



OPTP Product Bulletin



Resistive Bands by Caroline Corning Creager, PT



What are resistive bands?

Brightly colored resistive bands have adorned the walls, floors and doors of health clubs, therapy, chiropractic and physician clinics throughout the world since the 1970s. Currently, thousands, if not millions of people use resistive bands in their daily workout routines. This rapid rise in resistive band popularity may be attributed to the band's simplicity.

A resistive band - an elastic strip or tube of rubber material - is lightweight, portable, inexpensive, versatile and offers variable resistance. Many patient populations (cardiac, chronic pain, geriatric, neurologic, orthopedic, pediatric, prenatal and post-partum, sports medicine and world-class athletes) use the bands in a variety of positions to simulate sport specific exercises, activities of daily living and/or work-related strengthening positions.

Why use resistive bands?

Resistive bands, also commonly known as elastic bands, exercise bands, elastic tubing, Thera-Band, Dyna-Band or REP Band, are designed to introduce progressive resistance to an exercise program. The different color-coded resistance levels allow the fitness professional to customize strengthening programs to meet the needs of their clients. Hintermeister et al. concluded that the "external load provided by the elastic resistance device allows patients

to modify their exercises to match their rehabilitation progress."¹

Clinical and home-based resistance training programs that use resistive bands are routinely recommended by healthcare professionals. The following research studies indicate the rehabilitative potential of resistance bands.

- Mekesky et al. found that adults over the age of 65 who adhered to a home-based elastic tubing program increased: training resistance by an average of 82%, isokinetic eccentric knee extension strength by 12% and flexion strength by 10%.²
- Mostardi and Chapman's study documented a 9% increase in muscular strength in sedentary women when they used resistive bands.³
- Page et al. report that resistive bands are effective in increasing eccentric force production by 19.8% in the posterior rotator cuff of a pitching shoulder.⁴
- Research by Topp et al. suggests "older adults may realize reduced gait velocities and improved measures of dynamic balance, and may maintain or improve measures of static balance through strength training using resistive bands".⁵
- Hintermeister et al. also quantified muscle activation levels, knee joint angles and applied force during elastic resistance knee exercises. "The data on muscle activation levels and force of the elastic resistance device support the use of these exercises (single knee dip, double knee dip, leg press, hamstring pull and side-to-side jump) in a progressive, functional rehabilitation program."⁶
- Resistive band exercises have been reported as providing linear resistance; the more a resistive band is stretched, the greater the resistance.

Attaining end range of motion is more difficult with linear resistance where at end range the muscles are weakest. Hughes et al., however, found that "Thera-Band tubing provides linear resistance during shoulder abduction, but the resistive torque provided by the tubing mimics isotonic exercise."⁷ Classifying resistive band exercise as similar to isotonic exercise means band resistance is fixed and the speed of exercise is variable, providing greatest resistance at mid-range and allowing exerciser to attain end range of motion. (Curling a free weight with the bicep muscle is an isotonic exercise).

Caroline Corning Creager, PT expands on exercises using resistive bands in her book *Therapeutic Exercises Using Resistive Bands*

Additional information on using resistive bands can be found in materials by the following authors;

- ¹ Hintermeister, Robert and Bey, Michael, et al. "Quantification of Elastic Resistance Knee Rehabilitation Exercises." *JOSPT* 28 (1): 1998, pp. 40-50.
- ² Mikesky, Alan and Topp, Robert, et al. "Efficacy of a Home-Based Training Program for Older Adults Using Elastic Tubing." *E J Appl. Physiol Occup. Physiol.* 69: 1994, pp. 316-320.
- ³ Mostardi, Richard and Chapman, Elizabeth. "Improvement in Muscular Strength with the Use of Wide Therapeutic Resistive Bands." Akron City Hospital and the University of Akron.
- ⁴ Page, Philip and Lamberth, John, et al. "Posterior Rotator Cuff Strengthening Using Thera-Band in a Functional Diagonal Pattern in Collegiate Baseball Pitchers," *Athletic Training*, NATA 28(4): 1993, pp. 346-354.
- ⁵ Topp, Robert and Mikesky, Alan, et al. "The Effect of a 12-week Dynamic Resistance Strength Training Program on Gait Velocity and Balance of Older Adults," *Gerontol.* 33(4): 1993, pp. 501-506.
- ⁶ Hintermeister, p. 45.
- ⁷ Hughes, Christopher and Hurd, Kenneth, et al. "Resistance Properties of Thera-Band Tubing During Shoulder Abduction Exercise," *JOSPT.* 29(7): 1999, p. 413.

Using resistive band

Resistive band exercises can add diversification to treatment regimens and appeal to all ages and patient popula-

Exercises *Using Resistive Band*

tions. As research has shown, using resistive bands improves strength and balance; and patients readily participate because it is so simple, inexpensive, lightweight, portable and versatile. This is why resistive bands have been so successful and popular in the clinic, workplace, home and clubs.

- Always examine resistive bands for flaws, tears or brittleness to prevent bands from breaking or tearing while exercising.
- Tie a secure knot, such as a figure eight knot, in the resistive band to keep it from slipping.
- Do not hold breath while exercising. Exhale as band becomes taut. Inhale when band relaxes.
- Do exercises slowly and rhythmically. Do not allow the band to snap back.
- Maintain good posture while exercising with the resistive band.
- Begin using a low band resistance and progressively increase level of resistance as strength improves.
- To make exercises more difficult, shorten the length of the band or double the band forming a loop.
- To make the exercises easier, use a longer piece of band.
- Prevent the band from pulling on leg or body hair by wearing long pants or a long-sleeved shirt.
- Store resistive bands in a dark, cool area (21° C/70° C) to increase the life of the bands.

Thousands of exercise options exist when using resistive band. Resistive bands are perfect for home exercise programs since it is inexpensive, lightweight and very portable. Be creative when using resistive band. Remember to adapt the exercise to the client and not the client to the exercise.

Resistive band exercises

Unilateral Shoulder Rowing

To strengthen arm and mid-back muscles. Sit on floor with back straight and knees slightly flexed. Grasp one end of resistive band in each hand. Loop band around both forefeet. Pull left elbow back. Repeat with opposite side. Hold 3 seconds. Repeat 8-12 times. Perform 1-3 sets.



Abdominal Oblique Curl

To strengthen oblique abdominal muscles.

Tie knot in middle of resistive band and shut knot in door two feet above floor. Lie on back with knees bent, facing away from door. Raise arms overhead and grasp ends of resistive band with both hands. Raise head off floor and push left hand toward right knee. Return to starting position. Raise head off floor and push right hand toward left knee. Hold for 3 seconds. Repeat 8-12 times. Perform 1-3 sets.

Multifidus Back Strengthening Exercise

Place foot and with right hand. Raise hand up from side of body to a 70° angle. Gently raise and lower hand 6 inches. Repeat with opposite side. Hold 1 second. Repeat 8-12 times. Perform 1-3 sets.



Retro-Walking

To strengthen thigh muscles in an eccentric manner. Tie both ends of resistive band together



and shut knot in door at hip height. Stand facing door. Loop band around hips. Walk backward as far as band will allow. Walk forward slowly. Hold each step backward for 3 seconds. Repeat 5-15 times. Perform 1-3 sets.

Piriformis Strengthening Exercise



buttock (piriformis) and outer thigh muscles. Tie ends of resistive band together. Loop band around thighs. Lie on side with both knees bent. Raise top knee up toward ceiling while keeping heels together. Repeat on opposite side. Hold for 3 seconds.

Repeat 5-12 times. Perform 1-3 sets.

Helpful Products Available from OPTP



Resistive Band Creager

• Therapeutic Exercises Using Resistive Band by Caroline

- Thera-Band® Resistive Exercise Band and Tubing
- ~~REP Band™ Latex-Free Resistive Exercise Band and Tubing~~

- REP Band™ Loop
- Thera-Band® Door Anchor™
- Thera-Band® Handles
- X-Change™ Handles

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