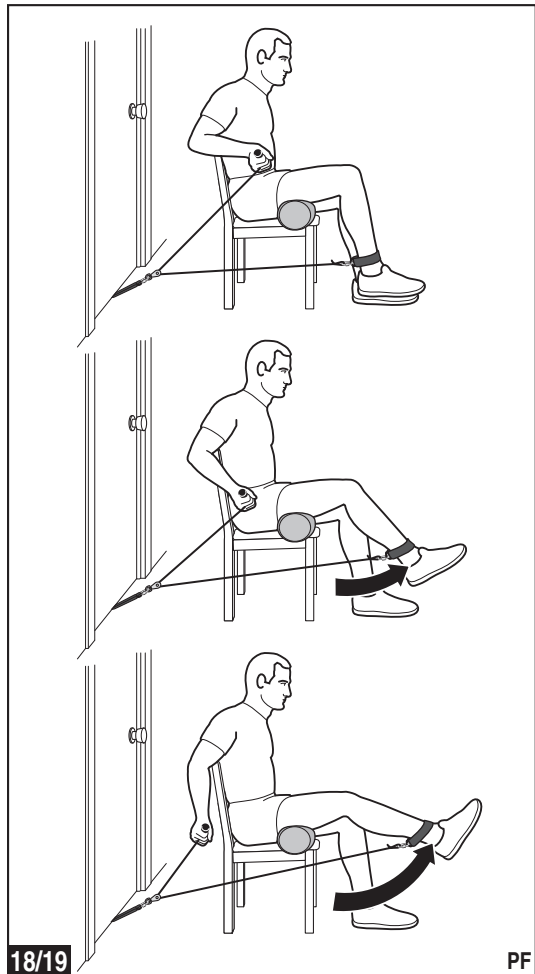
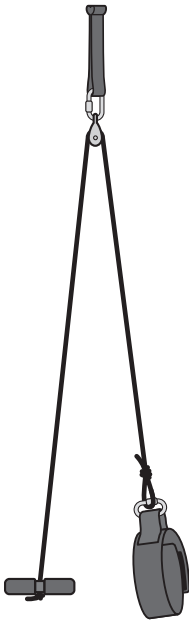
Short Arc Knee Extensions with Weight: Sitting on the floor as shown, tighten your quadriceps and extend your leg to a fully straight position. Hold for 5-10 seconds, and then relax.

Strengthening Exercises continued:

Assemble the **Rope and Pulley** to the **Door Strap** and **Ankle Strap** with **Quick Links**, as shown. Position the **Door Strap** as shown for each exercise.

Make sure the rolled end of the **Door Strap** is placed in the door jamb so that when pulled, the door will pull closed rather than open.

When positioning the **Door Strap** at the bottom of the door, place a bar, stick or similar object through the strap to prevent inadvertent release.



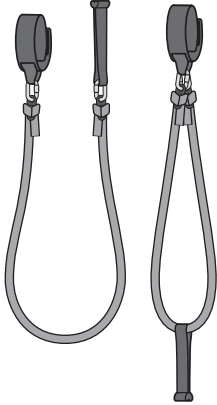
Resistive Knee Extension: Sit in a chair with the Pillow, Rope and Pulley positioned as shown. Starting with your knee bent to approximately 90 degrees, straighten your leg while providing resistance with the Rope Handle.

Isometric Knee Extension: Sit in a chair with the Pillow and Rope and Pulley positioned as shown. Starting at 90 degrees of knee flexion, contract your quadriceps to extend your leg, but using the Rope and Handle, do not allow the leg to extend. Hold for 5-10 seconds, and then relax. Repeat the exercise at approximately 75, 60, 45, and 30 degrees of knee flexion.

Strengthening Exercises continued:

For single **Rubber Tubing** resistance, connect the **Tubing Clips** to the **Door Strap** and **Ankle Strap**, as shown. For Clip adjustment see below.

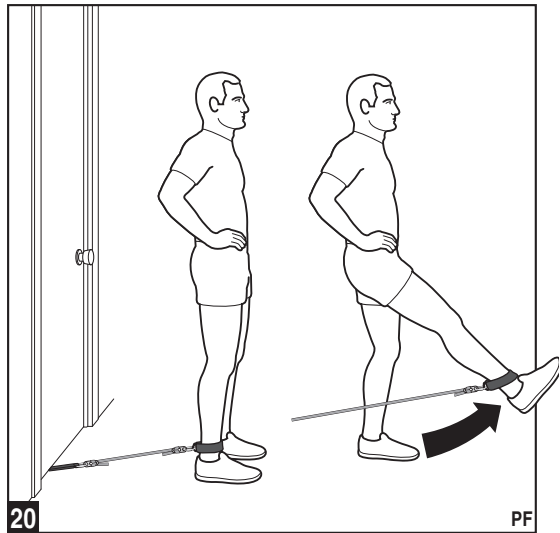
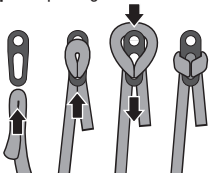
For double **Rubber Tubing** resistance, slide the **Tubing** through the **Door Strap** and connect both **Tubing Clips** to the **Ankle Strap**, as shown. For **Clip** adjustment, see below.



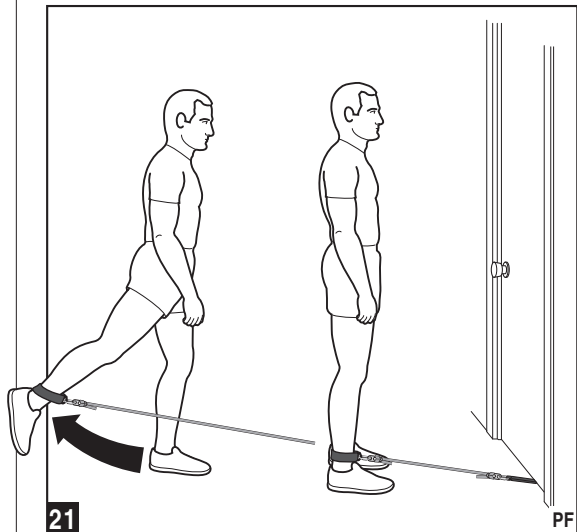
To release **Tubing Clip** from **Rubber Tubing**, push both trailing pieces of tubing simultaneously back through the slot in the **Clip**.



To attach **Tubing Clip**, fold the **Rubber Tubing** over at the desired attachment place and slide the fold through the slot in the **Clip**. Then loop the folded tubing over the top of the **Clip** and pull tight.



Hip Flexion Strengthening: Standing facing away from the door with the Ankle Strap and Rubber Tubing connected as shown and your leg straight, flex your leg forward at the hip, then return to the starting position.

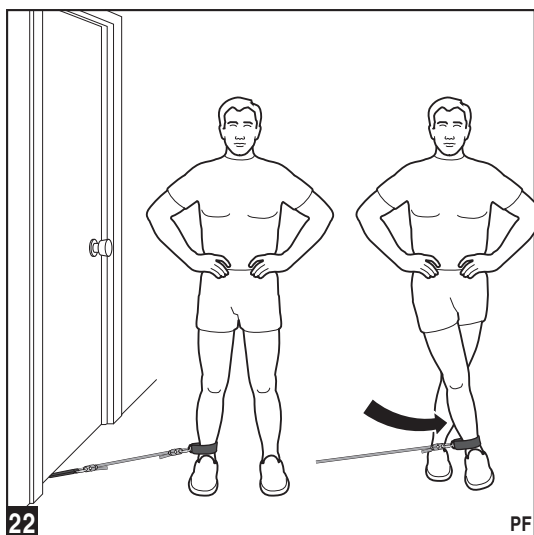
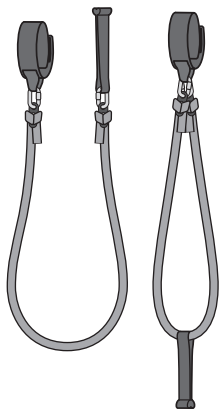


Hip Extension Strengthening: Standing facing the door with the Ankle Strap and Rubber Tubing connected as shown and your leg straight, extend your leg backwards at the hip, then return to the starting position.

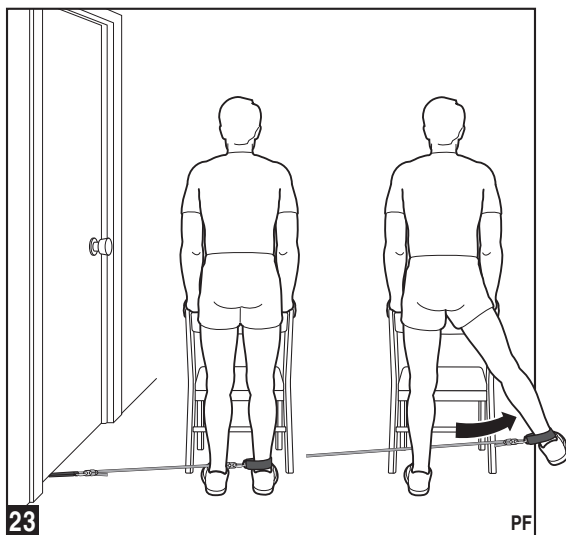
Strengthening Exercises continued:

For single **Rubber Tubing** resistance, connect the **Tubing Clips** to the **Door Strap** and **Ankle Strap**, as shown. For Clip adjustment see below.

For double **Rubber Tubing** resistance, slide the **Tubing** through the **Door Strap** and connect both **Tubing Clips** to the **Ankle Strap**, as shown. For **Clip** adjustment, see below.



Hip Adductor Strengthening: Standing sideways to the door as shown with your leg straight, pull your leg away from the door and across your other leg, then return to the starting position. Use a chair or table for balance support, if needed.

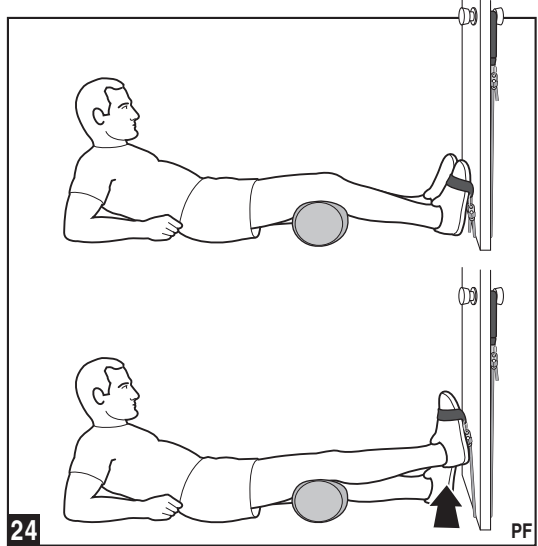
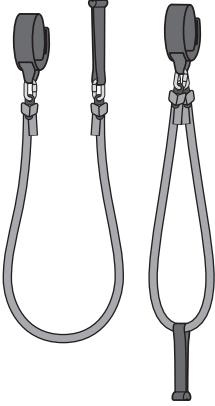


Hip Abductor Strengthening: Standing sideways to the door as shown with your leg straight, pull your leg away from the door and your other leg, then return to the starting position. Use a chair or table for balance support, if needed.

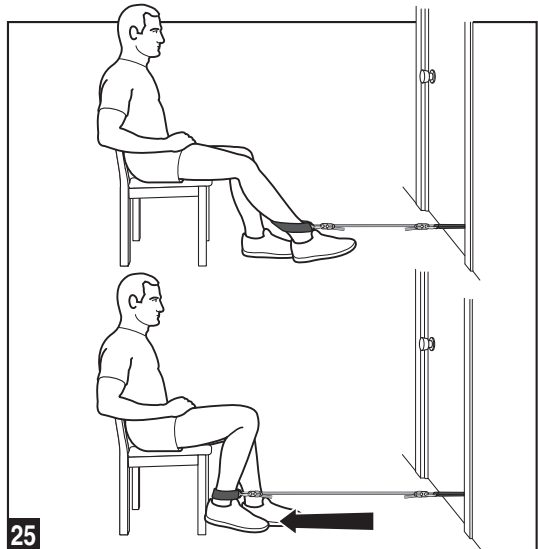
Strengthening Exercises continued:

For single **Rubber Tubing** resistance, connect the **Tubing Clips** to the **Door Strap** and **Ankle Strap**, as shown. For Clip adjustment see below.

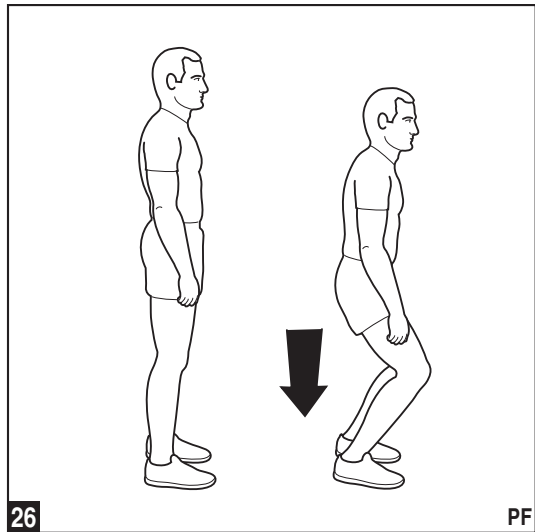
For double **Rubber Tubing** resistance, slide the **Tubing** through the **Door Strap** and connect both **Tubing Clips** to the **Ankle Strap**, as shown. For **Clip** adjustment, see below.



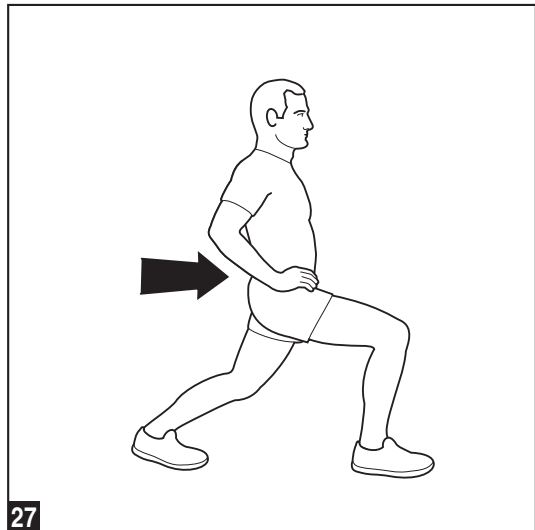
Short Arc Knee Extension with Resistance: Attach the Door Strap and Rubber Tubing as shown. Adjust the Rubber Tubing for correct length. Pull your toes toward you, fully extend your leg and hold for 5 seconds, then relax.



Hamstring Strengthening: Sit in a chair facing the door with the Ankle Strap and Rubber Tubing attached as shown. Starting with your leg straight out with resistance from the tubing, flex your knee as far as you can, then return to the starting position.

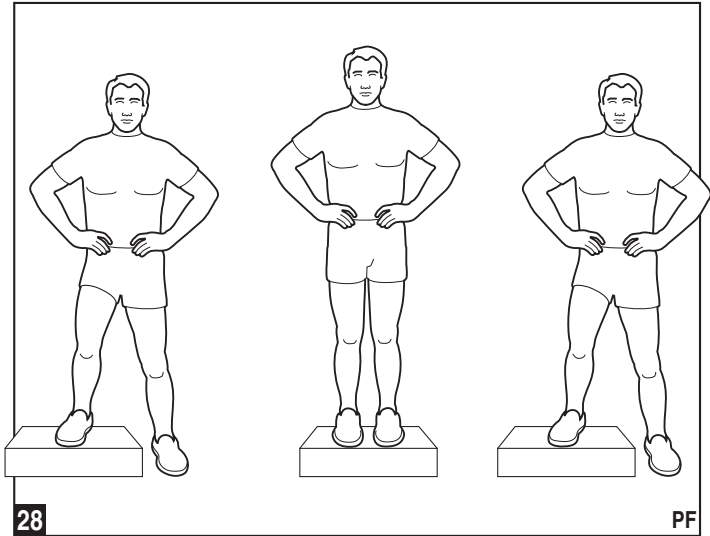


One-Quarter Squats: Stand with your feet shoulder length apart and toes pointed straight ahead. Keeping your back upright, squat one-quarter of the way down and return.



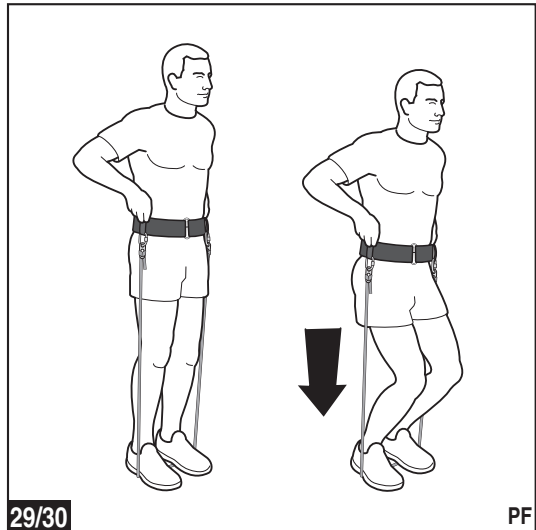
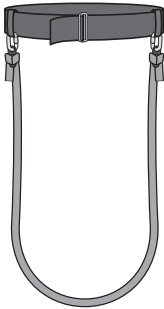
Forward Lunges: From a standing position, place your hands on your hips and step forward 2-3 feet with your affected leg. As your foot strikes the floor, allow your knee to bend approximately 90 degrees. Control your downward motion, then press hard to reverse your motion and stand back up.

Functional Exercises continued:



Step Ups: Stand with your affected leg next to a 6-8 inch high step. Step up with the inside foot, then with the outside foot. Next, step down with the outside foot, then with the inside foot.

Connect **Tubing Clips** to **Belt Loops** as shown. Adjust **Rubber Tubing** for proper exercise length.

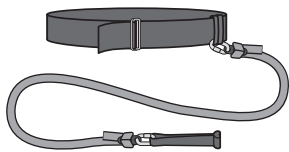


Squats with Resistance (both legs): Standing as shown, squat down to approximately 90 degrees, hold for one count, then return.

Squats with Resistance (one leg): Perform as above except on one leg only.

Functional Exercises continued:

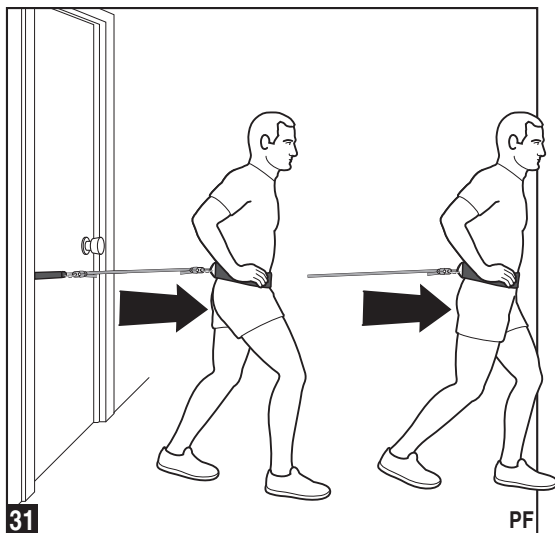
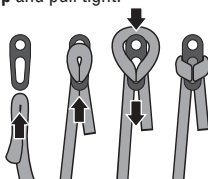
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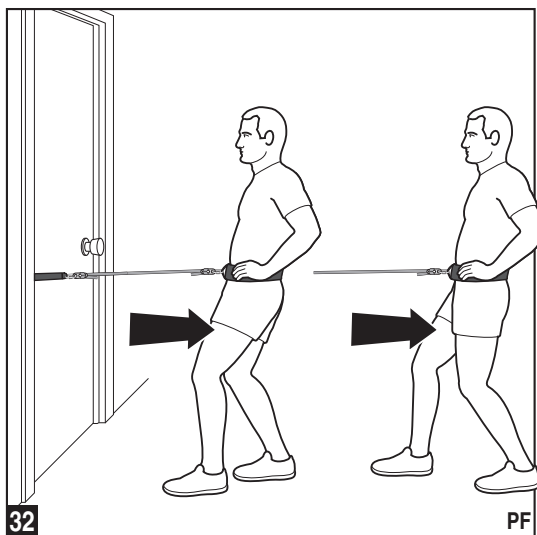
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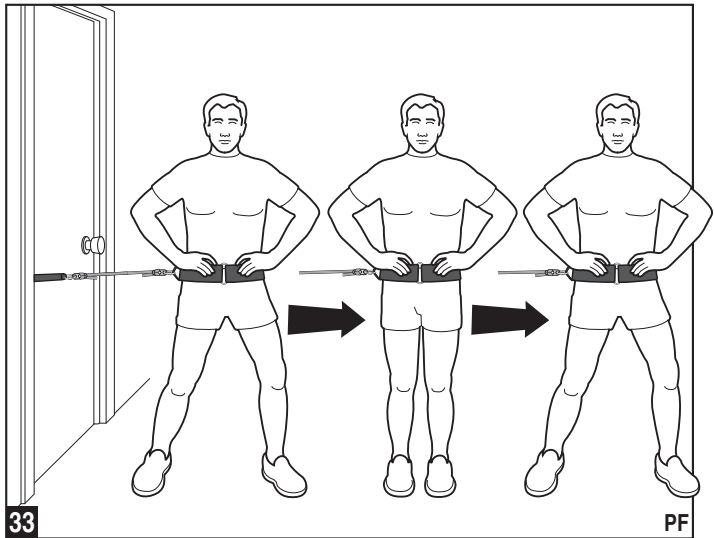


Forward Walking Against Resistance: Standing as shown, walk away from the door until the resistance is significant, then return to the starting position.

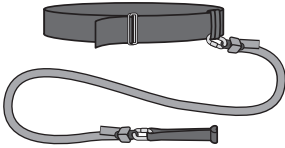


Backward Walking Against Resistance: Standing as shown, walk backwards away from the door until the resistance is significant, then return to the starting position.

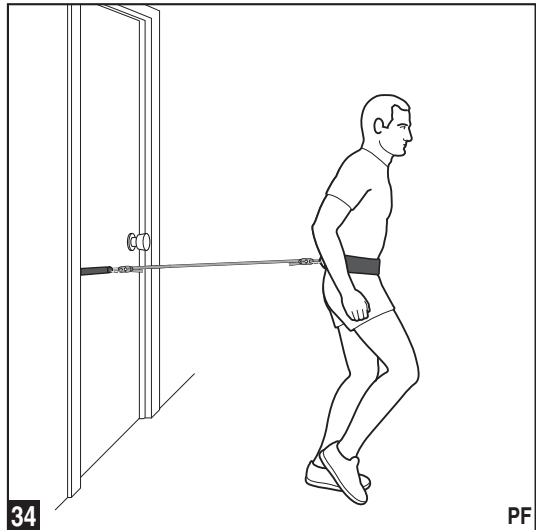
Functional Exercises continued:



Connect **Tubing Clips** to **Belt Loops** as shown. Adjust **Rubber Tubing** for proper exercise length. For **Clip** adjustment, see below.



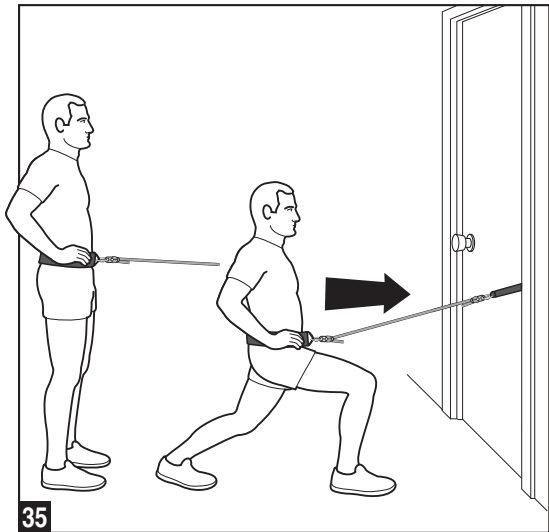
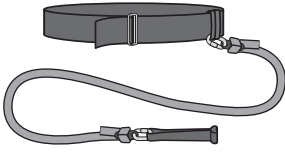
Slide Walking Against Resistance: Standing as shown, side-step away from the door until the resistance is significant, then return to the starting position.



Jogging in Place Against Resistance: Standing as shown, walk away from the door until the resistance is significant, then jog in place.

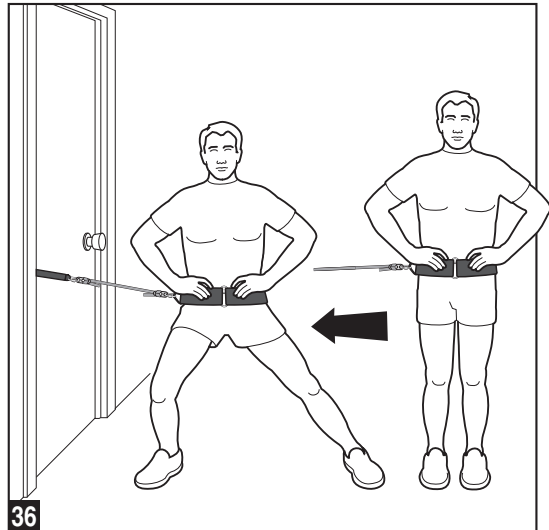
Functional Exercises continued:

Connect **Tubing Clips** to **Belt Loops** as shown. Adjust **Rubber Tubing** for proper exercise length. For **Clip** adjustment, see below.



35

Forward Lunges with resistance: Standing as shown, walk backwards away from the door until the resistance is significant, now step forward toward the door 2-3 feet with your affected leg. As your foot strikes the floor, allow your knee to bend approximately 90 degrees. Control your downward motion, then press hard to reverse your motion and stand back up.



36

Side Lunges with Resistance: Perform this exercise exactly as described above for the Forward Lunges with Resistance except face sideways to the door and lunge sideways toward the door with your affected leg.



K.T.K. Exercise Schedule

Range of Motion Exercises

Repetitions and Notes

1 Wall Slides

2 Passive Knee Flexion

3 Passive Knee Extension

4 Prone Leg Hang

Stretching Exercises

5 Calf Stretch

6 Groin Stretch

7 Hip Flexor Stretch

8 Quadriceps Stretch

9 Hamstring Stretch

10 Bent Knee Hamstring Stretch

11 Quad Set

12 Straight Leg Raises

13 Toe Raises

14 Calf Strengthening

15 Short Arc Knee Ext. w/o Res.

16 Straight Leg Raises w/Weight

17 Short Arc Knee Ex. w/Weight

18 Resistive Knee Extension

Patient Name _____ Date _____

Range of Motion Exercises

- 19 Isometric Knee Extension _____

- 20 Hip Flexion Strengthening _____

- 21 Hip Extension Strengthening _____

- 22 Hip Adductor Strengthening _____

- 23 Hip Abductor Strengthening _____

- 24 Short Arc Knee Ext. w/Res. _____

- 25 Hamstring Strengthening _____

Functional Exercises

- 26 One-Quarter Squats _____

- 27 Forward Lunges _____

- 28 Step Ups _____

- 29 Squats w/Resistance (both legs) _____

- 30 Squats w/Resistance (one leg) _____

- 31 Forward Walking Against Res. _____

- 32 Backward Walking Against Res. _____

- 33 Side Walking Against Res. _____

- 34 Jogging in Place Against Res. _____

- 35 Forward Lunges w/Resistance _____

- 36 Side Lunges w/Resistance _____



K.T.K. Limited Warranty

Breg, Inc. warrants that this product is free from defects in workmanship, materials, and fitness for use for six months from the date of purchase under normal use for which it was intended if, and only if, it has been properly used under direct supervision of a licensed health care practitioner. Breg, Inc.'s obligation under this warranty is limited to the replacement or repair of any defective part or parts of this product. All express or implied warranties, including the warranty of merchantability and fitness for a particular purpose, are limited to the actual warranty period set forth above. No other warranty, express or implied, is given and no affirmation of or by seller, by words or action, will constitute a warranty.

