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Research

Efficacy Of Abdominal Exercises With And Without Elastic Therapeutic Taping In Reducing Diastasis – Recti Among Post-Partal Females

Vishakha Kadam*[1], Mithila Pawar[2], Janvi Rajpal[3]

[1]*Musculoskeletal Department, Motiwala College of Physiotherapy, Nashik Maharashtra, India*
[2]*Community Department, Motiwala College of Physiotherapy, Nashik Maharashtra, India*
[3]*Final year BPTh, Motiwala College of Physiotherapy, Nashik Maharashtra, India*

*Author for Correspondence: Dr. Vishakha Kadam
Email: vishakhakadam810@gmail.com

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Abstract

Pregnancy induces significant physical and mental transformations. The expanding uterus and fetus exert increased pressure on the abdominal muscles and connective tissues. These forces often cause the linea alba to stretch and occasionally split, leading to diastasis recti. Diastasis recti can contribute to lower back pain and strain due to overworked or compensatory muscles, unstable core, pelvic and back muscles, poor posture, shallow breathing, and uterine prolapse. The aim of this study was to assess the efficacy of abdominal exercises alone and abdominal exercises combined with elastic therapeutic taping in reducing diastasis recti in postpartum females, and to compare their respective effects. Thirty postpartum females were randomly assigned to two groups- control and taping group with fifteen females in each group. Control group was provided with conventional exercises like Static abdominal exercise, Head lift, Head lift and pelvic tilt, Pelvic clock exercise which were to be done twice a day with a repetition of 5-7 times for a duration of 4 weeks. Another group of was given exercises in addition to elastic therapeutic taping. Tape was applied in a crisscross design, beginning just below the breast and extending to the superior pubis, twice a week for 4 weeks on the rectus abdominis. Ultrasonography was used to measure diastasis recti before and after the study. The result showed that conventional exercises, as well as conventional exercises combined with taping, are effective in reducing diastasis recti in postpartum females. However, it is found that taping in conjunction with conventional exercises is more effective.

Keywords: Diastasis recti, postpartum females, therapeutic taping, abdominal exercises.

INTRODUCTION

Pregnancy induces significant physical and mental changes. The expanding uterus and growing fetus exert increased pressure on the abdominal muscles and connective tissues. These forces often cause stretching and occasional splitting of the linea alba, leading to diastasis recti abdominis.

Diastasis recti is a prevalent complication post-pregnancy. It is characterized by the separation of the two rectus abdominis muscles along the linea alba. This increased inter rectus distance (IRD) can be congenital but commonly develops during pregnancy and the early postpartum period.

In pregnancy, many women experience an increase in the inter-recti abdominal muscle distance due to stretching and thinning of the linea alba. A widening of more than 2.7 cm at the umbilicus is considered a pathological diastasis of the rectus abdominis muscle (DRAM).

DRAM(Diastasis of the rectus abdominis muscle) occurs because of hormonal elastic changes of the connective tissue, mechanical stresses placed on the abdominal wall by the growing fetus, and displacement of the abdominal organs[2,3,6].DRAM generally appears in the second trimester of pregnancy and is found more commonly in the third trimester[2]. Studies have demonstrated that the inter-recti distance increases at approximately 14 weeks of gestation and continues to increase until delivery[3]. Natural resolution and greatest recovery of DRAM occurs between 1 day and 8 weeks after delivery, after which time recovery plateaus[7].

DRAM is very common and can have negative health consequences for women during ante-and postnatal periods. Varying estimates of incidence of DRAM have been reported ranging from 66% to 100% during the third trimester of pregnancy, and up to 53% immediately after delivery[7,8]. The abdominal wall plays major functions in posture, trunk and pelvic stability, respiration, trunk movement and support of the abdominal viscera.

An increase in inter-recti distance, or diastasis recti, can significantly weaken the abdominal muscles, impacting their ability to function effectively. This can lead to altered trunk mechanics, impaired pelvic stability, and changes in posture, ultimately making the lumbar spine and pelvis more susceptible to injury.

Diastasis recti can contribute to lower back Kinesio taping (KT) is becoming increasingly popular.Taping has become a widely used rehabilitation modality for the prevention and treatment of musculoskeletal conditions[15]. Kinesio taping is to facilitate muscle activation. It enhances blood and lymph circulation. It may regulate muscle and facial tension.it also stimulates mechanoreceptors by its application on skin[14]. It improves sensory feedback. In diastasis recti there is stretching of fasia which decreases sensory perception. Elastic therapeutic taping helps in improving sensory feedback[15].

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METHOD

Study design: Accessor blinded Pilot RCT
Study area: Smt Kashibai Navale Medical College and General Hospital, Pune.
Sampling method: Random sampling method
Sample size: 30
Outcome Measure: Pre and post measurement of diastasis recti are taken by Ultrasonography

Inclusion criteria

1. Vaginal delivery with or without Episiotomy.
2. Primiparous and multiparous women.
3. 6 weeks and more post partum females with separation of linea alba more than 2.7cm.

Exclusion criteria

1. Cesarean section
2. Fibroid uterus
3. History of polyhydraminous during pregnancy
4. Abdominal and spinal surgery and Systemic illness

Ethical clearance was obtained from the institutional ethics committee. Informed written consent was taken from each subject. Ultrasonography was used to check subjects for Diastasis recti at the umbilical level. The inter-recti distance was recorded as the pre-test measurement. Subjects were randomly assigned to two groups: an exercise group and an exercise + taping group. Each group had 15 subjects. One group was taught exercises, while the other group was taught exercises along with elastic therapeutic taping.

Exercises includes

Static abdominal exercise

Subject in supine lying with her arms crossed over the diastasis for support. And subject has to draw or pull the abdomen inwards so that there elicits an isometric contraction of abdominal muscles and repeated this for 5-7 times[16].

Head lift

Subject placed in Hook lying with her hands crossed over midline at the level of the diastasis for support, subject were asked to exhale and lift only her head off the floor or until the point just before a bulge appears. At that time, subjects hands were gently approximate the rectus muscles toward midline and lower her head slowly and relax[16].

Head lift and pelvic tilt

Subject were placed in hook-lying with her arms crossed over the diastasis for support and slowly her head was lifted off the floor while approximating the rectus muscles and performing a posterior pelvic tilt, then slowly lower her head and relax[16].

Pelvic clock exercise

In this exercise regime, subject will be placed in hook-lying, and will be asked to visualize the face of a clock on her lower abdomen. Later subject begin with gentle movements from12 to 6 o'clock, as instructed to move from 3 o'clock to 9 o'clock. Then move in a clockwise manner from 12 to 3 to 6 to 9 and then back to 12 o' clock [16].

These exercises were requested to be performed twice daily with a repetition of 5-7 times for a duration of 4 weeks[16]. Another group of subjects were instructed in all of the aforementioned exercises in addition to elastic therapeutic taping. Tape was applied in a criss-cross design, beginning just below the breast and extending to the superior pubis, twice a week for 4 weeks on the rectus abdominis[16]. Subsequently, a post-test measurement was obtained via ultrasonography of Diastasis Recti, measuring the inter recti distance. The gathered information was analyzed using appropriate statistical analysis tools to ascertain the results.

Fig 1 : Elastic therapeutic taping for diastasis recti

Fig 2: Measurement of diastasis recti by ultrasonography

RESULTS

Table1: It shows statistical analyses Diastasis recti pretest and post test values of exercise group

Variable	Diastasis recti Examination Mean±SD	P value
Pre test	2.9±0.11	0.000*
Post test	2.6 ±0.09	

Table 2: Diastasis recti pretest and posttest values of exercise + elastic therapeutic taping group

Variable	Diastasis recti examination Mean±SD	P value
Pre test	2.9±0.11	0.000*
Post test	2.4±0.1727	

Table 3: Comparison of effect of abdominal exercises versus effect of exercise and elastic therapeutic taping

Variable	Diastasis recti examination Mean±SD	P value
Post test (Exercise)	Mean =2.6± 0.09	0.000*
Post test (Exercise + taping)	Mean = 2.4±0.17	

DISCUSSION

In a study involving 30 postpartum females, the pretest diastasis recti means were found to be similar for both the exercise and exercise with taping groups, indicating that the groups were well-matched. Following the treatment, both groups demonstrated statistically significant improvements in reducing inter-recti distance (IRD).

Moreover, the minimal clinically important difference (MCID) for IRD is established as 0.27 cm. In this study, the observed differences were 0.32 cm and 0.44 cm for the exercise and exercise with taping groups, respectively. These findings suggest that both interventions resulted in clinically significant improvements.

Abdominal exercises performed in cases of diastasis recti act as a harness, generating adequate intra-abdominal force to prevent the condition from worsening. These exercises facilitate concentric activation of the abdominal muscles. Additionally, taping provides sensory feedback to the overstretched fascia of the abdomen.

In this study, elastic therapeutic taping has demonstrated its effectiveness in alleviating discomfort, facilitating deep breathing, and enabling pregnant women to engage in physical exercise and activities of daily living with reduced difficulty. Additionally, it stabilizes the extent of diastasis and potentially prevents further separation while the patient strengthens their abdominal muscles.

Both groups exhibited improvement, with a slightly greater degree of improvement observed in the exercise with taping group. This suggests that taping serves as a valuable adjunct to conventional exercises, potentially accelerating the recovery process for diastasis.

CONCLUSION

The research study concludes that conventional exercises, as well as conventional exercises combined with taping, are effective in reducing diastasis recti in postpartum females. However, it is found that taping in conjunction with conventional exercises is more effective in achieving this goal.

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