

concentrated on a selected number.

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## New Research

### Pre-pregnancy Fitness Levels and Delivery Outcomes

#### To the Editor:

The importance of physical activity as a cornerstone for treating and preventing chronic disease is well accepted. Paradoxically, however, exercise was historically contraindicated during pregnancy. The theoretical risks to the mother and fetus were felt to outweigh any potential benefits of regular exercise. This sentiment was based more on anecdote and dogma than science. The American College of Obstetrics and Gynecology (ACOG), therefore, has released a position statement encouraging that pregnant women, unless otherwise medically contraindicated, obtain 30 minutes of moderate exercise on most (preferably all) days of the week.<sup>1</sup> Moderate physical activity is safe, well tolerated, and associated with improved maternal well-being during pregnancy.<sup>2</sup>

Less is known, however, about any association of a woman's fitness prior to pregnancy and subsequent birth outcomes. The purpose of this pilot study, therefore, was to determine to what extent a woman's pre-pregnancy fitness level is associated with the selected birth outcomes of weight, Apgar scoring, mode of delivery, need for pain medication, and breast-feeding.

#### Methods

Following institutional approval, we enrolled a pilot cohort of 97 women presenting for routine low-risk prenatal care. All participants were on active duty in the US

Marine Corps. After obtaining informed consent, each participant's height, weight, and physical fitness scores (PFT) prior to becoming pregnant were recorded. The PFT is a validated series of exercises that assess body composition, muscular endurance, and aerobic conditioning.

At the time of delivery, data were recorded for mode of delivery, type of pain control, infant weight, and birth Apgar scores. Rates of maternal breast-feeding at hospital discharge and again at 2 months postpartum were also recorded. Cross tabulations and *t* testing were performed using SPSS® version 12.0 (SPSS, Chicago).

#### Results

The age of our population ranged from 18 to 34 (mean=22). The average pre-pregnancy body mass index was 23. Most patients delivered vaginally (77%), and most requested epidural analgesia (72%). The average length of labor was 7 hours. The average infant weight was 3,387 grams. Infant Apgar scores averaged 8 at 1 minute and 9 at 5 minutes of life. While most patients (80%) were breast-feeding at the time of hospital discharge, only 55% continued to do so 2 months postpartum.

Women with low levels of fitness were more likely to request epidural analgesia during labor than women with high fitness levels (OR=3.0, 95% CI=1.3–8.2; *P*<.03). There was no difference, however, in the mode of delivery or postpartum breast-feeding rates between women of high and low fitness. Additionally, there was no difference in infant birth weights or Apgar scores between groups.

#### Discussion

To our knowledge, this is the first attempt to prospectively follow a cohort of women to determine the association between pre-pregnancy fitness levels and birth outcomes.

Utilizing a unique population of active-duty women and validated measures of fitness, we found that physically fit women request less epidural anesthesia than those who are less fit. This provides further support to previous literature indicating that women in superior physical condition tolerate labor better than those in poor physical condition.<sup>3</sup> Pre-pregnancy fitness levels, however, were not associated with the mode of delivery, breast-feeding through 2 months postpartum, birth weight, or Apgar scores.

There are important limitations to our study. All participants were US Marines who are required to maintain a certain level of fitness to remain on active duty. Thus, the baseline demographics of our population are likely difficult to generalize. We plan, therefore, to prospectively confirm our findings through a larger prospective trial.

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