

## Review Article

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## Physical Therapy in Maternal Care: Prenatal and Postnatal Approaches for Health and Recovery

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**ABSTRACT**

Physical therapy also serves as an important element of maternal care, addressing prenatal and postnatal physical, physiological, and emotional changes. During pregnancy, you will have changes such as hormone changes, postural adjustments, and increased physical demands, often leading to discomforts like back pain, pelvic instability, and reduced mobility. Like the postpartum phase, the postpartum phase is characterized by diminished pelvic floor muscles, diastasis recti, as well as psychological problems of postpartum depression. Prenatal physical therapy involves tailored interventions to prepare the body for childbirth, i.e. pelvic floor strengthening, core stability exercises, and postural alignment. On the other hand, postnatal therapy is aimed at restoring physical function, stabilizing the core, and correcting the residual discomforts. But these approaches not only promote quicker physical healing but also help the betterment of mental health and quality of life. Although it has been proven to have benefits, there are barriers to accessing physical therapy, and those barriers are financial and sociocultural. Technological improvements such as wearables, telehealth, and virtual reality hold promise to solve the problem of access and effectiveness. Fostering holistic support for women in this transformational journey requires these innovations to be integrated into maternally minded practices of maternal care.

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**Introduction**

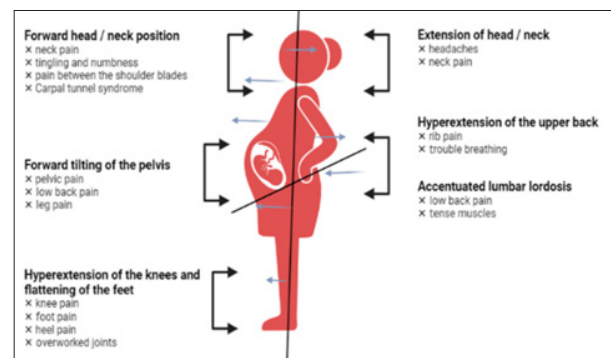
Maternal care consists of various types of healthcare interventions involved in improving the well-being of women during pregnancy, childbirth, and after childbirth. In this context, physical therapy has become an important nonpharmacological intervention to counteract the physiologic, musculoskeletal, and emotional challenges that women face during the prenatal and postnatal periods. During pregnancy, unique hormonal changes, weight gain, and biomechanical adjustments often lead to discomfort like back pain, Pelvic girdle pain, and reduced mobility. Like any other period of you are being a woman, the period postpartum also presents its challenges: weakened pelvic floor muscles, Diastasis recti, and, more so psychologically, postpartum depression [1]. Interventions of physical therapy are created to remove them (these conditions) while providing physical recovery and long-term health. Prenatal physical therapy prepares the body for childbirth through increased flexibility, strength, and endurance, while postnatal therapy works to help restore core stability and good posture and deal with any residual soreness after delivery. In addition to improving physical well-being, these interventions also contribute to improving the mental health and life quality of the mothers.

**Maternal Health and Physical Changes**

A woman's health changes during the prenatal and postnatal periods as she matures physically and physiologically. The changes

induced by these hormonal, biomechanical, and psychological factors require a complete understanding to produce effective physical therapy interventions. Addressing these transformations is necessary to ensure maternal health and recovery.

Figure 1: The Main Changes in Pregnancy: Therapeutic Approach (The Main Changes in Pregnancy & Therapeutic Approach To ..., n.d.)

**Prenatal Physical Changes  
Hormonal Influences**

Hormones are critical in preparing the body for childbirth during pregnancy. For example, relaxin increases ligament laxity to facilitate pelvic expansion. This increased joint flexibility is essential, but unfortunately, it has associated instability that may contribute to discomfort, such as pelvic girdle pain and a raised risk of musculoskeletal injuries [2]. The same can be said of

Progesterone and estrogen levels, which can cause an increase in blood flow and fluid retention, leading to swelling predominantly in the lower extremities.

### Musculoskeletal Adjustments

Posture and biomechanics change as the maternal centre of gravity shifts when the fetus grows. It causes hyperlordosis of the lumbar spine and hyperkyphosis of the thoracic spine, which leads to increased strain on the spine and surrounding musculature. For example, when they occur in association with low back pain, which occurs in approximately 70% of pregnant women [3], the resulting postural changes are often associated with low back pain. This abdominal stretching also accommodates uterine expansion and helps to decrease core stability, and this can lead to diastasis recti, separation of rectus abdominis muscles.

### Circulatory and Respiratory Changes

The cardiovascular and respiratory systems are also put under a high burden during pregnancy. By about 40 to 50 percent, blood volume increases, and thus, cardiac output has to become greater. Symptoms of this adaptation include fatigue and shortness of breath, which are further exacerbated by the increasing uterus that pushes the diaphragm upwards [4]. Though these changes are physiological, they can hinder a woman's ability to participate in physical activity, so tailored interventions to maintain functional capacity are important.

### Postnatal Physical Changes Recovery from Childbirth

The fourth trimester, that is, the postpartum period, is the body returning, gradually, to its pre-pregnancy state. However, there is wide variation in the extent of recovery, depending on, for example, the mode of delivery (vaginal or cesarean) and complications during labour. Perineal trauma can occur during vaginal deliveries, and cesarean sections can leave surgical scars which create strict movement or pain [5]. In both cases, the pelvic floor muscles often become weakened — resulting in urinary incontinence and inability to support pelvic organs.

### Musculoskeletal Challenges

Musculoskeletal imbalances are common among postpartum women due to the demands of childbirth and infant care. Typically, diastasis recti remains after the pregnancy and causes core instability and back pain. Repetitive movements such as lifting, feeding, and holding the baby may also strain the neck, shoulders, and wrists [6]. Those challenges underscore the need for postnatal physical therapy to regain strength and function.

### Psychological and Emotional Considerations

The changes in hormonal levels during the postpartum period can have a great influence on a mother's mental health. A rapid decline in estrogen and progesterone levels post-delivery may lead to mood disorders such as postpartum depression and anxiety. These conditions are further pushed by physical exhaustion alongside the pressures of caregiving, providing a desperate demonstration of the close connection between physical and psychological well-being [7].

### Implications for Physical Therapy

The importance of these prenatal and postnatal changes cannot be overlooked for the development of appropriate physical therapy interventions. Physical therapists work with pregnant women to minimize common discomforts and to train the body to be as ready for childbirth as possible through an exercise that builds strength, flexibility, and endurance [8]. While postpartum therapy

stresses restoring pelvic floor integrity, improving core stability, and resolving musculoskeletal pain issues, perinatal therapy concentrates on alleviating the problems that led to postpartum depression, such as vaginal delivery trauma, obstetric injury, and pelvic girdle function problems. Other postnatal therapy programs have been shown to accelerate recovery, where strength and mobility improve within 12 weeks of starting therapy [9]. Physical therapy helps take on physical challenges that are not only physical but also physical in a physiological sense associated with the maternal journey. Through tailored interventions, we not only alleviate discomfort, but also empower women to continue with an active and healthy lifestyle throughout, but also after, pregnancy.

### Prenatal Physical Therapy Approaches

Prenatal physical therapy uses evidence-based interventions to address the specific obstacles that occur during pregnancy. These approaches aim to improve maternal health, remove discomfort, and prepare the body for labour. The cornerstone of prenatal physical therapy is the following five techniques.

#### Pelvic Floor Strengthening

The pelvic floor muscles are key in supporting the uterus, bladder, and bowel. These muscles become heavier as the uterus grows in pregnancy, sometimes causing weakness and conditions such as urinary incontinence or pelvic organ prolapse. Prenatal therapy thus focuses on strengthening the pelvic floor. The use of Kegel exercises also recommends an improvement of pelvic floor function. The exercises involve the contraction and relaxation of the pelvic muscles while sitting, standing, or lying, with the variation in position. Pregnant women who regularly do Kegel exercises during pregnancy have fewer incontinence issues and better postpartum recovery [9]. In addition, When it is time for the pushing phase of labour, strong pelvic floor muscles make this phase of labour easier and less likely to be complicated by perineal tears.

#### Core Stability Exercises

During pregnancy, core stability is essential for allowing balance and posture because the growing fetus changes the maternal centre of gravity and puts strain on the spine. Moreover, the uterine expansion weakens the abdominal muscles, further stressing the importance of core strengthening to avoid musculoskeletal issues. The transverse abdominis is a deep abdominal muscle that helps stabilize the spine and pelvis. The following three core stability exercises help to develop pelvic tilts, side planks, and bird dog poses [10]. For pregnant women suffering from lower back pain, these exercises help and help minimize the risk of diastasis recti— separation of the rectus abdominis muscles.

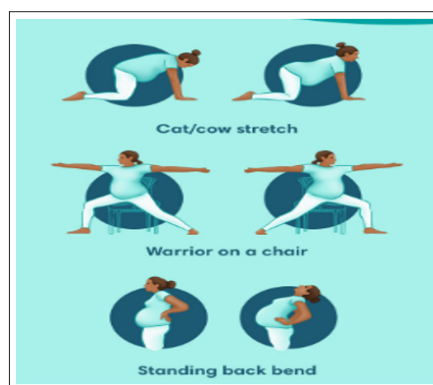


Figure 2: Physical Activity for Prenatal Therapy (Safe and Simple Pregnancy Exercises | Pampers, n.d.)

### Postural Education and Alignment

These physical demands of pregnancy commonly produce poor posture, with increased lumbar lordosis, rounded shoulder, and forward head posture. These changes arise as pregnancy causes the centre of gravity to shift, influences hormonal such as relaxin (increased joint laxity) and increased weight transferred. Posture is important as it puts a lot of stress on your musculoskeletal system, which gives you pain and increases the risk of injury. Prenatal physical therapy plays a significant role in postural education. Posture-defining therapists have a look at the individual's posture to create individual provisions for their misalignments [11]. The techniques involve keeping a neutral spine, adjusting the pelvis because it takes pressure off of the lower back, and distributing weight evenly when standing or sitting. Physical therapists may also introduce ergonomic tools such as lumbar support or pregnancy belts to help with posture to women with back pain or sciatica.

### Manual Therapy

Manual therapy includes hands-on techniques used to address muscle tightness, joint dysfunction, and pain as well in the lower back, hips, and pelvis. Many of these issues can be made worse by pregnancy-induced hormonal changes and weight gain, and manual therapy is an effective way to relieve symptoms [12]. Tailored techniques, including myofascial release, joint mobilization, and soft tissue massage, are used for pregnant women. For example, the myofascial release takes a look at tight connective tissues, helps the body feel more mobile, and reduces tension in areas like the hip flexors and lumbar spine. Discomfort near a common source of pain in pregnancy — the sacroiliac joint, which plays a role in pelvic stability — can be alleviated with joint mobilization techniques [13]. Benefits were found in women who practised manual therapy during pregnancy, with pain intensity reduced significantly and overall functionality also improved. Manual therapy is effective, but trained professionals need to perform it for the safety of the mother and the baby.

### Breathing and Relaxation Techniques

Pregnancy can be a physically and emotionally demanding time with stress and anxiety. Prenatal physical therapy includes breathing techniques and relaxation techniques and helps moms manage stress, improve oxygen flow, and ready themselves for labour. The type of breathing known as diaphragmatic or belly breathing involves deep inhalations that expand the abdomen rather than the chest. This technique helps to oxygenate, decrease muscle tension, and create a sense of calm [14]. Guided breathing exercises are usually part of the therapy sessions that physical therapists practice, and they advocate the use of them for relaxation and pain management purposes. Also, women are introduced further to relaxation techniques such as progressive muscle relaxation (PMR), which can help women relieve tension in particular muscle groups. During labour especially, these methods are very helpful because they allow women to manage contractions better and save energy.

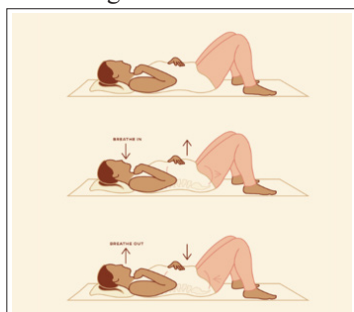


Figure 3: Relaxation Exercises for Prenatal Therapy (5 Pelvic Floor Exercises for Pregnant Women | Origin, n.d.)

These are indeed real benefits from a psychological point of view; according to research, women suffer from decreased anxiety and also an improvement in the mind during pregnancy [15]. By embedding these practices in a prenatal care routine, one keeps a focus on comprehensive maternal health.

### Postnatal Physical Therapy Approaches

The fourth trimester, or the postpartum period, is an essential time for mothers to recover after giving birth. This is a time when your body changes a lot—healing from childbirth and adjusting to the physical requirements necessary for taking care of an infant. Physical therapy postnatally treats the restoration of physical function, relieving pain, and advocating for well-being. The most important challenges faced during this period are to be addressed with the following approaches.

### Pelvic Floor Rehabilitation

During pregnancy and childbirth, the pelvic floor muscles are often weakened and can lead to urinary incontinence, pelvic organ prolapse, and sexual dysfunction. Pelvic floor rehabilitation is the focus of postnatal physical therapy for the goal of restoration of strength and function of these muscles. While Kegel exercises continue to be a part of pelvic floor therapy, postnatal programs tend to include more advanced techniques like biofeedback and electrical stimulation to increase muscle activation. In addition to introducing exercises that involve pelvic floor engagement along with core strengthening (e.g., bridges and modified squats), therapists may also suggest exercises that consolidate pelvic floor and core stability [16]. At three months postpartum, women who participated in a structured pelvic floor rehabilitation programme had significant improvements in continence and quality of life.

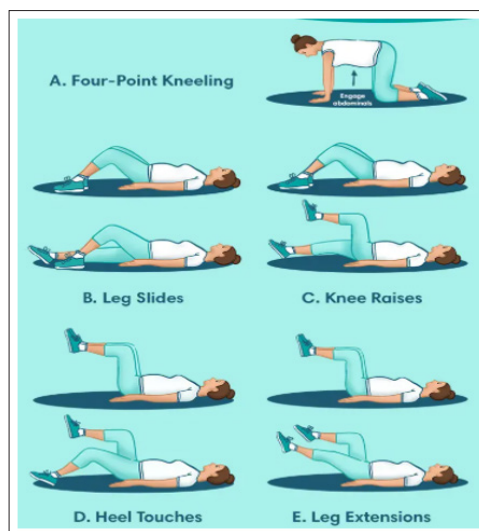


Figure 4: Exercises for Postnatal Physical Therapy (The Best Postpartum Workout Tips: Pampers' Guide, n.d.)

### Core Strengthening and Diastasis Recti Management

The abdominal muscles stretch during pregnancy to accommodate the growing uterus and may develop diastasis recti (separation of the rectus abdominis). The combination of weakened core and ensuing back pain and reduced functional capacity is a result of this condition. The focus of postnatal physical therapy is to retrain the deep core muscles to activate, especially the transverse abdominis, to close the abdominal separation and restore stability. Abdominal bracing, pelvic tilts, and modified planks are included techniques [17]. The healing tissues aren't overstressed in the gradual introduction of these exercises. In more severe cases, the use of abdominal binders or compression garments to assist in

recovery is sometimes recommended by therapists.

### Postural Training and Ergonomic Education

Repetitive movements like lifting, feeding, and holding a baby can mean a strain on the neck, shoulders, and back. These same poor habits during these activities typically cause people to either be uncomfortable or sustain injuries like “mommy thumb” (De Quervain’s tenosynovitis). Postnatal physical therapy is postural training to maintain proper mother alignment and minimize strain from the mother holding the infant. Therapists teach people to use ergo methods when they are performing day-to-day tasks, like using the breastfeeding pillow to alleviate the strain on the neck or bending at their knees and not their waist when lifting the baby [18]. Also, exercises to fortify the upper back and shoulders, like scapular retractions and rows, are added to protect against the deleterious one of consistent nose-down posture.

### Scar Tissue Mobilization

Scar tissue can cause pain and restrict movement in women who have undergone a cesarean delivery or who have had a perineal tear. Scar tissue mobilization techniques are used in postnatal physical therapy to promote healing and restore the mobility of the underlying areas. Gentle massage and myofascial release are manual therapy used to improve tissue elasticity and decrease adhesions. Women may be taught how to perform self-massage techniques at home by therapists [19]. In other words, they introduce stretching and strengthening exercises so that the surrounding muscles return to normal range of motion.

### Gradual Return to Fitness

Careful planning is required for reintroducing physical activity postpartum to prevent injury and help with recovery. This postnatal exercise includes personalized fitness programs specifically tailored for the individual’s delivery experience, fitness level, and progress on recovery. Initially, however, it’s common for the doctor to recommend low-impact exercises such as walking, swimming, or modified yoga. Less dynamic activities like light jogging or resistance training would be introduced as strength and endurance improves. The therapists watch progress and change the program to make sure of safe and efficient results. The benefits of a slow return to fitness do not end with physical recovery. Research shows that regular exercise can help with mental health, reduce symptoms of postpartum depression, and add energy to your body [20]. Physical therapists also espouse the benefits of listening to one’s body and resisting doing activities that hurt or hurt them.

### Challenges and Barriers

Physical therapy is known to provide great benefits in the prenatal and postnatal periods. However, several challenges and barriers hinder its accessibility and efficacy. An important issue is that pregnant and new mothers are not aware of the physical therapy role in the management of pregnancy-related discomforts and the facilitation of recovery. This results in the underutilization of services because knowledge gap. A major impediment is limited funding. But in many regions, physical therapy sessions are not covered by insurance, and thus, women have to pay the cost out of pocket [21]. For women living in low-income or under-served areas, healthcare resources may be very limited, and this makes it extra difficult. Sociocultural factors also influence perceptions of physical therapy. There is, in some cases, a social stigma in seeking and receiving rehabilitative care, or traditional beliefs might override evidence-based practices. Another barrier is that language barriers and culturally incompetent care are limited in availability [22, 23]. Logistical challenges, including a lack of qualified therapists, transportation issues, and busy schedules,

further restrict access. For postpartum mothers, the needs of their infants come first and tend to delay therapy seeking. To address these barriers, public health initiatives need to increase awareness, improve coverage and affordability, and promote equitable access to maternal physical therapy services.

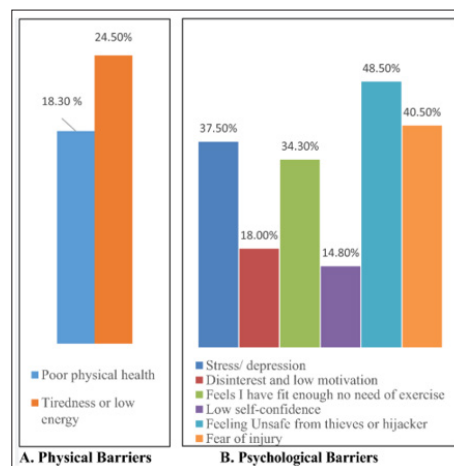


Figure 5: Statistical Representation of Barriers to Accessing Maternal Physical Therapy

### Innovations and Future Directions

New technology is improving prenatal and postnatal physical therapy by enhancing accessibility, efficiency, and patient engagement. Real-time feedback in wearable devices like pelvic floor trainers and fitness trackers helps women know their progress and make sure the exercise techniques are done correctly. Firstly, these tools help promote adherence but also allow therapists to customize their interventions depending on the needs of the individuals [23]. More recently, telehealth has completely revolutionized care delivery with virtual consultations and guided exercise sessions, particularly benefiting women in remote or underserved areas. The innovative aspect of this innovation closes the gap in access to specialized services and continuity of care. Virtual Reality (VR) also couples an interactive, multi-modal dimension to rehabilitation by producing realistic simulations of real-world scenarios for increased engagement and fear reduction. With a hybrid care model encompassing in-person and virtual therapy, patients can be cared for completely, with manual and initial assessments performed in person. At the same time, follow-ups are taken care of seamlessly virtually. These models overcome logistical barriers while maintaining quality of care [24]. Compared to earlier contraceptives, these innovations need to be mainstream for three reasons: they must be affordable and equally accessible to all mothers and be accompanied by at least basic education. Integration of these technologies into maternal health care can help physical therapy adapt to the particular needs of prenatal and postnatal women.

### Conclusion

Physical therapy is an integral part of mother care and provides specific remedies to overcome the physiological, biomechanical, and emotional troubles of pre and postnatal periods. Prenatal interventions strengthen, flex, and endure the body for childbirth preparation, while postnatal focus on stabilizing the central core, correcting posture, and relieving discomfort. As these approaches help mothers to recover physically, they also tend to improve mothers’ mental health and quality of life. However, benefits are limited by barriers of finances, knowledge, and sociocultural influences that prevent access to physical therapy services. Yet, technological advances, which include wearable devices and

telehealth platforms as well as virtual reality, have the potential to mitigate these challenges while expanding access. The continuing integration of maternal care must keep up with the evolution of maternal care and include physical therapy in standard healthcare practices. Policymakers and healthcare providers must develop equitable, affordable, and innovative solutions to these interventions to guarantee that all women can enjoy these interventions. Physical therapy addresses both the immediate recovery needs and long-term health outcomes and gives the mother the confidence and resilience to navigate the journey of becoming a mother.

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