

The Benefits Of Pilates Matwork Upon The
Posture of the Mother, for Optimum Foetal
Positioning and Birth

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Introduction

This essay aims to consider the benefits of Pilates matwork during pregnancy for the mother in preparation for birth.

The main focus of the essay will be upon the postural changes of the mother during pregnancy, how this effects optimum foetal positioning (OFP) and the benefits that Pilates can have upon this for birth.

The psychological impact on the mother will also be considered in relation to the holistic nature of the exercises, specific to the Pilates method.

It is important to acknowledge that the Pilates instructor should be fully aware of the exercise contraindications for each stage of pregnancy and should have conducted a thorough screening/ assessment of the client's suitability for exercise. This should be continually re-evaluated throughout the pregnancy with the client and where appropriate the medical team.

The following stages of pregnancy will be referred to during this essay:

- First trimester= conception to 12 weeks
- Second trimester = 13 – 27 weeks
- Third trimester = 28 weeks to birth
(Susanne Enzer 2004:44)

What affects posture during pregnancy/ birth?

Culture and lifestyle

Many activities of daily living, in western culture, have a general tendency to adopt and foster positions of static flexion: sitting/ slouching whilst watching TV, computer use, driving, predominantly office based occupations etc, all have an impact on muscle balance, postural alignment and the flexibility of the pelvis, spine and shoulder girdle.

If not addressed, these positions would have an effect on any person's posture and alignment, but in pregnancy this will be in addition to the already changing demands put upon the mother as she progresses through the trimesters.

Such postures may also have an effect in late pregnancy as they decrease the amount of space the baby has to move around and position itself in preparation for birth. Space is compromised anteriorly (at the front), encouraging the baby to lie toward the back, posterior part of the mother's pelvis

(Sutton and Scott 1996). The birthing process has become increasingly medical in our culture. Previously adopted upright birthing positions have become less common, with recumbent birth positions, more the norm (Coppen 2005). This term refers to positions whereby the mother is lying supine, with or without a back rest, sometimes with one or both legs suspended (lithotomy), or delivering on her side, with one leg raised. This again encourages the baby to lie toward the back of the mother's pelvis, which, as we shall examine, has an adverse effect on the position of the baby for birth and impacts on the mother's spine.

Cultural and societies norms have a huge impact upon the delivery of care and the response to it. In the UK, the phrase, "expected date of confinement" was until recently commonly used and has the suggestion of the mother being passive and inactive. J Rankin (2002) conducted a comprehensive literature search around this issue in attempt to discover the scientific evidence, linking a woman's activity levels upon her physical and psychological health and birth outcome. Her study concluded that regular exercise has a positive psychological effect on the mother and has no risk in terms of the health of the foetus and birth outcome.

Culture and lifestyle can also affect a woman's perception of and emotional reaction to pregnancy and birth and will affect her physicality in terms of body image, self esteem and confidence.

Anatomy of Pregnancy

The hormones of pregnancy play a major role in the anatomical, physiological and emotional changes in the mother, most notably; Human chorionic gonadotrophin (HCG), relaxin, oestrogen and progesterone.

HCG is a hormone produced by the embryo until the placenta has become established and is responsible for the nausea and tiredness usually experienced in the first 12 weeks. The mother can feel particularly anxious in the first trimester due to the hormones and the increased risk of miscarriage at this time. It is estimated that 20% of confirmed pregnancies end in miscarriage before 20 weeks (Henderson and Macdonald)

Relaxin is produced from the beginning of the pregnancy, and although peaks at the end of the first trimester, levels can take several months after the birth to normalise, particularly in breastfeeding mothers.

Relaxin alters the collagen composition of ligaments and fibrous tissues, making them more flexible and relaxed. Muscles that are intersected with a fibrous band, such as the rectus abdominus, pelvic floor muscles and ligaments around the pelvis and sacro iliac joints will be affected. This is vital during the pregnancy firstly, to accommodate the growing baby but also for delivery, by opening the pelvis inlet and outlet.

However, relaxin affects all joints making them potentially unstable (Dumas and Reid 1997). An increase in laxity can lead to an increase in joint range of movement, which affects the posture of the mother and the potential for injury, such as pelvic girdle pain. It can also cause an exacerbation of pre existing injury.

This must be considered when embarking upon an exercise programme, particularly for mothers with no previous experience of Pilates. The classical rep is contraindicated in favour of pre and evolved Pilates. Exercises must be performed within a safe range of movement with low load and in respect of the contraindications for each stage of pregnancy (see appendix 1).

Oestrogen impacts upon the development of body tissues during pregnancy, such as; placenta, breast tissue and uterus. Before pregnancy a woman's uterus is approximately 3x2 x1 inches and the shape of a small pear. By the end of the pregnancy this has grown to approx 12x9x9 inches (Balaskas 1989).

This process begins to impact upon the mother's pelvic and spinal alignment, as by 12 weeks the uterus moves from the pelvic cavity to become an abdominal organ (Rankin 2002). Pilates matwork can improve this alignment from the first trimester and throughout the pregnancy (see appendix 1).

After the fourth month, the growing baby can affect venous return by pressing on the inferior vena cava, one of the main veins supplying the heart with deoxygenated blood, causing supine hypertension. The mother may feel dizzy and nauseas and the uterine blood circulation can become compromised.

It is inadvisable to exercise in supine after the first trimester of pregnancy or around week 24 when the baby suddenly grows. The matwork programme should be adapted to include alternative positions in standing/ sitting and kneeling (see appendix 1).

Progesterone affects the smooth muscle tissues within the body and therefore helps the cardiovascular system cope with the rising demands placed upon it during pregnancy (Rankin 2002).

The influence of the hormones and the changing shape and weight of the mother's body will have a substantial impact on her posture and alignment. Her centre of gravity will move forward and up, and she typically develops a more lordotic/kyphotic posture, with anterior rotation of the pelvis on the femur. Thoracic posture is affected, again due to the centre of gravity shifting forward and due to an increase in breast tissue. Typically, the shoulders become more flexed and roll forward causing strain to the upper back, shoulders and neck, (King and Green 2002). Exercises such as arm circles and dumb waiter can help to mobilise and strengthen this area and improve thoracic alignment.

This combination of increased lumbar curve, increased laxity of the pelvis and sacro iliac joints and weakening of the muscles, mean the abdominals are less efficient in supporting the lower back and posture. Studies suggest that this is a common cause of lower back pain during pregnancy which in some cases can persist post nately, (Parsons C, 1994).

The matwork programme can help to overcome this through exercises which explore the position and alignment of the pelvis and spine, such as the small pelvic tilt and cat. Or through exercises which assist in engaging the abdominal muscles and pelvic floor and developing thoracic stability, such as the arm series (see appendix 1).

The abdominal muscles stretch both in length and width up to 6 inches, to accommodate the growing baby and uterus. This expansion is facilitated by the linea alba and this separation is called diastasis recti. In second pregnancies or multiple births this is more apparent, (King and Green, 2002).

What is Optimum foetal Positioning (OFP)?

OFP is the best possible position for a baby to be lying in before labour starts. The occipito anterior (OA) position gives the best chance of an intervention free labour and birth (Sutton and Scott, 1996).

OA positioned babies have their back towards the front of the mothers abdomen and the front of their skull facing the mothers back. In this position the baby is able to flex its head, so that

the smallest part is presented first, making it easier to pass through the mother's pelvis(see appendix 2).

Sutton and Scott (1996), suggest that left lateral or anterior positions (LOL/A) are most common, as the mothers uterus generally lies forward and to the right. However, if the baby is positioned more laterally than anterior (to the side rather than the front), then it is more likely that the baby may rotate to the occipito posterior (Sutton and Scott 1996)(see appendix 2).

A baby in the occipito posterior position lies with his/her back to the mother's spine, with their limbs towards the anterior of the abdomen. In this position the baby will find it more difficult to flex its head and thus will have a wider area to pass through the pelvis, requiring the cervix to dilate further for the head to descend smoothly into the birth canal.

Sutton and Scotts work, considers how this OFP can be achieved, before and during labour, through knowledge of the anatomy of the pelvis, labour, and how the baby moves through the pelvis for birth.

They promote postures in pregnancy and positions for birth which encourage this anterior position of the baby, creating the best possible angles and dimensions of the pelvis, to allow the baby's head to move through the birth canal. If the mother brings her pelvis forward, combined with the weight of the baby and gravity this will aid rotation and help the baby enter the pelvic brim in the optimum position for birth.

In Pilates, this can be helped from the first trimester through exercises which encourage forward postures such as the cat and exercises that help the mother gain a better awareness of her pelvis and spinal alignment e.g. small and large pelvic tilts.

This stance has been reinforced by other specialists. Janet Balaskas (1991) describes this approach as part of active birthing, stating that when the sacrum is free to move, the pelvic outlet can widen, enabling the baby to gain an optimum position for birth. She also states that this encourages more effective contractions.

This was re enforced by Mendez-Bauer et al (1975), who suggests that upright labour positions enable stronger more efficient contractions.

Gupta and Nikodem (2001) in Henderson and McDonald (2004) also suggest that more upright positions optimise the effect of gravity and show larger pelvic outlet diameters.

More recently, Ragnar et al, (2006), studied 271 women showing that upright positions were associated with a more favourable maternal experience, more efficient contractions and less pain as compared to recumbent positions.

The role of Pilates method and philosophy

It has been established that the mother's posture is hugely affected by an overall pattern of flexion, with the potential for joint instability and laxity. This has the potential, if combined with flexed positions and poor posture during pregnancy and recumbent birthing positions, to compromise OFP and a satisfactory birth outcome (see appendix 3).

Through their knowledge of the body, pregnancy and the Pilates method the instructor will be able to educate the mother about this process and adapt the exercises to meet her specific needs and wishes. They will be able to advise on postures to avoid and those to practice and adopt, adapting matwork exercise to help facilitate this, such as standing pelvic tilts, four point kneeling, using a pezzi ball etc (see appendix 1).

In doing so he/ she will develop a relationship with her client that promotes respect and positive re-enforcement. This is particularly important to the confidence and self esteem of the mother at a time when emotions and hormones can cause stress and anxiety.

The education/ awareness of the mother regarding options for labour and birthing positions and their confidence in discussing these with their midwife were highlighted by Coppen (2005), as being crucial to women choosing upright positions during labour.

Therefore Pilates instructors working with women during pregnancy could act as enablers, educating women about their bodies, pregnancy and OFP, developing their confidence physically and mentally, to discuss their wishes and execute choices for labour, if this is the path the mother wishes to pursue.

It must be acknowledged that as Sutton and Scott (1996) suggest that OFP may not be suitable for all pregnant women and is intended as a compliment to ante natal care.

Pilates works physically to improve strength and stamina activating the stabilising muscles of the abdomen and pelvis. The abdominal corset provides support for the internal organs, the pelvis and the spine and together with the diaphragm aid breathing. This corset comprises of specific muscles:

- Transverses abdominus (TA)
- Multifidus
- Rectus abdominus
- Pelvic floor
- Obliques

The TA is the deepest abdominal muscle and particularly important in maintaining good alignment and stability in the lumbar spine. TA also helps to activate the pelvic floor muscles through which the baby will pass as they are born. Consequently, an increased awareness of these muscles provided in Pilates matwork will not only enable the mother to develop her strength and posture in this area, but will help her to be able to relax and release these muscles as required during the birth,(Sutton and Scott).

The greater body awareness gained through Pilates is vital to OFP as the mother will gain a sense of where her pelvis needs to be for birthing. When the mother bends forwards e.g. in four point kneeling, the sacrum and coccyx lift and open expanding the pelvic outlet. An inability to gain this position can have an effect of narrowing this opening by as much as thirty per cent (Balaskas1989).

Pilates is a holistic form of exercise which links the body and mind through the fundamentals of concentration, breathing, control, precision and flow.

Breath work is a key component of Pilate's matwork and in addition to enabling effective use of the abdominal muscles can also aid relaxation and help in the management of labour pain.

Motha Gowri (2004) suggests that one of the greatest barriers to a natural birth is fear and anxiety as the fight or flight

response, which releases adrenalin, has a constricting effect on the muscles.

Again, by increasing the mother's awareness of her own body and ability to control this response through breath work, it is more likely that she will be able to release her muscles and adopt more beneficial postures during labour.

Conclusion

A wide range of factors affect a woman's posture during pregnancy. This essay has established what some of the major factors are, how they influence OFP and why this is important for birth.

The benefits of Pilates as a holistic approach, able to influence this process has been discussed. Also, its role in enabling women in their birth choices has been highlighted.

This supports current legislation and guidelines from the Department of Health, which state that women should have a choice around the type of care that they receive. They aim to increase the rate of births without intervention by 2010.

To develop the links between Pilates and main stream services would be a positive step toward achieving this aim.

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