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[Exercise for improving outcomes for women with pre-existing diabetes and their babies](#)

[How effective are pelvic floor muscle exercises undertaken during pregnancy or after birth for preventing or treating incontinence?](#)

[Planned birth at or near term for pregnant women with gestational diabetes and their infants](#)

Exercise for improving outcomes for women with pre-existing diabetes and their babies

Authors: Brown J, Ceysens G, Boulvain M

What is the issue?

Diabetes mellitus can be caused by autoimmune destruction of the cells producing insulin, so that levels are reduced (type 1 diabetes), or the body tissues becoming resistant to insulin (type 2 diabetes). The end result is increased blood glucose levels. Insulin is used to regulate glucose levels for pregnant women with type 1 diabetes. For women with type 2 diabetes, lifestyle changes, including diet and exercise, are an important part of treatment. An oral anti-diabetic drug (medication that aims to reduce blood sugar levels) or insulin may be added to lower blood glucose levels. We set out to evaluate the effects of exercise interventions, for pregnant women with pre-existing type 1 or 2 diabetes, on birth outcomes for the mother and her baby. An earlier review on the effects of exercise on diabetes during pregnancy has been split into two reviews - one for women with gestational diabetes, and this review, on women with pre-existing diabetes.

Why is this important?

Women with diabetes, who become pregnant, are at increased risk of pregnancy loss, or having a baby that is large-for-gestational age (baby is larger than would be expected for the number of weeks of pregnancy), is born preterm, who dies around the time of birth, or is born with birth defects. The newborn baby may also have blood sugar levels that are lower than normal, low calcium levels, and excess bilirubin in the blood. Long-term

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follow-up of the infants of diabetic mothers suggests that they are at increased risk of obesity and type 2 diabetes when older.

The number of women who already have diabetes when they become pregnant is increasing, and identifying ways to improve health outcomes for women with diabetes and their babies is a priority. We already know that exercise may be of benefit for non-pregnant women with type 2 diabetes, as it improves their blood glucose levels and reduces triglyceride fats in the blood. We are unclear if exercise benefits, and is safe for, pregnant women with pre-existing diabetes and their babies. Physical activity could help to increase fitness and prevent stress urinary incontinence, lower back pain, or depression, and control weight gain during pregnancy.

What evidence did we find?

We searched for evidence on 27 June 2017. We did not identify any randomised controlled trials (RCT) that compared any type of exercise programme (plus standard care) for pregnant women with pre-existing diabetes with 1) standard care alone, or 2) standard care plus another exercise programme.

What does this mean?

There is no evidence from RCTs to evaluate the effects of exercise interventions for improving mother and baby outcomes in women with pre-existing diabetes.

Good quality, large studies are urgently needed to find out if exercise interventions are safe, and if they improve health outcomes for pregnant women with diabetes and their babies. Future studies in this area could utilise the outcomes listed in this review, to improve consistency between trials in this area, and aid future analyses.

How effective are pelvic floor muscle exercises undertaken during pregnancy or after birth for preventing or treating incontinence?

Authors: Woodley SJ, Boyle R, Cody JD, Mørkved S, Hay-Smith EC

Review question

To assess whether doing pelvic floor muscle exercises (PFME) during pregnancy or after birth reduces incontinence. This is an update of a review published in 2012.

Background

More than one-third of women experience unintentional (involuntary) loss of urine (urinary incontinence) in the second and third trimesters of pregnancy and about one-third leak urine in the first three months after giving birth. About one-quarter of women have some involuntary loss of flatus (wind) or faeces (anal incontinence) in late pregnancy and one fifth leak flatus or faeces one year after birth. PFME are commonly recommended by health professionals during pregnancy and after birth to prevent and treat incontinence. The

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muscles are strengthened and kept strong with regular PFME. Muscles are contracted several times in a row, more than once a day, several days a week and continued indefinitely.

How up-to-date is this review?

The evidence is current to 16 February 2017.

Study characteristics

We included 38 trials (17 new to this update) involving 9892 women from 20 countries. The studies included pregnant women or women who had delivered their baby within the last three months. Women reported leakage of urine, faeces, both urine or faeces, or no leakage. They were allocated randomly to receive PFME (to try and prevent incontinence or as a treatment for incontinence) or not and the effects were compared.

Study funding sources

Nineteen studies were publicly funded. One received grants from public and private sources. Three studies received no funding and 15 did not declare funding sources.

Key results

Pregnant women without urine leakage who did PFME to prevent leakage: women may report less urine leakage in late pregnancy and three to six months after childbirth. There was not enough information to determine whether these effects continued beyond the first year after the baby's birth.

Women with urine leakage, pregnant or after birth, who did PFME as a treatment: it was uncertain whether doing PFME during pregnancy reduced leakage in late pregnancy or in the year following childbirth. It was unclear if doing PFME helped women with leakage after giving birth.

Women with or without urine leakage (mixed group), pregnant or after birth, who did PFME to either prevent or treat leakage: women who began exercising during pregnancy were less likely to report leakage in late pregnancy and up to six months after birth, but it was uncertain if the effect lasted at one year following birth. For women who started PFME after delivery, the effect on leakage one year after birth was uncertain.

Leakage of faeces: few studies (only six) had evidence about leakage of faeces. One year after delivery, it was uncertain if PFME helped decrease leakage of faeces in women who started exercising following childbirth. It was also uncertain if women with or without leakage of faeces (mixed group) who started PFME while pregnant were less likely to leak faeces in late pregnancy or up to one year after birth.

There was little information about how PFME may affect leakage-related quality of life. There were two reports of pelvic floor pain but no other harmful effects of PFME were noted. It is unknown if PFMEs offer value for money because no study had a health economics analysis. It is unknown if PFME offer value for money as no health economics data were identified.

Quality of the evidence

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Overall, studies were not large and most had design problems, including limited details on how women were randomly allocated into groups, and poor reporting of measurements. Some of the problems were expected because it was impossible to blind health professionals or women to whether they were exercising or not. The PFME differed considerably between studies and were often poorly described. Evidence quality was generally low to very low.

Planned birth at or near term for pregnant women with gestational diabetes and their infants

Authors: Biesty LM, Egan AM, Dunne F, Dempsey E, Meskell P, Smith V, Ni Bhuinneain G, Devane D

What is the issue?

The aim of this Cochrane review was to find out if planning an elective birth at or near the term of pregnancy, compared to waiting for labour to start spontaneously, has an impact on the health of women with gestational diabetes and the health of their babies. Planned early birth means either induction of labour or caesarean birth, and 'at or near term' means 37 to 40 weeks' gestation. To answer this question, we collected and analysed all relevant studies conducted up to August 2017.

Why is this important?

Women with gestational diabetes (glucose intolerance arising during pregnancy) and their babies are at increased risk of health complications (e.g. high blood pressure, bigger babies). Because of the complications sometimes associated with birthing a big baby, many clinicians have recommended that women with gestational diabetes have an elective birth (generally an induction of labour) at or near term (37 to 40 weeks' gestation) rather than waiting for labour to start spontaneously, or until 41 weeks' gestation if all is well. Induction has disadvantages of increasing the incidence of forceps or ventouse births, and women often find it difficult to cope with an induced labour. Caesarean section is a major operation which can lead to blood loss, infections and increased chance of problems with subsequent births. Early birth can increase the chance of breathing problems for babies. It is important to know which approach to birth has a better impact on the health outcomes of women with gestational diabetes and their babies.

What evidence did we find?

Our search identified one trial involving 425 women and their babies. In this trial, 214 women had an induction of their labour at term, the other 211 women waited for a spontaneous onset of their labour.

The findings of this trial highlighted no clear difference between the babies of women in either group in relation to the number of large babies, baby's shoulder getting stuck during birth or babies with breathing problems, low blood sugar and admission to a neonatal intensive care unit. No baby in the trial experienced birth trauma. In the group of women whose labour was induced, there were more incidences of jaundice in the babies. There was no clear difference between women in either group in relation to serious health problems for

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women, caesarean section, instrumental vaginal birth, postpartum haemorrhage, admission to an intensive care unit and intact perineum. There were no reports in either group of maternal deaths. It should be noted that most of the evidence was found to be of very low quality.

The following outcomes were not reported: postnatal depression, maternal satisfaction, length of postnatal stay (mother), babies with high blood acid, bleeding in the baby's brain, other brain problems for the babies, babies small-for-gestational age and length of baby's postnatal stay.

What does this mean?

There is insufficient evidence to clearly identify if there are differences in health outcomes for women with gestational diabetes and their babies when elective birth is undertaken compared to waiting for labour to start spontaneously or until 41 weeks' gestation if all is well. More research is needed to answer this question.

If you have any questions or comments with regard to the above document please feel free to contact me.

Kind regards

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