

# Exercise in Pregnancy

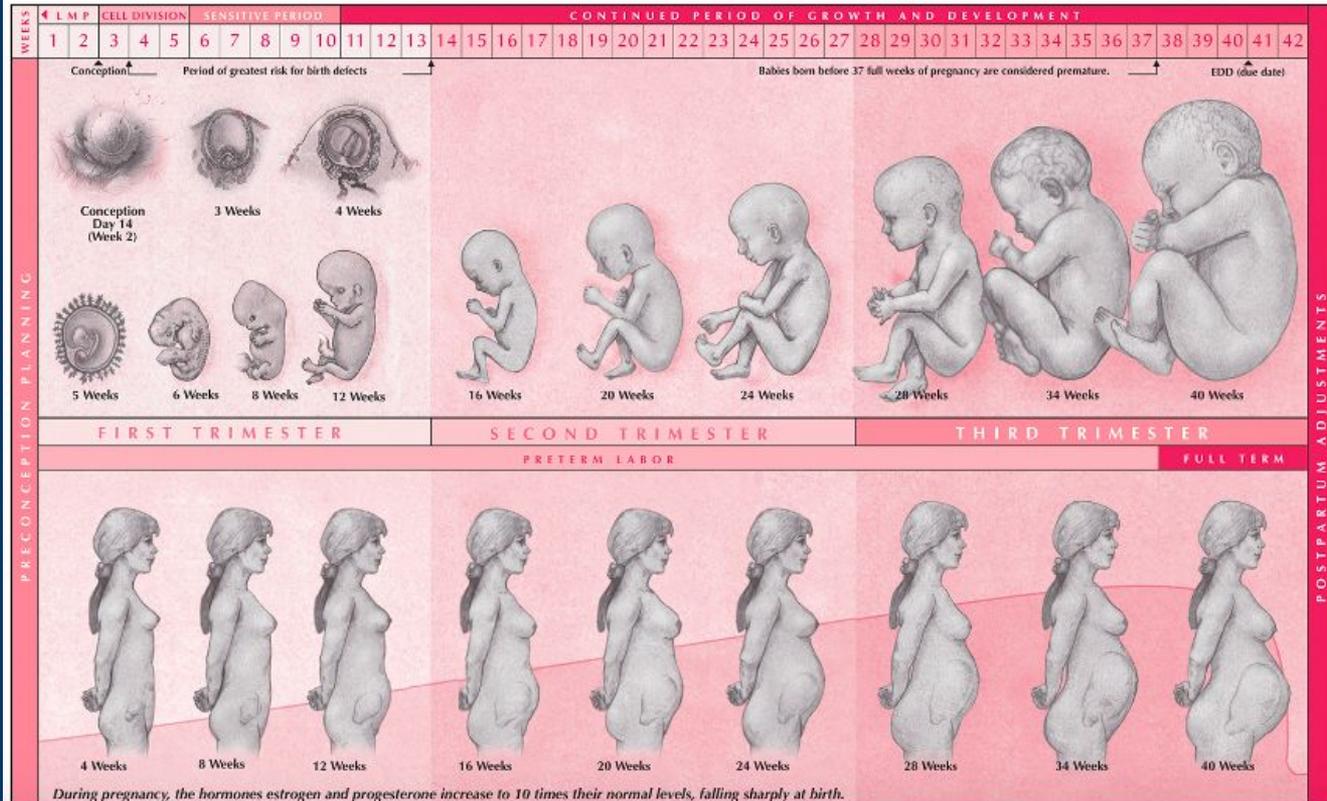


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# Goals and Objectives

1. Understand the physiologic and neuro-musculoskeletal changes that occur during pregnancy
2. Review current guidelines for exercise in pregnancy, including indications and contraindications
3. Appreciate the benefits and risks of exercise in the intrapartum and postpartum period
4. Apply this knowledge to counsel patients effectively and efficiently in clinic

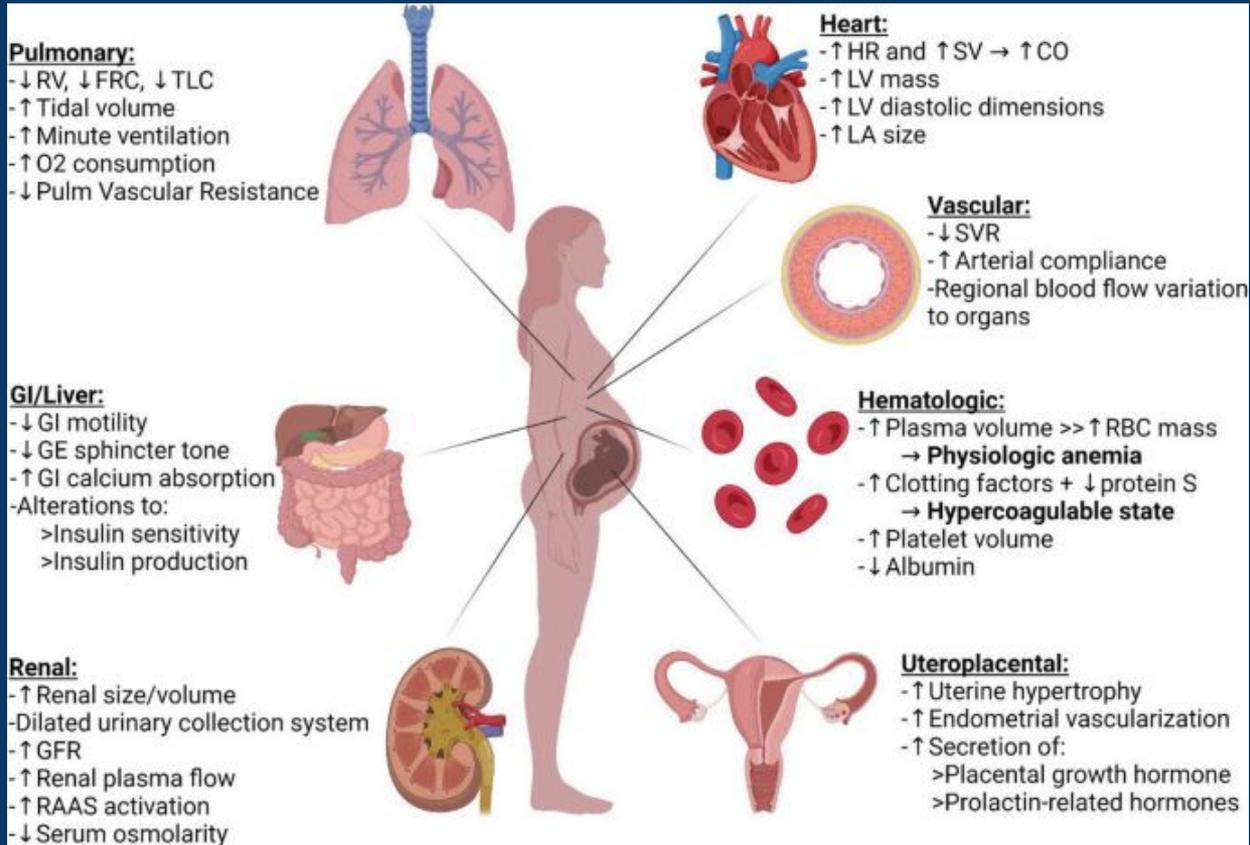
# Timeline of Pregnancy



PRECONCEPTION PLANNING

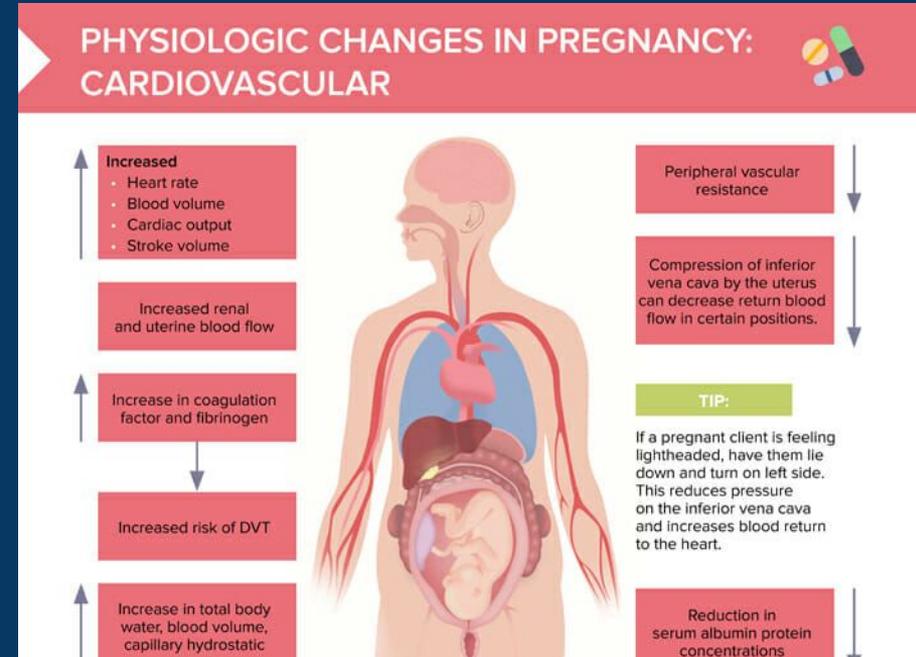
POSTPARTUM ADJUSTMENTS

# Physiologic Changes in Pregnancy–Overview

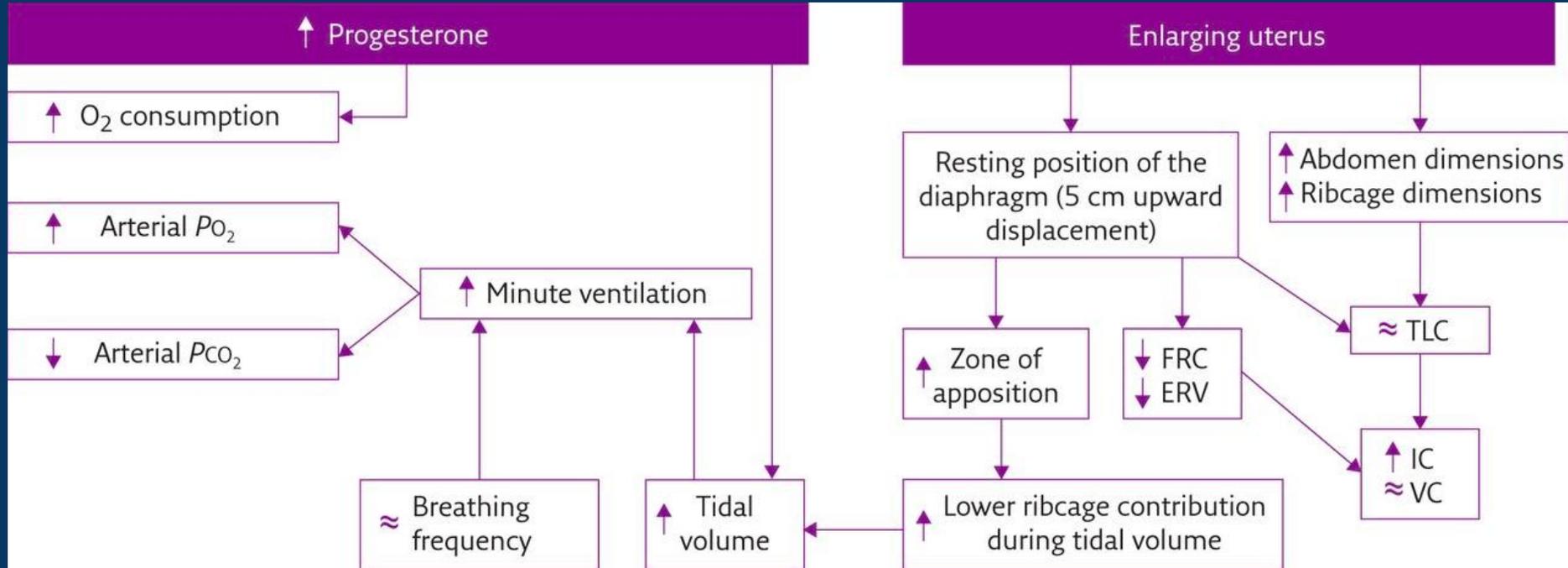


# Physiologic Changes in Pregnancy–Cardiovascular

- ↑ overall blood volume
- ↑ cardiac output (due to placental and uterus perfusion)
  - ↑ preload
  - ↑ HR
  - ↓ SVR
- ↓ blood pressure



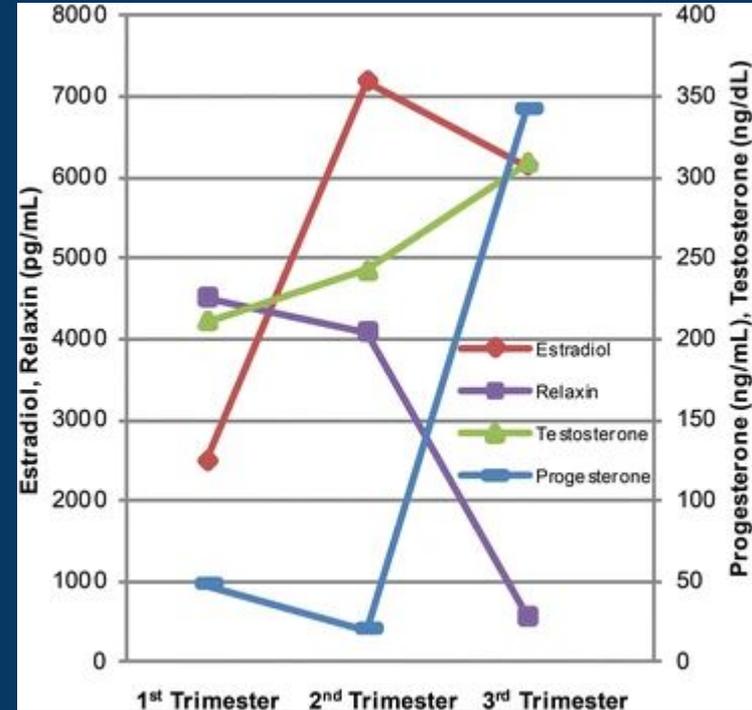
# Physiologic Changes in Pregnancy–Pulmonary



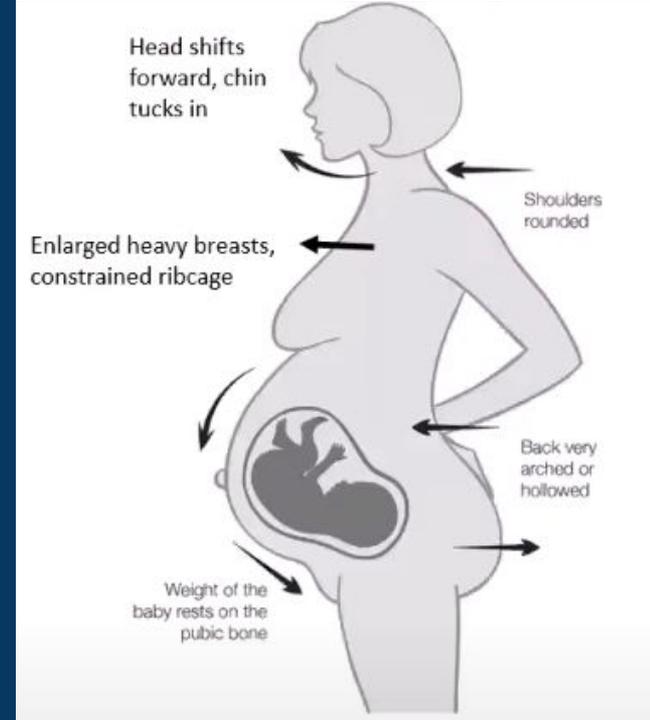
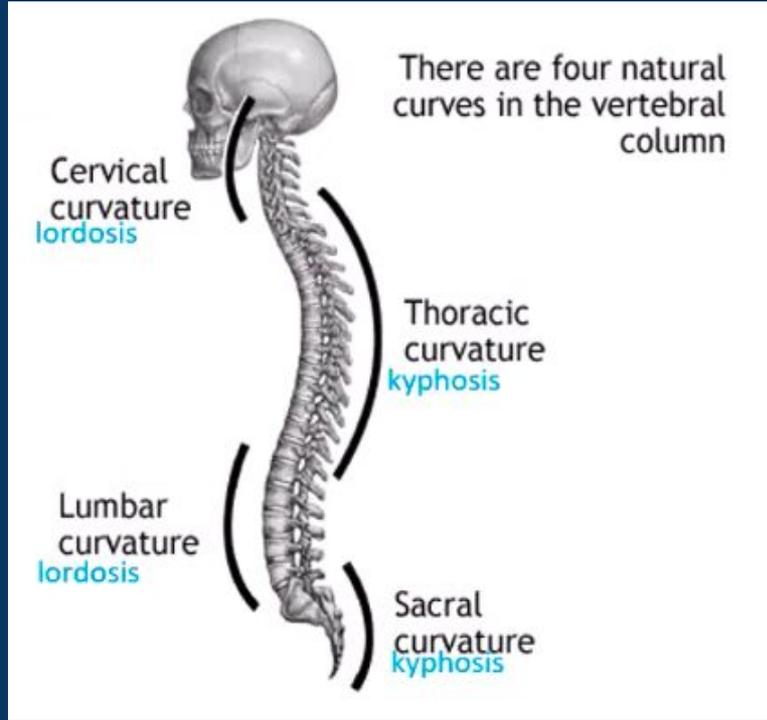
# Physiologic Changes in Pregnancy–Hormonal

- Estrogen
- Progesterone
- Testosterone
- Relaxin

→ Increased joint and ligamentous laxity, decrease stiffness in pregnancy

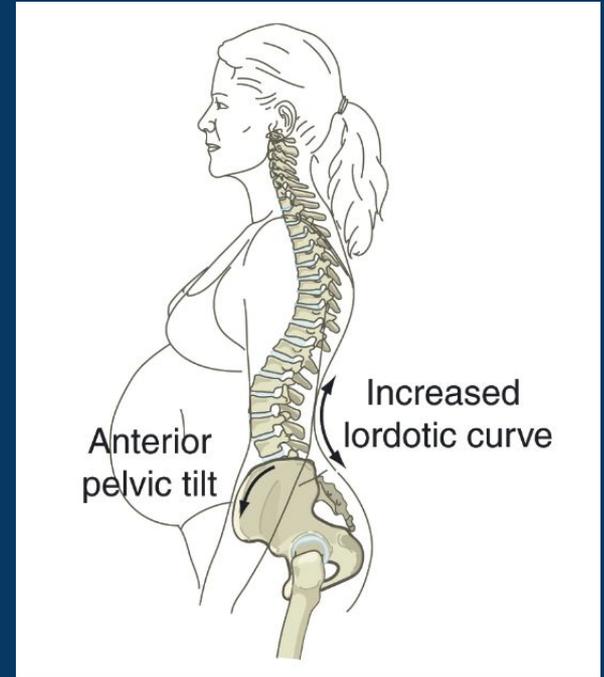
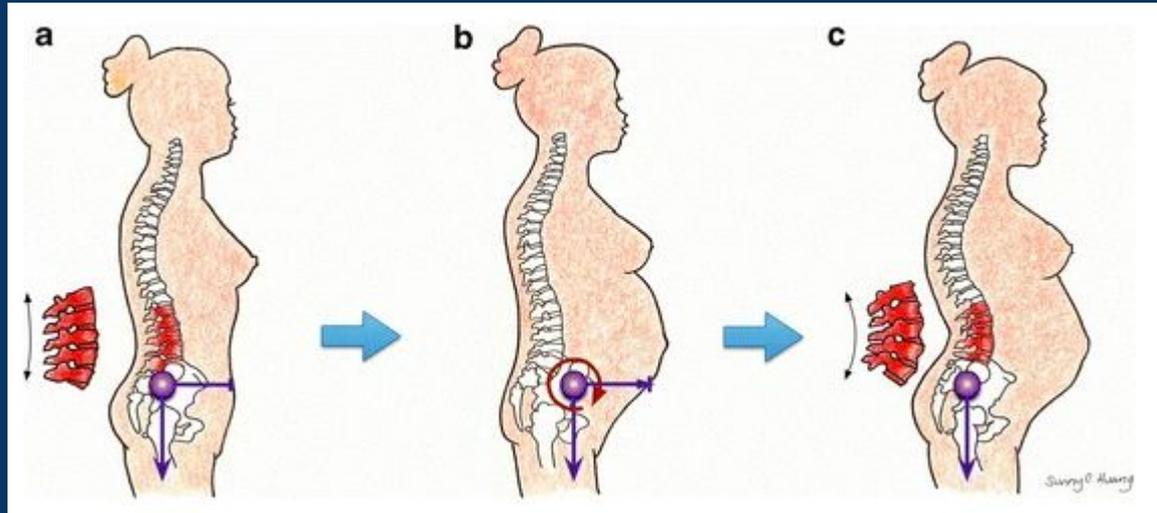


# Physiologic Changes in Pregnancy–Musculoskeletal



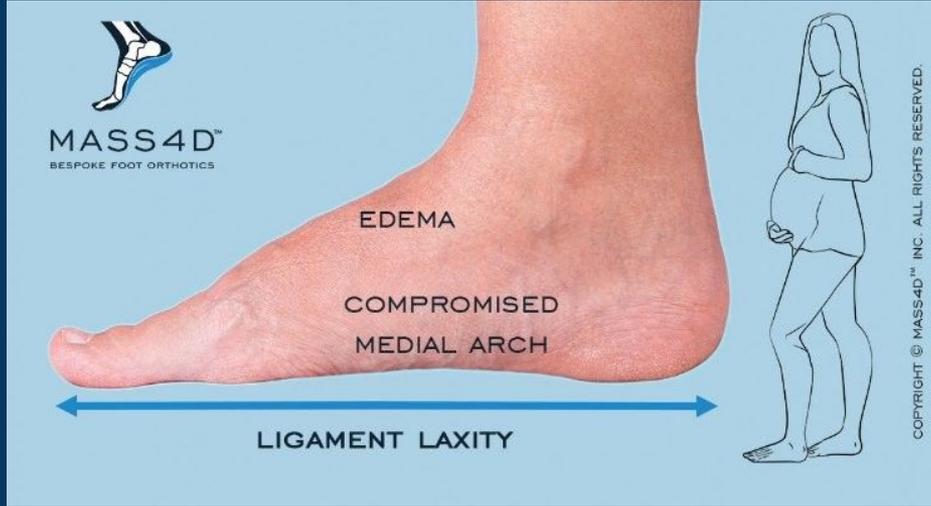
Spinal curvature is INCREASED

# Physiologic Changes in Pregnancy–Musculoskeletal

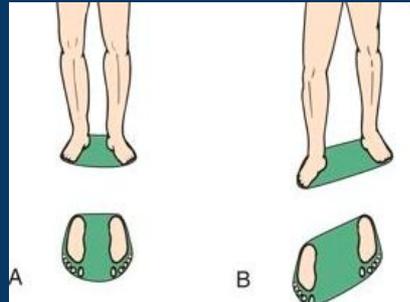
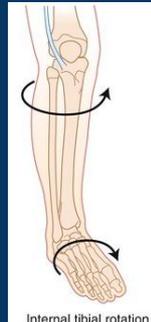
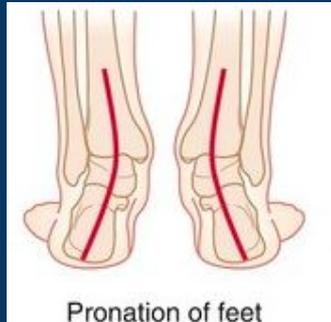


Center of gravity shifts forward → Anterior pelvic tilt

# Physiologic Changes in Pregnancy–Musculoskeletal

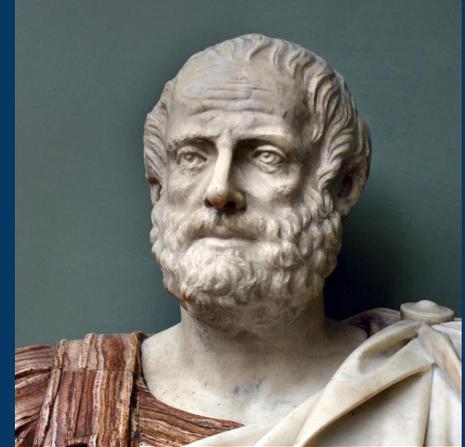


- Pes planus, “flat feet”
- Foot pronation
- Internal rotation of the tibia
- Widened base of support
- Decreased stride length, increased double support → “waddling gait”



# Should pregnant women exercise?

- Aristotle (4th century BCE) urged Greek women to exercise in order to decrease the pain of childbearing
- However, for many years, mixed societal/expert opinion on exercise in pregnancy
- Concern for harm to fetus, increased adverse outcomes

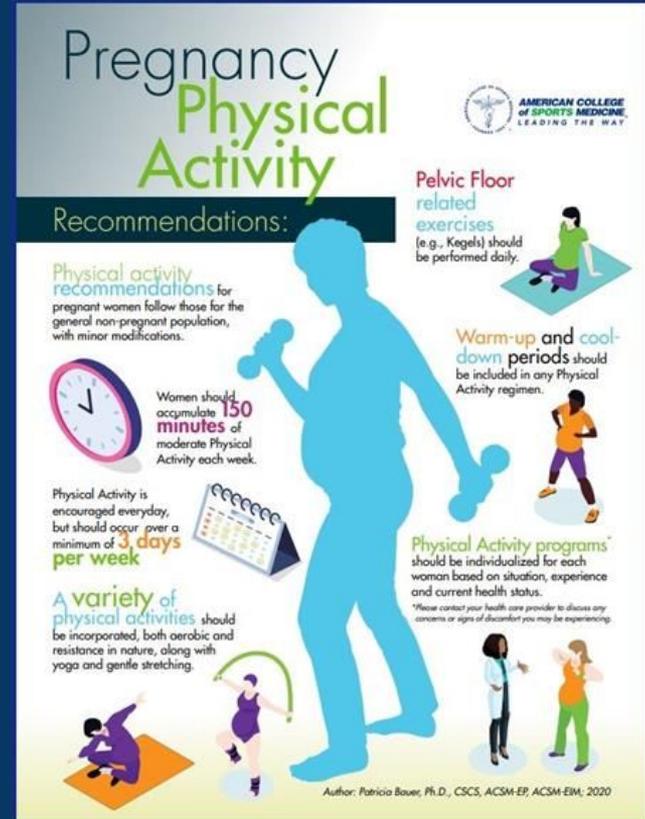


# Should pregnant women exercise?—Timeline

- Before 1985 = no exercise, just REST
- 1985 American College of Gynecology (ACOG) Guidelines:
  - Limit strenuous exercise  $\leq 15$  min in duration
  - Maternal HR  $\leq 140$  bpm
  - Previously sedentary women should NOT begin an exercise program during pregnancy
  - Previously active women should reduce exercise intensity to prevent fetal harm
- 1994 → 2002: no restriction on maternal physical activity, no HR/duration parameters

# Should pregnant women exercise?—Current Guidelines

- Current guidelines (including ACOG, WHO, Australian, ACSM) → **YES, almost all pregnant women should exercise!**
- Recommend at least 150 minutes of moderate-intensity exercise per week
- Minimum of 3 days per week, daily activity encouraged
- Incorporate a variety of both aerobic and resistance training



# Benefits of Exercise in Pregnancy

- Mother
- Fetus/Newborn
- Labor & Delivery
- Postpartum

# Benefits of Exercise in Pregnancy–Mother

- Reduces gestational weight gain
- Decreases musculoskeletal complaints, including low back pain and pelvic pain
- Decreases gestational diabetes, gestational HTN, and preeclampsia
- Decreases constipation



# Benefits of Exercise in Pregnancy–Fetus/Newborn



- Decreases risk for large-for-gestational-age (LGA) babies
- Decreases fetal distress during delivery
- Preliminary studies suggest decreases in childhood obesity



# Benefits of Exercise in Pregnancy–Labor & Delivery

- Increases rate of vaginal delivery, lowers the rate of C-section delivery
- Decreases risk of preterm labor
- Decreases rates of prolonged labor/delivery
  - Delivered 7 days earlier on average
- Decreases perception of pain during labor



# Benefits of Exercise in Pregnancy–Postpartum

- Decreases incidence of intrapartum and postpartum depression
- Improved bladder control postpartum
- Decreases risk of DVT postpartum
- Faster return to pre-pregnancy weight



# Who should NOT exercise in pregnancy?

**TABLE 1. Absolute Contraindications to Aerobic Exercise During Pregnancy**

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Hemodynamically significant heart disease  
Restrictive lung disease  
Incompetent cervix or cerclage  
Multiple gestation at risk of premature labor  
Persistent second-trimester or third-trimester bleeding  
Placenta previa after 26 weeks of gestation  
Premature labor during current pregnancy  
Ruptured chorioamniotic membranes  
Preeclampsia or pregnancy-induced hypertension  
Severe anemia

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**TABLE 2. Relative Contraindications to Aerobic Exercise During Pregnancy**

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Anemia  
Unevaluated maternal cardiac arrhythmia  
Chronic bronchitis  
Poorly controlled type 1 diabetes  
Extreme morbid obesity  
Extreme underweight (body mass index < 12)  
History of extremely sedentary lifestyle  
Intrauterine growth restriction in current pregnancy  
Poorly controlled hypertension  
Orthopedic limitations  
Poorly controlled seizure disorder  
Poorly controlled hyperthyroidism  
Heavy smoker

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# Counseling Patients

- For **\*ACTIVE\*** patients:
  - Continue what you're doing!
  - 150 minutes of moderate-intensity exercise/week, at least 3x/week, with variety of aerobic and resistance training
  - Expect a decline in performance and exercise tolerance



# Counseling Patients

- For **\*SEDENTARY\*** patients:
  - ACOG suggests that patient who were previously sedentary should follow a more gradual exercise progression
  - Start low intensity and gradually progress:
    - Start with 5 minutes per session, 3x/week
    - Increase to 15 minutes per session, 3x/week
    - Goal: 30-60 min, 4-6x/week

# Counseling Patients

- For **\*POSTPARTUM\*** patients:
  - No definitive consensus
  - Recommend gradual return to exercise
  - Resume strenuous activities 8-12 weeks postpartum
  - Advise kegels, core work

# Recommended Exercise Intensity

- HR: <75% of maximum HR
- Borg scale: 12-14, “somewhat hard”
- **\*Talk test = can talk while exercising, but cannot sing\***
- Some sources advise against high intensity activity for prolonged period of time, but the evidence is not strong



# Recommended Activities

- Walking
- Dancing
- Swimming
- Stationary cycling (particularly in later stages of pregnancy)
- Low-impact aerobics (i.e. yoga, water aerobics, modified pilates)
- **The physical activity that they enjoy the most!!!**

# Activities to Avoid

- Fall risk: gymnastics, horseback riding, skiing, road cycling
- Collision risk: ice hockey, soccer, basketball
  - Recommend no contact sports after 1st trimester
- Scuba diving (risk of decompression illness)
- High altitude activities
- Supine activities after 16 weeks gestation
- Heavy weight training (e.g. olympic lifts)
- Hot tub/sauna?

# When to STOP exercising

- Discomfort
- Significant dyspnea
- Vaginal bleeding
- Dizziness, lightheadedness, syncope, headache
- Chest pain
- Fluid leakage
- Decreased fetal movement

# Common Barriers to Exercise

- Lack of knowledge or experience on how to exercise
- Fear of doing harm to fetus
- Fatigue
- Lack of time
- Pain

Addressing these barriers can make a big difference!

# Takeaway Points

- Almost all pregnant women should be recommended to exercise!
  - Associated with minimal risks and several important benefits
- Pregnancy is an ideal time for behavior modification due to increased motivation and frequent access to medical supervision
- Take advantage of the prenatal visit as an opportunity to reinforce healthy exercise habits across the lifespan of two generations!

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