

Maternal exercise during pregnancy and the influences on cardiac autonomic control

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Background: Our previous research found decreased fetal heart rate (fHR) and increased heart rate variability (HRV) as a result of regular maternal aerobic exercise. These results suggest exposure to exercise throughout gestation influence cardiac autonomic control. However, it is still unknown if these affects persist into the postnatal period.

Aims: This study tested the hypothesis that regular exercise during pregnancy leads to decreased HR and increased HRV in infants relative to infants of mothers who did not exercise throughout gestation.

Study Design: Magnetocardiograms (MCG) were recorded at one month postnatal age from 13 regularly exercising (>30 minutes of aerobic exercise, 3x per week) and 14 healthy, non-exercising pregnant women. Normal R-peaks were marked within the infant MCG to measure HR and HRV in the time and frequency domains. Differences between infants of exercisers and infants of non-exercisers were examined using ANOVA to account for infant activity state.

Results: One month old infants from exercising mothers had lower HR relative to infants from non-exercising mothers ($p=0.06$). This potential difference was still present during the active state ($p=0.08$) and the quiet state ($p=0.11$).

Conclusion: These findings demonstrate the differences observed in fetal HR and HRV from exercise throughout pregnancy are still present after birth.