



Student Perceptions of Resistance Tube Training in Chiropractic Technique Labs

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Introduction

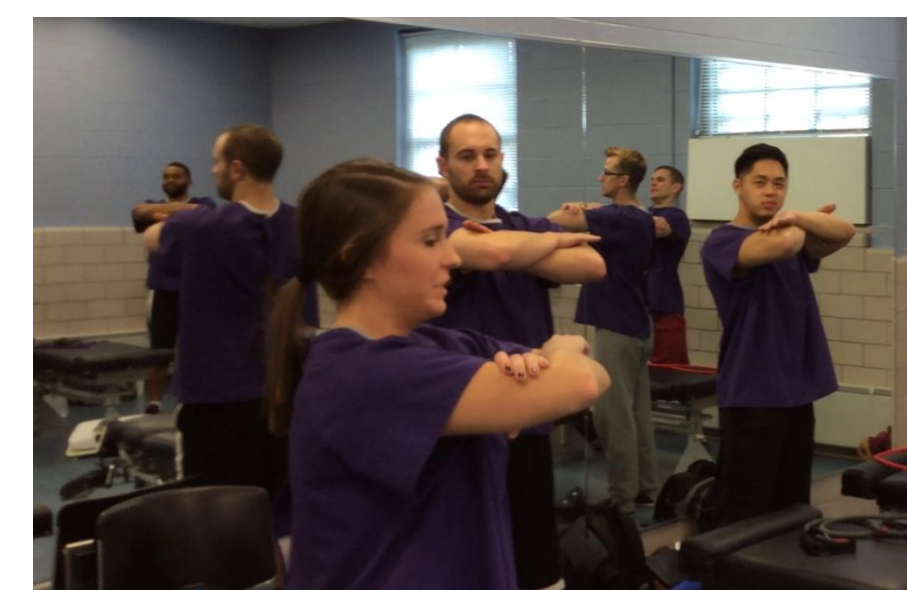
Chiropractic technique labs comprise a series of hands-on courses that train students in manual therapy skills, especially the application adjustments/manipulations using high velocity, low amplitude (HVLA) thrusts.

Different training methods have been utilized over the years including giving various types of feedback (including video analysis),⁽¹⁻³⁾ providing instructional videos,⁽⁴⁾ performing coordination and thrust exercises,^(2,5) changing teaching styles and measuring outcomes on manikins,⁽⁶⁾ and thrusting on chiropractic tables and portable miniature drop pieces.⁽²⁾

Many students appear to struggle with mastering HVLA thrust procedures because of shortcomings in physical conditioning involving either a lack strength (the ability to generate force at a given velocity), power (the ability to generate force quickly) and/or endurance (the ability to overcome a resistance many times) in their arms, legs and/or core muscles.

Resistance training using free weights, one's body weight, Nautilus and Cybex machines has been shown to increase strength, power and endurance⁽⁷⁻⁹⁾ and in some cases shift fiber type depending on the methods used.⁽¹⁰⁾ Resistance Tube (RT) training has also been shown to increase strength, power and endurance.⁽¹¹⁻¹³⁾ Additionally, RTs have a high level of utility because they are light weight, easily transported and relatively inexpensive.

The purpose of this study was to introduce beginner and intermediate level chiropractic technique students to RT training and to survey their attitudes regarding this.



Methods

Resistance tubes were obtained by the 2nd and 5th semester technique lab students.

The RTs were used twice per week for approximately five minutes at the beginning of class as part of a 15 minute Chirobics warm-up done to music.

RT exercises included 10 slow repetitions and then explosive movements involving the upper and lower limbs and core muscles.

After 12 weeks anonymous surveys were distributed in order to collect information about utilization rates and perceptions.



Results

35/36 students responded (12 females)

- 25 second semester (8 females) and 10 fifth semester (4 females)

Prior to 12 week training session:

- 23% had never used RTs (5/12 females were novices)
- 20% had used RTs in previous month

After 12 week training session, outside of class use:

- 63% used them again, 43% in month prior to survey
 - 2nd semester utilization: 25% women, 70% men
 - 5th semester utilization: 100% women, 83% men
- But for prior users:
 - 54% decreased, 36% no change, 11% increased
 - 2nd semester accounted for 93% of decreased use (all men)
 - No women decreased use, 42% increased use

Overall Perceptions

- Improved manipulation skills: Yes 52%, Unsure 26%, No 23%
 - 58% females, 48% men felt improved skills
- Improved confidence: Yes 35%, Unsure 43%, No 23%
 - 42% females, 30% males were more confident
- Enjoyment: 51% All or most of time, 17% At least half of time
- Continued use in class: Yes 69%, Unsure 17%, No 14%

Open ended question responses:

- Most common: Good warm up, improved skills and strength, welcome change
- A few: Maybe aggravated old injury, weren't effective for them, didn't mimic thrust procedure enough
- Some individuals: Make a manual, add standardization to routines, increase tube tension, get RTs as part of tuition!

References

1. Good C. *Task manipulation in psychomotor skill practice sessions: a literature review.* J Chiro Ed: Jun 1994 8(1), 21-28
2. Good C. *Reflections on the teaching strategies used in teaching the chiropractic adjustment.* J Chiro Ed: Jun 1994, 8(2), 59-68.
3. Glori H and Bergmann TF. *Video capture on student-owned mobile devices to facilitate psychomotor skills acquisition: A feasibility study.* J Chiro Ed: Fall 2013, Vol. 27, No. 2, pp. 158-162.
4. C Good and S Pezeshki. *Utilizing YouTube in Chiropractic Technique Lab.* ACC/RAC Conference. J of Chiro Ed: 2012: 26 (1), 90.
5. Good C. *An evaluation within the affective domain of teaching methods in manipulative technique laboratory: Chirobics vs conventional thrusting exercises.* J Chiro Ed: June 93, 7 (1), 19-28.
6. Harvey MP et al. *Learning Spinal Manipulation.* J of Chiro Ed: Oct 2011, 25 (2) pp 125-131.
7. Crewther BT, Cronin J, Keogh JW. *The contribution of volume, technique, and load to single-repetition and total-repetition kinematics and kinetics in response to three loading schemes.* J Strength Cond Res. 2008 Nov;22(6):1908-15.
8. Henwood TR, Riek S, Taaffe DR. *Strength versus muscle power-specific resistance training in community-dwelling older adults.* J Gerontol A Biol Sci Med Sci. 2008 Jan;63(1):83-91.
9. Thiebaud RS, Funk MD, Abe T. *Home-based resistance training for older adults: A systematic review.* Geriatr Gerontol Int. 2014 Aug 11. doi: 10.1111/ggi.12326.
10. Wilson JM, Loenneke JP, Jo E, Wilson GJ, Zourdos MC, Kim JS. *The effects of endurance, strength, and power training on muscle fiber type shifting.* J Strength Cond Res. 2012 Jun;26(6):1724-9.
11. Skelton DA, Young A, Greig CA, Malbut KE. *Effects of resistance training on strength, power, and selected functional abilities of women aged 75 and older.* J Am Geriatr Soc. 1995 Oct;43(10):1081-7.
12. Hostler D et al. *Skeletal muscle adaptations in elastic resistance-trained young men and women.* Eur J Appl Physiol. 2001 Dec;86(2):112-8.
13. Joy JM, Lowery RP, Oliveira de Souza E, Wilson JM. *Elastic Bands as a Component of Periodized Resistance Training.* J Strength Cond Res. 2013 May 9.

Conclusion

RTs are inexpensive and transportable, and utilizing them in technique labs appears to be safe and enjoyable. Many students believe RT training improves their manipulative skills and confidence levels, particularly more advanced students and women.