



Original Research Article

Effect of elastic bands as resistance for low back pain treatment in software engineers

Mohammad Sheeba Kauser^{1,*}, Mahendra Yadav², Mohammad Bismil Jaffery¹, C M Shankar³, Hymavati⁴, Shikha Kedia⁵, Kishore Dey⁶

¹Dept. of Physiotherapy, Apex University, Jaipur, Rajasthan, India

²Quality Care Medical Center, Abu Dhabi, UAE

³Physiotherapy, DHH, Sundergarh, Odisha, India

⁴Consultant Sports Physiotherapist, Kakinada, Andhra Pradesh, India

⁵ELITE Women National Boxing TEAM of India

⁶National Centre of Excellency, Itanagar, Arunachal Pradesh, India



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ABSTRACT

Background: software's experience a bad low back pain usually as a result of their lack of good ergonomic and high work request leading to stressed muscles and inclining to bad posture and decrease in quality of life, so to get rid of this we have designed the elastic band resistance exercises which is easy to even perform at work place and need no particular set up.

Materials and Methods: Hundred software engineers of 25 to 45 age group were selected and made into group of 50 and 50 one with traditional treatment and other with elastic band usage, a comparative study was done for 14 weeks with an 45 minute treatment plan. Numeric pain rating scale and VA spine disability Index scales were intervened and measured.

Results: Pvalue (<0.05), t-test values were compared of two groups, enough contrasts were found between both the groups.

Conclusion: post treatment use of elastic resistance bands shown incredible effect on reduction of neck pain in software engineers.

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1. Introduction

As an input of sedantary lifestyle Musculoskeletal issues have become trending issue from decades. This issue is due to excess, strange, or troubling developments. Among all desk jobs are at high treat, software computer engineers whose daily bread earning is by sitting continuous on stretch are at high treat. Musculoskeletal issues include: muscle strain, abominable neck and back postures, dull stress injuries of the neck and shoulder upholds, and psychosocial stressors for back, neck, and shoulder complaints.¹ An occupation in computers is seen as huge challenge with pain, which can begin as it so happens in their enlightening

getting ready.^{2,3} Reiterated unnatural, veered off, or lacking working postures, serious hand advancements, inadequate rigging or workplace plans, and ill-advised work plans are presumably going to be the particular risk factors for musculoskeletal issues. Profession related health issues in India have shown musculoskeletal issues about 40%.⁴

Forward posture in software engineers leading them to a muscle fatigue. These muscles weaken with prolonged forward posture and balanced shoulder posture. Consequently forward posture is the most broadly perceived explanation behind low back pain, craniofacial pain, headache, neck hurt, and shoulder pain and prompts decline in cervical joint development. Progressed photography is a kind of photography that uses cameras containing assortments of electronic photodetectors to get pictures

* Corresponding author.

E-mail address: sheebaishaq.doc@gmail.com (M. S. Kauser).

focused by a point of convergence. Various pros have used progressed photography system as a method for examination for bending posture.⁵

There are various prescriptions for instance electrotherapy including TENS, Hotpacks, laser, control, ultrasound and needle treatment. As shown by Ferreira et al. multimodal physiotherapy program (checking exercises, preparing, and ergonomics) was found as an unrivaled treatment elective for lessening of chronic pain.⁶ Fortifying exercises may lessen pain and augmentation back extent of development and muscle execution. Isometric exercise is commonly used to extend muscle execution. Posture correction. This will incite physical and mental comfort. Body weight, Elastic resistive bands, pulleys and weight machines are a few techniques for dynamic resistive exercises. Quality planning is favorable in decreasing back pain and besides unequivocal quality getting ready with theraband has been seen as preventive as for back pain among military pilots and office workers.^{7,8} A Theraband is an adaptable band used for quality planning. Elastic Resistance band getting ready is directly used extensively as a segment of general health and quality planning. Usually the bands are concealing coded to show different degrees of resistance and customers need to pick a fitting level and are Simple to use and their light weight licenses people to easily use.

2. Material and Methods

2.1. Purpose

software's experience a bad low back pain usually as a result of their lack of good ergonomic and high work request leading to stressed muscles and inclining to bad posture and decrease in quality of life, so to get rid of this we have designed the elastic band resistance exercises which is easy to even perform at work place and need no particular set up.

2.2. Method

Comparative study.

2.3. Methodology

A population of 100 subjects were randomly picked and divided into two groups. Each group consists of 50 subjects each, Group A had traditional treatment with stretching exercises, strenghtening exercises, postural correction, ice packs, ultrasound therapy. Group B- Elastic Theraband exercises and Conventional exercises (Experimental group)

2.4. Sampling

Random sampling.

2.5. Inclusion criteria

Age group 25-50 years

Chronic Back pain, Symptoms more than six months in duration.

SDI Score 14\50, NPRS Score 5/10 Males and females both

Forward bending posture (CV angle <50 degrees)

Evasion measures

Previous history of injury to spine injury, spondolities, acute spondolsthesis, Diagnosed with osteoporosis, Malignancy or other spinal infection, Patients on oral analgics, Diagnosed with Lumbar radiculopathy

2.6. Exclusion criteria

Above 50 age

Menstrual cramps,

Menstrual spasms

Spinal fractures

Surgical fixations

2.7. Rating scales

Numeric misery rating scale (NPRS).VA rating spinal disabilty scale (sdi) Digital photography technique

2.7.1. Control group A

Hot fomentation was given by applied for 15 minutes followed by ultrasound for 10 minutes and 40 minutes of exercise therapy which included Isometrics for back including flexors, extensors, sidelong flexors and Postural amendment included-Nodding, shoulder shrugs and shoulder propping, back stretch workout. Reaching out of trapezius and low back muscles was moreover given to control gathering. Hot fomentation and postural amendment rehearses was given to both the social occasions.

2.7.2. Experimental group B

Elastic Resistance band excercises were added along with the conventional treatment, the elastic band excercises included in four groups for lumbar flexors, extensors, side flexors, and rotators.

The two groups performed excercises for 5 times a week for 14 weeks, Resistance band practice consistently extended security from next level when they had the alternative to performed 6 to 6 7ourses of action of 10 to12 emphases. Exercise was performed with the concealing band that was supported for the patient, or with a concealing that allows the individual being referred to complete 2 to 3 plans of 10 to 15 redundancies with delicate fatigue on the last set. By then Progression was done to the accompanying concealing band when patient had the alternative to complete the 3 game plans of 10 to 15 emphases.⁹

Data was be accumulated on baseline, 7th week and a day back of 14th week. Data was analyzed using SPSS software 21.

3. Results

The Mean and standard deviations for age, height, weight, and weight list (BMI) are showed up for the two groups in Table 1 Comparison of progress in NPRS

The NPRS using unpaired t-test exhibited that there was no imperative differentiation seen between the two groups on seventh week ($p>0.005$), yet a significantly basic difference was seen on 14th week ($p<0.01$) (Table 2).

3.1. Comparison of change in VA SDI between both groups

The between group analysis of the VA SDI using unpaired t-test showed that there was no significant difference seen at baseline and 7th week ($p>0.05$), but a highly significant difference was seen on 14th week ($p<0.01$) (Table 3).

3.2. Between group comparison of CV angle

The between group analysis of the CV angle using unpaired t-test showed that a significant difference was seen at 7th week ($p<0.05$), but a highly significant difference was seen on 14th week ($p<0.01$) (Table 4).

4. Discussion

A profession related musculoskeletal issue (PRMD) is portrayed as a musculoskeletal physical issue that results from a occupational related circumstances. This may result from deferred work time. Reported professional related musculoskeletal issues (PRMD) is around 95% percent among Software engineers. The most widely recognized zones for pain have been shown to be the back (36.3-60.1%) and neck (19.8-85%). This examination broke down two sorts of exercises shows (conventional versus resistance band) in diminishing pain chronic lumbar pain. The outcomes of this assessment revealed that though both the groups improved, around the completion of the 14th week yet extension of "resistance" band works out of group B to the standard exercises (Group A) yielded improved NPRS and VA SDI results.

The outcomes of our examination lead us to excuse invalid hypothesis as needs be certifying that both treatment practice (traditional exercises and elastic resistance band utilization) were convincing in lessening back pain. The eventual outcomes of our assessment are statically critical. They found that a month of solidarity planning achieved lessening pain, insufficiency in subjects encountering chronic lumbar pain.^{9,10} Resistance getting ready with resistance band for spinal muscles have exhibited increase in muscle power in apprentice lifters. Various examinations

have furthermore indicated an additions in power age in the lower body following EB (adaptable band) getting ready. This assessment showed that there are valuable results of resistance getting ready on strong execution.^{11,12}

Quality getting ready with flexible bands have been shown convincing in reducing pain according to the results of an examination done by Mats Hagberg et al.^{13,14} They inspected the effect of solidarity planning on limit of chronically painful muscles. Delayed consequences of the examination revealed that the quality getting ready as treatment for shoulder pain had positive results in women with shoulder pain, masters found that "specific quality planning with the guide of resistance band reduced pain and additions maximal activity and their pain was diminished by 42-49%.¹⁴ Ylinen et al. inspected the effect of unequivocal getting ready with flexible bands to Reduce Chronic Neck Pain and failure. They isolated 180 female office workers with chronic neck pain into three social occasions: one get-together did quality getting ready with adaptable bands (flat shoulder raise) another did high-impact work out, and a third sat inert. They found that "both quality and genuine exercise decreased clear neck agony and hindrance in office laborers.¹⁵

Magni et al. considered the effects of resistance getting ready on muscle quality, joint pain, and hand work in individuals with hand osteoarthritis. They found that resistance getting ready has a slight imperative effect on handle quality or hand work.¹⁶ In the examination performed by Magistro D et al. In their assessment they found the effects of resistance band planning on women having idle lifestyle. As demonstrated by this examination, sound changes can happen using resistance band work out. The results show that a resistance exercise can give sound muscle changes.¹⁷ Gupta et al. in his assessment assumed that in people with neck pain, extension of normal quality and high-load duration retraining of muscles prompts decline in neck pain and related appearances.¹⁸ In an assessment performed by Lidegaard et al. counting office workers, it was found that single a little exercises state for 2 min step by step for 10 weeks with resistance band can enough reduce neck and shoulder pain. In this examination subjects were drawn closer to perform resistance band based exercises for 2 minutes consistently for a period of 10 weeks, and it has incited an important decrease in neck and shoulder pain.¹⁹ Our results are also maintained by Kim et al. they investigated the effects of adaptable band rehearses program on the posture of subjects with balanced shoulder and forward head posture. The delayed consequences of the examination suggested that the quality planning with the guide of adaptable band was valuable in altering balanced shoulder and forward head posture and it showed a basic result.²⁰ To wrap up the two social events were found to be incredible in diminishing pain, insufficiency and forward head posture. Delayed consequences of the

Table 1: Mean comparison of Age, Height, Weight and BMI.

	Group	Mean ± Standard Deviation	t-Value	p-Value
Age	Group A	36.7 ± 6.12	1.762	0.25NS
	Group B	80.72 ± 8.18356		
Weight	Group A	23.66 ± 0.05187	0.452	0.108NS
	Group B	12.5608 ± 0.06187		
Height	Group A	48.36 ± 2.112	0.572	0.78NS
	Group B	48.12 ± 2.12634		
BMI	Group A	21.2 ± 1.681	0.085	0.198NS
	Group B	21.088 ± 1.62923		

*p<.05 (Significant) NS (Not significant)

Table 2: Between group comparison of NPRS.

	Group	Mean ± Standard deviation	t-value	p-value
FIRST NPRS	A	7.92 ± 1.045	0.180	0.1619NS
	B	8.96 ± 0.968		
7th week NPRS	A	10.80 ± 1.041	0.181	0.1619NS
	B	10.76 ± .970		
14th week NPRS	A	8.84 ± .651	24.99	0.000
	B	2.102 ± .918		

**p<0.01HS (Highly significant) -not significant

Table 3: Between group comparison of VA SDI.

	Group	Mean ± Standard deviation	t-value	p-value
VA SDI	A	68.146 ± 2.047	0.644	0.650NS
	B	69.66 ± 2.430		
7th week VA SDI	A	64.0 ± 3.253	0.678	0.840NS
	B	61.36 ± 2.515		
14th week VA SDI	A	43.84 ± 3.325	14.674	0.000**
	B	81.16 ± 1.625		

**p<0.01 HS (Highly significant) -not significant

Table 4: Between group comparison of CV angle.

	Group	Mean ± Standard deviation	t-value	p-value
Cv angle	A	50.48 ± 6.864	2.032	0.521NS
	B	52.56 ± 6.754		
7th week Cv angle	A	60.08 ± 4.753	8.549	0.453
	B	68.08 ± 6.761		
14th week CV angle	A B	86.44 ± 4.256	20.809	0.000**
		96.92 ± 8.291		

**p<0.01 HS (Highly significant) -not significant

assessment revealed that choice of resistance band rehearses as a technique for resistance getting ready program when added to expectedly given exercises which joins (expanding, isometrics and posture modification works out) obtains better updates terms of diminishing pain, handicap and improving forward posture.

5. Conclusion

1. LOW BACK PAIN reduced in both the groups Group B improved far better than A.
2. Lumbar impingement was diminished in both but group B demonstrated best results over A.

3. There was a diminishing in level of forward posture in both the groups, anyway group B shows even
4. More better results.

Overall we assume that Resistance band exercises are more impressive than given exercises in reducing pain, Research hypothesis has been affirmed that resistance band utilization are more impressive in reducing lumbar pain, and increase stability and strength of spinal extensors and a great posture. Resistance bands can replace the heaps and it is definitely not hard to use alone as it will in general be used at home and work place. Resistance bands are ideal for rehearsing any time.

6. Source of Funding

None.

7. Conflict of Interest

None.

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Author biography

Mohammad Sheeba Kausar Research Scholar

Mahendra Yadav Chief Consultant Physiotherapist

Mohammad Bismil Jaffery Research Scholar

C M Shankar Specialist in Physiotherapy

Hymavati Consultant Sports Physiotherapist

Shikha Kedia Team Physiotherapist

Kishore Dey Sports Physiotherapist

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