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UNLOCKING THE

MENSTRUAL CYCLE

Enhancing Performance & Well-Being for Circus Artists

Johanna Künster

Susanna Gonzales Blanco

Tatjana Sommer

Charlotte Hofer

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01 INTRODUCTION

Dear Reader,

Thank you for picking up our book ! Maybe you have joined one of our workshops, or perhaps this was passed on by a friend. Either way, we're excited to share this journey with you.

Before diving in, we want to be upfront : we do our best to stay updated and share information that's helpful and safe, but science is always evolving. The good news ?

Menstrual health is finally getting the attention it deserves, and we hope research in this area will explode in the coming years. But we're not waiting around – we're ready to break free from the outdated advice we've been hearing for the past 50 years. (Let's be honest, that didn't always work out so well for us !)

A little note to our non -menstruating peers, colleagues, and teachers : Please remember that everyone's experience of menstrual cycles – and everything that comes with them – is different. If you want to help someone, start by listening and letting them figure out what works best for their body and training. There's no one -size -fits -all solution, and no

one appreciates second -hand advice from someone who hasn't lived through what they have. (Honestly, this goes for a lot of things in life !)

Here's our wish : take what resonates with you from this book, and feel free to leave what doesn't. With a bit of extra knowledge, we hope you'll gain a deeper understanding of your – or any – menstruating body. Just remember, this handbook is no substitute for professional medical advice. If you're experiencing severe symptoms or feel uncertain, we strongly encourage you to seek expert help.

Not sure where to start ? Check the last page for resources or reach out to us – we might be able to point you in the right direction.

And to those reading this to better understand a colleague, partner, student, or even your mum or sister, we're thrilled to have you here. Menstrual health shouldn't be taboo – there's nothing gross or shameful about it ! After all, you're here because your mum had a menstrual cycle and could bring you into the world.

02 The 101 of Menstrual Cycles

The menstrual cycle is much more than just a monthly period — it's a powerful signal of your overall health. Whether or not pregnancy is part of your future, understanding your cycle can empower you to take control of your well-being.

Cycle duration

28 days is the average length - a normal range is considered to be between **21 to 35 days**.

40 years, 400 cycles

For most menstruating bodies, we have **4 decades of cycles**. Cycles begin in the early teens around age 13 and typically continue until around age 50. This leads to about **400 cycles** over a lifetime!

Menstrual bleeding

Each cycle involves **3 to 7 days** of bleeding, with is up to **80ml** of menstrual fluid loss.

Anovulatory cycles

It is common to have **1-3 anovulatory cycles** each year where ovulation does not occur. These cycles are more common during the teenage years and around menopause.

03 PHASES OF THE CYCLE

The menstrual cycle consists of distinct phases



Menstruation

It marks the start of the menstrual cycle, involving the shedding of the uterine lining and bleeding. During this time, hormone levels are low, which can cause physical and emotional symptoms. This phase resets the body, eliminating the old lining.



Follicular phase

begins after menstruation, bringing higher hormone levels and increased energy as your body prepares for upcoming ovulation.



Ovulation

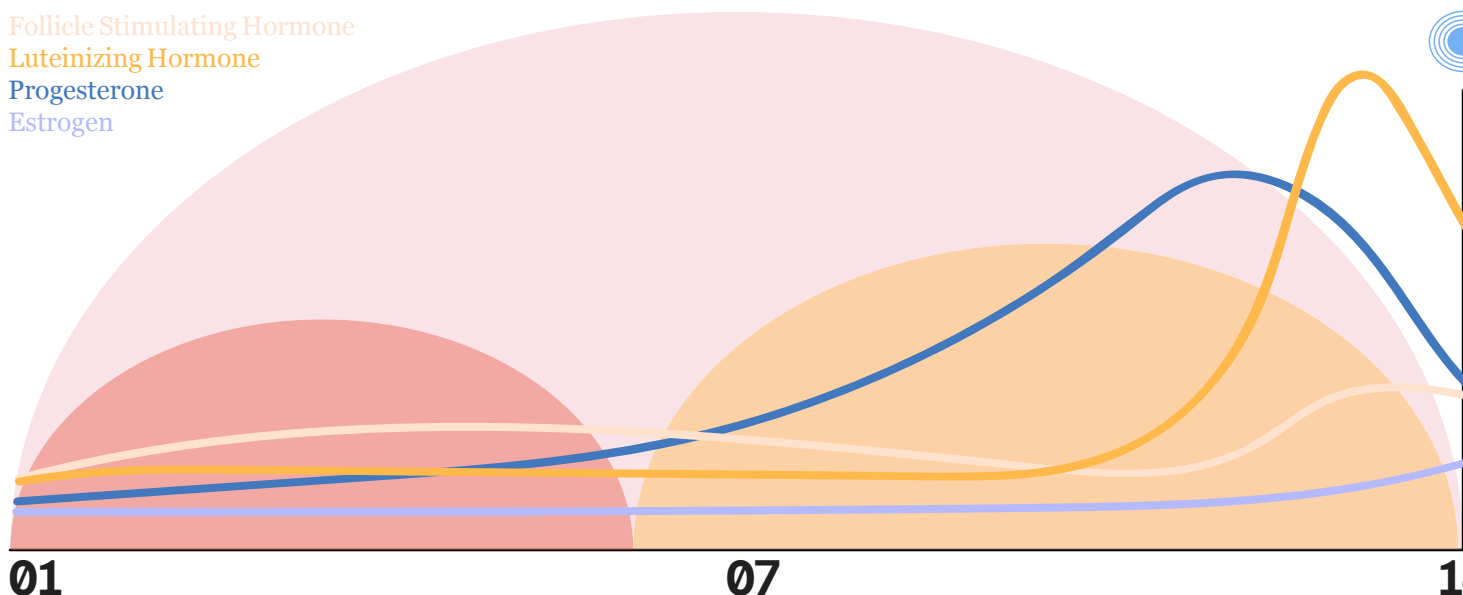
This is the mid-cycle event that lasts about 24 hours, characterized by the release of an egg triggered by a surge in luteinizing hormone.



Luteal phase

progesterone levels rise in preparation for a potential pregnancy. If fertilization does not occur, hormone levels will eventually drop, leading to menstruation and the start of another cycle.

Follicle Stimulating Hormone
Luteinizing Hormone
Progesterone
Estrogen



04 BEYOND REPRODUCTION

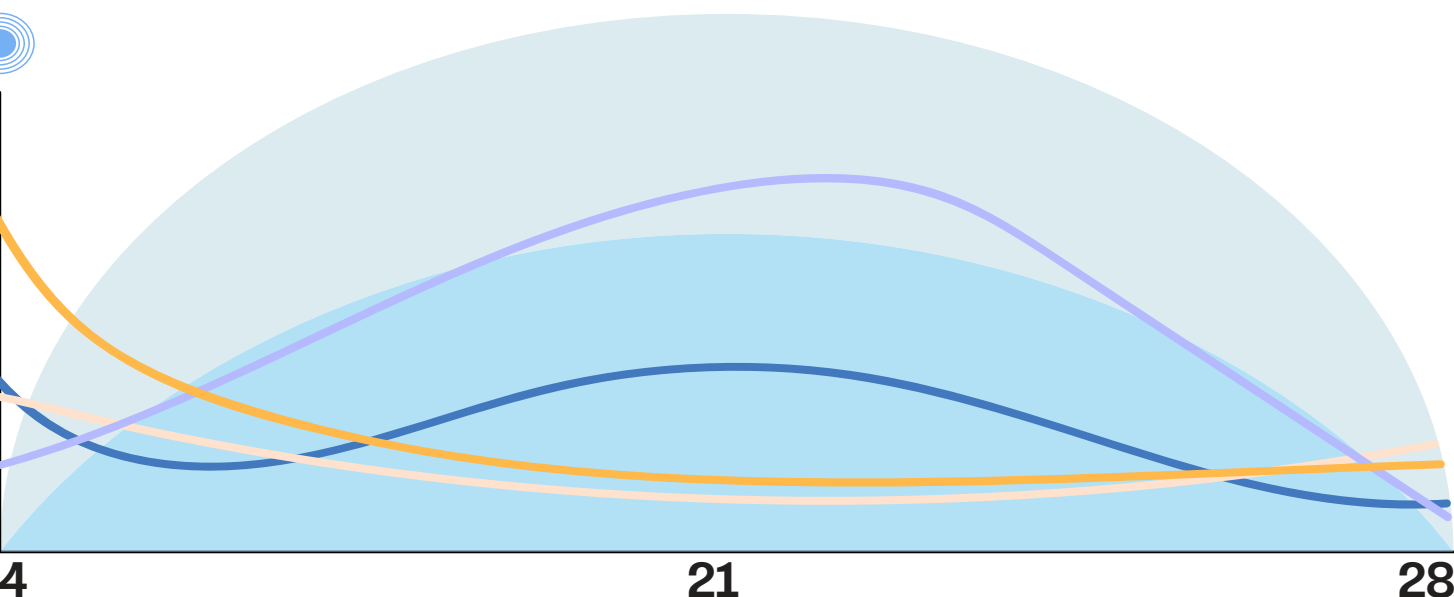
The menstrual cycle is not just about fertility; it serves a much broader purpose. **Estrogen and progesterone receptors** are found throughout your body — in your bones, muscles, brain, and immune system. This means that the hormones involved in your cycle have a profound impact on your overall health.

THE BRAIN acts as the body's control center, continuously monitoring overall health. Each day, the **hypothalamus** assesses stress levels, energy availability, and other key factors, then signals the **pituitary gland** to release hormones that regulate the menstrual cycle. These signals prompt the ovaries to produce the **estrogen and progesterone**, guiding the release of an egg and preparing the body for a potential pregnancy. The human body produces **over 50 hormones** that are regulating

all kinds of processes in the body, which are influencing each other in complex ways.

The menstrual cycle acts as a **FEED-BACK SYSTEM**, signaling when the body is under stress or lacking some proper fuel. A healthy and regular menstrual cycle is a sign of balance within the body, reflecting a well-functioning, interconnected system working to keep the body in an optimal state for training, recovery and performance.

IRREGULARITIES in menstrual cycles can indicate that the body is **struggling to maintain balance**, which can affect bone health, muscle building, and recovery processes. By understanding these signals, one can make better lifestyle and training choices, leading to improved short-term performance and long-term health outcomes.



05 THE REGULATING CYCLE

How does the menstrual cycle regulate the physiological processes? The menstrual cycle is a nuanced regulatory system that extends beyond reproduction and fertility. The hormones estrogen and progesterone significantly influence. Many of these parameters can be tracked at home, if you want to know how, head over to the chapter on cycle tracking.

01 Body temperature & thermoregulation

Hormonal changes lead to fluctuations in core body temperature, affecting performance in varying environmental conditions.

02 Bone health

Estrogen plays a critical role in maintaining bone density, with its fluctuations influencing long-term bone health.

03 Muscle function & strength

Hormonal changes affect muscle contraction, recovery, and flexibility, determining the effectiveness of strength training at different times in the cycle.

04 Cardiovascular function

Blood pressure and heart rate variability change throughout the cycle, impacted by hormonal effects on blood vessel dilation.

05 Metabolism & energy Use

Hormones influence how the body utilizes carbohydrates, fats, and proteins across different phases, affecting endurance, strength, and recovery.

06 Gastrointestinal function

Hormonal fluctuations, particularly progesterone, can slow gut motility, leading to symptoms like bloating and constipation, especially during the luteal phase.

07 Immune function

Variations in immune response occur during different cycle phases, with susceptibility to illness changing around menstruation.

08 Cognitive & mental health

The cycle influences mood, concentration, motivation, stress regulation as well as muscle coordination.

09 Fluid balance & hydration

Hormones influence fluid retention and electrolyte balance, impacting performance and recovery especially in the luteal phase and during hormonal drops.

06 NUTRITION

Fueled bodies perform best

Athletes' bodies require energy for movement and performance and to sustain essential physiological functions. For menstruating individuals, energy demands are particularly nuanced due to hormonal fluctuations throughout the menstrual cycle. During physical activity, the body uses carbohydrates and fats as its primary fuel sources. These bodies tend to rely on fat earlier in exercise and experience lower carbohydrate availability, especially during the lu-

teal phase. This makes carbohydrates crucial for maintaining energy levels, muscle function, and performance. Unlike their male counterpart, they have a shorter time window for re-fueling, after ~90 min of exercise, they need to snack or eat to prevent undue stress on the hormonal system. Delaying refueling can disrupt hormone production, affecting not just the menstrual cycle but also bone health, muscle recovery, and overall energy balance.

Hormone Regulation

Sustains a healthy menstrual cycle, bone density, and heart health.

Recovery

Repairs muscles, replenishes glycogen, and aids training adaptation.

Immune Function

Helps prevent illness and speed up injury recovery.

Mental Health

Fuels the brain for focus, decision-making, and mood stability.

Prolonged fasting or under-eating disrupts these processes, impairing both performance and long-term health. Prioritizing a balanced nutrition and timely refueling ensures the body performs at its best while safeguarding overall well-being.

Avoid exercising in a fasted state at all costs! The intermittent fasting is not recommended for the menstruating individuals.

Prioritize carbohydrate intake before, during, and after exercise to optimize muscle response and performance, especially during the luteal phase.

Ensure **consistent protein intake** throughout the day to support muscle repair and recovery.

Keep hydrated!

Relative energy deficiency in circus performer

(RED-S) encompasses the wide-ranging effects of insufficient energy availability on the body. This condition affects multiple physiological systems and poses significant risks to athletes' health and performance.

Maintaining an optimal energy and nutrient intake, especially carbohydrates, is crucial for menstruating athletes and performers. An ideal body fat percentage (between 20-32%) supports a healthy menstrual cycle, which is vital for bone and overall health.

Low energy availability (LEA)

- When energy intake fails to meet demands of training and daily activities

Can disrupt vital functions, including hormone regulation.

Bone health

- Insufficient energy impairs bone density, increasing the risk of stress fractures and osteoporosis.

Other systemic effects

- Weakened muscles, delayed recovery
- Reduced ability to fight infections.
- Slowed metabolism, potential heart health issues
- Increased risk of anxiety, depression, and disordered eating

Reproductive health

- Menstrual dysfunction, including irregular or absent cycles

Low energy availability

LEA occurs when energy intake is insufficient to meet the demands of daily life and training.

This can be intentional or unintentional and has serious consequences for health and performance.

Risks of LEA:

- Menstrual cycle irregularities or absence (amenorrhea)
- Increased risk of injuries (e.g., stress fractures)
- Bone density loss, leading to osteoporosis
- Loss of muscle mass and reduced recovery

07 WHAT TO EAT

Food is there to fuel you but also to enjoy !

Remember that everyone's needs are different. There is no perfect diet, neither is it healthy to strive for perfection regarding food and fuel. It is fully ok to have sweets, to snack, to have a bit of caffeine in the day. Your body will let you know if something is too much, so carefully listen.

Prioritize protein

Aim for 2g of protein per kg of body weight daily in your meals. This includes at least 20g of protein at breakfast to kickstart your day.

Balance macronutrients

Pair complex carbs with protein to keep your blood sugar stable. Menstruating bodies can use all macronutrients (carbs, protein, and fats) for fuel, so ensure some variety in your meals

Do not skip meals

Especially breakfast. Start your day with a hearty meal. Missing meals stresses your hormonal system, reducing performance and recovery.

Snack smart,

Especially in the Luteal Phase. Have protein-rich snacks every 90 minutes during long training days to avoid hormonal and energy crashes. (ex: protein ball, crackers with cheese, protein bar...)

08:30 •————• Breakfast

Eggs on toast with veggie spread or porridge with nuts/seeds & vegan protein powder.

If you have a hard time eating early, try smoothies with oats and protein powder that you have on the go and during the first hour of training.

10:00 – 13:00 •————• Training

11:30 Snack Break

Energy balls (nuts & dates) or a banana with a nut butter.

13:00 – 14:00 •————• Lunch

White rice with stir-fried veggies and a protein source (e.g., chicken, tofu).

14:00 – 18:00 •————• Training

15:30 Snack break

Crackers / rice cakes with cheese or hummus.

18:00 •————• Dinner

Balanced dinner with protein, carbs, and optional lighter digestion options if needed.

Some supplements ?

Supplements can be helpful, but whole foods should remain the priority. When purchasing supplements, it is important to be aware they can be poorly regulated, and that the quality can vary greatly.

Always research the specific forms of minerals or vitamins you are considering to take and check if they have been independently tested for contaminants, such as heavy metals.

Before taking any supplements, it's essential to have a blood test conducted by your healthcare provider to check your vitamin and mineral levels!

- ➔ **Vitamin B12**
Highly necessary for vegans / vegetarians to support the nervous and immune systems.
- ➔ **Vitamin D**
Essential during the darker months in Northern Europe for everyone.
- ➔ **Iron**
Critical for oxygen transport, consider digestion-friendly forms to avoid stomach discomfort.

In your GUT

Your gut plays a central role in regulating hormones, mood, and overall health. It's not just about digestion—your gut is a communication hub between your brain, hormones, and immune system.

01. Keeping hormone-levels balanced

Estrogen-Metabolism:

The liver processes estrogen into inactive forms, which are excreted into the bile and sent to the intestines. Reactivated estrogen can be reabsorbed into the bloodstream, contributing to the body's circulating estrogen levels. Known as enterohepatic circulation, it helps maintain hormonal balance. Progesterone and other hormones (testosterone and cortisol) are metabolized in the liver, similarly to estrogen.

Microbiome balance:

A well - balanced estrobolome ensures optimal estrogen levels, supporting reproductive health, bone density, and cardiovascular health. An imbalance in gut microbiota (dysbiosis) can lead to excessive estrogen reabsorption or improper clearance, potentially contributing to conditions like PMS, endometriosis, and estrogen-dominant disorders (e.g., PCOS, fibroids).

02. Gut-brain connection

Serotonin and Mood:

About 90% of the body's serotonin is produced in the gut. Gut bacteria influence serotonin synthesis by modulating the availability of its precursor, tryptophan.

Dopamine and GABA: Certain gut microbes produce or modulate these neurotransmitters, affecting mood, stress response, and cognitive function.

Hormonal Shifts:

Hormonal shifts during the menstrual cycle (e.g., changes in estrogen and progesterone) can alter gut motility, microbiota composition, and neurotransmitter levels. These changes may contribute to mood fluctuations, anxiety, or irritability commonly experienced during the luteal phase or PMS.

03. Gut health and inflammation

Chronic gut inflammation or leaky gut syndrome

It can disrupt the balance of neurotransmitters and hormones, exacerbating symptoms of PMS, PMDD, or even menstrual migraines.

A healthy gut is essential for balancing hormones, stabilizing mood, and supporting overall well-being. Start by focusing on fiber-rich foods, probiotics, and stress management, small changes that can have a big impact on your body. Keeping your blood sugar steady is equally important, which means eating a variety of whole, nutrient-dense foods and spreading a protein intake throughout the day.

Creatine, often known for its role in muscle recovery, also supports gut health. This is relevant for menstruating bodies, as physical exercise can lead to mucosal erosion more easily and quickly compared to men. It has been shown

it helps maintain a healthy gut lining, making it a valuable addition to your routine.

If you are struggling to get enough micronutrients through your diet only, some supplements can help lower the inflammation:

Probiotics

To support gut bacteria balance

Omega-3

For fatty acids to reduce inflammation

Magnesium

For the bowel regularity and hormone metabolism

08 ANATOMICAL FACTORS

Menstruating bodies face unique anatomical and hormonal factors that can impact physical performance and injury risk differently than non-menstruating or male bodies. Certain areas—such as the pelvic floor, knee health, and susceptibility to concussions—are more commonly affected and present specific challenges. Recognizing these distinctions is essential for developing effective training and injury prevention strategies.

Pelvic floor health

The pelvic floor is a **complex muscular system** at the base of the pelvis, supporting organs like the bladder, bowel, and uterus. It plays key roles in urinary and bowel control, breathing, digestion, and sexual function. Dysfunction in this muscle can lead to a weak or overly tight muscles, which disrupts breathing, digestion, and core stability

about 80% of professional female trampolinists, tumblers, gymnasts, and dancers experiencing some level of dysfunction. **Symptoms include urinary incontinence during high-impact activities** (e.g., jumping, lifting), pain during intercourse, GI disturbances, breathing issues, and hip or lower back pain.

Pelvic floor issues are common in sports associated with circus, with

If you experience these symptoms, consult a pelvic floor therapist.

Knee injuries

Studies show that female soccer players are **3 times more likely** than males to **experience ACL tears**. This increased risk stems from several factors, including less strength training at an early age and different training protocols, which can impact physical resilience.

Puberty introduces significant anatomical changes, such as **altered knee angles**, requiring adjustments in jumping, landing, and running techniques.

One national soccer team reduced ACL injuries to zero in a single season by implementing strength and technical training, demonstrating the effectiveness of these methods.

Strength training and refining movement patterns can also prevent other joint injuries, including those in the ankles, shoulders, hips, and wrists. Addressing imbalances early ensures safer and healthier training progression.

Concussions

While concussions could happen to anyone, data suggest that women may be more susceptible due to generally a smaller neck size and less neck muscle development, which can make the head impacts more likely to lead to concussions.

Additionally, the hormone levels and the inflammation markers tend to be higher during the luteal phase of the menstrual cycle, which may prolong recovery time from a concussion that occurs during this phase.

Concussion recovery includes:

Seeking professional guidance
(ensure they use up-to-date recovery protocols)

Resting fully for a few days
(usually 1-3, depending on severity)

Start with gentle cardio
to increase blood flow, aid brain recovery

Keeping a positive mindset
which can support brain healing

09 IN PRACTICE

Keeping track of the length of your cycle is important for your general awareness. For circus performers, it is even more helpful to pay attention to other details too. These following parameters combined can give a fairly accurate indication of workout readiness.

01 Sleep quality and duration

Adequate sleep is crucial for recovery and workout readiness. Circus performers can monitor the duration and quality of their sleep to assess their overall readiness for training. An approximate of 8-9h sleep per night is recommended for most menstruating circus performers.

02 Basal body temperature (BBT)

Tracking your basal body temperature can indicate if you've ovulated. Without ovulation, your body might not produce important hormones that support your health. Since ovulation is crucial for reaching certain protective hormone levels, thus monitoring it can help you find out about your body's health status. Tracking ovulation is also useful for circus performers with irregular cycles, as it helps estimate the length of the current cycle and allows for better planning ahead.

03 Resting heart rate (RHR)

An increase in resting heart rate may indicate fatigue or stress on the body. Monitoring RHR regularly can help circus performers estimate their bodies recovery status.

04 Heart rate variability (HRV)

Heart Rate Variability measures the time variation between successive heartbeats, offering valuable insights into the balance of the autonomic nervous system and the body's readiness for training. High HRV typically indicates a less stressed nervous system, while low HRV may suggest increased stress levels. Both RHR and HRV can be measured with a standard heart rate belt.

Hydration status

05 Proper hydration is essential for optimal performance. Monitoring urine color, frequency and overall hydration status can help circus performers estimate their hydration and maintain proper fluid balance.

Subjective ratings

06 Circus performers can use subjective assessments, such as the perceived level of stress, fatigue, muscle soreness and mood, to gauge their readiness for exercise.

10 RESSOURCES

ROAR

How to Match Your Food and Fitness to Your Female Physiology for Optimum Performance, Great Health, and a Strong, Lean Body for Life.

Sims, Stacy T., Selene Yeager (2024)

ISBN: 9780593581926

Period power

Harness Your Hormones and Get Your Cycle Working For You

Maisie Hill (2019)

ISBN: 9781472963611

Next Level

Your Guide to Kicking Ass, Feeling Great, and Crushing Goals Through Menopause and Beyond

Sims, Stacy T., Selene Yeager (2022)

ISBN: 9780593233160

Up to Speed

Your Guide to Kicking Ass, Feeling Great, and Crushing Goals Through Menopause and Beyond

Christine Yu (2023)

ISBN: 9780593332399

Podcast Playlist



Where to get help:

In and around Rotterdam / Tilburg (NL)

Reach out to your local GP / health care provider for general blood tests etc.!

Nutritionist:

Gosia Sojka is offering free intake appointments and on request might be able to offer you a student discount. She specializes in microbiome balance and hormonal balance for women.

[*www.blossomnutrition.co.uk/*](http://www.blossomnutrition.co.uk/)

Pelvic Floor Physiotherapist:

Stephanie Leyh is the pelvic floor physical therapist and uses her knowledge of the pelvic area in a unique combination with manual therapy, breathing therapy and sports-training knowledge. With more than 20 years of experience, she can give you a top analysis in this area after examination.

[*www.physiomotion.nl/physical-therapy/pelvic-physical-therapy/*](http://www.physiomotion.nl/physical-therapy/pelvic-physical-therapy/)

Pelvic Floor Coach:

Mayumi Yamamoto has worked with many circus artists as athletic trainer at Cirque du Soleil and has shifted her focus to pre- and postpartum care in the last 10 years. She offers online consultations.

[*www.mamabodyology.com/*](http://www.mamabodyology.com/)

