Pelvic PT Distance Journal Club

Article: Regular exercisers have stronger pelvic floor muscles than nonregular exercisers at mid-pregnancy
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Introduction:
• ACOG guidelines (2015)
  o 30 min of aerobic activity most days of the week
    ▪ Strength training major muscle groups 2-3 days per week
• Cochrane Review (2012):
  o PFM training during pregnancy to prevent and treat UI= level 1A evidence
    ▪ Pregnant women are recommended to do regular strength training of PFM
• Current debate per Kari Bo:
  o Physical activity strengthens PFM through co-contraction during increased intrabdominal pressure
  o Physical activity weakens the PFM due to impact that cannot be counteracted

Aim/Primary Aim:
• Compare vaginal resting pressure, PFM strength, PFM endurance @ mid-pregnancy in those who exercise regularly vs those who do not exercise at all
  o Assess whether general exercise OR PFM strength were associated with UI

Study Design/Study Format:
• Cross sectional study
  o 218 nulliparous pregnant women (2010-2011) in Norway
  o Mean gestational age 20.9 (+/- 1.4) weeks
  o Pre-pregnancy BMI: 23.9
  o Inclusion criteria: first pregnancy, Scandinavian language
  o Exclusion criteria: multiple pregnancies, miscarriage after week 16

Methods:
• Exercisers (93):
  o General exercise: >30min x3 or more a week
    ▪ Page 2 discusses which type of exercises were included
      ▪ Wide variety of exercise: should it be categorized as mild, medium, hard exercise to be more standardized?
• Non-exercisers (125):
  o Never performed exercise
• Data collected at gestational week 21
  o Self-reported: electronic questionnaire on exercise participation
• 2 trained PT’s taught participants how to contract PFM
  o Verified by observation of perineal body mobility and vaginal palpation
• High precision pressure transducer connected to a vaginal balloon catheter (good intra-observer reliability)—reference 10
  o Only contractions with visible movement of catheter and perineum counted
  o Measured: resting pressure, strength (MVC – resting pressure), endurance (10 sec)
    ▪ Hook lying
• ICIQ-UI (SF)

• Statistical Analysis:
  o See page 3; Table 1 and Table 2
    ▪ Table 1:
      • Variables identified: age, pre-pregnancy BMI, marital status, education level, smoking during pregnancy, regular PFM training during pregnancy, UI mid-pregnancy
    ▪ Independent- sample T test
      • P value: 0.05
      • Linear regression analysis used to adjust for possible covariates
        o Adjustments made for covariates: BMI, age, education, smoking, PFM training
        o These covariates were chosen based on present literature/clinical reasoning

Results:
• Vaginal resting pressure: no statistically significant difference between groups
• PFM muscle strength and endurance: higher in exercisers
  o After adjustment: PFM strength only
• UI: no difference between groups
  o Adjustment: only PFM strength was inversely associated with UI (not endurance or VRP)
    ▪ PFM strength was associated with UI
  o ACOG: lifted a lot of restrictions in recent guidelines
    ▪ If people are exercising, let them keep exercising
    ▪ We don’t know the result if non-exercisers begin a new program

Discussion:
• Strengths: large number of participants, use of reliable/valid assessment methods, adjusted analysis to control for covariates
• Weaknesses: lack of power calculation, fewer exercisers than non-exercisers, limited existing evidence
  o No randomization between the groups
  o Those who exercised could have been in great shape and healthy. Was it the exercise that increased the PFM strength or was the person just healthy to begin with?
• Need more research!
  o Current competing research:
    ▪ Some research that supports the findings in this study are references 2,13: RCTs that indicate PFM training during pregnancy can increase strength and decrease UI (this includes the Cochrane review)
    ▪ Reference 23: systematic review of women concluded that PFM training significantly shortened first- (mean 28 minutes) and second-stage (mean 10 minutes) of labor.
      • PFM training did not increase the risk of episiotomy, instrumental vaginal delivery, and perineal laceration.
    ▪ However, there is current research that indicates that elite athletes have higher prevalence of UI and research that indicates physical activity during pregnancy increases the risk of UI post-partum (references 12, 14, 15, 20, 3, 4)

Clinical Application
• Importance of PFM strengthening and education during pregnancy
  o importance for evidence supporting decreased UI, shortening 1\textsuperscript{st} and 2\textsuperscript{nd} stage of labor
• Importance of exercise during pregnancy with our pregnant patients who are already exercising
  o types of exercise we encourage and dosing (ACOG)
  o The potential for general exercise to increase PFM strength + PFM exercises to decrease UI during pregnancy
    - Need a longitudinal RCT study

List discussion questions
1. In this study, PFM strength was associated with decreased UI but not PFM endurance. In clinical practice do you see a decrease in UI with increased strength and/or endurance in your pregnant patients?
   a. Any strategies for strength vs endurance training in this population?
2. Has anyone noticed in their clinical practice a difference in reports of UI (during pregnancy) in those who already participate in regular exercise vs those who are beginning an exercise program?
3. How often are you all monitoring specific PFM strength in our pregnant patients? How are you measuring it?
4. In your experience are referring physicians supporting PFM strengthening in non-high-risk pregnancies? Or have you run into problems where it is discouraged based on the potential for negatively affecting labor?
5. Does anyone work with athletes who are pregnant? Any input on UI related to their physical activity or PFM function?

Other References:
• ACOG (2017)
  o at least 150 minutes of moderate-intensity aerobic activity every week.
    - 30-minute workouts on 5 days of the week or into smaller 10-minute workouts throughout each day.
    - https://www.acog.org/Patients/FAQs/Exercise-During-Pregnancy?IsMobileSet=false
  o PFM function measurement using vaginal balloon catheter