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Revisão

PHYSIOTHERAPY APPROACHES TO REDUCING THE SEVERITY OF OBSTETRIC PERINEAL TRAUMA: AN INTEGRATIVE REVIEW

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ABSTRACT

Perineal trauma during vaginal delivery is characterized as a situation that is commonly associated with short- and long-term morbidity, such as persistent pain, dyspareunia, pelvic floor disorders, and depression. The aim of this study was to carry out an integrative review to identify the physiotherapeutic approaches carried out in the last eleven years that have reduced the severity of perineal trauma, as well as the types of studies carried out and the scientific evidence supporting their use. In January 2022, a systematic search was carried out using four electronic databases: PubMed, Embase, SCOPUS, and WEB OF SCIENCE. The search protocol included studies published in the last eleven years (2011-2022) that addressed one or more physiotherapeutic resources during the gestational period and/or labor, without language restriction. The search strategy used in each database included standardized terms from Medical Subject Headings (MeSH), Health Sciences Descriptors (DeCS) and 32 keywords. The Preferred Reporting Items for Systematic Reviews and Metaanalysis (PRISMA) was used to select studies and exclude duplicate records. Given the above, it is possible to infer that among the techniques evaluated in the studies, the practice of massage in the pelvic injury muscles during pregnancy and training through perineal exercises may be effective in the incidence of severe lacerations and episiotomy during childbirth.

KEYWORDS: perineal and pelvic floor laceration; perineal trauma and prevention; Perineal trauma and vaginal delivery.

INTRODUCTON

Perineal trauma is the most common obstetric complication during childbirth, defined as the loss of tissue integrity in the perineal region that can occur due to spontaneous laceration or episiotomy. It is estimated that the prevalence of perineal injury in high-income countries occurs in 85% of vaginal deliveries and may be higher in low- and middle-income countries, mainly affecting primiparous women [1,2].

The consequences of perineal trauma are multiple, ranging from immediate complications, such as perineal pain, bleeding, increased risk of wound infection and dehiscence, might result in long-term impairments, such as vaginismus, dyspareunia, pelvic organ prolapse, and urinary and fecal incontinence [3–6]. The different degrees of perineal lacerations affect different tissues; first- and second-degree injuries affect the skin, mucosa and superficial muscles of the perineum. The most severe third- and fourth-degree lacerations involve the internal and external anal sphincter, the latter being associated with a higher level of maternal physical morbidity after childbirth [7,8]. In addition, more severe perineal trauma can lead to psychological damage, compromising female sexuality and the mother-child relationship [9,10].

Given the potentially harmful repercussions resulting from third- and fourth-degree perineal trauma, it is clear that professionals should be aware of interventions that can reduce the severity of these perineal injuries. The role of specialized physiotherapists during pregnancy has been gaining prominence in the prevention of more severe perineal trauma, mainly due to the practice of perineal massage during prenatal care, which is widely associated with a reduction in the incidence of more severe trauma. However, other physiotherapeutic approaches remain little explored.

Therefore, the aim of this study was to perform an integrative review to identify the physiotherapeutic approaches carried out in the last ten years that reduce the severity of obstetric perineal trauma, as well as analyse the types of studies and the scientific evidence supporting their use.

MATERIAL AND METHODS

This integrative literature review was developed using the main phases described by Whittemore and Knafl[11], which are: 1) Problem identification, 2) Literature search and 3) Data evaluation. This approach allows the simultaneous integration of several empirical and non-empirical study methods, favoring a holistic and comprehensive understanding of the topic of interest.

STAGE 1. PROBLEM IDENTIFICATION

The PICO (Population, Intervention, Comparison, Outcome) strategy was used to formulate the following research question for the study: What physiotherapeutic resource(s) were used to reduce obstetric perineal trauma(s)?

STAGE 2. LITERATURE SEARCH

In January 2022, a systematic search was carried out using four electronic databases: PubMed, Embase, SCOPUS and WEB OF SCIENCE. The databases were accessed through Periódicos Capes. The search strategy used in each database included standardized terms from Medical Subject Headings (MeSH), Health Sciences Descriptors (DeCS) and keywords. Boolean operators “AND” and “OR” were used to combine the words and assemble the search strategy as shown in Table 1.

Table 01. Database search strategy.

Database	SEARCH STRATEGY	TOTAL
PubMed Search performed on January 28, 2022. Filter used: 2011-2022	((pregnancy OR gestation OR "pregnant women" OR "prenatal Care" OR parity OR parturition OR "natural childbirth" OR "labor, obstetric" OR prepartum OR prenatal OR "antenatal") AND (perineum OR "perineal trauma" OR "obstetrical laceration" OR "obstetric lacerations" OR "perineal injury" OR "episiotomy" OR "perineums" OR "childbirth trauma" OR "obstetric anal sphincter injuries" OR "obstetric trauma" OR "perineal lacerations" OR "perineal tears" OR "vaginal tears")) AND ("physical therapy modalities" OR "physical therapy modality" OR "physical therapy techniques" OR "physical therapy technique" OR "physical therapy" OR "physical therapies" OR physiot32herapy)	113
Embase Search performed on January 28, 2022. Filter used: 2011-2021	('pregnancy'/exp OR pregnancy OR 'gestation'/exp OR gestation OR 'pregnant women'/exp OR 'pregnant women' OR 'prenatal care'/exp OR 'prenatal care' OR 'parity'/exp OR parity OR 'parturition'/exp OR parturition OR 'natural childbirth'/exp OR 'natural childbirth' OR 'labor, obstetric'/exp OR 'labor, obstetric' OR prepartum OR 'prenatal'/exp OR prenatal OR antenatal) AND ('perineum'/exp OR perineum OR 'perineal trauma'/exp OR 'perineal trauma' OR 'obstetrical laceration' OR 'obstetric lacerations' OR 'perineal injury'/exp OR 'perineal injury' OR 'episiotomy'/exp OR 'episiotomy' OR 'perineums' OR 'childbirth trauma' OR 'obstetric anal sphincter injuries' OR 'obstetric trauma'/exp OR 'obstetric trauma' OR 'perineal lacerations' OR 'perineal tears' OR 'vaginal tears') AND ('physical therapy modalities'/exp OR 'physical therapy modalities' OR 'physical therapy modality' OR 'physical therapy techniques'/exp OR 'physical therapy techniques' OR 'physical therapy technique' OR 'physical therapy'/exp OR 'physical therapy' OR 'physical therapies' OR 'physiotherapy'/exp OR physiotherapy) AND [2011-2021]/py	107
SCOPUS Search performed on January 28, 2022. Filter used: 2011-2021	(TITLE-ABS-KEY (pregnancy OR gestation OR "pregnant women" OR "prenatal Care" OR parity OR parturition OR "natural childbirth" OR "labor, obstetric" OR peripartum OR prenatal OR antenatal) AND TITLE-ABS-KEY ("perineal trauma" OR "obstetrical laceration" OR "obstetric lacerations" OR "perineal injury" OR "episiotomy" OR "perineums" OR "childbirth trauma" OR "obstetric anal sphincter injuries" OR "obstetric trauma" OR "perineal lacerations" OR "perineal tears" OR "vaginal tears") AND TITLE-ABS-KEY ("physical therapy modalities" OR "physical therapy modality" OR "physical therapy techniques" OR "physical therapy technique" OR "physical therapy" OR "physical therapies" OR physiotherapy)) AND PUBYEAR > 2010 AND PUBYEAR < 2022	51
Web of Science Search performed January 28, 2022. Filter used: 2011-2021	pregnancy OR gestation OR "pregnant women" OR "prenatal Care" OR parity OR parturition OR "natural childbirth" OR "labor, obstetric" OR prepartum OR prenatal OR antenatal (All fields) and perineum OR "perineal trauma" OR "obstetrical laceration" OR “obstetric lacerations” OR “perineal injury” OR “episiotomy” OR “perineums” OR “childbirth trauma” OR “obstetric anal sphincter injuries” OR “obstetric trauma” OR “perineal lacerations” OR “perineal tears” OR “vaginal tears” (All fields) and "physical therapy modalities" OR "physical therapy modality" OR "physical therapy techniques" OR "physical therapy technique" OR "physical therapy" OR "physical therapies" OR physiotherapy	69

The search protocol included studies published from 2011 to 2022 that addressed one or more physiotherapeutic resources during the gestational period and/or labor, without language restrictions. Exclusion criteria were duplicate studies and studies that did not meet the objective of this review.

The Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) was used to select studies and exclude duplicate records[12]. In the first selection screening, studies were analyzed by title and abstract and then by reading the full article. Selection was performed by two independent researchers. A third researcher was included in cases of disagreement regarding inclusion.

STEP 3. DATA EVALUATION

Data from the included studies were categorized and summarized, containing the following information: author(s), year of publication, study objective, design, methods/sample characteristics, physiotherapy intervention, relevant results, conclusion, and quality and level of evidence. The quality of evidence was classified into seven levels according to Melnyk BM[13].

At level 1, evidence comes from a systematic review or meta-analysis of all relevant randomized controlled trials or from clinical guidelines based on systematic reviews of randomized controlled trials; level 2, evidence comes from at least one well-designed randomized controlled trial; level 3, evidence comes from well-designed clinical trials without randomization; level 4, evidence comes from well-designed cohort and case-control studies; level 5, evidence comes from a systematic review of descriptive and qualitative studies; level 6, evidence comes from a single descriptive or qualitative study; level 7, evidence comes from authoritative opinion and/or expert committee reports.

RESULTS AND DISCUSSIONS

The database search identified 340 records published between January 2011 and September 2022. A total of 28 articles were selected for careful analysis of the full text, of which 13 were excluded. The final sample consisted of 15 articles (Figure 01).

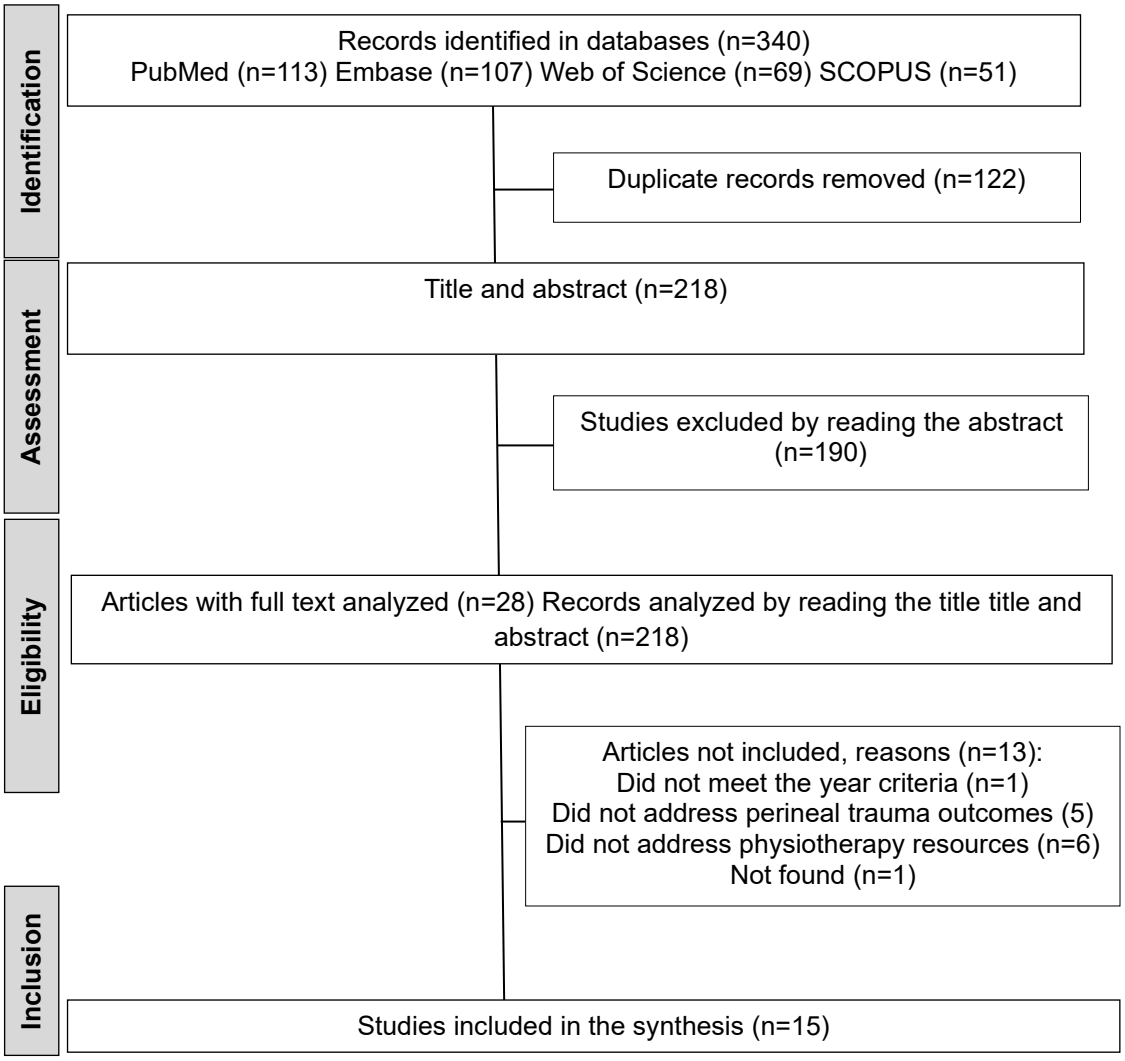

Figure 1. PRISMA study selection flowchart

Among the selected studies, four were randomized clinical trials, one non-randomized clinical trial, one quasi-randomized clinical trial, one prospective cohort, four systematic reviews and meta-analysis, one systematic review and two literature reviews. The articles were categorized into six physiotherapeutic practices, namely: prenatal perineal massage, pelvic floor muscle training, abdominal strength training, use of EPI-NO, birthing balls during labor and aquatic physical exercise (Table 2).

Perineal massage

Some articles that evaluated the practice of perineal massage in prenatal care in relation to obstetric perineal traumas associated a decrease in the incidence and severity of injuries[15,16,21,22,26,27]. A recent literature review evaluated the effectiveness of prenatal perineal massage at different levels of scientific evidence (see Table 2) and all of them favored the use of the technique for preventing serious perineal injuries.

A randomized clinical trial associated the practice of perineal massage with a decrease in postpartum complications such as perineal pain, wound healing, and flatus incontinence. The different methods of applying the massage were also evaluated. Álvarez-González et al. (2021) evaluated the difference between perineal massage applied by a specialist physiotherapist and home self-massage[15]. He concludes that when applied by a professional, massage has more positive effects than self-massage.

A systematic review with meta-analysis analyzed the practice of intrapartum perineal massage, during the first and second final stages of labor and its effects on the incidence of perineal trauma and the episiotomy rate, observing that its performance during labor showed a reduction in the risk of severe perineal trauma and the episiotomy rate[28].

Abdominal strength training

Abdominal strength training was assessed in a study that associated with birth outcomes, including reduction of perineal trauma. The study included 36,124 nulliparous pregnant women who completed a questionnaire on abdominal muscle strength training 3 months before pregnancy and during pregnancy. Two-thirds of participants reported abdominal muscle strength training before pregnancy, decreasing to one-third during pregnancy. However, there was no association between maternal reports of abdominal strength training before and during pregnancy with third- and fourth-degree perineal injuries.[20]

EPI-NO device

The use of the EPI-NO device during pregnancy was evaluated in three studies [15, 22, 24], being one a non-randomized clinical trial [15], one a literature review[22] and a systematic review [24]. The non-randomized clinical trial assessed different methods of applying perineal massage during prenatal care, which included the combination of perineal massage with the EPI-NO device, applied by a specialist physiotherapist, and home self-massage. The equipment was used after a period of manual massage of the perineum and inserted deflated into the vagina. After insertion, the EPI-NO was slowly inflated until it reached the first stretching barrier, and the volume was maintained until the pregnant woman reported a decrease in muscle stretching. This process was repeated three times for each pregnant woman. Compared to the group that performed only self-massage, the group that received perineal massage by a professional and used the EPI-NO device showed a decrease in the prevalence of perineal trauma (30% and 26.6%, respectively).

A systematic review evaluated whether EPI-NO equipment used prenatally could prevent vaginal trauma in nulliparous women[24]. Five studies were included in the review and two of them were included in the meta-analysis. Among the studies included in the meta-analysis, EPI-NO did not reduce episiotomy rates (RR 0.92 [95% CI 0.75–1.13], p = 0.44), did not increase the intact perineum (RR 1.15 [95% CI 0.81–1.64], p=0.43), had no influence on the reduction of all perineal

injuries (RR 0.99 [95% CI 0.84–1.17], p = 0.55) or severe third- and fourth-degree perineal injuries (RR 1.31 [95% CI 0.72–2.37], p=0.84). A literature review evaluated three different interventions for the prevention of perineal injuries[22]: prenatal perineal massage, EPI-NO device and pelvic floor strengthening exercise. Regarding the EPI-NO device, no benefits were found for obstetric perineal protection, and its use during pregnancy to prevent OASIS is not recommended.

Birthing balls during labor

A systematic review and meta-analysis assessed the level of evidence for the potential benefits of using birthing balls during labor on maternal and neonatal outcomes, including perineal lacerations and episiotomy. Seven randomized and non-randomized clinical trials were included in the study. The use of the birthing ball for 20/30 minutes (mean difference – 1.46; 95% Confidence Interval: 2.15 to -0.76, p < 0.0001), 60 min (mean difference -1.95; 95% Confidence Interval: 2.68 to -1.22; p < 0.00001) and 90 min (mean difference -1.72; 95% Confidence Interval: 2.44 to -1.00; p < 0.0001) reduced the outcome of pain after childbirth. However, there was no significant difference in perineal trauma and other maternal and neonatal outcomes between the groups[18].

Aquatic physical exercise

A randomized clinical trial evaluated the effect of an aquatic exercise program during pregnancy on the rate of intact perineum after delivery. A total of 129 pregnant women (control group = 62 and intervention group = 65) participated in the study. The intervention was an aquatic exercise program developed specifically for pregnant women from 20 to 37 weeks, lasting 60 minutes each, with 3 sessions per week, called SWEP (Study of Aquatic Exercise During Pregnancy). In this study, it was noted that participants in the intervention group had a higher rate of intact perineum, when compared with the control group after delivery (odds ratio [OR] = 13.54, Confidence Interval [CI] = 2.75-66.56)[18].

Table 2. Characteristics of the studies included in the review (n=15)

Quality and evidence level	Author/year	Objective of the study	Type of study	Methods/Sample characteristics	Intervention	Relevant results	Conclusion
1	Abdelhakim et al., 2020[16]	To update the current evidence on whether antenatal perineal massage reduces the risk of perineal trauma and postpartum complications.	Systematic review and meta-analysis	Eleven randomized clinical trials involving 3,467 patients (1,711 in the intervention group and 1,756 in the control group).	In the intervention group, digital perineal massage was performed during prenatal care in the last four to six weeks of pregnancy, and in the control group, perineal massage was not performed during prenatal care.	Women who received antenatal perineal massage had a significantly lower incidence of episiotomies (p <0.001) and perineal lacerations (p=0.007), particularly the risk of third- and fourth-degree perineal lacerations (p=0.03). Better wound healing and less perineal pain were evident in the antenatal perineal massage group.	Prenatal perineal massage is associated with a lower risk of severe perineal trauma and postpartum complications.
1	Delgado et al., 2019[18]	To evaluate the possible benefits of using balls during labor on maternal and neonatal outcomes.	Systematic review and meta-analysis	Seven clinical trials (randomized and non-randomized) involving 629 women in labor.	The intervention group used the birthing ball during the first and/or second stage of labor, performing exercises for a minimum period of 20 to 30 minutes or until they reached 10 cm of dilation. The control group did not use the birthing ball during labor.	Pain outcomes showed differences in the subgroups of 20/30 min on the birthing ball (p<0.0001), 60min (p<0.00001) and 90min (p<0.0001), based on moderate quality of evidence. Other outcomes, including perineal trauma, showed no differences between groups after interventions.	The use of the birthing ball reduced pain after 20-90 min of use and there was no difference in the other outcomes assessed, including perineal tears and episiotomy.
1	Brito et al., 2015[24]	To evaluate whether the Epi-No birth simulator used during pre-labor could prevent perineal trauma in nulliparous women.	Systematic review and meta-analysis	Five randomized controlled trials involving 1,369 participants and two studies were eligible for meta-analysis (932 participants).	Primiparous women or women whose previous pregnancy ended before 21 weeks gestational age and who used the Epi-No birth coaching system antepartum versus any other form of medical treatment or no treatment.	Epi-No did not reduce episiotomy rates (RR 0.92 [95% CI 0.75–1.13], p = 0.44) and did not increase the intact perineum (RR 1.15 [95% CI 0.81–1.64], p = 0.43). No influence of Epi-No on reducing all perineal injuries (RR 0.99 [95% CI 0.84–1.17], p = 0.93) or severe (3rd/4th) perineal	The Epi-No birth trainer is a device that did not reduce episiotomy rates and had no influence on reducing

						injuries (RR 1.31 [95% CI 0.72–2.37], p = 0.38).	perineal lacerations.
1	Du et al., 2015[25]	To investigate the possible effect of antenatal pelvic floor muscle training (PFMT) on labor and delivery.	Systematic review with meta-analysis	Twelve studies involving 2,243 women (1,108 in the intervention group [PFMT] and 1,135 in the control group).	Studies that performed PFMT prenatally, and all types of PFMT programs were considered, including the use of variations in ways of teaching PFMT, types of contractions (rapid or sustained) and number of contractions.	PFMT during pregnancy significantly shortened the first and second stages of labor in primigravidae. When evaluating the effect on the rates of episiotomy, instrumental delivery, and perineal laceration, the meta-analysis showed that the results were not significant (OR = 0.75, 95% CI: 0.54 to 1.02; OR = 0.84, 95% CI: 0.61 to 1.17 and OR = 0.96, 95% CI: 0.66 to 1.40, respectively).	Antenatal PFMT may be effective in shortening the first and second stages of labor in primigravidae. Antenatal PFMT did not increase the risk of episiotomy, instrumental delivery, and perineal laceration in primigravidae.
1	Venugopal et al., 2022	To analyze the practice of perineal massage during the first and second stages of labor and its effects on the incidence of perineal trauma and the episiotomy rate.	Systematic review and meta-analysis	This review was conducted using studies from 1987 to 2021, in the PubMed, Scopus, Cochrane Library and Science Direct databases, applying the DerSimonian and Laird random effects model to produce summary treatment effects in terms of relative risk (RR) with 95% confidence interval (CI).	Of the ten studies included data from 4,088 women were extracted, of which 1,705 women were in the experimental group (perineal massage during labor) and 2,383 in the control group (women with singleton pregnancy and cephalic presentation at ≥36 weeks, without massage application).	Women receiving perineal massage during labor had a significantly lower incidence of severe perineal trauma (RR: 0.52, 95% CI 0.29-0.94) compared with the control group. The incidence of episiotomy was lower in the perineal massage group (RR: 0.71, 95% CI 0.52-0.98 p < 0.01), but was statistically insignificant (P > 0.05).	The results of the current meta-analysis showed that perineal massage during labor is effective in reducing the risk of severe perineal trauma and the rate of episiotomy during labor.

1	Beckmann and Stock, 2013[26]	To evaluate the effect of prenatal digital perineal massage on the incidence of perineal trauma at birth and subsequent morbidity.	Systematic review	Systematic review of four trials involving 2,497 women.	Digital perineal massage performed by the woman or her partner during at least the last four weeks of pregnancy	Prenatal digital perineal massage has been associated with an overall reduction in the incidence of trauma requiring suturing and a lower propensity to have an episiotomy.	Prenatal digital perineal massage reduces the likelihood of perineal trauma (especially episiotomies) and the reporting of ongoing perineal pain.
2	Rodríguez-Blanque et al., 2019[19]	To determine the effect of an aquatic exercise program performed during pregnancy on the rate of intact perineum after delivery.	Randomized clinical trial	129 pregnant women (65 in the intervention group and 64 in the control group).	In the intervention group, a water-based physical exercise program developed specifically for pregnant women (SWEP) was carried out. SWEP was applied during weeks 20 to 37 of pregnancy, lasting 60 minutes, three sessions per week in three phases: warm-up, the main phase with aerobic movements and strengthening and resistance exercises, stretching and relaxation.	Women in the intervention group had a higher rate of intact perineum than those in the control group. Maternal weight gain did not influence the chances of intact perineum. Administration of anesthesia and previous pregnancy were also associated with intact perineum.	Women who followed the SWEP method were significantly more likely to have an intact perineum after delivery.

2	Ugwu et al., 2018[21]	To evaluate the effectiveness of prenatal perineal massage in reducing perineal trauma and postpartum morbidities.	Randomized clinical trial	108 primiparous women with singleton pregnancies at 34-36 weeks of gestation (53 in the intervention group and 55 in the control group	In the intervention group, 10 minutes of prenatal perineal massage was performed daily from 34-36 weeks; in the control group, pregnant women did not receive prenatal perineal massage.	Intact perineum and lower incidence of episiotomy were significantly more frequent in the intervention group. Regarding the rates of spontaneous perineal lacerations, there was no significant difference between the groups.	Prenatal perineal massage reduces the incidence of episiotomy and increases the incidence of women with an intact perineum after vaginal delivery.
2	Walker et al., 2012[27]	To evaluate the effects of an alternative model of birth (AMB) on the incidence of assisted vaginal birth (AVD) and perineal trauma (PT)	Randomized clinical trial	199 women included during the active phase of the first stage of labor. 96 in the traditional model of birth (TMB) and 103 in the alternative model of birth (AMB).	In the intervention group, AMB consisted of two moments during the second stage of labor. First, women moved to different positions while delaying the onset of pushing during the passive phase, and second, women were placed in the modified lateral Gasquet position during the active pushing phase. In the control group, the traditional model of labor was performed.	AMB was associated with a significant reduction in ADL compared with TMB (19.8% vs 42.1%, $p<0.001$). AMB significantly increased the rate of intact perineum compared with TMB (40.3% vs 12.2%, $p<0.001$). The episiotomy rate was significantly reduced in AMB (21.0% vs 51.4%, $p<0.001$).	A combination of postural changes during the passive expulsive phase of labor and lateral positioning during the active pushing time is associated with reductions in ADL and PT.

2	Dieb et al., 2020[17]	To evaluate the effectiveness of perineal massage, pelvic floor muscle training, and an educational program to prevent pelvic floor dysfunction in pregnant women over the age of 35 years to prevent perineal laceration and episiotomy.	Randomized clinical trial	400 nulliparous or multiparous women (200 in the intervention group and 200 in the control group)	In the intervention group, pregnant women were instructed to perform perineal massage and pelvic floor muscle training and received the usual educational program for preventing pelvic floor dysfunction. In the second group (control), women received only the usual educational program for preventing pelvic floor dysfunction.	Delivery was significantly less complicated by perineal laceration, episiotomy and postnatal pain in the first group than in the second ($p < 0.05$). Degrees of perineal laceration were mainly first and second degree in the first group compared with the second group. We found a significantly lower need for analgesia and fewer ampoules needed during hospitalization in the first group ($p < 0.001$, 0.002, respectively).	Performing prenatal digital perineal massage and pelvic floor muscle training, in addition to health education, is recommended to reduce perineal complications.
3	Álvarez-González et al., 2021[15]	To determine the effectiveness of perineal massage in preventing perineal laceration and to identify possible differences in the application of the massage.	Non-randomized clinical trial	90 pregnant women divided into three equal groups (30 pregnant women in each group)	In the first group, manual perineal massage and instrumental massage with an EPI-NO device applied by a physiotherapist were performed from the 34th week of pregnancy until delivery. In the second group, the pregnant woman was instructed to perform self-massage at home at least twice a week from the 34th week of pregnancy until delivery, and in the third group (control group), the pregnant woman received obstetric care.	Significant differences were found between the control group and the two perineal massage groups in perineal postpartum pain. Correlations between perineal postpartum pain, duration of labor, and infant weight were not statistically significant. The lithotomy posture was significantly less prevalent in the perineal massage group than in the other two groups.	Perineal massage reduces postpartum perineal pain and the prevalence and severity of perineal laceration during childbirth. In addition, perineal massage performed by a healthcare professional has significantly better positive effects than self-massage.

3	Leon-Larios et al., 2017[23]	To investigate the effects of pelvic floor training after a childbirth program on perineal trauma.	Quasi-randomized clinical trial	466 primiparous women (254 in the control group and 212 in the intervention group.	In the intervention group, a pelvic floor/perineal program was carried out that included daily perineal massage for eight minutes and muscle training twice a day (ten to fifteen voluntary contractions of the pelvic floor muscles for 5 seconds each and gradual muscle contraction for 10 to 15 minutes).	Women in the pelvic floor/perineal intervention group had a 31.63% reduction in episiotomy (50.56% versus 82.19%, $p < 0.001$) and a greater likelihood of having an intact perineum (17.61% versus 6.85% < 0.001). In addition, they also had less postpartum perineal pain (24.57% versus 36.30% < 0.001) and required less analgesia in the postnatal period (21.14% versus 30.82%, $p < 0.001$).	A training program consisting of pelvic floor exercises and perineal massage can prevent episiotomies and lacerations in primiparous women.
4	Rise et al., 2019[20]	To investigate whether nulliparous pregnant women who reported regular abdominal strength training before and at two points during pregnancy have a reduced risk of caesarean section, instrumental assisted vaginal delivery, and third- and fourth-degree perineal lacerations.	Prospective cohort study	36,124 nulliparous pregnant women	Report of abdominal muscle strength training 3 months before pregnancy and at both time points during pregnancy. Women were asked to report frequency of abdominal strength training with the alternatives “never”, “one to three times per month”, “once per week”, “twice per week” and “three or more times per week”.	Among participants, 66.9% reported performing abdominal strength training exercises before pregnancy, decreasing to 31.2% at 30 weeks of gestation. Adjusted odds ratios were 0.97 (95% CI 0.79–1.19) for acute caesarean section among those who trained equally frequently before and during pregnancy compared with those who never trained. Results were similar for instrumental assisted vaginal delivery and third- and fourth-degree perineal laceration.	There was no association between reported regular abdominal strength training before and during pregnancy and birth outcomes in this prospective population-based cohort.

6	Azón et al., 2021[14]	Discover the effectiveness and scientific evidence supporting the prenatal perineal massage procedure.	Bibliographic review	Ten studies were found. A total of 3,071 women were analyzed (83.94% primiparous and 16.06% multiparous). 50.09% of the women received prenatal perineal massage and 49.91% were part of the control group.	Six of the articles analyzed applied prenatal perineal massage by inserting one or two fingers into the vagina approximately 3-4 cm. Of these, one study added two more perineal stretching exercises (three-step technique). Four of the studies did not provide information on the application of prenatal perineal massage.	All studies were favorable to the use of prenatal perineal massage in the prevention of perineal trauma. The main effect of its use was the increase in the percentage of intact perineum after delivery, which reached 50.9% in the experimental group compared to 29.1% in the control group. Massage also reduced the rate of episiotomies and perineal lacerations. Two studies described that the use of massage was associated with a decrease in severe perineal injuries (third and fourth degree), while others found no relationship with the rate of minor injuries or with any type of injury.	Currently available evidence suggests that the use of antenatal perineal massage in late pregnancy may be an effective and safe procedure to reduce perineal trauma during childbirth, especially in primiparous women, and postpartum pain in multiparous women.
	Schantz, 2018[22]	To evaluate the effectiveness of different interventions during pregnancy (prenatal perineal massage, use of the Epi-No device and pelvic floor muscle training exercises) in preventing postnatal perineal injury or dysfunction.	Literature review	A keyword search was performed in PubMed for each topic evaluated (prenatal perineal massage, Epi-No device, pelvic floor muscle strengthening exercises). For perineal massage, 4 randomized and quasi-randomized clinical trials were included, with a total of 2,497 women. For the evaluation of the	The intervention tested was digital perineal massage (at least 4 weeks before delivery, practiced by the woman or her partner, at least once or twice a week, from 35 weeks) versus control. The intervention (n = 335) was the use of the Epi-No device, from 37 weeks of gestation until delivery, two daily sessions of 20 minutes, with cycles of 5 minutes; versus a control group (n = 325). Regarding the practice of exercises to strengthen the muscles of the perineal floor, it reports interventions	Perineal massage during pregnancy reduces the rate of episiotomy, as well as perineal pain and postpartum perineal flatulence. It does not reduce the rate of OASIS or the rate of postpartum urinary incontinence. The Epi-No device does not provide benefits for perineal protection. Prenatal pelvic floor muscle training exercises do not reduce the risk of perineal tears; they reduce the prevalence of postpartum urinary incontinence at 3 to 6 months but not at 12 months postpartum.	Perineal massage during pregnancy should be encouraged among women. Use of the Epi-No device and pelvic floor muscle training during pregnancy is not recommended for the prevention of OASIS.

				Epi-No device, five trials were included, with a total of 2,301. Regarding the variable pelvic floor muscle strengthening exercises, a total of 38 randomized or quasi-randomized trials were included, with a total of 9,892 women.	of heterogeneous modality, intensity and adherence of women. Prenatal exercises to strengthen the muscles of the pelvic floor do not prevent the risk of obstetric perineal injuries (NE2); they reduce the prevalence of urinary incontinence in the postpartum period between 3 and 6 months, but do not reduce the prevalence of urinary incontinence at 12 months postpartum (NE2).		

CONCLUSION

Given the above, it is possible to infer that among the practices evaluated in the studies, the most used in the period from 2011 to 2022 were perineal massage during pregnancy, pelvic floor muscle training, use of the EPI-NO device and aquatic physical exercise. The most performed types of studies related to the prevention and reduction of the severity of perineal trauma during childbirth during the period mentioned above are Randomized Clinical Trials, Systematic Reviews/Meta-analyses and Prospective Cohort Studies. Finally, we observed that the practice of pelvic floor muscle massage during pregnancy and training through strengthening exercises can be effective in reducing the occurrence of severe lacerations and episiotomy during vaginal delivery.

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