|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **(((Pregnant women OR gravida OR pregnan\* OR female OR primipar\* OR postnatal OR post-natal OR post natal OR prenatal OR pre-natal OR pre natal OR postpartum OR post-partum OR post partum)) AND (pelvic floor) AND (muscle training OR physical therapy OR physiotherapy)) OR post-natal care OR prenatal care) AND (low back pain OR back pain)** | | | | | | |
| **Question: Are short-term conservative management techniques such as pelvic floor muscle training (PFMT) during pregnancy or within 1 year following childbirth effective at reducing low back pain (LBP), lumbopelvic pain (LPP), sacroiliac pain (SIJP) and/or pelvic pain (PP) for women during and following pregnancy?** | | | | | **Search databases:**  **PubMed**  **PEDro** | |
| **Author/**  **Year** | **Purpose/Design/**  **Subjects** | **Intervention** | **Measurements** | **Outcomes** | | **Limitations/**  **comments** |
| Morkved S. et al. 2007 | **Purpose**: to assess if a 12-week antenatal training program can prevent and/or treat LPP.  **Design**: RCT in hospital and 3 outpatient PT clinics  **Subjects**: N=301 nulliparous women at 20 weeks of singleton pregnancy; n=148 in training group, n=153 control group | *Training group:* daily home PFMT, 60-minute weekly group training (aerobic exercises, PFMT, and other exercises, and education)  *Control group:*  Education only | - Self-reported LPP  - sick leave  - functional status (Disability Rating Index)  -PFM strength  Outcomes taken at 12 weeks (end of program) and 3 months postnatally | Training group participants significantly less likely to report LPP at 36 weeks (44% verses 56%, p=0.03). No significant difference at 3 months postnatal. No difference in sick leave during pregnancy. Training group had significantly higher scores on DRI (p=0.01). | | Only nulliparous women with singleton pregnancy included. High adherence to home protocol makes this study more applicable to outpatient setting with home exercise program. LPP measured exclusively by self-report, though alterative objective outcome measures are limited. Sick leave measured as binary yes/no, not frequency. Specific LPP not specified (LBP, PP, both, etc.) | |
| Lisi AJ 2006 | **Purpose**: to describe the results of the treatment of pregnant women with LBP using spinal manipulation  **Design**: Retrospective case series  **Subjects**: N=17 pregnant women who sought care for LBP at author’s private chiropractic practice. All without significant complications or neurologic involvement | Patient education, body mechanics, exercise instruction, manual myofascial release, manual joint mobilization, and manual spinal manipulation to lumbar facets and/or sacroiliac joints. | -Numerical pain-rating scale (0-10); MCID considered 2 points | No adverse events were reported. 94.1% of women reported at least 2 point improvement. Average decrease of 4.4 points by termination of care in 4.5 days, with an average of 1.8 visits. | | Sample of convenience, since all subjects taken from author’s private practice. Relatively little information about the nature of the LBP described.  Provides evidence that spinal manipulation may be safe and appropriate during pregnancy, though more evidence, particularly of higher quality, is required. | |
| Kalus SM et al. 2007 | **Purpose**: to determine if two external support garments (BellyBra® and tubigrip) are associated with decreased LBP severity, as well as improved physical activity and quality of life  **Design**: RCT in tertiary referral hospital  **Subjects**: N= 115 pregnant women without complications between 20-36 weeks gestation with LBP, SIJP, or PP. BellyBra® group n= 55, Tubigrip group n=60 | *Intervention group*: BellyBra®  *Control group*: tubigrip | - pain severity (Visual analogue scale)  - frequency of physical activity  -Impact on sleeping, walking, sit🡪stand transfers (Likert scale)  - Satisfaction with Life Scale  -analgesic medication use | Mean VAS scores decreased from 6.1 to 4.5 (p=0.001) in BellyBra® group, and 6.0 to 4.7 (p=0.003) in tubigrip group. No significant difference in pain reduction between groups though both groups experienced significant decreases in pain. BellyBra® group experienced larger improvements in sleeping, sit🡪stand transfers, ambulation, and analgesic use. Both external support devices had positive impact on LBP. | | Few details given about donning protocol (frequency and duration). Overall, participants were pleased with both devices regarding helpfulness and ease of use. No true control was used, so true efficacy verses placebo effect cannot be explored. May be useful in conjunction with other modalities for controlling pain. | |
| Granath AB et al. 2006 | **Purpose**: to compare the effectiveness of land and water based exercise programs on LBP/PP and sick leave during pregnancy.  **Design**: RCT at 3 antenatal care centers  **Subjects**: N=390 pregnant women with non-complicated pregnancies | Duration: 45 minutes of exercise, 15 minutes of relaxation, held weekly starting gestation week 11-12 until birth. Interventions focused on strength, flexibility, and aerobic fitness. Two groups: land based and water based. | - Days of sick leave | Subjects in the LBP water therapy group experienced a decreased rate of sick leave compared to LBP land-based group. No differences were found between land and water based therapy for PP. | | Women with severe PP received individualized programs, while all other subjects received group-based interventions. Randomization conducted by date of birth instead of more robust means. Unclear how to interpret PP results without control group. Little information on either protocol. | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **(((Pregnant women OR gravida OR pregnan\* OR female OR primipar\* OR postnatal OR post-natal OR post natal OR prenatal OR pre-natal OR pre natal OR postpartum OR post-partum OR post partum)) AND (pelvic floor) AND (muscle training OR physical therapy OR physiotherapy) OR (post-natal care OR prenatal care) AND (perineal OR perineum))** | | | | | | |
| **Question: Are short-term conservative management techniques (pelvic floor muscle training, massage) during pregnancy or following childbirth effective at reducing risk of perineal damage, tears, or trauma?** | | | | | **Search databases:**  **PubMed**  **PEDro** | |
| **Author/**  **Year** | **Purpose/Design/**  **Subjects** | **Intervention** | **Measurements** | **Outcomes** | | **Limitations/**  **comments** |
| Shipman MK et al. (1997) | **Purpose**: to determine the effects of antenatal perineal massage on perineal outcomes at delivery.  **Design**: RCT, single-blinded  **Subjects**: N=861 nulliparous women with singleton pregnancy | *Massage*: Self or partner performed perineal massage with almond oil BPC, 3-4 times per week fro 4 minutes, beginning at 6 weeks prior to due date.  *Control*: no massage; standard antenatal care.  *Both groups*: pelvic floor exercises, including 4 exercises, 4 times an hour while awake | Incidence and severity of perineal tears directly after delivery; incidence of instrumental deliveries | Statistically significant reduction in 2nd and 3rd degree tears or episiotomies (6.1%) in massage group. Incidence of instrumental deliveries decreased significantly when adjusted for mother’s age and infant’s birth weight (from 40.9 to 34.6%). Massage provides a greater benefit in mothers over 30 years of age. | | No women with prior pregnancies were included. Large variation in compliance. Low full compliance (32.9%), high partial compliance (52.1%) and relatively high rate of non-compliance (15.0%). | |
| Beckmann MM et al. (2013) | **Purpose**: Examining antenatal perineal massage to decrease the incidence of perineal trauma. **Design**: Cochrane Review of randomized and quasi-randomized controlled trails.  **Subjects**: N=2497 women across 4 trials in the last 4 weeks of pregnancy | Any kind of digital perineal massage performed by the woman or her partner, during at least the last four weeks of pregnancy.  All trials included control, receiving standard care. | **Primary outcomes:** presence of: perineal trauma requiring suturing, first, second, third, or fourth degree perineal trauma, incidence of episiotomy  **Secondary outcomes**: length of second stage of labor; instrument delivery; length of inpatient stay; admission to nursery; Apgar less than 4 at 1 minute/less than 7 at 5 minutes; woman’s satisfaction; post-partum perineal pain, painful sex, sexual satisfaction, urinary/ flatus/fecal incontinence | Women practicing perineal massage were significantly less likely to have episiotomy (RR=0.84, 95% CI 0.74 to 0.95), and overall had lower incidence of trauma requiring suturing (RR= 0.91 (95% CI 0.86-0.96)  Only women with previous vaginal birth experienced statistically significant reduction in pain (RR=0.45, 95% CI 0.24, 0.87). No significant differences between incidence of instrumental delivery, sexual satisfaction, urinary/fecal/anal incontinence. | | Very limited number of trials, though all of moderate to high quality evidence with low risk of bias. Unable to blind participants due to nature of study. | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **(((Pregnant women OR gravida OR pregnan\* OR female OR primipar\* OR postnatal OR post-natal OR post natal OR prenatal OR pre-natal OR pre natal OR postpartum OR post-partum OR post partum)) AND (pelvic floor) AND (muscle training OR physical therapy OR physiotherapy) OR (post-natal care OR prenatal care) AND (perineal OR perineum))** | | | | | | |
| **Question: Are short-term conservative management techniques (pelvic floor muscle training, massage) following childbirth effective at reducing pain and speeding recovery from perineal tears and trauma?** | | | | | **Search databases:**  **PubMed**  **PEDro**  **Embase** | |
| **Author/**  **Year** | **Purpose/Design/**  **Subjects** | **Intervention** | **Measurements** | **Outcomes** | | **Limitations/**  **comments** |
| Peirce CS et al. (2013) | **Design**: single center randomized trial  **Purpose**: to compare biofeedback and pelvic floor muscle training for the initial management of 3rd degree perineal tears.  **Subjects**: N=120 primiparous women with 3rd degree tears; randomized into Early Biofeedback group (n=30) or pelvic floor exercise group (n=90) | *Early biofeedback (EB)*: use of EMG to monitor contraction. 10 contractions, held 5 seconds, 10 second rest. Probe placed intra-anally.  *Pelvic floor exercise (PFE)*: perform Kegal exercises for a 5-minute period.  All protocols to be performed twice a week. Training performed prior to hospital discharge. | Differences in anorectal manometry, Cleveland Clinic continence scores, Rockwood faecal incontinence quality of life scale scores, all at 3 month follow-up. | No statistically significant differences between EB and PFE in any outcomes. No apparent added value to early home biofeedback. | | Poor compliance (less than 70%) in EB group may have contributed to a lack of improvement. EB group subjects stated it was time consuming. Even if useful, EB may not be practical as part of a home exercise program. Unclear why groups were uneven. PFE protocol poorly defined. Baseline readings not recorded, so improvement over the intervention cannot be judged. | |
| Hay-Smith EJ (2000) | **Design**: Cochrane Review, systematic review of randomized or quasi-randomized controlled trials  **Purpose**: Determine whether therapeutic ultrasound (US) is safe and effective for the treatment of acute post-partum perineal pain and persistent perineal pain or dyspareunia  **Subjects**: Post-partum women with perineal pain (acute or persistent) | Studies involving therapeutic US compared to placebo or no treatment, and US compared to other treatment. | **Primary** **outcomes**: maternal function (self care, infant care, sitting, stair climbing, sexual function, etc.)  **Secondary outcomes**: change in severity of pain, persistence of pain, change in bruising and/or edema, complications during wound healing | US more effective than placebo for acute pain (OR 0.37, 95% CI 0.19-0.69). US more effective than pulsed electromagnetic energy for acute pain (OR 0.43, 95% CI 0.22-0.84) at 3 month follow-up. US more effective than placebo for persistent perineal pain (OR 0.31, 95% CI 0.11 to 0.84) and US group more likely to report no pain with intercourse. | | Risk of bias is present in included studies. Many included studies were not blinded.  There may be limited benefit of US compared to placebo. May be a worthwhile additional therapy, but is insufficient to treat the pain of most women with perineal trauma. | |
| Shin TM et al. (2012) | **Design:** Systematic review  **Purpose:** to review the regimens, protocols, and efficacy of scar massage on new or mature scars.  **Subjects:** Pooled N=144 patients receiving scar massage. 10 publications reviewed. Adult and pediatric patients included. Scar location included upper extremity, face, multiple locations, chest, or not reported. | Studies involving scar massage with onset ranging from post-suture removal to 2+ years. | Improvement of scar mobility and appearance, judged by Patient Observer Scar Assessment Scale score (POSAS), Vancouver Scar Scale (VSS) score, scar thickness, patient reported status, subjective clinical appearance (photograph), range of motion, pruritus, pain, mood, depression, or anxiety. | Protocols vary significantly from onset (post-suture removal to 2+ years), duration/frequency (10 minutes twice daily to 30 minutes twice weekly), intervention duration (one treatment to 6 months). Most patients receiving massage for surgical scars (90%) had improved POSAS or appearance scores. Half of patients experienced improvements in POSAS, VSS, mood, ROM, pruritus, pain, depression, and/or anxiety. | | Relatively little high quality evidence exists for scar massage, though it appears to provide some benefit, particularly for post-surgical scars. No perineal scars were included in these studies, though this lends limited evidence to the concept of scar massage for improvements in scar mobility and comfort. | |

**Bibliography:**

1. Dame J, Neher J, Safranek S, Huber TE. Clinical inquiries. does antepartum perineal massage reduce intrapartum lacerations? *J Fam Pract*. 2008;57(7):480-481.
2. Domenjoz I, Kayser B, Boulvain M. Effect of physical activity during pregnancy on mode of delivery. *Am J Obstet Gynecol*. 2014;211(4):401.e1-401.11.
3. Edwards J. Scar management. Nurs Stand. 2003 Sep 10-16;17(52):39-42.
4. Granath AB, Hellgren MS, Gunnarsson RK. Water aerobics reduces sick leave due to low back pain during pregnancy. *J Obstet Gynecol Neonatal Nurs*. 2006;35(4):465-471.
5. Hay-Smith EJ. Therapeutic ultrasound for postpartum perineal pain and dyspareunia. Cochrane Database Syst Rev. 2000;(2):CD000495.
6. Ho SS, Yu WW, Lao TT, Chow DH, Chung JW, Li Y. Effectiveness of maternity support belts in reducing low back pain during pregnancy: a review. J Clin Nurs. 2009 Jun;18(11):1523-32.
7. Ismail SI, Emery SJ. Patient awareness and acceptability of antenatal perineal massage. *J Obstet Gynaecol*. 2013;33(8):839-843.
8. Kalus SM, Kornman LH, Quinlivan JA. Managing back pain in pregnancy using a support garment: A randomised trial. *BJOG*. 2008;115(1):68-75.
9. Kelly M, Tan BK, Thompson J, et al. Healthy adults can more easily elevate the pelvic floor in standing than in crook-lying: An experimental study. *Aust J Physiother*. 2007;53(3):187-191.
10. Labrecque M, Eason E, Marcoux S, et al. Randomized controlled trial of prevention of perineal trauma by perineal massage during pregnancy. Am J Obstet Gynecol. 1999;180(3 Pt 1):593-600.
11. Lisi AJ. Chiropractic spinal manipulation for low back pain of pregnancy: A retrospective case series. *J Midwifery Womens Health*. 2006;51(1):e7-10.
12. Miquelutti MA, Cecatti JG, Makuch MY. Evaluation of a birth preparation program on lumbopelvic pain, urinary incontinence, anxiety and exercise: A randomized controlled trial. *BMC Pregnancy Childbirth*. 2013;13:154-2393-13-154.
13. Morkved S, Salvesen KA, Schei B, Lydersen S, Bo K. Does group training during pregnancy prevent lumbopelvic pain? A randomized clinical trial. *Acta Obstet Gynecol Scand*. 2007;86(3):276-282.
14. Premkumar G. Perineal trauma: reducing associated postnatal maternal morbidity. RCM Midwives. 2005 Jan;8(1):30-2.
15. Roques C. Massage applied to scars. Wound Repair Regen. 2002 Mar-Apr;10(2):126-8.
16. Shipman MK, Boniface DR, Tefft ME, McCloghry F. Antenatal perineal massage and subsequent perineal outcomes: A randomised controlled trial. *Br J Obstet Gynaecol*. 1997;104(7):787-791.
17. Shin TM, Bordeaux JS. The role of massage in scar management: a literature review. Dermatol Surg. 2012 Mar;38(3):414-23.
18. Wang SM, Dezinno P, Maranets I, Berman MR, Caldwell-Andrews AA, Kain ZN. Low back pain during pregnancy: Prevalence, risk factors, and outcomes. *Obstet Gynecol*. 2004;104(1):65-70.
19. Webb DA, Bloch JR, Coyne JC, Chung EK, Bennett IM, Culhane JF. Postpartum physical symptoms in new mothers: Their relationship to functional limitations and emotional well-being. *Birth*. 2008;35(3):179-187.
20. Webb S, Sherburn M, Ismail KM. Managing perineal trauma after childbirth. BMJ. 2014 Nov 25;349:g6829.
21. Williams A, Herron-Marx S, Carolyn H. The prevalence of enduring postnatal perineal morbidity and its relationship to perineal trauma. Midwifery. 2007 Dec;23(4):392-403. Epub 2006 Dec 29.