

**West Chester University**  
**Digital Commons @ West Chester University**

---

Sports Medicine

College of Health Sciences

---

9-1995

# Closed Kinetic Chain Terminal Knee Extension Using a Padded Elastic Band

Neil Curtis

*West Chester University of Pennsylvania*, ncurtis@wcupa.edu

Follow this and additional works at: [http://digitalcommons.wcupa.edu/spomed\\_facpub](http://digitalcommons.wcupa.edu/spomed_facpub)



Part of the [Sports Sciences Commons](#)

---

## Recommended Citation

Curtis, N. (1995). Closed Kinetic Chain Terminal Knee Extension Using a Padded Elastic Band. *Journal of Athletic Training*, 30(3), 270-271. Retrieved from [http://digitalcommons.wcupa.edu/spomed\\_facpub/15](http://digitalcommons.wcupa.edu/spomed_facpub/15)

This Article is brought to you for free and open access by the College of Health Sciences at Digital Commons @ West Chester University. It has been accepted for inclusion in Sports Medicine by an authorized administrator of Digital Commons @ West Chester University. For more information, please contact [wcressler@wcupa.edu](mailto:wcressler@wcupa.edu).

## Closed Kinetic Chain Terminal Knee Extension Using a Padded Elastic Band

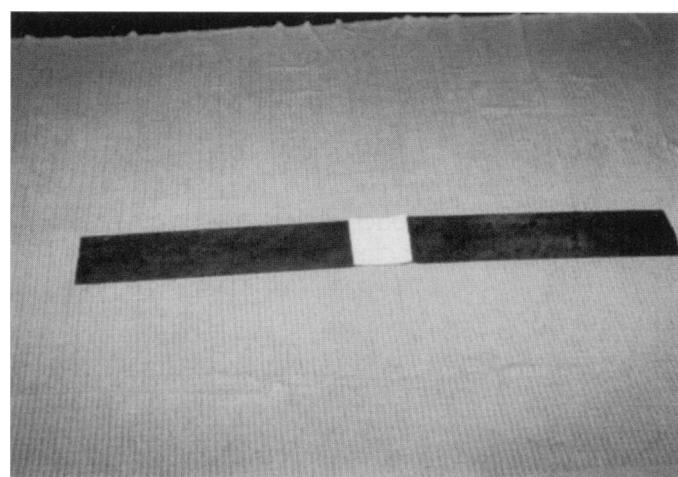
**Neil Curtis, EdD, ATC**

**L**ower extremity closed kinetic chain exercises are commonly performed by athletes during rehabilitation of knee injuries and are often integrated early in the rehabilitation progression.<sup>1,2,4</sup> The standing terminal knee extension using resistance is a closed kinetic chain exercise often used in knee rehabilitation programs.<sup>2-4</sup> Einhorn et al<sup>2</sup> describe this exercise using an elastic band for resistance. Other authors<sup>2,4</sup> describe the exercise using surgical tubing for resistance. When a Theraband (The Hygenic Corporation,

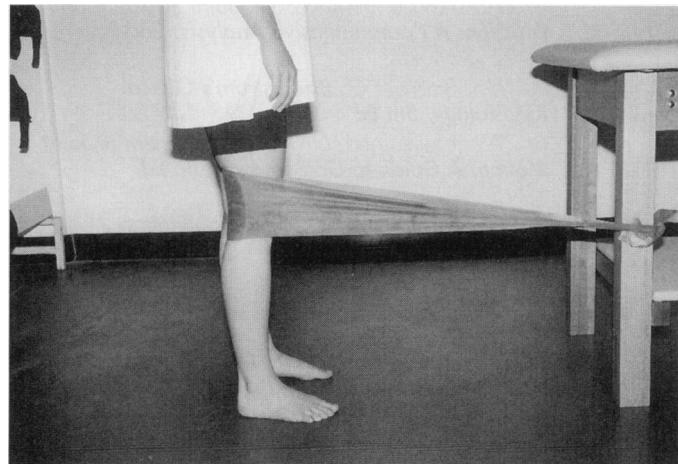
Akron, OH) elastic band is used to perform the terminal knee extension exercise, it often rolls or bunches behind the knee in the popliteal space (Fig 1) causing discomfort. This makes performing the exercise more difficult. I have found that applying a foam pad to the Theraband reduces the bunching behind the knee and allows the athlete to perform the standing terminal knee extension more comfortably. Anecdotal reports from athletes indicate that using the padded elastic band is more comfortable than using the elastic tubing alone when performing this exercise.



**Fig 1.** Theraband, without foam pad, bunched behind the knee.



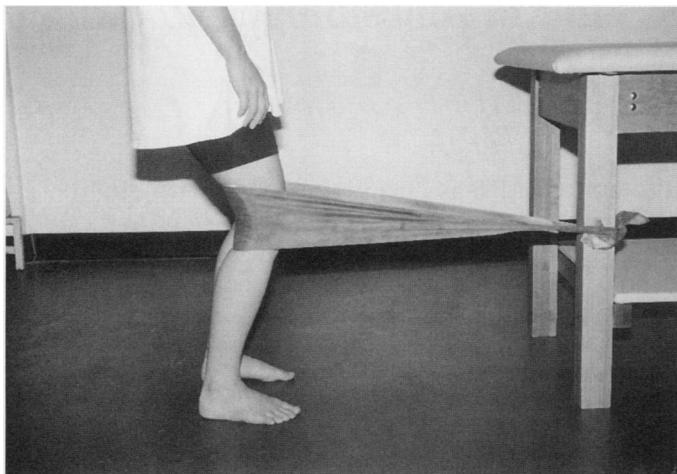
**Fig 2.** Foam pad attached to the center of a 60-inch black Thera-band.



**Fig 3.** Position 1: pad behind extended knee.

**Neil Curtis** is Coordinator of Athletic Training Education in the Department of Sports Medicine at West Chester University in West Chester, PA 19383.

- Step 1: Select the appropriate resistance (color) Theraband and cut a 60-inch piece.
- Step 2: Cut a 6-inch square piece of 1/8-inch adhesive foam and adhere it to the center of the Theraband (Fig 2).
- Step 3: Tie the band securely to a treatment table leg.
- Step 4: Have the athlete position the foam pad behind the knee and perform the exercise (Figs 3 & 4).



**Fig 4. Position 2: flex the knee to about 30°, then return to Position 1 and repeat.**

Protocols should be determined according to the athlete's stage of rehabilitation and should be modified as the athlete progresses. The closed kinetic chain terminal knee extension can easily be incorporated into an athlete's home rehabilitation program. To make the exercise more challenging, you can increase the number of repetitions, increase the tension on the elastic band, and/or use a higher resistance Theraband color.

#### ACKNOWLEDGMENTS

Thanks go to Melissa Marcus, ATC, who helped inspire this tip, to Lisa Mattea for being a patient model, and to Carolyn Jimenez, ATC, for the photographs.

#### REFERENCES

1. Albert MS. Principles of exercise progression. In: Greenfield BH, ed. *Rehabilitation of the Knee: A Problem Solving Approach*. Philadelphia, PA: FA Davis; 1993:129.
2. Blair DF, Wills RP. Rapid rehabilitation following anterior cruciate ligament reconstruction. *Athl Train, JNATA* 1991;26:32-43.
3. Einhorn AR, Sawyer M, Tovin B. Rehabilitation of intra-articular reconstructions. In: Greenfield BH, ed. *Rehabilitation of the Knee: A Problem Solving Approach*. Philadelphia, PA: FA Davis; 1993:266.
4. Prentice WE. *Rehabilitation Techniques in Sports Medicine*. 2nd ed. St Louis, MO; 1994:104.

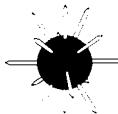
## Over a Decade of Results....

### THE MULTIAXIAL® ANKLE EXERCISER

The MULTIAXIAL® Ankle Exerciser saves time, space and wear and tear on your isokinetic equipment while offering your patient the very best in therapeutic exercise at a reasonable cost.

- all joint ranges of motion
- closed chain kinetic exercise through universal movement
- smooth action and adjustable progressive calibrated resistance with new zero degree stop
- easy to set up and stabilize by your treatment table
- balanced, biomechanical compartment loading plus chart of 15 comprehensive patterns of exercise

FOR MORE INFORMATION, PLEASE CONTACT



**MULTIAXIAL® INC.**

P.O. Box 404, Lincoln, Rhode Island 02865 • (401) 723-2525

