

# PREGNANCY, BIRTH AND THE TIME AFTERWARDS IN A DANCERS BODY

– A RESEARCH COLLECTION –

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SPECIALS THANKS TO ALL THE WOMEN WHO TALKED TO ME AND KATHARINA GUSTAVS FOR PROOFREADING



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## A FEW WORDS AT THE BEGINNING

The work of a dancer combines art and creativity with physical performance that requires a very mobile and strong body. Being used to movement, many dancers want to keep on dancing, training and working in their pregnancy. In the freelance scene most have to keep dancing, because of the bad socioeconomic situation pregnant dancers face in most countries. Freelancers often have no paid maternity leave or low parental allowance. In addition, their work relies on their body, similar to athletes. But there is a huge difference: most sports have a limited variety of movements, alongside a clear defined requirement on endurance and strength that can be studied in detail and adopted to the athletes during pregnancy. Often they are accompanied and advised by a team of specialists. In dance, especially in contemporary dance, the movement, dynamics and use of space is not fixed. It is impossible to know about the impact of every movement on the pregnant body while dancing.

Besides the natural limitations that make a handful of moves impossible after some months of pregnancy, there are some basic principles to consider when moving. To me personally, the most important point is the following: The body is very intelligent. It will take care of itself and the baby while dancing and training during pregnancy. The task of the pregnant dancer is to permit the body to take over. Trained in a discipline that pushes dancers past their body's signals and places importance on physical appearance and shape, it is harder for some and easier for others to let go of the typical dancer's mindset.

Giving birth and becoming a mother is a major change for every woman. It is very important to heal after pregnancy and birth for dancers and non-dancers alike. Unless a dancer can decide to stay home with their children, physical rehabilitation plays an even more important, sometimes urgent role. The same goes for dancers who wish to be in movement or to train again for well-being. There are a few things that can support healing and others that can cause damage or prolong recovery after birth.

In this document, I present experiences, information and ideas related to the physical aspects of dancing and pregnancy in the hope that someone can benefit from it and are inspired to learn and understand their body in movement while pregnant and to keep the body available during and after pregnancy. There are sections that speak more directly to first time mothers, but most of it is addressed to every pregnant dancer. In the section about the time after birth, you can find inspiration, even if the birth happened a long time ago.

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You want to share your experience? You see parts that need improvement? You have ideas to share on this topic? You know resources that could be interesting or should be added? Feel free to contact me: [johanna.junghans@posteo.de](mailto:johanna.junghans@posteo.de)

Die Informationen hier sind auf English verfasst, um einen möglichst großen Personenkreis abzudecken. Wenn du Informationen auf Deutsch brauchst oder daran interessiert bist, lass es mich wissen: [johanna.junghans@posteo.de](mailto:johanna.junghans@posteo.de)

## THE FRAME OF THIS WORK – MY OWN EXPERIENCE

Like every woman, every dancer enters a pregnancy from different life situations. These physical, emotional, social and economic situations influence in which frame dance and movement play a role during pregnancy and the time after birth. For freelance dancers, the situation is often quite difficult due to changing work situations and an insecure income. In my interviews I have met dancers who became pregnant in all kinds of situations, ages and socio economic situations. Some stopped to dance, some continued to work as a teacher or performer into the third trimester (but none danced professionally after month seven) and others did training until the very end.

I became pregnant unplanned right after my graduation in contemporary dance. At that time I should have been sorting out in which direction I want to go within the dance world, but instead I had to sort out where to live, how to go on in general. Without an established name or network, missing work experiences and the forthcoming limitations of my body, I asked myself if I could even call myself a dancer.

Fortunately, I got funding from DISTanzen Solo to do research on the second half of pregnancy, birth and the time afterwards in a dancer's body. Since my „work life“ did not resemble the situation of most dancers (I was mostly working and training on my own, not in a fixed performative project or institution), I focused a lot on the pure physical and mental experience in a dance trained body. What is possible? What should the dancing person be aware of? What thoughts, questions, possibilities and limitations occur? I kept on training in the fields of my studies (contemporary and ballet), improvised/created small material and tried out different pregnancy related methods that strengthen the body or are supposed to prepare for birth. Through a detailed diary I observed changes in my system, my body, my training, my approach, my creativity. At the same time, I also personally interviewed nine dancers in depth about their pregnancy and birth experiences.

I danced until the very end and enjoyed it. Due to many factors, known and unknown, I started with a home birth and ended up with a cesarean section. So my experience of becoming a mother and being a dancer turned out to be more intense and transformative than expected. It also added a new dimension to my research: Besides a strong and intense labour and the new life with a child, I had to heal and take care of a traumatic cut in my midline. This was a time that taught me about my limits, my physicality and my trust in what the body is capable of.

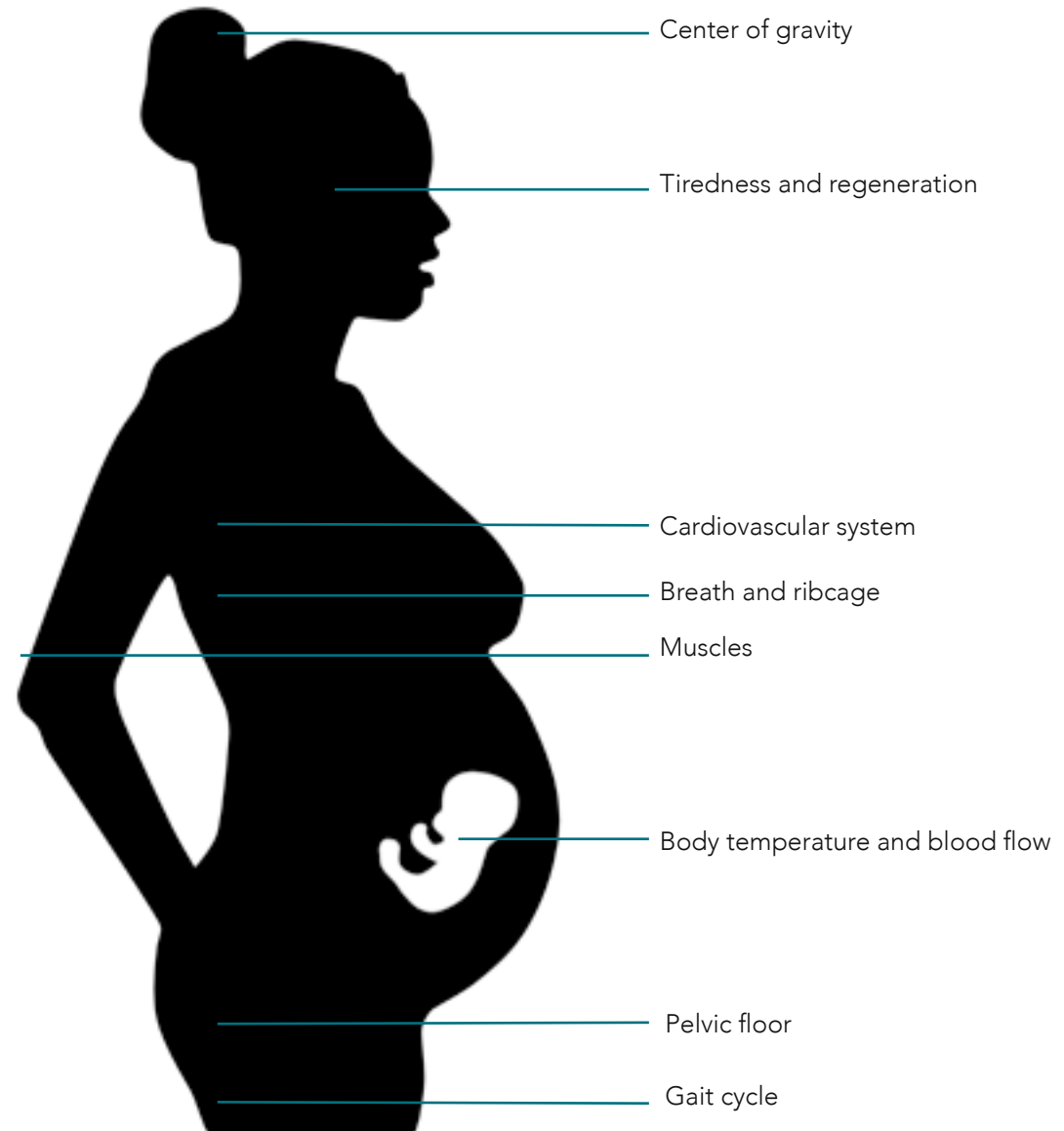
These six months have been full of small and big physical and mental sensations and changes as for all becoming mothers. But I would say that there are some special aspects and perspectives in the experience of dancers.

The document below, is a very personal collection of practical advices, information and ideas. It is meant to provide insight into the complexity of a pregnant dancer's body and mind. I hope this information can be useful for those who are in a similar situation and provide guidance to those who work with pregnant dancers or those who have only recently given birth.

## BODY AND PHYSIOLOGY

### WHAT HAPPENS IN THE PREGNANT BODY:

*Note: this is not a medical guideline. It is a summary of my own observations during and after pregnancy, the experience of dancers I talked to and the research I did. I encourage everybody to do their own research on changes within their body during pregnancy and after birth.*



#### Warning signs

- Bleeding of any kind should be sorted out immediately with a midwife or doctor.
- Nausea and dizziness.
- Constant tiredness and muscle weakness.
- Feeling sick or short of breath – rather take a break than dance.
- Strong calf pain and swelling (besides the changing posture and weight and the uterus that presses on pelvic veins, it could be a sign of vein thrombosis)
- Contractions during movement or after can be a sign that it is too much (especially in the last trimester). Regular and painful contractions have to be taken seriously.

## 1. CENTRE OF GRAVITY

The centre of gravity is shifting forward (especially from the 2nd trimester), because the uterus and the child within and the breasts are growing. Leaning backwards in order to counteract the shift in weight causes progressive lumbar lordosis and an anterior tilt of the pelvis on the femur, which results in an anterior flexion of the cervical spine, an abduction of the shoulders and the head moving forwards as well as an increased knee flexion in stance. These changes happen slowly and will impact your balance – upright and inverted.

What I found helpful:

Constantly breathing my spine long from bottom to top, especially during walks and while standing.

„Graham-like“ contractions in standing, while focusing on the length front and back during the spine curve instead of a pulling in. Keeping the shoulders in place, not moving them to the front, instead moving the breastbone back. Long lower back.

Making all kinds of balance exercises part of my training. I realized: the more regular I balanced, the better my body could adapt to the small changes within short periods of times, such as two days. The longer the balancing break was, it became harder to find balance afterwards.

## 2. CHANGE IN GAIT CYCLE AND STEP LENGTH

Every step while walking consists of double and single support time. Because of weight gain and a shifting alignment during pregnancy, the double support time (the time being on two legs during a step) increases and the single support time decreases, while step and stance width increase to the side. This shift leads to a different, less dynamic way of walking and alters the use of muscles and puts pressure on joints and bones. It also impacts the ways of weight transfer while dancing, e.g. pushing from two legs to one leg in a *relève*.

What I found helpful:

Being aware of my stance while dancing, moving and walking. I had two weeks during the 2nd trimester when I started doing a wider stance which created pain in

the hip and lower back to me. The more I „practiced“ a normal distance in standing and walking the less lower back pain I had and could take it with me until the end of pregnancy.

A lot of walking with the feeling of moving away from the floor.

Keeping different stances and weight transfers in my daily practice in order to let my body adapt to the changing weight and centre and learn from it.

## 3. MUSCLES AND LIGAMENTS

Muscles, ligaments and joints are softened by hormones (relaxin) in order to prepare the body, especially the bony structure of the pelvis for birth. This may lead to loosened joints which makes them less stable (see above). This effect will last at least 5 months after birth, when breastfeeding even longer.

What I found helpful:

I paid special attention in fast and more extreme movements, tried them slower or more carefully when done for the first time.

Some dancers experience looser joints and feel more mobile, some feel it just for a certain time. It is tempting to go with the new flexibility, but it can damage the muscles and ligaments. This should always be kept in mind, when experiencing a new alluring mobility. Having a set of certain similar mobility exercises for almost every body part, I did regularly in order to have an overview of if and how my mobility/flexibility is changing. Even though I didn't feel more flexible for a long time, there was a rapid change in the last 4 to 5 weeks of pregnancy, where I suddenly felt more open and soft and in the need for more stabilization for instance in the feet.

**The pelvis joint** (symphysis) becomes looser as the delivery nears. In some women this softening start earlier. As the baby grows, they experience a pulling pain in the symphysis and the pelvis and a sensation of decreased support. Strong and fast impact (e.g. in partnering) or carrying heavy weight can stretch the loosened ligaments of the pelvis joints apart.

**The abdominal muscles** will have to make space for the growing baby, resulting in a change of their functionality (decreased and limited support) and the stretching of the connective tissue (linea alba) between the rectus abdominis muscles. As a

consequence both muscles move apart, a phenomena known as abdominal separation. An indicator for the separation is coning: when a linear ridge down the mid line is visible during movements that involve strong abdominal muscle work (e.g. plank, crunches, back bending). This "cone" is caused by protruding inner organs against the linea alba which becomes thinner due to stretching as explained above. It indicates that there is a separation of the rectus abdominis muscles (starts during 2nd trimester).

Passive twisting (when you push in a twist) has a similar effect as coning and should be avoided. The twist should come from the upper body or with engaged stomach muscles only.

*Abdominal separation* is happening in every pregnancy and there is no reason to fear it. It will disappear alongside the "coning". But certain movements can make the separation even bigger and/or prolong the healing after birth: shortening the muscles in crunching movements, passive twisting, coming out of back bends, etc. When the connective tissue is extremely overstretched or damaged, it is called *rectus diastis* which needs special exercises to heal since this condition may have a serious impact on pelvic floor health, muscle strength and sometimes makes the belly appear loose, as if pregnant.

For a detailed explanation and the difference of doming and coning: <https://www.youtube.com/watch?v=b3vd0QQVSrA> (See also *The First Weeks after Birth*)

What I found helpful:

Testing and finding out how coning feels and looks on me, so I could recognize the feeling in more complex movements. I practiced it in plank pose during the second trimester with a person watching from the outside and giving me feedback, so I could focus exclusively on the sensation of coning/not coning.

Here again: The imagination of stable length in my back and stomach muscles rather than contracting them was helpful and stabilizing when using the core in any kind of movement.

Doing active (from muscles initiated) twist in standing.

## 5. PELVIC FLOOR

The pelvic floor consists of three layers, each of them can be sensed and individually activated. A healthy pelvic floor needs relaxation and calmness as well as strength

and tension on all three levels.

A weak and a tensed pelvic floor can cause similar problems: Leaking pee, faecal incontinence, pelvic organ prolapse, painful sex, vaginal flatulence, frequent urge to pee, frequent urinary tract infections. Often the deep layers are weak and it seems as if the problem is caused by the outer layer, which is actually just compensating. The pelvic floor muscles are under strain already during pregnancy and need extra support and care. A weakened pelvic floor might not be sensible in the moment it occurs, because it starts deep within. Problems in that area can also show some months or years after birth. Keep watching for any of the above signs during and after pregnancy.

### What is the state of the outer layer?

To test the level of tension massage the perineal area: Is it possible to let go of the "holding" when having to pee? Is the perineum and the area around the vagina tense and burning while being massaged? If so, traditional pelvic floor exercises should be avoided. Focus on releasing through perineal massages (see also *Preparing for Birth*) and deep squat stretches.

### Which exercises?

There are thousands of approaches on how, when or where to exercise the pelvic floor. Some exercises only focus on the pelvic floor, some involve the whole body, some work more on the inside and others more on the outside. I can just recommend to find something that feels harmonious and effective for your body and to see it as a journey of discovery. Most pelvic floor exercises work with tensing and releasing the outer layer of muscles which often is not the core problem or just one part of the equation. It is very helpful and maybe more successful in the long-term to practise a method that involves the deeper layers which can be triggered by imagination since the movement there is very subtle. In the end, every kind of movement involves and impacts the pelvic floor, but considering its role in pregnancy, birth and after birth, however, it is worth having a close relation with your pelvic floor and knowing how to access it. Be careful if a method is only based on tensing muscles or works the sphincter intensely.

What I found helpful:

Personally, I found Cantienica to be the most wholesome approach. It involves the whole body alignment starting from the bones, releasing tensed muscles and bringing space into the joints. It is advisable to already become familiar with exercises or a certain approach before birth. It helped me save time after birth.

In addition: there is a strong connection between jaw, pelvic floor and the feet.

Concentrating non-stop on releasing the jaw while dancing and moving helps to sense the pelvic floor more precisely. Also paying attention to relaxation and activation in the feed. It made such a difference in my hip and leg mobility despite the growing belly. I could also feel the connection when preparing the pelvic floor and perineal muscles: see also *Preparing for Birth*.

## 6. BREATH AND RIBCAGE

During pregnancy the oxygen demand is higher due to an increase in the metabolic rate and overall oxygen consumption. But the perceived breathing discomfort during exercise is reduced because hormones lower the airway resistance and increase minute ventilation\*.

With the upward expansion of the uterus by time, the diaphragmatic mid position is raised and the thoracic cage expands. This will restrict forward bending movements and the mobility of the spine. It can also cause extra effort when breathing in backward, forward or sideways bended positions.

What I found helpful:

Taking the breath as a serious adviser for where I am at with my energy during movement of all kinds.

Mobilizing the upper body and rib cage on a very regular basis in order to make space and learn about growing restrictions. I found mobilizing, repetitive movements more helpful than passive stretching.

Practicing to breathe in 360 degrees sideways (with hands placed wide on the rib cage) and breathing out, upwards along the spine. This creates a very free and unrestricted breathing and length in the spine which will allow for more forward bending)

Understanding breathing better (see *Resources and Helpful Tools*)

“Coherent Breathwork” is helpful on many levels, calming and save to do in pregnancy (see appendix *Helpful tools*)

\* The minute ventilation – volume of gas inhaled per minute – is rising by around 40% to 50%. This leads to a drop in CO<sub>2</sub> levels that can cause hyperventilation, since CO<sub>2</sub> in the blood is needed to exchange oxygen. Another reason could be the heightened response to blood CO<sub>2</sub> due to sexual hormones such as oestrogen and progesterone. Progesterone levels are elevated during pregnancy because their task is to maintain the pregnancy. But they also act as respiratory stimulants and increase the blood's sensitivity to CO<sub>2</sub>. More information on this very fascinating topic can be found in *Breathing Cure* by Patrick McKeown

## 7. CARDIOVASCULAR SYSTEM

Relaxin heightens the cardiac output (volume of blood that is pumped through the heart per minute) which increases heart rate and stroke volume. Pregnancy itself is an endurance training. In general, the own estimation of the personal heart rate (in order to detect the level of exhaustion) is often underestimated during pregnancy, meaning that overexertion of the cardiovascular system may not be noticed. Blood volume increases by 30% to 50% (its mainly the plasma that increases, the red blood cells less).

What I found helpful:

I got the suggestion to focus more on strength in training then endurance, since the latter is trained by pregnancy itself. (I can approve this assumption by my experience after birth.)

Probably every dancer has their own rating of exhaustion levels. Though the sensations of each level might not change, the time for the body to regenerate and energy that is left over after changes. I found it especially important when being involved in a creative dance process when you loose track of time and your power.)

## 8. BODY TEMPERATURE AND BLOOD FLOW

Muscle work increases the body's core temperature and leads to a redistribution of the blood to muscles (where the work results in heat) and the skin (in order to cool the blood). A reduction in circulation in the inner organs can be observed.

This mechanism can cause two problems when pregnant:

1. Problem: The foetus is 0.5°C warmer than the mother and has no system of its own to regulate its temperature. The mother's hearth prioritizes the blood flow (for oxygen) to the placenta which takes warmth in quickly and may lead to overheating.

2. Problem: Is the uterus affected by the redistribution of blood that results in foetal stress? Animal experiments support this presumption.

There is no way to check your core temperature and blood distribution during a normal training or rehearsal session. In the end it is more an evaluation of the level of overspending and peak performance.



What I found helpful:

Being aware that the ambient temperature as well as the created heat within me can (but doesn't have to) have an impact on the child. This doesn't mean I cannot sweat. It just helps to give this sensation more priority than in usual training situations where sweating and heat is a normal part, especially in summer time.

Taking a break as soon as I felt too warm: for me personally this point is reached at the latest when I get a headache, my breathing becomes even heavier and the sweat seems to be 'not enough'.

## 9. TIREDNESS AND REGENERATION

Especially in the first trimester very strong fatigue can occur because of hormonal changes impacting heart rate, blood volume, etc. It's the time for the body to adapt to the enormous changes of pregnancy. It's the time of the embryo's genesis and development of the organs.

The regeneration (in the whole body, not just muscles) might take more time, since the nurturing of muscles and energy supply are competing with the needs of the child.

What I found helpful:

Even though it might be frustrating, taking breaks as needed is essential. Also in later pregnancy it is not useful to „push“ through, often it makes the tiredness stay for whole days. A nap in-between or stopping movement for 5 to 10min never made a bigger difference in my energy levels than in pregnancy.

I automatically listened more to "tired" muscles. Not in a way that I avoided tiring movements (the situation before birth is different: see *Preparing for Birth*), but being more aware that my regeneration works differently during the pregnancy.

Last weeks before birth: I tried to not exhaust myself anymore, even though I really enjoyed moving, walking, dancing a lot, accompanied by the feeling, that I needed it to sense my body in movement in order to feel connected and prepared for birth. At one point (3 to 4 weeks before birth) a sudden caution appeared, a wish to conserve my energy. Listening to those subtle, sometimes weird "messages" helped me to feel awake and prepared for birth.

## BODY AND PHYSIOLOGY – TRAINING AND MOVEMENT

### TRAINING DURING PREGNANCY IN GENERAL <sup>1,2,3,5</sup>

- Pregnancy is not the time to build up fitness or peak performance: it is more about keeping moving, training and creating within a frame that feels good while adapting to the upcoming changes within the body.
- Scientific data is very limited and vague, but moving and training more than the recommended 150min per week seems to have no adverse effects for trained women. The question in which way peak performances and over-exhaustion may impact the birth outcome still remains. Exercise in the first trimester is not associated with increased odds of miscarriage.
- Every athlete reduces strength and cardiovascular training in intensity and duration towards the third trimester
- To get back to a pre-pregnancy training level seems to depend more on motivation and social support after birth than on training intensity during pregnancy
- Adequate intake of food for nutrients and energy and fluid for hydration is important when training. Dieting or losing weight shouldn't be a goal in pregnancy (or right after).\*

\* Eating disorders are prevalent in sports and in sports with a focus on aesthetics, even more so in dance. Pregnancy and the inevitable weight gain can be a trigger to dancers with conscious or unconscious eating disorders. In order to find a healthy way for mother and child, it is recommended to seek professional help.

**Discovery on regularity:** Everything I did before pregnancy was easier to do while being pregnant. Learning/starting fundamentally new types of movement seemed harder. On the other hand, my body adapted to movements such as balancing, strength and coordination according to the growing stomach depending on the regularity with which I did them. As soon as I stopped doing a certain thing for longer than a week after the second trimester, it became more difficult to return to it. When I practiced/used a certain principle / movement/body part regularly, the better my coordination. And my body could incorporate the changes from the centre shift over breath rhythm to the growing belly.



## ATTENTION ON GENERAL MOVEMENTS

**Stomach muscles on the floor:** No movements that shorten the rectus abdominals (e.g. crunches), no passive twisting. Both are a strain on the straight abdominal muscles. It can injure the linea alba and prolong recovery after birth.

**Laying on the back:** Since the weight of the baby presses on the inferior vena cava it can block the blood flow to the uterus and lead to hypotension (low blood pressure). The body reacts with severe dizziness, later on the child may give a sign through rapid movements. It doesn't have to occur every time you lie on your back, but the position should be changed as soon as the symptoms appear. (Observation: Some have more or less problems with it, depending on the shape of the pelvis, the underground, the movement or the child's position.)

**Squatting:** and movement deep in the hips as used in floor work, is even recommended to mobilize the hips. If the baby is not in the right position after week 32, it should be avoided, since squatting can move the baby deeper in the pelvis.

**Deep back bending:** As long as it is space wise possible with the belly and there is no pain or a sensation of aversion to it (+ any of the listed warning signs), there is no indication of not doing it. But it is important to keep in mind, that the support by the abdominal muscles decreases. This can cause lower back pain and while coming out of a back bend and put strain on the linea alba and rectus abdominus (see also: *Muscles and Ligaments and Floor Work*)

**Inversions:** As long as they feel safe and there is no dizziness appearing meanwhile or afterwards, inversions can be performed throughout pregnancy. If it is in the repertoire: Going into a bridge after an inversion shouldn't be performed since the abdominal muscles may not supply the needed support to enter and leave the backbend.

**Jumping and high impact movements:** such as stamping or big jumps that land on one leg should be avoided. When looking on jumps, it's important to consider, that the high impact of a jump cannot be absorbed fully by the pelvic floor because of the baby and the decreased functionality of the stomach muscles. As the pregnancy progresses, the strain is increasing. When looking out for the following warning signs, jumps can still be performed:

- Incontinence (any amount of unintentional leaking of urine or faeces is a sign to stop!)
- Pressure or pain in the pelvis (bone and muscles)

- Heaviness/bulge sensation in the vagina
- Pain in the back, hips, belly and pubic bone during/after jumping
- Pulling sensation in the abdomen or pelvis

Without being too anxious, it is helpful in the long run to be aware that with progressing weight in pregnancy the pelvic floor muscles have to do more work. Unfortunately it is not immediately obvious, if they are seriously weakened. So being a bit more careful with high impact on the pelvic floor even if a movement feels okay may save you time for recovery after birth.

Observations: I observed that in myself and this experiences was also shared by other dancers. There seems to be a *difference in the kind of jump* one does. It seems easier for the pelvic floor to support more rhythmical, varied and light jumps (e.g. petite allegro) than heavy and repetitive jumps (including jogging). One reason could be the pulsing of the inner pelvic floor muscles that is automatically activated in smaller, bouncing jumps.

## COMMON PREGNANCY EXERCISES

Almost all the dancers I have interviewed reported, that they didn't do any pregnancy specific exercises or methods to stay fit or prepare for birth. They either adopted what they used to do before pregnancy along with the physical changes or stopped dancing at a certain point.

From the interviewed dancers and partly myself I could find three reasons: First of all, many exercises make too little use of the complexity in movement, they seem to be boring to some dancers bodies. Secondly many dancers seem to prefer using the energy and time they have during pregnancy to dance and train in a known or more creative way. And last, some dancers reported that by the time of their pregnancy they either didn't know special pregnancy related exercises or didn't have the time because of the work load.

What I found helpful:

In my opinion it is not necessary to do pregnancy specific exercises to stay „fit“ or be safe for other movements during pregnancy as long as some basic principles (see below) are taken into consideration.

But in the last trimester some methods are useful to help preparing the body for birth. Many mechanics and images that are used during complex dance moves are

opposite during birth (e.g. energy up or being upright in contrast to energy down, opening up in the pelvis). It is helpful to start slowly in the last trimester getting used to this direction on a bony and muscular level, especially when you had a very danceful pregnancy. I don't think that a certain method is more or less suitable, as long as it offers the body and mind some hints to this opening. I also started to incorporate some "opening images" into my "normal" dance moves.

## BODY AND PHYSIOLOGY – CONTEMPORARY AND FLOOR WORK

**On the ground:** In opposition to more upright dance styles, floor work seems to be quite restricted during pregnancy (especially in the second half).

The first limitation is the rolling over the belly, which becomes impossible at some point because of the pressure on the baby. The second difficulty that arises is the use of abdominal muscles that is needed to close and open, lift the head, give impulse to go over the hands, on the shoulders etc. in floor work. The growing belly restricts space and mobility in the upper body and puts strain on the weakened straight abdominal muscles that are overstretched and opened (see *Abdominal separation*). Additionally rolling over the back can cause pressure and pain in the sacrum.

But a lot can be done in the mid level, movement that involves squatting (as long as there is no medical problem that indicates otherwise or having a baby in breech position after week 30), having weight on the hands, etc.

**Quality:** Even though the pregnant body is still open to a big variety in movement qualities, many dancers report that they unconsciously carry out movements in fixed as well as in improvised material more softly and fluid. Most fast, strong and staccato movement impulses have their origin in the middle of the body, which is due to the pregnancy is not as available as usually. I do think that it is an intelligent automatism to avoid abrupt, uncontrolled movement impulses, which could take the body out of balance or pull already overstretched muscles and loose ligaments apart.

**Plies:** There is no contraindication to plies of any kind as long as there is a feeling of stability within the feet and knees. The extra weight can be an additional strain on the ligaments when going in or coming out of a plié, especially in fast and uncontrolled movements that go in or out of the floor. Pain should be avoided at any costs and taken seriously if it appears. Practicing slow plies as well as foot rises can be a helpful tool throughout pregnancy when there is the wish to perform more complex plies.

**Spinal movement:** The limitations that pregnancy brings become the most obvious in any kind of spinal movement. Even though the dancer might not sense too much restriction in spinal expression (1st and 2nd trimester) the movements of the spine make a very limited impression from the outside. The reason for that is the

relatively immobility of the belly and rib cage that make spinal movement visible in the body. This also contributes to an overall feeling of movements travelling less through the body. This mainly aesthetic factor shouldn't pose a problem in training. It's even advisable to focus on spinal movements in order to keep mobility in the spine and ribcage, both of which can stiffen during pregnancy, restrict breathing and stay hardened post-partum. In choreographic work, the limitation of the spine puts a gentle focus on the pregnant belly (from second trimester onwards) that can be used and integrated.

In the last months of pregnancy, the dancer will feel the restriction in the spine more and more. It's important to still keep the spine moving on the one hand and to not ignore any kind of pain related to more expanded movements of the spine.

**Partnering:** Almost all the dancers I have interviewed stopped doing partnering on stage no later than the second trimester, either because of painful sensations during lifts, impacts from another person or limitations and a feeling of unsteadiness. There are wonderful performances of pregnant dancers including various forms of partnering. But lifting, abrupt impulses and impactful movements from the partner towards the pregnant dancer as well as any type of pressure on the abdomen shouldn't be part of the choreography. (Also see *Symphysis and Pelvic Floor*)

**Performing:** There are no adverse consequences from performing on stage at any point during pregnancy (dependent on the material of course). Some dancers perform until week 37. The only thing to keep in mind is that the stress the mother is experiencing will immediately be transferred to the child through hormones, heart beat etc. Some dancers experience more mental stress towards performing during pregnancy, which is a very natural response. It is good to also remember that it also takes mental energy and resources to prepare internally for the child's arrival and to integrate this new life into your reality..

Another aspect that is easily overlooked as we are so used to it is loud music on stage, which can put stress on the foetus as it is very sensitive to volume and sound.

## BODY AND PHYSIOLOGY – SIGNALS

What dancers should do and nor do, what kind of movement they feel safe with or not is as different as every pregnancy. There are no safe, evidence based guidelines for dancers or dance specific movements, just vague suggestions what to do and what to avoid during pregnancy. Added to this is that the regulations for studies on pregnant women are very strict – for good reasons<sup>4</sup>. Some dancers feel insecure about this situation and stop doing certain movements or stop dancing altogether, other dancers use their sensations in the moment as a guide and some dancers do everything as usual, no matter what. In the end every pregnant dancer finds their own way. But I wish that we as dancers can make more self-determining decisions with which we feel good, safe and not fearful, especially for freelance dancers who might have and want to continue work in their pregnancy and right after birth.

### THE BASE: SIGNALS

Dancers do unfamiliar, uncomfortable movements, train when the body might be tired and push past its limits. Therefore they often have a strong mind and will power enabling them to do so. Being aware that the responsibility for my body affects two people while being pregnant, I could recognize two kinds of signals within me. First there was my brain looking for permission and indications collected from what I could find and read, what I have heard and a common knowledge what a pregnant woman can and cannot do. This voice can be overly cautious or be appeased by the dancer's mind, that wants to be as free and unrestricted as possible. After a while I found it confusing and irritating to rely solely on this voice.

The other signal comes from the body. Even though a dancer is often quite in tune with her body, expectations from inside and requirements from the dance frame outside can silence those messages. But thanks to the pregnancy, which brings a heightened awareness, it gets harder to ignore signals from the body and I can encourage everybody to study them closely. We might think of pain as such a signal or a movement that feels clearly uncomfortable. However, in my experience those signals are more subtle and yet very clear. They appear as a sharp but grounded thought that often makes little logical sense. Sometimes I knew that the child doesn't feel good with the movement although I couldn't feel direct pain. Other times it was a clear feeling of *no* or a calm feeling of *yes*, though my head was

anxious. Questions arose: I have done this until yesterday, why should it be bad today? Or the other way around: It wasn't possible the past two weeks, why does it feel okay today? Or: It is not advised to do it. After a while I could recognize those signals more often, particularly in moving situations and it gave me a base of safety and trust in what I was doing, even if it was a lot or not the way a „normal pregnant women“ behaves.

In the end it is a mixture of both signals: *knowing your mind and knowing your body*. It is important to find a way that feels safe but does not lead to anxiety.

One way I found for myself, with which I felt safe but not in an overly careful limiting way, was the knowledge about what is changing within my body (besides the visible growing belly) combined with a close self-observation of specific fields of my movement, energy and regeneration in order to assess possibilities and limits.

Further below want to share a (internal) list of questions that evolved over time for me. Maybe they can be helpful, but every dancer will have to find their own criteria depending on how and in which frame they move.

### Regeneration

- Do I have very „tired“ days, more than two in a row? (Tired days in pregnancy are normal, as well as in a dancer's life. The question is: Is a night's sleep and rest enough or do I feel strained for a prolonged time?)
- How long does my regeneration take? How is my sleep quality?
- Do I have muscle pain? How long does it stay?

### Energy and concentration

- How long can I concentrate? Do I wander a lot with my thoughts?
- Am I aware of what I am doing, moving? Is my brain taking breaks?
- How do I feel energy wise after moving? Do I still have capacity and energy for non-dance-related things?

### Movement

- First observation: Is there anything new? (change in hips, mobility, pain, etc.)
- Why do I train? Do I want to stay in shape? Is it for working purposes? Do I need movement, feeling my body, having a good sweat?
- Choreographic work: Do I want to prove myself? Do I communicate my limits? Do I fear of being seen as weak? Do the people I work with see limitations I don't feel?
- Do I have a sudden feeling of wanting to stop a certain movement even

though there might be no pain?

- Legs: Do I retain lots of water? Do I have muscle pain? Is the sensation changing while moving? (Sometimes movement improves water retention, other times it can even occur as a sign of exhaustion and an indicator to rest)
- Breath: How is my breathing before, during and after dancing? (breath length, deepness, freedom in rib cage, burning?) Does a movement restrict my breathing?
- Abdomen: When do I see coning? Is there burning or pulling in the stomach muscles? How supported do I feel from within (is there pressure within the vagina)?
- Inversion: How does the belly feel? How is the breathing? How do I feel afterwards? Is there dizziness or are tingling sensations appearing?
- Back and rib cage: Does a certain movement create back pain, immediately or afterwards, is it short and sharp or deeply tensed? How mobile is my rib cage?
- Hip: How moveable do I feel in my hips while: standing, squatting, with leg in the air? Do I feel pressure within my pelvis (feeling of putting pressure on the baby)? Do I feel pulling sensations or pain in my pubic bone?
- Jumping/bouncing: How does my pelvic floor feel? Does it create sensations in my belly, stomach muscles that haven't been there before doing it? Do I experience incontinence?

### Later on / last trimester / last weeks:

- How does the baby react? (It is hard to know what the reactions of the child exactly mean, but maybe you can relate to experiences outside of dancing such as kicking when it is too narrow)
- Why do I dance/train? Does it give me satisfaction or joy, is it a „must-do“?
- When the head of the baby starts to move downwards: How do movements in my hips feel?
- How does my belly feel and react to movement? Do I have contractions? Is there pain in the superficial stomach muscles?
- Do I feel more stiff and tensed after moving? (In the last weeks, the body should be available for sensations of softness and letting go, especially in the legs and within the muscles of the pelvis)

## PREPARING FOR BIRTH

Preparation for birth might look similar for non dancing mothers. As a professional dancer, it is worth having a look at these points, since they can contribute to an easier birth and / or decrease the possibility of birth injuries that take longer to heal or have an impact on the availability of the body after you gave birth.

1. See a professional to **clarify tensions within the pelvis**: In all sports, the sports person gets medical care and advice from physicians and experts. As a dancer this support is often not given or has to be paid personally. Since dancers train and dance a lot while often repeating one sided movements in rehearsals, muscular imbalances can evolve and even impact the bony structure of the pelvis. Those don't resolve when you stop dancing some weeks before pregnancy. It is advisable to be checked out by a specialist, such as an osteopath or physiotherapist, in order to make the entrance into the pelvis easier for the baby.

2. Do **perineal massage** in order to minimize perineal tear and learn something about the level of tension in your pelvic floor: It is said to be very helpful to avoid tearing, but for me it was more a surprising possibility to get to know my outer and middle pelvic floor muscles and learn how to release them consciously (for a good explanation, see Appendix)

3. Read something about the **spinning babies method** to understand why problems, extraordinary pain or stall in labour can occur during birth: today's obstetrics has a very medical and problem focused approach. Spinning babies focuses more on the muscular balances of mothers and helps the positioning of the baby. Their website is also a first aid kit during birth (I wish I knew!). It is also advisable to do the pelvis balancing exercises, which are very easy to perform and can be found on the website.

4. **Prepare yourself mentally** that life and dance will be different afterwards. It is nothing to be scared about: Whatever comes, whatever may be hard, try to see it as a new challenging but enriching experience on all levels. The time you have will be different, your attention will be different (maybe more focused) and your

body will feel different and needs a new kind of attention, at least in the first weeks, sometimes even months.

5. Become familiar with **pelvic floor exercises**: in order to have awareness for it during pregnancy, to have an idea of its state after birth and an easier start when you have little time to dive deep in the subject because of the baby. (I suggest Cantienica that has a very different approach than common pelvic floor exercises.)

### Dancing and training in the last 6 weeks

Very obvious and rational: At this point, the main factor for movement should be enjoyment or the wish to move. Sensations of tension and tiredness through movement should be avoided. But by the end of pregnancy, the body will take whatever it needs, ambitions are replaced by a sensation of heaviness and excitement towards the birth, even though dancing in a moderate way can bring relief to stiffness and heavy legs.

### Do dancers have a more painful and complicated birth?

Some people say that because of their high muscle tone and their strong pelvic floor, dancers have more complications during birth or a higher risk of a C-section. I have asked midwives about their experience, since there is no scientific data looking at this phenomena. All of them said that there is the observation of strong athletic women having longer births, but that there are also a lot of them who have very average births. After my own research and an intense study of „Spinning babies“, I would say that a strong pelvic floor is no indicator for a complicated birth, as long as the muscles and the bony structure of the pelvis are balanced. The way the birth is accompanied seems to be more important: an induction (often leads to more irregular and painful contractions) and how much space is given for the individual birth process also has an impact.

## THE FIRST WEEKS AFTER BIRTH

It is all about a sustainable approach since you want to use and work with your body on a level that is beyond what the average woman does movement wise. Here are some points to consider about the when and how to start.

**Sustainable recovery:** Be aware of the strain that birth and pregnancy means to the body, even if you are and feel fit. The body needs time to recover, even though recovery looks different for everybody. If you start training too early, it can cause damage to the pelvic floor and increase diastasis recti. The problems might not be obvious at first, but they can also appear or start a few months and up to some years after giving birth if the impact is too early too high (e.g. incontinence, prolapse, slowly or not healing diastases rectis)

**Bonding and emotions:** The first weeks are important for mother and child (and father) to get to know each other. In terms of getting back to dancing: it is important to keep in mind, that the weeks after birth are a comparatively short and deeply imprinting time. It is an emotional rollercoaster caused by the sudden change of hormonal levels in the body and the rewiring in the brain. The puerperal period is also a place to digest birth experiences. Here the aspect of sustainability can be found as well: Even if it is tempting to start again fast for different reasons (pleasure, need, fitness, body shape, etc.), keep in mind, that every emotion that can be digested now, you don't have to carry around with you and every moment you spend with your child now impacts your communication later.

(If you had a traumatic birth experience you may seek professional help. Physical and mental trauma during birth can be stored in our nervous system and muscles and may be reactivated suddenly in physical intense or intimate moments as they often happen in dance (e.g. partnering, exhausting rehearsals) . It can prolong regeneration/healing after birth and impact body perception.)

**When to start dancing again** after birth is a very personal choice, depending on the birth experience (intensity of birth, caesarean section, traumas, etc.), possible birth injuries (e.g. perineal tear, C-section scar, pelvic floor injuries) and your mental state. If you really feel like it, moving and stretching in a moderate way soon after birth can help physical recovery and balance mental struggles due to the extreme hormonal changes, especially if the body is used to move.

Be careful with taking impact when you do movements with a partner. The hor-

mones keep the tissue around the pelvis soft and decrease its stability. This can lead to pain and strain on the symphysis and the pelvic floor.

**Patience:** *Shape, strength, fitness and total availability* will be changed. Even though it might be scary in some moments when a dancer feels far away from her pre-pregnancy body, healing takes big steps after birth. Trust in the process of healing. It helps a lot to keep the focus on internal sensations when moving in the beginning in order to detect pain, discomfort and alignment issues. The mirror and the lines are less important.

*Your strength and fitness* will come back as soon as you use and need it.

*Your shape, bodyweight and skin* will be different in the very beginning. Most of the changes will return to normal, some of the things may stay for good. In an aesthetic field such as dance, it takes extra mental strength to stay positive with your body image. Don't underestimate its importance.

*The total availability* of your body including flexibility and mobility may need some time and depending on personal "hot spots" (back flexibility, leg flexibility, hip mobility). Those spots need some extra attention to get back to normal again. Often birth injuries, tension or alignment issues are the origin and it is advisable to seek the cause rather than stretching for hours on the surface. \*

**Start simple:** Start with simple, known movements to get a feeling where you need extra support, strengthening or attention on alignment. Even though the body adapts usually quite fast, the sensation of being out of balance is quite common in more complex movements. The centre of gravity has suddenly changed and also circulatory problems can appear because of hormonal changes. Increase complexity, tempo and rhythmicity slowly.

**Pelvic floor:** (see *Physical Changes*) Before starting to move with more impact, it is highly advisable to get an idea about the state of your pelvic floor and the stability that the inner and outer abdominal muscles can provide for the back and impact in the direction of the floor. The post-partum regression of the pelvic floor takes time, independent from the mode of delivery due to the strain during pregnancy (the healing will be completed at the earliest one year after delivery). Even if your pelvic floor is comparably strong, hormones are still active and soften the muscle tissue. Too early and unsupported stress on the pelvic floor can weaken it in the long term, causing symptoms of incontinence or prolapse.

Be aware of your feet, they have a close connection to the pelvic floor. Feeling impulses coming from the floor that travel through the body can give extra support if the strength in the middle of the body isn't fully there yet. Also by focusing on the strength in your legs, you can give the pelvic floor extra support.



**Diastis rectis:** Check (see appendix) how big the gap between your abdominal muscles is, even though it is not only the gap that is important to consider. Even more significant is the inner stability that can be sensed within the gap. If the tissue feels very soft and there is no support, then it can be more harmful than a bigger gap. It is no reason to panic, but keep an eye on its healing and look for certain exercises if nothing is happening or more than two centimetres stay after 3 months. In the past, it was thought that it is necessary to just train certain muscles in order to heal diastis rectis. Today most specialists agree that all abdominal muscles are part of the game. But it is necessary to start from within, slow and very easy, always avoiding exercises that cause pressure on the abdomen, shorten abdominal muscles or cause doming/coning to happen.

It's important to know that despite the changed look of your belly (look of a pregnant belly), a weakened or injured linea alba cannot support the organs as it should and impacts the function of the deep muscles in the pelvic floor.

C-section: During a C-section the straight abdominal muscles are pulled apart in order to make space for pulling out the baby. This can lead to a wider diastis rectis that needs longer to heal.

#### What I found helpful:

A picture coming from Cantienica: Lay on the floor, imagine to pull your spine and coccyx apart, rib cage and hips as well. Your stomach has the same eased length as the back. Imagine the two rectus muscles long and pulse them together - its more

\*Coccyx: During vaginal labour the coccyx can be shifted because of the pressure of contractions and the pull on ligaments and muscles. This can cause local pain and impact spinal alignment and flexibility in hips and legs. An osteopath or physiotherapist can help the bony structure of the pelvis to move back in its position.

*Scars from C-section or perineal tears:* The evolving scar tissue can cause muscular imbalances in the pelvic floor as well as the abdominal muscles. Those imbalances can "travel" through the whole body causing unspecific pain and tension. Massaging the scar yourself or getting help from a specialist is very helpful.

*Breath:* Pregnancy and pushing during birth can cause muscular tension in the diaphragm impacting breathing patterns which in turn can cause tension and immobility in the upper back and neck. Try simple breathing exercises where you focus on letting ribs and muscles fall into yourself while breathing out. Don't use any muscular force.

the imagination then a muscular „doing“. After some tries, you will feel a subtle muscle activity, a real pulsing together.

**Breast feeding:** Strong physical exertion and mental stress can decrease milk production. Keep that in mind when starting to train or work again. Even though there is no scientific proof for a change in milk composition, some babies reject the breast after intense physical exercise. It helps to rinse off sweat and wait ten to twenty minutes.

Your breasts are very likely to be bigger during breastfeeding with changing sizes, depending on when the baby was nursed the last time. A supportive bra and avoiding rolling over the breasts is advisable, otherwise it might take some time to get used to it.

As long as you breast feed, your body will produce hormones that keep the body tissue comparatively soft. Because of that high impact on the pelvis should be avoided otherwise there can be pain in the symphysis.

**If you have to work soon** after birth: early strain on stomach muscles, the pelvic floor and mental stress can prolong recovery unnecessarily, cause damage and may impact the outcome. Its not about being overly careful but paying close attention to how your muscles feel (do they feel "torn" or are they swollen?).

## BIRTH TRAUMAS

Birth traumas such as 3rd to 4th degree perineal tears or caesarean sections need more time and care to heal. The first days and maybe weeks are very painful. If you take pain medication that allows you to walk and stand, keep in mind, that any abrupt impact in the first ten days on the sewn tissue can cause rupture, which exacerbates and prolongs healing. Scar massages are important. Perhaps seek for support, especially if touching the scar is emotionally difficult.

**Perineal tears** are in fact injuries of the pelvic floor and might cause symptoms of incontinence in the beginning. It will pay off to rest for 6 to 8 weeks. Wait until the pain is gone and start off with pelvic floor activation before any other kind of exercise or movement. Scar massages after inflammations are healed help to prevent adhesion. Hardened scar tissue and adhered fascia can cause tension and pain in the area and impact pelvic floor functionality. In cases of severe adhesion: physio-



therapists / scar specialists have specific methods and instruments to mobilize and soften scars.

**Caesarean section** is a serious abdominal operation that cuts through many layers of fascia. The first ten days should be spent in bed except for some slow steps upright for circulation. There will be a lot of swelling from lymph fluid around the scar up to the lower abdomen. The swelling can come back for up to some months after the operation when moving. A C-section cuts through the lymph vessels and limits their transport functionality. As long as there is no inflammation and pain emerging, increased swelling around the scar and also in the abdominal muscles (it looks as if you gained some weight suddenly) after dancing and training is normal. But it is also a sign, that the scar has not fully healed yet. Another sign for a less than optimal healing is a drawn-in immobile ridge which can cause a so called C-section shelf: A thickening of tissue above the scar which looks like an attached shelf. Also here: The importance of scar massages shouldn't be underestimated since adhesion in this region can decrease spinal mobility, functionality of abdominal muscles besides causing pain when moving (see *Helpful Tools*). Considering the length and depth of the scar, it is good to have support from a specialist, when the healing has stopped or the scar feels hard and padded, looks drawn-in, stays dark in colour or is painful.

The abdominal muscles need more time to heal than after a vaginal birth, because they get pulled apart during the c-section in order to get the baby out. Burning pain in the stomach muscles, feeling weak and an abdominal separation that heals slowly are the result. When starting to move again, it's important to watch out for pain and stop.

What I found helpful:

Due to my own birth experience, I can only refer to C-sections.

Healing from a C-section is physically and mentally demanding. The sudden physical restriction and pain can be hard to deal with. Being bound to the bed, I found a lot of relieve by laying on the floor and moving my arms and legs softly without the use of my abdominal muscles. Since the body reacts with hardening and contracting after a severe injury such as a C-section there will be a sensation of a shortened front upper body. Starting early with imagining the back and front side of the upper body to lengthen supported by breathing up helps recovery a lot. Even though it may look in the beginning as if the road of recovery will take forever and the fears of being restricted long-term or not looking the same anymore - with patience, softness and support the healing will come and with it the dance.

A word on softness: A C-section is a shock to the nervous system even if we understand its necessity on a cognitive level. The body reacts with tensing and hardening to protect itself. Consciously putting a focus on softening while breathing and moving (especially when starting dance-related movement again) helps the body to open up and become available again.

## HELPFUL TOOLS AND INFORMATION

### IN DEPTH INFORMATION:

#### Coning and doming

Video (English): <https://www.youtube.com/watch?v=b3vd0QQVSrA>

#### Diastus rectis: how to measure it

Video (English): <https://www.youtube.com/watch?v=-uZ2PNYuFc4>

#### C-section scar massage / perineal tear

(German, written - more detailed): <https://faszienzentrum-hamburg.de/verwachsungen-kaiserschnitt-narbe-so-behandelst-du-sie-richtig/>

(English, written): [https://www.stgeorges.nhs.uk/wp-content/uploads/2022/10/THE\\_STM.pdf](https://www.stgeorges.nhs.uk/wp-content/uploads/2022/10/THE_STM.pdf)

(English, video): <https://www.youtube.com/watch?v=h7USrW4Hy-4>

### HELPFUL TOOLS

#### Perineal massage

Introduction (English): <https://www.midwife.org/ACNM/files/ccLibraryFiles/File-name/000000000656/Perineal%20Massage%20in%20Pregnancy.pdf>

#### Coherent breathwork

(20min exercise, video): <https://www.youtube.com/watch?v=i5apnLrzaT4>

(very detailed information): <https://www.bmedreport.com/archives/18731>

#### Cantienica:

Website (German, English):

English introduction, video (English): <https://www.youtube.com/watch?v=l92oLbp8nN8>

Postpartum regression, playlist (German): [https://www.youtube.com/watch?v=SuEmDfH-73Jo&list=PLoCln1GZV8FE9d\\_6YvY\\_sApRA5rep2L4-](https://www.youtube.com/watch?v=SuEmDfH-73Jo&list=PLoCln1GZV8FE9d_6YvY_sApRA5rep2L4-)

#### Spinning Babies

Website (English): <https://www.spinningbabies.com/>

Techniques (English): <https://www.spinningbabies.com/pregnancy-birth/techniques/>

### MOTHERHOOD AND DANCE

**Dancemama.org** - stories and resources from dancing mamas: <https://www.dancemama.org/>

**re\_dance platform:** „was created for professional dance artists with children to share experiences, build supportive networks and gather strategies on how parenthood and dance can enrich each other“, they also list a variety of references about dance and pregnancy: <https://re-dance.work/about/>

**Tanz und Elternschaft:** German network for parenting dancers: <https://tanz-und-elternschaft.de/en/>

### ARTICLES

**About the complexity of a pregnant dancer's life:** <https://www.maternityandmidwifery.co.uk/pregnancy-and-the-professional-dancer/>

**Experiences:** <https://www.istd.org/discover/news/the-pregnant-dancer/>  
<https://dancersgroup.org/2017/06/in-practice-dwp-dancing-while-pregnant/>  
<https://www.stopgapdance.com/story/dancing-after-having-a-baby/>

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