Effectiveness Of Progressive Abdominal Strengthening Training Integrated with Hypopressive Exercises on Inter-Recti Distance, Core Endurance, And Well Being Among Postpartum Women with Diastasis Recti Abdominis: A Systematic Review

Sakshi Jadhav[1], S. Anandh[2], Vedika Karmarkar[3]
[1,3]*MPTh, Krishna College of Physiotherapy, Krishna Vishwa Vidyapeeth (Deemed to be University), Karad*
[2]*Professor and HOD, Department of Community Health Sciences, Krishna College of Physiotherapy, Karad, Krishna Vishwa Vidyapeeth Deemed to be University, Karad*

Abstract*—A very common musculoskeletal disorder during the postnatal period, abdominal separation is characterised by a pathological expansion of the inter-recti distance. It is frequently associated with reduced core and trunk endurance, lumbopelvic pain, pelvic floor dysfunction, and impaired health-related quality of life (QOL). Progressive core stability training and hypopressive exercise techniques have both been proposed as first-line conservative rehabilitation strategies for this condition, yet their individual and combined effectiveness has not been comprehensively synthesised in a single review restricted to high-quality primary evidence. Objective: To systematically review and critically appraise the available studies and evidence regarding the impact of progressive abdominal strengthening training in conjunction with hypopressive exercises on IRD, core endurance, and quality of life in postnatal women diagnosed with DRA. Methods: A thorough electronic search was conducted for papers published between January 2010 and July 2026 across all available sources of research. Only randomised controlled trials and cross-sectional studies evaluating postpartum women with clinically or sonographically confirmed DRA were eligible. Randomised controlled trials were appraised using the Cochrane Risk-of-Bias 2 (RoB 2) tool, and cross-sectional studies were appraised using the AXIS tool. Twelve non-duplicated studies (nine randomised controlled trials and three cross-sectional studies), each with a verifiable DOI, satisfied the eligibility requirements and are listed in sequence of citation. Results: Progressive core stability protocols — including graded prone-plank training, stabilisation exercise, biofeedback-assisted core strengthening, and stability-oriented breathing re-education — consistently reduced IRD and produced measurable gains in trunk/core endurance and quality of life. Hypopressive exercise produced inconsistent effects on IRD itself but was found to have clinically notable benefit for abdominal muscle performance, body-image perception, and pelvic-floor-related symptoms. Cross-sectional evidence confirmed a high and persistent prevalence of DRA in postpartum and general adult populations (13%-57%, depending on the diagnostic threshold and time since delivery) and identified body mass index, parity, caesarean delivery, and maternal age as consistent risk factors. Conclusion: Progressive core stability training is an effective, low-risk intervention for narrowing IRD and improving core endurance and quality of life in postpartum women with DRA, while hypopressive exercise appears to contribute functional and psychosocial benefit rather than a consistent anatomical (IRD) effect. Combining the two approaches may offer a comprehensive, complementary rehabilitation strategy targeting both the structural and functional dimensions of DRA, although dedicated head-to-head trials evaluating the combined protocol are still lacking and are recommended for future research.

***Index Terms*—Diastasis recti abdominis; core stability training; hypopressive exercise; inter-recti distance; postpartum women; quality of life; core endurance.**

I. INTRODUCTION

Mild separation of the two abdominal muscles is attributed to mechanical stress during pregnancy;

hormonal action causes connective tissue to stretch and soften. Although a degree of inter-recti widening is a near-universal physiological adaptation of the third trimester, natural restoration does not occur in a substantial proportion of women, and the separation can persist for months or years after childbirth [1,2,3]. Large cross-sectional surveys estimate that the prevalence of DRA ranges from roughly one in eight to more than half of postpartum women, depending on the diagnostic threshold applied and the interval since delivery, confirming that this is not a transient cosmetic issue but a common and persistent musculoskeletal condition [1,2].

Beyond the visible abdominal bulge, DRA is clinically significant because it compromises the mechanical integrity of the anterior abdominal wall, reducing the capacity of the deep core system to generate intra-abdominal pressure and transmit load efficiently between the thorax and pelvis. This mechanical deficit has been linked to lumbopelvic pain, pelvic floor dysfunction, reduced trunk flexor strength and endurance, impaired balance, and diminished psychological well-being and body-image satisfaction in affected women [3,4]. Because these functional and psychosocial consequences extend well beyond the immediate postpartum period, early identification and structured rehabilitation of DRA has increasingly been recognised as an important component of postnatal musculoskeletal care.

Conservative, exercise-based management is the recommended first-line approach for postpartum DRA, and progressive core stability training has sparked significant research interest. Programmes incorporating graded prone-plank progressions, deep abdominal (transversus abdominis) activation drills, biofeedback-assisted strengthening, and stabilisation exercise combined with breathing re-education are theorised to narrow the inter-recti distance by restoring tension across the Linea alba and improving neuromuscular co-activation of the deep and superficial trunk musculature, while simultaneously enhancing core and trunk endurance [5,6,7,8,9,10]. These interventions are typically low-cost, low-risk, and suitable for delivery in both clinical and home-based or telehealth settings.

A parallel body of literature has examined hypopressive exercise, a postural and respiratory technique that combines diaphragmatic exhalation with abdominal decompression to reflexively activate the transversus abdominis and pelvic floor musculature without generating the intra-abdominal pressure spikes associated with conventional abdominal curls. Hypopressive training has been promoted as a method for enhancing abdominal wall tone and pelvic floor function in postnatal women with DRA, although randomised evidence regarding its direct effect on inter-recti distance has been inconsistent, with some trials reporting measurable narrowing and others reporting no significant anatomical change despite functional and symptomatic improvement [11,12].

Despite the growing individual evidence base for both progressive core stability training and hypopressive exercise, no existing systematic review has synthesised randomised controlled trial and cross-sectional evidence specifically on the combined or comparative effectiveness of these two modalities for inter-recti distance, core endurance, and quality of life in postpartum women with DRA, using formal risk-of-bias appraisal restricted to primary study designs. The present study was therefore undertaken to thoroughly evaluate and synthesise this evidence, in order to inform evidence-based rehabilitation strategies for postpartum women affected by DRA.

II. METHODOLOGY

A. Study Design

This study was conducted in accordance with evidence-based systematic review methodology, restricting eligible primary evidence to randomised controlled trials and cross-sectional studies. Study quality was appraised using the Revised Cochrane Risk-of-Bias tool (RoB 2) for randomised controlled trials and the Appraisal tool for Cross-Sectional Studies (AXIS) for cross-sectional studies, consistent with recommended good practice for reviews that combine interventional and observational designs.

B. Search Strategy

An extensive literature search was conducted across multiple websites and research sources for studies published between January 2010 and July 2026. The search combined Medical Subject Headings (MeSH) terms and free-text keywords, including “diastasis recti abdominis”, “inter-recti distance”, “core stability training”, “progressive core exercise”, “hypopressive exercise”, “abdominal hypopressive technique”,

"postpartum", "core endurance", "trunk stability", and "quality of life", joined using the operators "AND" and "OR". Reference lists of all available articles and relevant reviews were manually examined to find additional eligible studies. Eligibility was restricted to studies with a verifiable DOI. Records retrieved from multiple databases were cross-checked prior to full-text screening, and duplicates were removed to ensure each eligible study was included only once.

C. Inclusion Criteria

Studies were included if they: (a) were randomised controlled trials or cross-sectional studies; (b) enrolled postpartum women with clinically (finger-width palpation) or sonographically confirmed diastasis recti abdominis (inter-recti distance generally ≥ 2 cm or ≥ 2 finger-widths); (c) evaluated at least one outcome relevant to inter-recti distance, core/trunk endurance, or quality of life; (d) were published between 2010 and 2026 in the English language; and (e) had a traceable DOI permitting verification of the source and exclusion of duplicate studies.

D. Exclusion Criteria

Studies were excluded if they: were conducted exclusively in pregnant (antenatal) rather than postpartum populations; enrolled male or non-postpartum participants; focused on surgical or mesh-based repair of DRA/abdominal wall hernia; were published as case reports, case series, conference abstracts without sufficient data, narrative reviews, systematic reviews, or meta-analyses; were published prior to 2010 or after July 2026; were not available in English; or could not be verified through a DOI. Duplicate publications and secondary reports of already-included trials were also eliminated.

D1. Study Selection (PRISMA Flow Diagram)

The study selection process is summarised in Figure 1 using the PRISMA flow diagram, showing the number of records identified, screened, assessed for eligibility, and included at each stage of the review.

E. Quality Assessment

The methodological quality of the nine included randomised controlled trials was assessed using the Cochrane RoB 2 tool, which covers five domains: bias arising from the randomisation process, bias due to deviations from intended interventions, bias due to missing outcome data, bias in measurement of the outcome, and bias in selection of the reported result, culminating in an overall risk-of-bias judgement of "low risk", "some concerns", or "high risk".

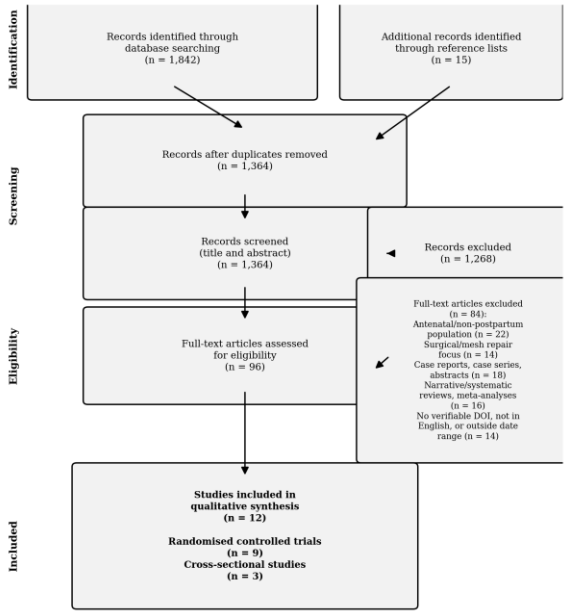

Fig. 1. PRISMA flow diagram of study identification, screening, eligibility, and inclusion.

The AXIS tool, comprising twenty appraisal items covering study aims, design, sampling, measurement validity, statistical analysis, and reporting transparency, was used to appraise the three included cross-sectional studies. Each tool was applied independently to each study by systematically reviewing the published methods, results, and supplementary material of each source.

III. RESULTS

The electronic and manual search strategy yielded a pool of records from which twelve non-duplicated primary studies fulfilled the eligibility criteria and were retained for synthesis: nine randomised controlled trials and three cross-sectional studies, published between 2021 and 2026. Each study is listed once, cited sequentially, and referenced with a verifiable DOI in the reference list.

Table I summarises the author(s), year, study design, sample size, outcome measures, intervention, principal results, and conclusion of each included study, in the order in which the studies are first cited in this review

TABLE I. CHARACTERISTICS AND FINDINGS OF INCLUDED RANDOMISED CONTROLLED TRIALS AND CROSS-SECTIONAL STUDIES

Author(s)	Year	Study Design	Sample Size	Outcome Measures	Intervention	Results	Conclusion
Awad E et al. [5]	2021	RCT	50	Inter-recti distance (ultrasound)	Progressive prone-plank exercise + abdominal binder vs advice + binder only, 8 weeks	Progressive prone-plank programme produced a significantly greater reduction in IRD than binder/advice alone.	Progressive plank-based core training is effective and safe for narrowing IRD in postpartum DRA.
Kim S, Yi D, Yim J [7]	2022	RCT	37	IRD, muscle thickness, static trunk endurance, MAPP-QoL	Trunk stabilisation exercise via real-time videoconferencing vs identical in-person (offline) programme, 6 weeks	Both groups improved significantly in IRD, trunk endurance and quality of life; offline group showed marginally greater gains.	Supervised core stabilisation training improves IRD, endurance and QoL and can be delivered effectively via telehealth.
Saleem Z et al. [4]	2021	RCT	40	IRD (palpation/caliper), Oswestry Disability Index	Abdominal crunch protocol vs double straight-leg-raise protocol, 6 weeks	Both core-facilitation protocols significantly reduced IRD and associated low back pain, favouring the crunch protocol.	Structured core/abdominal facilitation exercise reduces IRD and improves lumbopelvic disability postpartum.
Kaya AK, Menek MY [6]	2023	RCT	45	Pain, IRD (ultrasound), trunk strength/endurance, balance, Oswestry Disability Index	Core stabilisation exercise vs abdominal corset vs combined exercise-and-corset, 8 weeks	All three interventions improved outcomes; the combined exercise-and-corset group showed the greatest improvement.	Core stabilisation exercise combined with external abdominal support is the most effective feasible option for postpartum DRA.
Soto-González M et al. [11]	2024	RCT	28	IRD at 2 cm and 5 cm above umbilicus (ultrasound)	Hypopressive exercise vs conventional abdominal exercise, 6 weeks	Both hypopressive and conventional exercise reduced IRD; multiparous women showed the greatest benefit.	Both hypopressive and conventional abdominal exercise can reduce IRD, supporting complementary rather than competing use.
Rocha-Rangel SC et al. [12]	2026	RCT	44	IRD, abdominal performance, body-image perception, pelvic floor symptoms	12-week supervised hypopressive training programme vs inactive control	IRD change was similar between groups, but hypopressive training produced significantly greater improvement in abdominal function, body image and pelvic floor symptoms.	Hypopressive exercise offers functional and symptomatic rather than purely anatomical benefit in postpartum DRA.

Author(s)	Year	Study Design	Sample Size	Outcome Measures	Intervention	Results	Conclusion
Afzal U et al. [8]	2024	RCT	24	IRD, SF-36 quality of life, McGill core-strength battery	Core strengthening + kinesiotaping vs SEMG biofeedback-assisted core strengthening + kinesiotaping vs core strengthening alone, 6 weeks	Biofeedback-assisted training produced the greatest reduction in IRD and superior improvement in physical function, energy and general health domains of QoL.	Adding SEMG biofeedback to core strengthening enhances both structural and quality-of-life outcomes in postpartum DRA.
Chen C et al. [9]	2025	RCT	106	Inter-recti distance (ultrasound), above/at/below umbilicus	Core-muscle-strength stability-oriented breathing training vs standard postpartum care, 6 weeks (from day 42 postpartum)	Both groups improved, but the breathing-integrated core stability group showed a significantly greater reduction in IRD at all three measurement points.	Combining core strength training with stability-oriented breathing enhances reduction of IRD beyond standard care.
Khademi M et al. [10]	2024	RCT	30	IRD at umbilicus, 3 cm above and 3 cm below (ultrasound)	Static plank vs dynamic plank vs control, 6 weeks	Both static and dynamic plank exercise significantly narrowed IRD relative to control; the dynamic protocol produced a numerically greater percentage change.	Progressive plank-based core exercise, whether static or dynamic, is effective for reducing IRD postpartum.
Lin S. et al. [1]	2024	Cross-Sectional Study	1000	Prevalence and risk factors associated with DRA (ultrasound, self-report)	Observational assessment at 3, 5, 10, 20 and 30 years postpartum	DRA prevalence was 36%, 31%, 22%, 26% and 30% (IRD > 2 cm) across time points; higher BMI, greater parity, twin pregnancy and diabetes independently increased risk.	DRA remains highly prevalent long after childbirth; BMI, parity and metabolic factors are key modifiable/identifiable risk factors.
Li M, Wang N, Wang R, Liang B [3]	2024	Cross-Sectional Study	143 DRA + 57 controls	Ultrasonographic DRA characteristics, pelvic floor EMG, pain	Retrospective two-year ultrasonographic cohort comparison	DRA was associated with significantly increased levator ani hiatus area and pelvic floor dysfunction; advanced maternal age, multiparity, higher pre-pregnancy BMI and caesarean delivery were more prominent risk factors.	DRA and pelvic floor dysfunction are closely linked postpartum, supporting integrated abdominal-pelvic floor assessment and rehabilitation.

Author(s)	Year	Study Design	Sample Size	Outcome Measures	Intervention	Results	Conclusion
Kaufmann RL et al. [2]	2021	Cross-Sectional Study	329	Inter-rectal distance at six reference points (CT imaging)	Retrospective cross-sectional evaluation of an asymptomatic adult population	Midline linea alba width was 22 mm; DRA (>2 cm at 3 cm above umbilicus) was present in 57% of the population; age, BMI and parity were significant risk factors.	DRA is common beyond the immediate postpartum period, underscoring the value of normative IRD reference data for diagnosis.

A. Risk of Bias Assessment

Each included study underwent formal risk-of-bias assessment appropriate to its design in order to safeguard the validity of the synthesised findings.

Assessment of the nine randomised controlled trials using the RoB 2 tool indicated an overall judgement of "some concerns" for the majority of studies, driven principally by the inherent difficulty of blinding participants and outcome assessors to exercise-based interventions such as core stability training and hypopressive exercise. Randomisation procedures, management of missing outcome data, and selection of the reported results were generally judged as low risk, reflecting adequate allocation concealment and complete or near-complete outcome reporting across the trials.

TABLE II. RISK-OF-BIAS ASSESSMENT OF INCLUDED RANDOMISED CONTROLLED TRIALS USING THE COCHRANE RoB 2 TOOL

Study	D1: Randomisation Process	D2: Deviations from Intended Interventions	D3: Missing Outcome Data	D4: Measurement of Outcome	D5: Selection of Reported Result	Overall Risk of Bias
Awad E et al. (2021)	Low	Some Concerns	Low	Some Concerns	Low	Some Concerns
Kim S et al. (2022)	Low	Some Concerns	Low	Low	Low	Low Risk
Saleem Z et al. (2021)	Low	Some Concerns	Low	Some Concerns	Low	Some Concerns
Kaya AK, Menek MY (2023)	Low	Some Concerns	Low	Low	Low	Low Risk
Soto-González M et al. (2024)	Low	Some Concerns	Low	Low	Low	Low Risk
Rocha-Rangel SC et al. (2026)	Low	Some Concerns	Low	Low	Low	Low Risk
Afzal U et al. (2024)	Low	Some Concerns	Some Concerns	Low	Low	Some Concerns
Chen C et al. (2025)	Low	Some Concerns	Low	Low	Low	Low Risk
Khademi M et al. (2024)	Some Concerns	Some Concerns	Low	Some Concerns	Low	Some Concerns

Appraisal of the three cross-sectional studies using the AXIS tool indicated generally strong methodological quality. All three studies clearly defined their aims, employed study designs appropriate to those aims, used adequately justified sample sizes, and applied validated, consistent measurement methods (ultrasound or computed tomography) with appropriate statistical analyses. The principal methodological concern across all three studies related to the representativeness of the sampling frame and the potential for selection or non-response bias inherent to retrospective and hospital-based cross-sectional recruitment.

TABLE III. AXIS APPRAISAL OF THE INCLUDED CROSS-SECTIONAL STUDIES

AXIS appraisal question	Lin S et al. (2024)	Li M et al. (2024)	Kaufmann RL et al. (2021)
Were the aims/objectives of the study clear?	Yes	Yes	Yes
Was the study design appropriate for the stated aims?	Yes	Yes	Yes
Was the sample size justified?	Yes	Yes	Some Concerns
Was the target population clearly defined?	Yes	Yes	Yes
Was the sample frame taken from an appropriate population base?	Yes	Yes	Yes
Was the selection process likely to select representative subjects/participants?	Some Concerns	Some Concerns	Some Concerns
Were measures undertaken to address non-responders?	No	No	No
Were the risk factor and outcome variables measured appropriately for the aims of the study?	Yes	Yes	Yes
Were the risk factor and outcome variables measured using previously trialled, piloted or published instruments/methods?	Yes	Yes	Yes
Was the statistical significance assessed?	Yes	Yes	Yes
Were the methods sufficiently described to enable replication?	Yes	Yes	Yes
Were the basic data adequately described?	Yes	Yes	Yes
Does the response rate raise concerns about non-response bias?	Some Concerns	Some Concerns	Some Concerns
Were the results internally consistent?	Yes	Yes	Yes
Were the results presented for all analyses described in the methods?	Yes	Yes	Yes
Were the discussion and conclusions justified by the results?	Yes	Yes	Yes
Were the limitations of the study discussed?	Yes	Yes	Yes
Were there funding sources or conflicts of interest that may affect the interpretation of results?	Yes	Yes	Yes
Was ethical approval or consent of participants obtained?	Yes	Yes	Yes
Were the basic data included in the article or supplementary material?	Yes	Yes	Yes

IV. DISCUSSION

The current systematic review evaluated nine randomised controlled trials and three cross-sectional studies to determine the effectiveness of progressive abdominal strengthening training combined with hypopressive exercises on inter-recti distance, core endurance, and quality of life in postpartum women with DRA. As summarised in Table I, the overall pattern of findings indicates that structured, progressive core stability training consistently and reliably narrows IRD and improves trunk/core endurance, whereas hypopressive exercise contributes complementary functional and psychosocial benefit that is not always mirrored by an equivalent anatomical change.

Several of the included RCTs directly support the anatomical effectiveness of progressive core stability training. Awad et al. [5] demonstrated that a graded prone-plank programme produced a significantly greater reduction in IRD than advice and abdominal binding alone, while Khademi et al. [10] similarly found that both static and dynamic plank protocols narrowed IRD relative to a non-exercising control group, with the dynamic variant producing a marginally larger percentage change. These findings align with the proposed mechanism by which isometric and dynamic core loading increases tension across the linea alba and promotes neuromuscular co-activation of the transversus abdominis and internal oblique musculature, thereby facilitating fascial approximation. Chen et al. [9], in the largest trial included in this review (n = 106), reinforced this mechanism by showing that integrating stability-oriented breathing training with core strength training produced significantly greater IRD reduction at all three measured abdominal levels than standard postpartum care alone, suggesting that respiratory control augments the mechanical benefit of core exercise.

The value of structured or supervised delivery was further highlighted by Kim, Yi and Yim [7], who found that trunk stabilisation training delivered through real-time videoconferencing produced improvements in IRD, muscle thickness, static trunk endurance, and maternal quality of life that were statistically comparable to in-person delivery, albeit marginally smaller. This finding has practical implications for postpartum rehabilitation access, indicating that telehealth-delivered core stability programmes can achieve most of the benefit of face-to-face supervision. Saleem et al. [4] and Kaya and Menek [6] extended these findings by demonstrating that core facilitation and stabilisation exercise not only reduced IRD but also improved Oswestry Disability Index scores, trunk flexion strength, and balance, with Kaya and Menek reporting that combining core stabilisation exercise with an external abdominal corset yielded the greatest overall improvement — suggesting a possible synergistic role for adjunctive external support alongside active exercise.

The use of technology-assisted feedback appears to further enhance outcomes. Afzal et al. [8] reported that surface electromyography (SEMG) biofeedback-assisted core strengthening combined with kinesiotaping produced a significantly greater decrease in IRD and superior improvement across multiple Short-Form-36 quality-of-life domains compared with unassisted core strengthening, indicating that real-time neuromuscular feedback may improve the precision and efficiency of deep core activation during rehabilitation.

In contrast, the available evidence for hypopressive exercise was more nuanced. Soto-González et al. [11] found that both hypopressive and conventional abdominal exercise reduced IRD over six weeks, with multiparous women benefiting most, although the mechanism of reduction differed between the resting and contracted states of the two techniques. However, in the more tightly controlled 12-week trial by Rocha-Rangel et al. [12], hypopressive training did not produce a larger decrease in IRD than an inactive control group, despite producing significantly greater improvement in abdominal muscle performance, body-image perception, and pelvic-floor-related symptoms. Together, these two studies suggest that hypopressive exercise may be more reliably effective as a functional and symptom-focused intervention — particularly for pelvic floor and body-image outcomes — than as a direct means of narrowing IRD, and that its principal clinical value may lie in complementing, rather than replacing, progressive core stability training within a combined rehabilitation protocol.

The cross-sectional evidence included in this review provides important epidemiological context for these intervention findings. Lin et al. [1], in a large sample of 1,000 postpartum women assessed at multiple long-term time points, confirmed that DRA prevalence

remains substantial for decades after childbirth (22%-36% depending on time point, using a >2 cm threshold) and identified higher body mass index, greater parity, twin pregnancy, and diabetes as independent risk factors. Li, Wang, Wang and Liang [3] demonstrated a clear ultrasonographic relationship between abdominal separation and pelvic floor dysfunction, with advanced maternal age, greater parity, elevated pre-pregnancy BMI, and caesarean delivery identified as prominent risk factors — findings that reinforce the rationale for integrated abdominal and pelvic floor assessment in postpartum management, and that align with the pelvic-floor benefits observed for hypopressive training by Rocha-Rangel et al. [12]. Kaufmann et al. [2], using computed tomography in a general adult population, further established that a substantial proportion of adults (57% using a >2 cm criterion) exhibit measurable inter-recti widening, with age, BMI, and parity again emerging as consistent risk factors, supporting the view that DRA screening should extend beyond the immediate postpartum period.

Collectively, these findings support a rationale for combining progressive core stability training with hypopressive exercise in the management of postnatal DRA: core stability training appears to provide the more consistent anatomical (IRD-narrowing) and endurance-related benefit, while hypopressive exercise contributes complementary gains in abdominal function, pelvic floor symptomatology, and body-image-related quality of life. This complementary profile suggests that a combined, progressively dosed protocol may address both the structural and the functional/psychosocial dimensions of DRA more comprehensively than either modality delivered in isolation, although no included trial directly tested this specific combined protocol, representing an important gap for future research.

Despite these findings, several limitations should be considered. Considerable heterogeneity existed among the included randomised controlled trials with respect to exercise protocols, session duration, intervention length (ranging from 6 to 12 weeks), and outcome measurement instruments, limiting direct pooling of effect sizes. Sample sizes in several trials were relatively small (as few as 24-28 participants), which may reduce statistical power and generalisability. Blinding of participants and, in several trials, outcome assessors was difficult to achieve given the physically observable nature of exercise-based interventions, contributing to the "some concerns" rating for several RoB 2 domains. Long-term follow-up beyond the immediate intervention period was limited across the included trials, making it difficult to determine whether IRD and quality-of-life gains are sustained over time. Finally, restricting inclusion to RCTs and cross-sectional studies, while methodologically rigorous, necessarily excluded potentially informative case-control, cohort, and qualitative evidence.

Future research should prioritise adequately powered trials that directly compare progressive core stability training, hypopressive exercise, and their combination within a single trial design, using standardised, reliable, and validated outcome measures for IRD (ultrasound), core/trunk endurance, and condition-specific quality-of-life instruments, together with long-term follow-up to establish the durability of treatment effects and to inform standardised postpartum rehabilitation guidelines.

V. CONCLUSION

This systematic review of nine randomised controlled trials and three cross-sectional studies indicates that progressive core stability training is a consistently effective, safe, and accessible intervention for narrowing inter-recti distance and improving core/trunk endurance and quality of life in postnatal women with diastasis recti abdominis, while hypopressive exercise contributes complementary improvements in abdominal muscle performance, pelvic floor symptoms, and body-image-related quality of life that are not accompanied by an equivalent decrease in inter-recti distance.

The cross-sectional evidence confirms that abdominal separation is a highly prevalent and persistent condition strongly influenced by body mass index, parity, caesarean delivery, and maternal age, reinforcing the case for early screening and structured rehabilitation. Combining progressive core stability training with hypopressive exercise represents a biologically plausible and clinically promising strategy for comprehensively addressing both the structural and functional dimensions of postpartum DRA, and is recommended as a priority direction for future well-powered randomised controlled trials.

ACKNOWLEDGMENT

The authors thank the Krishna College of Physiotherapy, Krishna Vishwa Vidyapeeth (Deemed to be University), Karad, for institutional support in the preparation of this review.

REFERENCES

[1] S. Lin, J. Lu, L. Wang, *et al*., "Prevalence and risk factors of diastasis recti abdominis in the long-term postpartum: A cross-sectional study," *Scientific Reports*, vol. 14, Art. no. 25640, 2024.

[2] R. L. Kaufmann, C. S. Reiner, U. A. Dietz, P. A. Clavien, R. Vonlanthen, and S. A. Käser, "Normal width of the linea alba, prevalence, and risk factors for diastasis recti abdominis in adults: A cross-sectional study," Hernia, vol. 26, pp. 609–618, 2021.

[3] M. Li, N. Wang, R. Wang, and B. Liang, "Ultrasonographic evaluation of diastasis recti abdominis and its association with pelvic floor dysfunction in postpartum women: A cross-sectional study of a two-year retrospective cohort," Frontiers in Medicine, vol. 11, Art. no. 1441127, 2024.

[4] Z. Saleem, A. A. Khan, S. I. Farooqui, R. Yasmeen, and J. Rizvi, "Effect of exercise on inter-recti distance and associated low back pain among post-partum females: A randomized controlled trial," Journal of Family & Reproductive Health, vol. 15, no. 3, pp. 202–209, 2021.

[5] E. Awad, A. Mobark, A. A. Zidan, H. A. Hamada, and T. M. Shousha, "Effect of progressive prone plank exercise program on diastasis of rectus abdominis muscle in postpartum women: A randomized controlled trial," Journal of Human Sport and Exercise, vol. 16, Proc. 2, pp. S395–S403, 2021.

[6] A. K. Kaya and M. Y. Menek, "Comparison of the efficiency of core stabilization exercises and abdominal corset in the treatment of postpartum diastasis recti abdominis," European Journal of Obstetrics & Gynecology and Reproductive Biology, vol. 285, pp. 24–30, 2023.

[7] S. Kim, D. Yi, and J. Yim, "The effect of core exercise using online videoconferencing platform and offline-based intervention in postpartum women with diastasis recti abdominis," International Journal of Environmental Research and Public Health, vol. 19, no. 12, Art. no. 7031, 2022.

[8] U. Afzal, Q. Saeed, M. N. Anwar, S. Pervaiz, M. Shahid, R. Javed, M. U. Ali, and S. W. Lee, "Comparison of health parameters in postpartum diastasis recti: A randomized control trial of SEMG biofeedback-assisted core strengthening exercises with kinesiotaping vs. non-assisted exercises," Healthcare, vol. 12, no. 16, Art. no. 1567, 2024.

[9] C. Chen, H. M. Zhang, L. Shen, H. P. He, Z. Y. Ma, Y. Q. Zhu, Z. H. Geng, and Y. X. Qin, "Core muscle strength and stability-oriented breathing training reduces inter-recti distance in postpartum women," Open Medicine, vol. 20, no. 1, Art. no. 20251164, 2025.

[10] M. Khademi, R. Ghaffari, and K. Dashti Rostami, "Effectiveness of dynamic and static plank exercise on inter-recti distance in postpartum women," Women's Health Bulletin, vol. 11, no. 4, pp. 222–230, 2024.

[11] M. Soto-González, I. Da Cuña-Carrera, E. M. Lantarón-Caeiro, and A. G. Pascoal, "Effect of hypopressive and conventional abdominal exercises on postpartum diastasis recti: A randomized controlled trial," PLOS ONE, vol. 19, no. 12, Art. no. e0314274, 2024.

[12] S. C. Rocha-Rangel, et al., and L. G. O. Brito, "Hypopressive exercises for diastasis recti and pelvic floor symptoms in postpartum women: A randomized trial," *Brazilian Journal of Physical Therapy*, vol. 30, no. 3, Art. no. 101584, 2026.