

IS THERE EVIDENCE THAT PREGNANCY YOGA LEADS TO POSITIVE CHILDBIRTH OUTCOMES?

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INTRODUCTION

As a yoga teacher, when I see someone leave a prenatal yoga class they often have a post-class glow or look rested. I wanted to know whether there is evidence for these benefits lasting beyond a class to have beneficial outcomes for during pregnancy. Also, whether yoga can affect the experience and outcome of labour? There is now a sizeable amount of academic research into the impact of pregnancy yoga and I share highlights of the best studies here.

I have taught pregnancy yoga for 17 years, but also have a background in academic research with a PhD in Medical Sociology. I wanted to see if the evidence backed up what I observe from my classes.

First, it's important to know there are different levels of evidence: **systematic reviews** assess studies for quality and compare the findings of the best quality ones. **Randomised controlled trials** (RCTs) are considered the gold standard because they reduce the effect of researcher bias. **Meta-analyses** use all of the data across a number of studies where they can compare like with like to have a bigger sample.

Several systematic reviews exist that show psychological and social benefits to the expectant mothers as well as those specifically around childbirth. The most recent review selected 17 quality studies, compared to 10-12 in the 2010s. This means that the **quality of evidence is improving** over time.

The yoga interventions took place in the second and/or third trimesters and lasted 10 weeks or more. Not all were reported in detail, but tended to include asanas (the movement component), breathing, and mindfulness/ meditation. In the RCTs, the control group either joined a walking group or received standard antenatal care only.

Before we launch into the studies, here is a summary of the different outcomes for which there was statistical significance (lower than a probability of 0.05 of occurring randomly) in the pregnancy yoga groups compared to controls (standard care / standard care and walking): SEE GREY BOX OVERLEAF

ALL REVIEWS REPORTED NO INCREASED RISK TO FETUS.

In the yoga groups compared to control groups there were:

CLINICAL

Fewer preterm babies
Less pregnancy induced hypertension (PIH)
Less pre-eclampsia
Less gestational diabetes (GDM)
Less intrauterine growth restriction (IUGR)
Fewer Small for Gestational Age (SGA) babies
Better Apgar scores
Increased birth weight

PREGNANCY

Improved sleep
Fewer pregnancy discomforts (38-40 weeks)
Lower depression scores
Lower stress scores
Lowers anxiety during class & over time
Increased maternal confidence
Higher self-efficacy
Improved interpersonal relationships
Decreased fear of childbirth

CHILDBIRTH

Less induction of labour
Shorter first, second and third stages
Increased pain tolerance
Less surgical & instrumental deliveries
Lower rupture grade of episiotomy
Decreased severe perineal trauma

PRENATAL YOGA STUDIES (OR GO TO CONCLUDING THOUGHTS)

I selected the following three diverse studies to share with you from a systematic review of the effectiveness of prenatal yoga (Rong et al. 2020). The authors concluded that yoga is an intervention that improves delivery outcomes and very importantly does not increase the **risk to fetus**, and is thus worth recommending to pregnant women.

In the Iranian study with 60 women, participants in the control group reported higher **pain intensity** compared to yoga group (twice a week, from 26 weeks) at 3-4 cm of dilatation ($p = 0.01$) and at 2 h after the first and the second measurements ($p = 0.000$) (Jehdi et al. 2017). Mothers in the yoga group required a decreased frequency of **labour induction** in comparison with control group ($p = 0.008$). In addition, **mode of delivery** of the intervention group resulted in a lower percentage of caesarean section than the control group ($p = 0.002$). Lastly, the intervention group experienced a shorter **duration of labour**, for both the second and third stages.

A meta-analysis of 6 quality studies on yoga and **maternal depression** during pregnancy found that those in the intervention groups had beneficial outcomes on mood with a decrease in depressive scores ($P=0.015$), however the authors noted that the studies included participants with mild depression only (Ng 2019).

In an Indian study focusing on **high-risk pregnancies** with 68 women, it was found that in the yoga group (receiving yoga three times a week) there were significantly fewer **pregnancy induced hypertension** (PIH), **preeclampsia**, **gestational diabetes** (GDM) and **intrauterine growth restriction** (IUGR) cases were observed ($p = 0.018, 0.042, 0.049, 0.05$ respectively) (Rakhshani et al. 2012). Significantly fewer **Small for Gestational Age** (SGA) babies and newborns with low **APGAR scores** ($p = 0.006$) were born in the yoga group ($p = 0.033$). The control group had standard antenatal care plus walking.

"Shorter duration of labour and less labour pain"

In a 2014 systematic review (Riley & Drake), all studies found that prenatal yoga provided significant benefits, and **no adverse effects** were reported. Significant findings from the randomized studies included an increase in infant **birth weight**, lower incidence of **pregnancy complications**, shorter **duration of labour**, and less **labour pain** among yoga practitioners.

Significant findings from the non-randomized and qualitative studies included decrease in **pain**, improved **quality of sleep**, increased **maternal confidence**, and improved **interpersonal relationships** among pregnant women who practiced yoga.

The following four studies are a part of another systematic review (Curtis et al. 2012). Satypriya et al. (2009) found that **Perceived Stress Scale** scores were significantly lower in the pregnancy yoga group compared to the controls and that those receiving the Deep Relaxation Technique (DPT) had a significantly beneficial effect on their **heart rate** compared to those practicing a Supine Position only (lying down for a rest). The authors suggested the DPT may be a more powerful modulator of the sympathetic nervous system or the "fight or flight" response than rest alone.

In another study, Sun et al. (2010) found that there was no difference between the groups in the **Discomforts of Pregnancy Questionnaire** until weeks 38-40 when the yoga group scored significantly more comfortably. However, those in the yoga group had significantly higher **self-efficacy** outcome expectancy in both the first and second stages of labour than the women in the control group, as measured by the Childbirth Self-Efficacy Inventory (CBSEI).

Chuntharapat et al. found that both self-reported and observed **labour pain** scores were significantly lower in the yoga intervention group than in the control group (standard antenatal care), although, not surprisingly, pain scores did increase over time in both groups. Results demonstrated that the first stage of labour and the total **duration of labour** were significantly shorter in women who had received the yoga intervention.

"Perceived Stress Scale scores were significantly lower in the pregnancy yoga group"

"Significantly higher self-efficacy outcome expectancy in both the first and second stages of labour. "

"First and second stages of labour were significantly shorter in women who had received the yoga intervention. "

"Preterm labour was significantly lower in the yoga group"

"51.7% of women in the yoga group and 82.6% of women in the control group required induction" (Iranian hospital)

"82.9% of women in the yoga group and 65.7% in the control group had a natural delivery "

Maternal anxiety was reduced after a single session, both on anxiety scales and in cortisol measurements, and remained lower at the final session.

In a controlled, but non-randomised study, the number of infants weighing over 2500 g was significantly greater for women who had participated in the yoga intervention; however, the mean **birth weight** of infants did not statistically differ between the two groups. In addition, the number of women who experienced **preterm labour** (i.e., before 37 weeks) was significantly lower in the yoga group (Narendran et al. 2005).

In a randomised clinical trial in Iran, 70 women were randomly assigned to hatha yoga (traditional yoga with asana, breathing and meditation) twice a week or standard antenatal care (Yekefallah et al. 2021). The results showed that yoga exercises had a significant effect on the rate of **induction of labour** in pregnant women in the yoga group (51.7% of the women in the yoga group and 82.6% of the women in the control group requiring induction). Pregnancy yoga exercises had a significant effect on the variable of **preterm delivery** outcome in the yoga group (0% of the subjects in the yoga group and 11.4% in the control group had preterm labor and delivery before the 37th week of pregnancy).

The results showed that 82.9% of the women in the yoga group and 65.7% in the control group had a **natural delivery** and the rest underwent **emergency caesarean** (Yekefallah et al. 2021). There was a significant difference in the **rupture grade of episiotomy** (55.2% of the women in the yoga group did not have a rupture and 44.8% had a first-grade rupture, while, in the control group, 43.5% had a first-grade rupture, 47.8% had a second-grade rupture, and 8.7% had a third-grade rupture).

In a UK study with 59 pregnant women assessed an 8-week yoga programme for the affects on **maternal anxiety** during pregnancy compared to treatment as usual (Newham et al. 2014). A single session of yoga reduced both subjective and physiological measures of state anxiety (on anxiety scales and cortisol measurements) and this class-induced reduction in anxiety remained at the final session of the intervention.

"Mindfulness correlates with decreased fear of childbirth and reduced symptoms of anxiety and depression"

"Simple mindfulness practices could be integrated into antenatal education."

Mindfulness-based childbirth education showed increased childbirth self-efficacy and decreased fear of childbirth.

"Using techniques and positions that increase pelvic dimensions by releasing tense muscles can make more room for baby to rotate and descend."

MINDFULNESS STUDIES

A literature review of 12 combined mindfulness and yoga studies found that increased mindfulness correlates with decreased **fear of childbirth**; reduced **symptoms of anxiety and depression**; and **supportive group settings** found to be beneficial by pregnant women (Van der Riet 2019). Pregnancy yoga classes often have a social element with time to express how each person is feeling or to talk over tea.

.A systematic review of mindfulness interventions found that they all the studies included had improved **maternal psychosocial outcomes**, and encouraged the practice of mindfulness during the postpartum period (Shorey et al. 2019). It was suggested that simple mindfulness practices could be integrated into antenatal education, rather than needing a specific mindfulness intervention.

A mindfulness-based childbirth education pilot in Australia was typical of the type of study included and found that statistically significant improvements and large effect sizes were observed for **childbirth self-efficacy** and **fear of childbirth** (Byrne et al. 2014). Improvements in **depression**, mindfulness, and **birth outcome expectations** were underpowered, but this may be due to the sample size of 12 participants who completed all of the assessments.

Many pregnancy yoga classes incorporate mindfulness into the way that asanas (postures) and movements are taught and/or have a meditation component.

BIOMECHANICS FOR BIRTH TECHNIQUES AND EFFECT OF LABOUR POSITIONS

Biomechanics training has increased among perinatal professionals and a UK trainer recommends 'regular walking, use of the birth ball and suggests physical interventions, such as using techniques and positions that increase pelvic dimensions by releasing tense muscles can make more room for the baby to rotate and descend' (O'Brien 2020). Yoga postures have such an effect on the pelvic dimensions, for example on the psoas muscle that can shorten as a result of a sedentary lifestyle.

Flexible sacrum positions improve mode of delivery, episiotomy, severe perineal trauma, pain and shorten active pushing.

More studies need to be conducted with clear descriptions of the flexible sacrum positions used by women

A systematic review and meta-analysis of 16 quality studies (3397 women) found that **flexible sacrum positions** (such as side-lying/ 'lateral', all fours or kneeling) in the second stage of labour could reduce the **incidence of operative delivery, instrumental vaginal delivery, caesarean section, episiotomy**, severe **perineal trauma**, severe **pain** and shorten the **duration of active pushing** phase in the second stage of labour (Zhang et al. 2020). However, flexible sacrum positions may increase the incidence of mild **perineal trauma**. There was no significant difference in the **duration of the second stage** of labour and **maternal satisfaction**. During pregnancy yoga, participants do not lie on their back and practice postures that include the flexible sacrum positions used in these studies.

However, another systematic review and meta-analysis focused on **duration of second stage** of labour found that it was reduced in the groups using flexible sacrum positions (Berta et al.2019). The authors commented on the heterogeneity of length of second stage and I suggest that there are other factors that could be affecting this outcome such as the range of positions used and environment (obstetrics unit, midwife-led unit. homebirths).

An interview study with Swedish midwives found that using Spinning Babies techniques, which include biomechanics and flexible sacrum positions, reported positive childbirth outcomes, but no English translation is available of the details (Sirviö & Ohlsson 2021).

RECOMMENDATION 1

Pregnancy yoga classes should include asanas (postures), breathing techniques and mindfulness/ meditation in order to replicate the studies and get the full benefit.

RECOMMENDATION 2

To obtain the same benefits, women are advised to practice yoga at least twice a week (with at least one session with a teacher)

CONCLUDING THOUGHTS

A large range of statistically significant outcomes have been reported from prenatal yoga for both during pregnancy and childbirth, including biological, psychological and social effects. Generally, the yoga interventions have included movement, breathing techniques and meditation, and lasted for 10 weeks or more. They have ranged from one session per week to two or three.

While many pregnancy yoga clients come for 10 weeks or more, they often attend one class a week. Therefore, practicing yoga at home would be strongly advised to achieve the benefits described in these studies and many pregnancy yoga teachers offer videos of practices that they have shared in class.

RECOMMENDATION 3

To obtain the psychological and social benefits, seek a class that has a social component to it such as checking in or a regular tea.

The social nature of classes is also important, with two studies measuring the impact of the social effect specifically.

You may have noticed from the authors' names that many of the studies in the 2010s have been conducted in Asian countries where there may be biological and cultural influences on the study results. More recent studies are across a diverse range of countries and the same trend for no negative effect on the unborn baby and benefits for pregnancy and childbirth persist.

None of the articles I read talked about how having regular yoga sessions as an intervention provides consistency of care and may have been a factor in the beneficial outcomes. As well as the attention of the yoga teacher, the participants would have contact with the research staff.

There is strong evidence for the role and importance of consistency of care through pregnancy (Hildingsson et al 2002) and although a yoga teacher cannot give clinical care, they are often able to signpost to different resources and services within their community.

RECOMMENDATION 4

When looking for a pregnancy yoga class, look for the teacher's qualifications with a known organisation (BWY, Birthlight, FEDANT-accredited teachers are a few). Ask about their experience and what is included in a class.

For those wanting to recommend pregnancy yoga to those in their care, there are some considerations: a fully qualified and insured pregnancy yoga teacher, ideally trained in mindfulness and biomechanics for birth. Those with mild to moderate pelvic pain should be given modifications so they can continue to benefit from the yoga sessions.

Pregnant women should be made to feel comfortable to ask about the teacher's training and experience, and what is included in a session (as well as asanas, breathing, deep relaxation, mindfulness, understanding of biomechanics, antenatal education).

RECOMMENDATION 5

Ask whether the pregnancy yoga teacher is trained in biomechanics for birth or Spinning Babies techniques. This is not essential, but teaching why flexible sacrum positions support labour is ideal.

We know that being able to practice flexible sacrum positions during pregnancy supports women to use them during labour in contrast to only seeing photos of other people in different labour and birth positions (Reading MVP 2021).

RECOMMENDATION 6

In antenatal education, ask participants to try out flexible sacrum positions and signpost to pregnancy yoga classes. Trying and practicing positions may support women to feel more able to and more comfortable to use them during labour.

RECOMMENDATION 7

Set up induction and epidurals so that women are able to move into or be supported in flexible sacrum positions. Support this with information on the wards and in rooms about the benefits of flexible sacrum positions.

RESOURCE

On Tessa's YouTube channel - video on **Preparation for Labour Yoga Sequence: Based on Biomechanics for Birth & Pelvis Balancing (20 mins)**
<https://youtu.be/F6WTxRxFTIA>

Neuroscience shows us how reading books is not enough to change our behaviour as we are neurologically disposed to certain emotionally linked behaviours and when we move it is more likely that we can change our response to stimuli and change our behaviour (Ref 22).

Obviously, the positions women have practiced will only have a beneficial effect if they're enabled to use them during labour, including induction and mobile mix epidurals.

There is strong research evidence from RCTs and meta-analyses showing that there are **many benefits from taking part in pregnancy yoga** and **no risk to the unborn baby**. Many articles concluded that pregnancy yoga is a low-cost and safe intervention.

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