

Effect of theraband in improving Core Strength in Young Female Students

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Abstract:

Background: Core exercises are designed to train the core muscles that control and stabilize the movements of the abdomen, waist, and hip. The core exercises enhance the control and balance of the body. **OBJECTIVE:** To find the effectiveness of Theraband in terms of core strength.

METHOD: A total of 16 young females were recruited according to the inclusion and exclusion criteria to examine the impact of 5 weeks targeted treatment protocol to check the improvement in core strengthening in young female students with weak core muscles.

RESULTS: The intragroup comparison of pre and post mean values show statistically significant results for all the variables post-training. **Conclusion:** Theraband is an effective tool which can be used in conjunction with exercises to increasing core strength.

Keywords: Core strength, theraband, muscle strength, core muscles.

Introduction

The term 'core strengthening' is used to describe the muscular control required around the lumbar spine to maintain functional stability [1]. The core can be defined as the 29 pairs of muscles that support the lumbo-pelvic-hip complex in order to stabilise the spine, pelvis and kinetic chain during functional movement [2]. When these muscles contract they provide direct support and increased intra-abdominal pressure to the inherently unstable spine [2]. Core strength is important in providing a solid base for the body to exert or resist forces, however according to Anderson and [3] it is still uncertain which type of training is most effective in providing trunk and joint stability in its role in injury prevention and its contribution to balance. Most researchers who studied the use of Swiss ball exercises quantified abdominal muscle activity during the crunch, push-up, and bench press exercises, and typically investigated the recruitment patterns of only 1 or 2 muscles. [4,5,6,7]. Core muscle strength is an important prerequisite for several sport (e.g., track and field, climbing, soccer), and everyday activities (e.g., sitting, standing, walking in an upright position). Anatomically, the core can be described as a muscular box with the abdominals in the front, paraspinals and glutes in the back, the diaphragm as the roof, and the pelvic floor and hip girdle musculature as the bottom [8]. Functionally, the core can be thought of as the kinetic link that facilitates the transfer of torques and angular momentum between the lower and upper extremities that is of vital importance for sport-specific and everyday activities in different age groups [9].

Training with resistance bands is a great way to build muscular strength while improving balance. Because it can be used in a variety of ways, it can increase the strength and improve the muscle tone progressively. Resistance band training provides a linear form of resistance which allows getting a larger range of motion than other strength training methods. Before starting resistance band training, it's important to inspect the band and prepare it for use. Resistance band exercises with a longer band and as progress the performance through move to shorter bands, which will increase the resistance [10]. Core training will also tone the torso and abdominal muscles and improve the posture – if the core is strong, the lower abdominal muscle will be drawn in toward the spine and help to sit up straight. Balance and coordination will be improved, and most important of all, core stability will help to keep the spine healthy and flexible throughout life [11]. Thera – Band resistance bands and tubing are low – cost, portable and versatile, made of natural rubber latex. They are easily recognized by the trademark. Thera – Band colours are Tan

(Chocolate), Yellow, Red, Green, Blue, Black, Silver and Gold. Advancing through the sequential system of progressive resistance provides positive reinforcement and feedback for gauging results. The progressive resistance level speaks of success, the colours tell you it's Thera _ Band. The colours like Tan, Yellow, Red, Green and Blue are specially designed for the beginners; the colours like Black, Silver and Gold are specially designed for advanced athletes.

Table-1: Mean of Demographic and Anthropometric Characteristics of the Experimental Group.

Group	Group (TH)
Age(yrs)	21.125±3.030
Height(cm)	159.250±9.426
Weight(kg)	58.500±10.942
BMI(Kg/M2)	23.237±4.634

Study Design

Present study was experimental in nature where the therapeutic intervention was compared for their efficacy in improving Core Strengthening in Young Female Students.

Table 2: Schematic presentation of research design of study Variables Description

Variables	Description
I. Sample size (n=16)	16 Subjects with weakened core muscles
II. Intervention Theraband	received core strengthening exercises with Theraband.
III. Major outcome measures	1. Manual muscle testing (MMT) 2. Trunk flexion endurance test 3. Trunk extension endurance test 4. Lateral trunk endurance test 5. Front abdominal power test
IV. Frequency of Data Collection	a. 1st day (pre-treatment) b. 5th week (post-treatment)

The present study was designed to examine the impact of 5 weeks targeted treatment protocol to check the improvement in core strengthening in young female students with weak core muscles. Subjects were chosen according to the inclusion and exclusion criteria. Informed consent was obtained from the patients. Condition around the trunk and abdominal area was noted for lesions.

The total treatment duration was of 40 minutes. The study was comprised of 2 stages i.e. First day (pre-treatment assessment) and after 5 weeks (post-treatment assessment).

Core Strengthening with Theraband

For this, green and blue Theraband was used. The group received the following exercises:-

- 1) Theraband abdominal crunch in supine.
- 2) Theraband abdominal oblique in supine.
- 3) Theraband abdominal crunch.
- 4) Diagonal chop/ lift.
- 5) Side bends. (Welling and Nitsure, 2015)



(i) (ii)

(iii)



Fig. 1: Theraband Core Strengthening Exercise Program Photos.

Table 3: Intragroup comparison of pre and post mean values of Group (TH) for all parameters.

Variable	Pre		Post		t-value	p-value
	Mean	SD	Mean	SD		
MMT (Trunk Flexion)	3.06	0.25	4.69	0.48	-13.000	0.001 ^{VHS}
MMT (Trunk Extension)	2.81	0.54	4.69	0.48	-21.958	0.001 ^{VHS}
MMT (Trunk Rotation)	2.69	0.48	4.63	0.50	-31.000	0.001 ^{VHS}
MMT (Elevation of pelvic)	3.00	0.63	4.56	0.51	-9.934	0.001 ^{VHS}
TF End Test	15.88	7.34	42.88	9.11	-18.238	0.001 ^{VHS}
TE End Test	11.94	4.37	38.69	8.14	-15.498	0.001 ^{VHS}
LT F End Test(R)	8.44	3.05	35.13	8.37	-14.641	0.001 ^{VHS}
LT End Test(L)	8.63	4.16	34.00	7.52	-19.662	0.001 ^{VHS}

HS – High Significant ($p < 0.01$), S – Significant ($p < 0.05$), NS – Non-Significant ($p > 0.05$)

Table 3 Shows intragroup comparison of pre and post mean values of group B in which statistically results were observed in all the variables. Manual muscle testing for Trunk flexion(t value=13.330, $p=0.001$), Manual muscle testing for Trunk extension(t value=17.984, $p=0.001$), Manual muscle testing for Trunk rotation(t value=15.492, $p=0.001$), Manual muscle testing for pelvis elevation(t value=17.384, $p=0.001$), Trunk flexion endurance test (t value=11.911, $p=0.001$), Trunk extension endurance test (t value=14.208, $p=0.001$), Lateral trunk flexion endurance test for right side (t value=16.705, $p=0.001$), Lateral trunk flexion endurance test for left side (t value=17.631, $p=0.001$).

Discussion

It was found that the exercises performed with the theraband were extremely efficient at increasing the core strength.

The theraband training method lead to positive effect on the tested variables, the choice of the specific theraband and set of exercises should probably be decided based on individual core strength and the training environment (Aksen-Cengizhan and Pelin et al., 2018)[12].

Elastic resistive bands have a inimitable advantage in that resistance can be developed in any direction the band is elongated. Elastic resistance in theraband is generated linearly by lengthening the elastic band and is directly dependent on the band stiffness and length of the band. The current method of progression with elastic resistance is typically based on the individual's rating of perceived exertion of the exercise difficulty or completion of target number of repetitions that has been found to be effective to increase strength [13].

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