



Practice Guidelines

Chinese expert consensus on primary prevention for pelvic floor dysfunction during pregnancy



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ABSTRACT

Objective: Pregnancy has been identified as a risk factor for pelvic floor dysfunction (PFD). The aim of this study was to establish primary prevention measures for PFD during pregnancy and reduce the overall incidence of PFD.

Methods: We assembled a panel of 36 experts, including gynecologists, obstetricians, and physiotherapists. Through surveys and expert meetings, the panel reviewed and assessed the safety and effectiveness of various clinical interventions. Based on expert comments from Round 1, a revised list of 8 clinical interventions was developed and submitted for a second round of expert review.

Results: A consensus was reached on the importance of implementing prevention measures to protect pelvic floor function during pregnancy. Experts particularly emphasized the significance of health education, weight management, pelvic floor muscle training, respiratory training, overall exercise, physical activity, and perineal massage.

Conclusion: The expert consensus provides comprehensive clinical measures to safeguard pelvic floor function during pregnancy. This paper represents the initial step toward developing scientific recommendations for pregnant women regarding the primary prevention of PFD. Future research should focus on the implementation of these recommendations in clinical practice.

1. Overview

Pelvic floor dysfunction (PFD) occurs when the supporting structures of the pelvic organs, such as the pelvic floor muscles, fascia, and ligaments, become weak, leading to conditions like pelvic organ prolapse, stress urinary incontinence, lower urinary tract symptoms, anorectal abnormalities, and sexual dysfunction.

During pregnancy, the pelvic floor tissue undergoes continuous stretching and expansion due to the burden of the growing uterus. Prolonged stretching and reduced blood flow may cause various pathological changes, including decreased muscle strength and potential tears in the pelvic floor muscles (PFM).^{1,2} Additionally, hormonal changes and alterations in posture during pregnancy can impact the stability of the pelvic floor tissue.^{3,4} Pregnancy has been identified as an independent risk factor for PFD,⁵ underscoring the importance of primary prevention measures for PFD during this period. Currently, experts from China and worldwide have explored primary prevention measures for PFD during pregnancy. They have found that interventions such as pelvic floor muscle training, abdominal respiratory training, and core muscle training are effective in protecting and improving pelvic floor function.^{6,7} This consensus reflects the collaborative efforts of Chinese experts in urogynecology, obstetrics, physiotherapy, evidence-based medicine, and guideline methodology. The aim is to provide primary prevention measures for PFD during pregnancy and reduce the overall incidence of this condition.

The primary goal of this consensus is to propose the best management for pelvic floor training for pregnant women. However, due to variations

in infrastructure, medical levels, cultural factors, etc., the implementation of these guidance techniques may differ. Any doctor applying or consulting these methods should carefully analyze and adapt them based on individual circumstances. This consensus does not provide any form of representation or warranty regarding its content, use, or application, and it assumes no responsibility for how it is applied or used.

2. Methods

The recommendations in this consensus were carefully developed by considering the current best evidence including relevant pregnancy exercise guidelines, clinical studies, and systematic evaluation. These sources were used to formulate standardized procedures, and then the consensus was obtained through extensive consultation with expert opinions.

2.1. Registration

This consensus has been officially registered on the International Practice Guidelines Registration platform (<http://www.guidelines-registration.org>) (No: PREPARE-2023CN044).

2.2. Working group and conflicts of interest

The formulation of this consensus involved five groups, namely the chief experts, chief methodologists, consensus expert group, consensus working group, and secretarial group. The composition of these groups

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included experts from various fields, such as urogynecology, obstetrics, physiotherapy, evidence-based medicine, and guideline methodology. All members who participated in developing this consensus completed the conflict of interest statement form and declared that they had no direct or indirect conflicts of interest related to this consensus.

2.3. Target audience

This consensus is intended for obstetricians, gynecologists, physiotherapists, nurses, and health education professionals who are involved in guiding women to exercise during pregnancy.

2.4. Clinical interventions

The consensus working group identified clinical interventions through a comprehensive review of clinical research and expert discussions. To gain a better understanding of the experiences and concerns of pregnant women who received the interventions, pregnant women were also invited to participate in the discussions. As a result, the following eight clinical interventions were determined (as shown in Table 1).

2.5. Evidence retrieval and evaluation

The evidence retrieval and outcome analysis were conducted based on the identified clinical problems and the principles of PICO (Population, Intervention, Control, Outcome). Chinese biomedical literature database CNKI, Wanfang, and VIP, as well as English database PubMed, Embase, and The Cochrane Library, were utilized to obtain relevant research protocols, clinical studies, reviews, and systematic evaluations. The US National Guideline Library was also consulted to acquire practice guidelines and expert consensus related to pregnancy exercises. The search time frame extended from the establishment of the databases to February 14, 2023.

2.6. Level of evidence

The level of evidence was evaluated using the Oxford Centre for Evidence-based Medicine Criteria, as shown in Table 2.⁸ The level of evidence may be graded down based on low study quality, indirectness, imprecision, a very small absolute effect size, or inconsistency between studies. Conversely, the level of evidence may be graded up if a large or very large effect size is observed. This rigorous evaluation process ensures that the recommendations and conclusions in this consensus are based on robust and reliable evidence, enhancing the credibility and applicability of the guidelines.

3. Physiological changes during pregnancy and their effects on pelvic floor function

Hormonal changes during pregnancy, such as increased levels of relaxin, along with pelvic floor connective tissue relaxation and the enlargement of the uterus, contribute to the dysfunction of the pelvic floor. Specific anatomical points Aa, Ba, C, Ap, and Bp decreased from the second to third trimester,⁹ and 46.1% of pregnant women had at least

Table 1
Clinical interventions identified by expert consensus.

Clinical interventions during pregnancy
1. Safety of overall exercise for pregnant women and fetuses
2. Raising awareness of the potential damage of pregnancy on the pelvic floor
3. Lifestyle changes: Weight management, diet, etc.
4. Pelvic floor muscle training
5. Respiratory training
6. Overall training
7. Physical activity
8. Perineal massage

Table 2
Oxford centre for evidence-based medicine criteria⁸.

Grade recommendation	Evidence level	Therapy/Prevention
A	1a	SR with homogeneity of RCTs
	1b	Individual RCT (with narrow confidence interval)
	1c	“All or none” evidence (all patients died before the treatment, some patients survived after the treatment, some patients die before the treatment, no patients die after the treatment)
B	2a	SR with homogeneity of cohort studies
	2b	Individual cohort study (including low-quality RCT; e.g., <80% follow-up)
	2c	“Outcomes” research; Ecological studies
	3a	SR with homogeneity of case-control studies
C	3b	Individual case-control studies
	4	Case series (and poor-quality cohort and case-control studies)
D	5	Expert opinion without an explicit critical appraisal, or based on physiology, bench research, or “first principles”, Mechanism-based reasoning

SR: systematic review; RCT: randomized controlled trial.

one symptom of PFD.¹⁰ Additionally, the incidence of pelvic organ prolapse and stress urinary incontinence at 6–8 weeks postpartum was reported to be 35% and 25.7%, respectively.^{11,12} The pudendal nerve is also passively pulled and irreversible nerve damage occurred when it is stretched by more than 15%,¹³ which impairs the repair ability of pelvic floor muscles. The whole muscles and bones can be seen as an ensemble and play a central role in maintaining body balance. As a result, fascia and ligaments tend to adjust, leading to changes such as thoracic kyphosis, lumbar lordosis, and pelvic anteversion,¹⁴ which are closely related to PFD³ and affect the local blood circulation in the pelvic cavity. Insufficient blood supply causes ischemia and hypoxia of the pelvic floor muscle, reducing the strength of the pelvic floor muscle.

During pregnancy, chest breathing becomes the predominant breathing pattern with reduced breathing depth.¹⁵ Due to the elongated abdominal muscles during pregnancy, chest breathing is limited in strength.¹⁶ As a result, the diaphragm and the pelvic floor muscle do not function together efficiently. This impaired coordination between the diaphragm and pelvic floor muscles may contribute to PFD.¹⁷

Understanding these physiological changes and their effects on pelvic floor function is crucial for developing effective preventive measures and interventions to maintain the health of the pelvic floor during pregnancy.

4. Methods to protect the pelvic floor function during pregnancy

Given the significant impact of pregnancy on women, various experts have explored and conducted clinical research on methods to protect pelvic floor function during this period. The following interventions have been identified as effective measures: health education, weight management, pelvic floor muscle training, respiratory training, overall exercise, physical activity, and perineal massage.

4.1. Safety of overall exercise for pregnant women and fetuses

- (1) Warm up the body before each training and organize the exercise after each training.
- (2) During exercise, maintain proper breathing and avoid holding one's breath.
- (3) Avoid bad sitting posture, standing posture, and bilateral asymmetric practice.
- (4) Try to perform pelvic floor muscle training (PFMT) in different positions, including supine, sitting, or standing position according to their practice. The supine position should not exceed 5 minutes after 13 weeks of pregnancy, especially during abdominal muscle

training. A towel roll can be placed on the right hip joint when being in the supine position, to make the body slightly inclined to the left.

- (5) Integrate PFMT into daily life and develop good behavior habits, including adopting proper urination and defecation habits, as well as timely treatment of chronic constipation, chronic cough, and rhinitis. When abdominal pressure increases, such as coughing, sneezing, heavy lifting, or bending, pregnant women should tighten their pelvic floor muscles in advance. PFMT is not limited by time and place, which can be done when bathing, brushing, eating, or other suitable scenarios.
- (6) Empty the bladder before exercise to avoid overfilling.
- (7) Be aware of contraindications to exercise during pregnancy.

4.1.1. Absolute contraindications

They include premature rupture of membranes; threatened abortion; cervical insufficiency; persistent vaginal bleeding; placenta previa after 28 weeks of gestation; abnormal fetal movement; persistent pain or regular and painful contractions after exercise; uncontrolled type I diabetes mellitus, thyroid disease, blood and cerebrovascular diseases, respiratory diseases and other systemic diseases; arrhythmia, dizziness, or syncope; edema or pain in the leg (excluding phlebitis); poor balance, difficulty in walking or difficulty maintaining balance.

4.1.2. Relative contraindications

They include previous history of spontaneous abortion; premature birth; fetal growth restriction; after 28 weeks of gestation with twins; anemia (hemoglobin < 100g/L); malnutrition or eating disorders; mild or moderate cardiovascular, cerebrovascular, and respiratory diseases; overheating during exercise.

Pregnant women need to consult with their healthcare providers before initiating or continuing an exercise routine, especially if they have any medical conditions or concerns. Healthcare providers can assess individual circumstances and provide personalized guidance on safe and appropriate exercise during pregnancy. Prioritizing the safety and well-being of both the mother and the developing baby is of utmost importance.

4.2. Raising awareness of the potential damage of pregnancy on the pelvic floor (evidence level: Ib; recommended intensity: A)

This consensus highlights the importance of raising awareness among pregnant women about the potential damage that pregnancy can have on the pelvic floor. It aims to provide personalized and professional advice to reduce the risk of pelvic floor muscle injury.

Summary of Evidence Support: Studies showed a poor awareness of pelvic floor dysfunction in pregnant women.¹⁸ Two randomized controlled trial (RCT) studies^{19,20} and a case-control study²¹ revealed that providing pelvic floor health education during pregnancy is helpful to increase awareness of pelvic floor function in pregnant women, thereby enhancing the effectiveness of pelvic floor muscle training. Health education has been identified as an independent influencing factor for a successful vaginal delivery.

4.3. Lifestyle changes (level of evidence: Ia; recommended intensity: A)

This consensus recommends weight management: Body mass index (BMI) before pregnancy should be 18.5–23.9 kg/m². The weight gain during pregnancy should refer to the “Recommended gestational weight gain for pregnant women with different BMI before pregnancy in China”, avoiding overweight and obesity. This consensus also recommends constipation and chronic cough prevention or treatment, reducing the Valsalva maneuver, and avoiding lifting heavy weights in daily life.

Summary of Evidence Support: With the improvement in people's living standards and changes in daily diet, the problems of being overweight before pregnancy and excessive weight gain during pregnancy

have become more prevalent. Rational weight control before pregnancy is recommended in previous literature.²² Excessive weight gain during pregnancy has been associated with increased pregnancy complications and fetal macrosomia, which, in turn, elevate the risk of pelvic floor muscle injury.²³ Recommended gestational weight gain for pregnant women with different BMI before pregnancy in China²⁴ is shown in Table 3. Moreover, efforts should be made to prevent or address constipation and chronic cough, as these conditions can contribute to increased pressure on the pelvic floor muscles.²⁵ Avoiding excessive straining during activities such as lifting heavy weights and practicing the Valsalva maneuver is essential to minimize the damage to the pelvic floor muscles.

4.4. Pelvic floor muscle training during pregnancy (Level of evidence: Ia; recommended intensity: A)

This consensus recommends: A complete set of gestational PFMT by completing type I muscle fiber exercises and type II muscle fiber exercises while mastering the Knack maneuver with PFM pre-contraction²⁶ and avoiding breath holding during exercise. Pregnant women should conduct gestational PFMT starting from 16 to 28 weeks of pregnancy under strict supervision and guidance. Effective programs of PFMTs should respect the FITT principle,²⁷ including exercise frequency (F), exercise intensity (I), exercise time (T), and exercise type (T). They should meet certain conditions, but differences in exercise programs and supervision measures are present in different studies, which might be the reasons for the different effects of gestational pelvic floor muscle training. For example, three sets of 8–12 close to maximum contractions 3–4 times/week are recommended. The specific frequency and duration of exercises should be formulated with the help of pelvic floor professional doctors. For those who have already experienced urinary leakage during pregnancy, the frequency of training should be increased accordingly.

The summary of evidence is the following: the pelvic floor muscles are an important part of the pelvic floor support tissue, and Delancey noted that their injury is the initiating factor in PFD.²⁸ PFMT was proposed in 1948 by the American obstetrician Kegel AH.²⁹ This training refers to the active and rhythmic contraction of the urethra, vaginal and perianal muscles, as the preferred measure of pelvic floor protection.^{30–34} The 2019 Canadian Guidelines for Activities in pregnancy³⁴ and the 2021 National Institute for Health and Care Excellence guidelines³³ suggest that gestational pelvic floor muscle training during pregnancy helps to reduce the incidence of urinary incontinence. A systematic review of 24 studies (18 of which were RCTs) showed that PFMT in pregnant women without urinary incontinence reduced its incidence and severity during pregnancy and postpartum.³⁵ Another systematic review and meta-analysis³⁶ reported that antenatal PFMT might be effective in reducing severe perineal trauma and shortening the second stage of labor. However, some studies also found³⁷ no pelvic floor protective effect of gestational pelvic floor muscle training, and the reasons might be related

Table 3

Recommended gestational weight gain for pregnant women with different BMI before pregnancy in China²⁴.

BMI before pregnancy classification (kg/m ²)	Total gestational weight gain (kg)	Weight gain in the first trimester (kg)	Weekly weight gain in the second and third trimesters [kg, median (range)]
Low body weight (<18.5)	11.0–16.0	≤2	0.46 (0.37–0.56)
Normal body weight (18.5–<24.0)	8.0–14.0	≤2	0.37 (0.26–0.48)
Overweight (24.0–<28.0)	7.0–11.0	≤2	0.30 (0.22–0.37)
Obesity (≥28.0)	≤9	≤2	≤0.30

to some factors including the method of exercise and compliance.

It has been reported that effective resistance training for adult skeletal muscle refers to 2 to 4 cycles of 8–12 slow to medium speed, moderate to maximum intensity daily contraction, at least 2–3 days per week, for a total time of more than 16 weeks.^{38–40} In terms of the number of contractions, some scholars proposed no more than 200 times a day, including the exercise of type I and type II muscle fibers. As regards the duration of the exercises, most current studies now suggest that the duration of pelvic floor muscle training should not be less than 6 weeks to reduce the number of involuntary urine leakage.⁴¹ Some scholars used meta-analysis to study the effect of PFMT to minimize the occurrence of urine leakage in urinary incontinence patients and found that training for 3–7 days per week and 10–45 min for 6–12 weeks can improve urinary incontinence. The study also revealed that more short exercises are far better than longer exercises, which might be due to the fact that short training can ensure better exercise learning ability and achieve greater clinical benefits.⁴¹

The daily activities (knack maneuver) ensure the production of enough tension of the pelvic floor muscles to counter intra-abdominal stress. However, sudden movements like coughing or jumping increase intra-abdominal pressure, potentially leading to urine leakage.²⁸ It has been proved that the reduction of the mobility of the bladder neck reduces the incidence and severity of urine leakage. The method is simple: the woman should actively contract the pelvic floor muscles before the increase of the abdominal pressure to enhance the structure stability of the pelvic floor support.

The starting time of the gestational pelvic floor muscle training reported in foreign literature varies from the 11th to the 28th week of gestation. The risk of abortion is relatively high due to many clinical uncertainties in the first trimester, and the increase in uterine volume and weight is more remarkable in the second and third trimesters. In China, the training usually starts from the 28th week of gestation.⁴² The exercise cycle ranges from 6 to 36 weeks.^{43–45} The 2021 NICE recommendation is the following⁴⁶: pregnant women with first-degree relatives (family) with a history of PFD should start the gestational pelvic floor muscle training at the 20th week of pregnancy and complete at least 3 months of PFMT.

4.5. Respiratory training (level of evidence: Ib; recommended intensity: A)

This consensus recommends respiratory training for pregnant women as follows: breathe slowly and deeply while relaxing the upper chest, allowing the abdomen to relax and feel as if the abdominal cavity is expanding, with the ribs expanding to both sides. Exhale through the mouth, causing the abdominal cavity to shrink without actively contracting the abdominal muscles. It is also advised to combine pelvic floor muscle training with respiration, relaxing the pelvic floor muscles during deep inspiration and contracting them during deep expiration. If feelings of dizziness or tingling in the lips or fingers arise, reduce the intensity of breathing.

Summary of Evidence Support: In 2001, Sapsford^{47,48} demonstrated for the first time that the contraction of the rectus abdominis is related to the combined contraction of the pelvic floor muscles, suggesting that the exercise of these muscles should be combined with abdominal training. The effect of diaphragm training on the treatment of pelvic floor dysfunction has gained attention with the increasing understanding of diaphragm function.⁴⁹ A comparison of diaphragm training, abdominal training, and pelvic floor muscle training revealed that the diaphragm training group showed the highest muscle strength and endurance and the strongest correlation with effective avoidance of urinary incontinence.

Deep and slow abdominal breathing primarily involves the movement of the diaphragm and abdominal muscles. Core muscle groups such as the transverse abdominis, internal oblique, external abdominis, and quadratus are connected with the deep pelvic floor muscles through myofascia. The movement of the diaphragm and abdominal muscles not only

drives the contraction and relaxation of the pelvic floor muscles but also relieves muscle tension by regulating the pressure in the abdominal cavity.⁵⁰ Additionally, the movement of these muscles stimulates the pelvic floor muscles and promotes blood circulation in the pelvic floor. Respiratory training has been reported to help cope with uterine contractions and reduce anxiety and perceived pain levels.⁵¹ When pelvic floor muscle training during pregnancy is combined with corresponding contraction and relaxation of abdominal breathing, it maximizes the pelvic and abdominal dynamics produced by the breathing process. By enhancing the relative stability of the spine and pelvis, it achieves the purpose of obtaining enhanced effects of gestational pelvic floor muscle training with less effort.

4.6. Overall training (evidence level: II b; recommended intensity: B)

This consensus recommends overall training, which is a comprehensive training program that includes PFMT, posture training, strength training, endurance training, coordination training, flexibility training, and stability training for the trunk, pelvis, and limbs. During the training, breathing training should be integrated throughout. Multiple intensive repetitions are recommended, such as 12–15 repeats in each exercise, until moderate fatigue. Each training session should last 15–30 min, not less than twice a week, and it is recommended to maintain a fatigue level between 12 and 14 points on the rating of perceived exertion (RPE) scale. Pregnant women should perform the overall training from the 28th week of pregnancy under a professional guidance to restore the original muscle chain function and bone posture in the human body. The exercise intensity should be individualized by professionals based on the gestational week and exercise tolerance. During the exercises, pregnant women should practice abdominal breathing, guided by exercise rehabilitation therapists, exhaling deeply when muscles contract and inhaling deeply when muscles relax. Overall posture training can be integrated into aerobic exercise and stretching routines.

Summary of Evidence Support: The human body's muscles and bones form a complete muscle and bone chain. Poor breathing patterns, posture disorders, and trunk instability are often associated with musculoskeletal issues. A study by the gynecology team of Peking University People's Hospital found a significant correlation between overall posture and pelvic floor function.³ In 1981, Souchard introduced the concept of Global Posture Reeducation (GPR), which focuses on overall exercise of the entire musculoskeletal system, and Fozzatti C^{52,53} et al. found it was beneficial for reducing the incidence of urinary leakage. Another study demonstrated that comprehensive yoga movements can train the perianal muscles, increase muscle flexibility, and enhance pelvic floor muscle tension recovery.⁵⁴ The exercise intensity is best followed on the RPE scale, ranging from 12 to 14, indicating a somewhat challenging but still manageable level.

Boyle KL et al.⁵⁵ demonstrated that enhanced neuromuscular control, particularly in the lumbar-pelvic region, deep abdomen, diaphragm, and pelvic floor, is effective in treating PFD in patients with poor breathing and posture. The study conducted by Foster SN et al.⁵⁶ indicated that the obturator muscle shares a fascia connection with the pelvic floor muscle, suggesting that compensatory movements of the obturator muscle may contribute to some extent in aiding pelvic floor muscle contraction. It was also observed that intravaginal pressure increases with the strength of the hip rotator muscles during pelvic floor muscle contraction.⁵⁷ Many researchers^{58,59} have found that elderly individuals with a higher incidence of pelvic floor dysfunction may benefit from external hip joint rotation exercises. The theory and rehabilitation technology of the Postural Restoration Institute® (PRI) has recently garnered attention. PRI focuses on restoring the balance of the anatomical system, adjusting pelvic position, and enhancing core stability through targeted training, which is beneficial for rehabilitating pelvic floor function. Several Chinese institutions have adopted pelvic adjustment techniques in clinical practice, but further research is required to assess their effectiveness.^{57,60}

As the size of the fetus increases during pregnancy, maternal postural

muscles experience added stress, leading to a gradual forward and upward shift in the center of gravity, as well as adjustments in spinal alignment. Morphological changes during pregnancy are known to persist for at least 4–6 weeks postpartum. Hence, specific movement adjustments are essential during pregnancy, including active flexion of the cervical muscles, extension of the shoulder abduction muscles, stabilization of the trunk muscles, and exercises targeting the hip and knee muscles. Accurate stretching exercises are also recommended to maintain pelvic floor health and overall musculoskeletal balance.

4.7. Physical activity and pelvic floor health during pregnancy (Level of evidence: Ia; recommended intensity: A)

This consensus strongly advocates the importance of regular physical activity during pregnancy to reduce pregnancy-related complications and safeguard the pelvic floor. Pregnant women are recommended to engage in physical activity at least three days a week, with each session lasting no less than 150 minutes of moderate intensity. Activities that involve large muscle groups, such as walking, Taiji, Baduanjin, and Wuqinxi, are particularly beneficial. The intensity of physical activity during pregnancy should be maintained at a moderate level, ensuring that pregnant women experience a level of fatigue ranging between 12 and 14 points on the RPE scale or achieve a target heart rate of 40%–59% of their heart rate reserve. For women below the age of 30, the target heart rate range should be between 125 and 146 beats per minute, while for those above 30, it should be within 121–141 beats per minute. It is crucial to exercise caution when engaging in high-intensity activities, seeking guidance from experts to ensure safety. For women with a BMI above 24 kg/m² before pregnancy, low-intensity activities are recommended to promote optimal health outcomes.

Summary of Evidence Support: Numerous studies support the positive impact of physical activity on overall well-being during pregnancy. Physical activity encompasses a broad spectrum of activities that elevate energy expenditure, including not only structured exercises but also daily tasks like household chores, occupational duties, and transportation-related activities. Studies have indicated that engaging in mild to moderate physical activity significantly reduces the risk of developing urinary incontinence during pregnancy.⁶¹ Rigorous RCTs have demonstrated that moderate-intensity exercise during late pregnancy (at 60% of the maximum heart rate) does not result in any adverse fetal hemodynamic changes, as evidenced by the middle cerebral artery beat index and umbilical artery beat index.⁶² Additionally, another RCT revealed that exercise during pregnancy reduces the incidence of depression in the third trimester and postpartum period, highlighting the mental health benefits of physical activity for both mother and fetus.⁶³

Reputable organizations, such as the American College of Obstetricians and Gynecologists,⁶⁴ recommend following the Centers for Disease Control and Prevention guidelines, encouraging moderate physical activity for at least 30 minutes most days of the week, preferably distributed throughout the day.⁶⁵ For women who were physically active before pregnancy, they are encouraged to continue their activity, while considering adjustments to the intensity and frequency during pregnancy.^{64–66} Various other guidelines on physical activity during pregnancy and postpartum are available, including those provided by the Royal College of Obstetricians and Gynecologists⁶⁷ and the Canadian physical exercise guidelines.^{66,68,69}

Some researchers have emphasized the importance of incorporating strength training and muscle conditioning to enhance the benefits of moderate activity and promote the inclusion of high-intensity exercises and increased weekly physical activity consumption.⁷⁰

4.8. Perineal massage for pregnant women (evidence level: Ia; recommended intensity: A)

This consensus strongly recommends pregnant women to begin professional perineal massage starting from the 35th week of pregnancy,

with a frequency of 2–3 times a week, using gentle movements and adhering to standard procedures.

The perineal massage technique is as follows^{71,72}:

Pregnant women should adopt the bladder lithotomy position after urination.

The gynecologist performing the massage should wash their hands and wear sterile gloves.

Water-based lubricant should be evenly applied to the vaginal orifice and lower vagina.

The gynecologist gently inserts their middle and index fingers about 3–4 cm into the participant's vagina and continues to massage downwards towards the perineal body (anal direction) and both vaginal lateral walls for 2–3 minutes each.

The massage should be performed with a strength that causes pregnant women to experience a slight burning, tingling, or stretching sensation.

A U-shaped massage on the vagina should be performed for 2–3 minutes.

The procedure should be stopped immediately if there is any discomfort during the massage.

Pregnant women with vaginal infection or genital herpes should avoid the massage.

Summary of Evidence Support:

Perineal massage has been shown to offer several benefits for pregnant women.^{73–75} The practice enhances the elasticity and compliance of pelvic floor muscle fibers, leading to improved pelvic floor health. Additionally, perineal massage expands the blood vessels in the vaginal and perineal areas, increasing blood circulation. The massage also simulates the compression of the vagina and perineal tissue, aiding in tissue expansion during delivery.

Studies, including a RCT and a meta-analysis, have demonstrated that perineal massage reduces the incidence of perineal fissures during labor. Furthermore, perineal massage has been associated with a decreased perineal incision rate and reduced perineal lacerations during childbirth.⁷⁵ Additionally, perineal massage has been shown to alleviate postpartum perineal pain and reduce postpartum complications.

Based on the evidence, it is recommended that perineal massage be initiated from the 35th week of pregnancy and continued for 3–6 weeks until labor. The procedure is considered relatively safe when performed during the antenatal period.

The primary aim of The Expert Consensus on Primary Prevention Strategies for Pelvic Floor Dysfunction during Pregnancy is to establish standardized and improved strategies for protecting the pelvic floor during pregnancy and to effectively implement them in clinical practice. These strategies encompass considerations for exercise tolerance and obstetric factors, prioritizing the safety and well-being of both the mother and the infant. Tailored pregnancy exercise programs can be developed either individually or in combination, enabling a comprehensive assessment of pregnant women's health.

Moreover, it is crucial to provide relevant training and systematic education on the characteristics of the gynecological pelvic floor, obstetrics, sports rehabilitation, and related topics to healthcare professionals utilizing this consensus. This knowledge empowers them to effectively minimize pelvic floor injuries during pregnancy and ensure the safety of both the mother and child.

While there is some evidence supporting the benefits of pelvic floor exercise during pregnancy, the clinical evidence is currently insufficient. Therefore, continuous evaluation and improvement are essential, drawing from clinical experiences. This includes conducting more high-quality studies in related fields to establish a stronger evidence base for pelvic floor protection during pregnancy.

In conclusion, The Expert Consensus on Primary Prevention Strategies for Pelvic Floor Dysfunction during Pregnancy aims to set a standard for protecting the pelvic floor during pregnancy. By incorporating exercise tolerance, obstetric considerations, and personalized pregnancy exercise programs, healthcare professionals can ensure the safety and

health of pregnant women and their infants. Ongoing research and evaluation will further refine these strategies, providing enhanced support and care for pregnant women in the future.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Additional contributing authors for the Chinese expert consensus on primary prevention for pelvic floor dysfunction during pregnancy:

Bing Xie (Peking University People's Hospital), Yi Zhu (The Fifth Affiliated Hospital of Zhengzhou University), Xin Luo (The First Affiliated Hospital of Jinan University), Jinsong Han (Peking University Third Hospital), Yanfeng Song (The 900 Hospital of the Joint Service Support Force of the People's Liberation Army of China), Yongxian Lu (The Fourth Medical Center, Chinese PLA General Hospital), Feng Sun (Peking University), Huixin Liu (Peking University People's Hospital), Huan Ge (Jiangsu Women and Children Health Hospital), Guizhu Wu (Shanghai First Maternity and Infant Hospital, School of Medicine, Tongji University), Li Hong (Renmin Hospital of Wuhan University), Zhong Lin (The Reproduction Hospital of Guangxi Zhuang Autonomous Region), Yali Miao (West China Second University Hospital, Sichuan University), Jingyan Xie (Nanjing First Hospital, Nanjing Medical University), Ye Lu (Peking University First Hospital), Zhijun Xia (Liaoning Maternal and Child Health Hospital), Zhenwei Xie (Women's Hospital School of Medical Zhejiang University), Huan Li (Peking University Shenzhen Hospital), Dan Lu (Beijing Obstetrics and Gynecology Hospital, Capital Medical University Beijing Maternal and Child Health Care Hospital), Hongjian Lu (Nantong First People's Hospital), Henghui Wu (Henan Provincial People's Hospital), Juan Liu (The Third Affiliated Hospital Guangzhou Medical University), Xin Yang (Peking University People's Hospital), Shiyang Wang (Peking University People's Hospital), Xiaowei Li (Peking University People's Hospital), Haibo Wang (Peking University), Yunfeng Han (Beijing Sitan Sports Rehabilitation Center), Shufang Liu (Guangzhou Sport University), Yiting Wang (Peking University Third Hospital), Xiuhong Fu (Luohe Central Hospital of Henan Province), Hongjuan Li (Zhengzhou Central Hospital Affiliated to Zhengzhou University), Min Zhen (Fangshan Maternal and Child Health Hospital), Hui Xiang (Fengtai Maternal and Child Health Hospital), Li Lin (Peking University International Hospital), Yan Hu (Peking University Shenzhen Hospital), Lingrui Kong (Capital Medical University Mentougou Teaching Hospital).

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Xiuli Sun^{a,*}, Lei Gao^a, Hongmei Zhu^a, Wei Jiao^b, Jianjun Guo^c,
Jianliu Wang^a, Lihui Wei^a, Sports, Exercise and Health Branch of
Chinese Preventive Medicine Association
^a Department of Obstetrics and Gynecology, Peking University People's
Hospital, Beijing, China
^b School of Sports Medicine and Physical Therapy, Beijing Sports
University, Beijing, China
^c Sports and Medicine Integration Innovation Center, Capital University
of Physical Education and Sports, Beijing, China

* Corresponding author.

E-mail address: sunxiuli@pkuph.edu.cn (X. Sun).