International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

The Effectiveness of Physical Therapy Interventions in Management of Diastasis Recti in Postpartum Females: A Narrative Review

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ABSTRACT:
Diastasis recti is a condition caused by increased intra-abdominal pressure which causes the linea alba to stretch resulting in a wider inter-rectus gap. It is most common after pregnancy but can also be caused by obesity or previous abdominal procedures. Research shows myofascial laxity affecting the entire front abdominal wall. Postpartum women have a doubling of the interrectus distance and pregnancy affects abdominal muscle strength with nulliparous women having a higher number of trunk flexors and rotators [1]. DRA is mostly treated conservatively. Patients referred to a physiotherapist receive training programmes that specifically target reducing IRD. Some studies recommend training with physiotherapist, while others let patients train on their own. Recommended frequency of training sessions varied from one to five sessions per week. The exercise interventions consist of the following: Core trainings, Breathing technique and Mindfulness teaching. This study aims to find out the effectiveness of different physical therapy interventions in the treatment of diastasis recti abdominis. The condition of diastasis recti abdominis has prevalence in postpartum females and it is important to address this for the welfare of women and required to explore the best physical therapy treatment available.

KEYWORDS: Diastasis Recti, Postpartum females, DRA, Physical therapy interventions, Exercises.

INTRODUCTION:

Diastasis recti is caused by hormonal release which occurs in two out of every three postnatal women with significant cases occurring within 92 hours of delivery, after 6 weeks, and 6 months. DRA, a disorder causing abdominal pain, can be caused by hormonal changes, neuro-developmental issues or laxity [2]. Because of hormones like oestrogen, progesterone and Relaxin level increases that result in a decrease in the strength of connective tissue and Linea alba, it can also be observed during pregnancy. Thus, the sustained elevated stretch in conjunction with hormonal changes causes the Linea Alba to break which in turn causes DRAM [3]. Exercise with weakened pelvic floor and abdominal muscles can cause pelvic girdle pain, urinary incontinence, and pelvic organ prolapse. Around 17% of women report discomfort, 11% lumbar pain, and 5% mixed pain after pregnancy. Women often stop jogging due to leaking urine, vaginal pressure, and uneasiness [4]. Sperstad et al. found that women with DRA were no more likely than women without DRA to experience lumbopelvic discomfort 12 months after giving

birth, and mild DRA was not associated with lumbopelvic pain [5]. Benjamin et al. observed no association between DRA and lumbopelvic pain or incontinence. The risk factors for DRA are poorly understood and not commonly accepted [6]. Several risk factors have been identified, including multiparity, maternal age and high age, caesarean section, macrosomia, numerous pregnancies, ethnicity, heavy lifting, BMI, and diabetes. Caesarean section seems to be a risk factor only in women who have given birth twice [7]. DRA, a condition primarily caused by hormonal changes or pregnancy-induced mechanical effects on abdominal musculature, can impair the mechanical control of the abdomen, impacting posture, stability, respiration, parturition, elimination, and abdominal visceral support [8].

CLINICAL PRESENTATION

Pregnancy and vaginal delivery both impact the pelvic floor muscles, resulting in a larger levator hiatus and weakened pelvic floor muscles in the first year after birth. Furthermore, women who are primiparous have a substantially greater gap between the two bellies of the recti abdominis muscle than those who are nulliparous. An increasing inter-rectus distance (diastasis recti abdominis) is associated with weaker abdominal muscles. There are two competing hypotheses whether general postpartum exercise damages and overloads these muscles or whether it helps to strengthen and repair muscular strength and function [9].

Abdominal pain: DRA is most likely caused by hormonal changes or the physical effects of pregnancy on the abdominal musculature. A woman's abdominal musculature is critical for trunk control and function during pregnancy and after childbirth [10].

Lumbar pain, pelvic pain, and self-perceived disability due to low back pain: Low back pain-related lumbar pain, pelvic discomfort, and self-perceived impairment. Medical professionals frequently advise women to wait to resume sexual activity until after the three-week postpartum checkup [11].

Urogynecological complaints: The short-form Pelvic Floor Distress Inventory and the short-form Pelvic Floor Impact Questionnaire are two complementary health-related quality-of-life surveys for female urinary/fecal incontinence, urgency, and pelvic organ prolapse. Each questionnaire is scored on a range of 0 to 300, with higher scores indicating increased discomfort and a negative impact of symptoms on quality of life [12].

Physical complaint: The link between DR and pregnancy has been particularly well documented with all describing physiologically high percentages of DR during the third trimester and persistence in one-third up to 12 months postpartum. These include: high and low back pain, stomach pain, pelvic girdle pain, urine and fecal incontinence, pelvic organ prolapse, and muscle weakness [13].

METHODS

Study design: The design of the current study is a narrative review. The design was chosen to give an overview of previous research about treatment and interventions of diastasis recti postpartum females.

Data collection: Searches on electronic databases were conducted to identify all potentially relevant articles that were published between the year 2009 and 2024. A Google scholar search strategy was developed using 3 concepts:

1. Postpartum females with diastasis recti.
2. Rehabilitation of diastasis recti.
3. Exercises related to the DRA.

The electronic databases used were Google Scholar and PubMed. Manual searches of reference list of

included articles were undertaken to search for possible studies not captured by the electronic searches. **First**, the title and abstract were screened for eligibility. **Second**, the full text papers were assessed to verify whether the study met the inclusion criteria.

Inclusion Criteria: Articles that were published between the year 2009 and 2024

- Full text available
- Published in English language
- Experimental studies

Exclusion Criteria: Articles that were published before 2009 were excluded

- Abstracts
- Conference papers
- Thesis
- Other type of studies (Systematic Review, Case Studies, Observational studies)

RESULTS:

S.no	Authors/years	Type of study	Participant	Outcome measure	Intervention Treatment	Duration	Results
1	Faith C. Laframboise et.al, 2021	RCT	n=8 mean Average age =35.6 ± 3.2 years 3 months postpartum	Nylon calipers, International Physical Activity Questionnaire (IPAQ), Unilateral Hip Bridge Endurance Test (UHBE)	Exercise teachings, Breathing methods: diaphragmatic Breathing core exercises, breathing techniques, and mindfulness teachings, planks,	6-weeks, and 12-weeks	Exercise interventions delivered in a virtual setting may be effective for decreasing the severity of DRA in postpartum women
2	Sinéad Dufour et.al, 2019	Pre-post cohort pilot study	n=30 Average : 38.03 Postpartum women	IRD Digital palpation (finger width), callipers, or ultrasound	Core breath Single leg t-position clap Bridging active straight leg raise	one-time multicomponent	Intervention, all outcomes measures improved with statistically significant changes in IRD (finger width), LA

					(ASLR), Pelvic Floor Disability Index.		integrity, and LA tension generation.
3	Mahalakshmi V et.al, 2016	Quasi-experimental study	n=54 VD and n=42 cesarean section mean age of 26.25 (± 3.61) years Primiparous women	Finger palpation	Strengthening exercises *Seated squeeze*,Pelvic tilt ,Heel drop with core activation.	exercises for 6 weeks	There was a significant improvement in the reduction of DRA within the groups at p <0.01.
4	Sanjivani Ramesh Khandale et. al, 2016	Pre post design	(N=40) female Average:21.7	Finger Palpation Technique, caliper technique	Static abdominal, exercise Head lift with posterior pelvic tilt exercise, Double Straight Leg Raising Exercise, Superman exercise,	30min/day, 5 times/ week for period of 8 weeks.	The result of this study shows that abdominal exercises are very effective in reducing diastasis recti in early postpartum women and inter recti distance.
5	Ali A. Thabet et.al, 2019	RCT	n=20 Average age 17.6 postpartum women	Digital nylon calipers S Physical Functioning Scale (PF10)	Deep core stability and strengthening program, diaphragmatic breathing, pelvic floor contraction , plank, and isometric	3 times a week, for a total duration of 8 weeks.	The deep core stability exercise program, inter-recti separation had a high statistically relevant decrease, (P<0.0001),

					abdominal contraction		
6	Gandhali Situt et. al, 2021	RCT	N=40 Age 20- 30 Group A A-20(NMES along with core stabilization exer) Group B-20(taping along with core stabilization exercises.) 6 weeks postnatal	IRD, MMT, 't' test	strengthening exercises, core stabilization exercises	4 week protocol was followed including 3 sessions every week for both the groups	The study concluded that NMES along with core stabilization exercises is effective in recovery of diastasis recti and increasing abdominal muscle strengthas well as improvement in its complications like low back pain.
7	Dalia M. Kamel et.al, 2017	RCT	N=60 Group A (n=30) NMES+abdominal exercises Group B (n=30) Abdominal exercises 2 months postnatal Female	index (BMI), waist/hip ratio, inter recti distance (IRD),	abdominal muscle strength	3 times per week for 8 weeks	NMES helps reduce DRAM in postnatal women; if combined with abdominal exercises, it can augment the effects.
8	Nisha Acharry and Krishnan Kutty, 2015	a cross-sectional study design	(n=30) 23 years to 34 years, 1 month after delivery	't' test palpation test, ultrasound	Strengthening exercise, Abdominal exercise with bracing	1 day and 8 weeks	After the exercise regimen and bracing the Diastasis recti muscle separation

					Pelvic clock exercise, Head lift and pelvic tilt with bracing		by finger palpation was found to be reduced
9	Rutuja Amit Lalingkar, 2019	Clinical trails	N=20 20 to 30 years after 6 weeks postnatal period	IRD are finger width method, caliper method, tape measure, ultrasound, CT and MRI.	(NMES) and abdominal muscle strengthening Exercises	3 days/ week for 4 weeks	Inter recti distance was significantly reduced in women given electrical stimulation above umbilicus (2.000±0.4714), at umbilicus (2.000±0.6667) and below umbilicus (1.800±0.4216).

DISCUSSION:

Diastasis rectus abdominis (DRAM) is a common condition in postnatal women, often untreated. A study found a strong relationship between DRAM size and physical activity before and during pregnancy. Obesity and the android type of body were identified as risk factors. A novel physiotherapeutic program involving exercises, education, and kinesiotaping was effective in 95% of the exercise group. Proper physical activity, abdominal exercises, and muscle tone can reduce DRAM size. Abdominal exercises should be continued until diastasis is reduced.

Physiotherapy most recommended Exercises: Diaphragmatic Breathing, Lateral Costal Breathing, pelvic floor muscles Planks And Modified Planks Exercises, Core Stabilization Exercises, Heel drop with core activation, Heel slide with core activation, Static abdominal exercise, Pelvic tilts, Head lift with posterior pelvic tilt exercise, Head lift and pelvic tilt with bracing, Pelvic clock exercise, Double straight leg raising exercise, Superman exercise, Curl Up, Head lift, twisted curl-up and curlup exercises, Postural Awareness and Modification [4].

Physical exercise therapy: Therapists recommend abdominal workouts during pregnancy and postpartum for improving IRD. However, there is no uniform therapeutic exercise plan. Exercise training focuses on transversal and rectus abdominis muscles, which can alter the LA and prevent or

reduce AD. Core movement and abdominal support can effectively treat and reduce back discomfort caused by DRA. Recommended exercise duration is 5 days per week for 12 weeks, with different dosages for different durations [14].

Postpartum Physical Therapy for Deep Abdominal Pain: The study suggests non-exercise physical therapy, including abdominal adhesives, exercise tape, electrical stimulation, and manual therapy, can reduce deep abdominal pain in the early postpartum period, with external support garments offering biofeedback. Electrical stimulation benefits in treating diastasis recti and more effects can be seen during first month of postpartum and decreases with time [15].

Non-exercise physical therapy: The study suggests that non-exercise physical therapy, including abdominal adhesives, exercise tape, electrical stimulation, and manual therapy, can help reduce the prevalence of deep abdominal pain (DRA) in the early postpartum period. Techniques include deep core training, abdominal binding, and elastic tape. Manual therapy, such as visceral manipulation (VM), muscle energy technique, myofascial release, and trigger point release, can also be beneficial. External support garments can also offer biofeedback to help the muscle relax [16].

Quality of life: DRA, a common prenatal and postpartum health issue, can lead to lower back pain, decreased function, and poor quality of life. Studies suggest elevated IRD may improve postural control but not colorectal function. Deep core stability exercise can improve postpartum women's quality of life [16]. Postpartum women can prevent or treat DRA by re-training their movements, managing intra-abdominal pressure, and strengthening abdominal muscles. Workouts targeting the entire abdominal complex can reduce DRA breadth and improve functional performance [17].

CONCLUSION:

The aim of this study was to review the current published evidence regarding the effectiveness of physical therapy interventions in management of diastasis recti in postpartum females. Diastasis rectus abdominis (DRA) is a common condition in postnatal women, often untreated, so they are developed with serious complications such as urinary incontinence, pelvic floor muscle weakness, lumbopelvic pain, and pelvic floor dysfunctions, faecal incontinence, and pelvic organ prolapse. The risk factors for the occurrence of this condition are physical inactivity, obesity, and the android type of body. Furthermore, a physiotherapeutic program that involves exercises, education, Kinesio taping, Abdominal exercise with bracing, neuromuscular electrical stimulation can also reduce DRAM size. In addition, an online exercise intervention may be effective in reducing DRA. As less data is available on specific physical therapy treatment, best quality researches should be conducted on large scales. It would help to get standardized physical therapy assessments and protocols for the treatment of diastasis recti.

CONFLICTS OF INTEREST:

The authors declare that they have no conflict of interest.

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