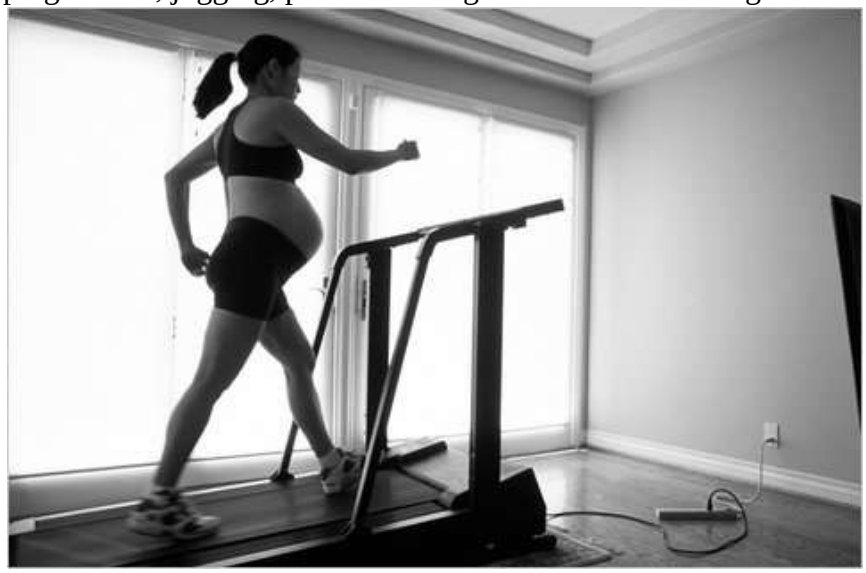
Exercising for Two

Almost anyone who's been pregnant remembers the profound link that can develop between a mother-to-be and her unborn child. You feel that life inside you, both physically independent and braided with your own.

Now, new research suggests that the bond may be stronger than had been suspected. When you exercise during pregnancy, your baby is not, as most of us would have thought, a passive, floating passenger (and ballast on the bladder). Instead, he or she may be actively joining in the workout, with the fetal cardiac system growing stronger and healthier as a result of the workouts.

This training response lingers apparently even after birth, the new science shows. Babies born to mothers who exercised while pregnant were found to have healthier hearts than other infants a full month after delivery.

For the study, which was presented on Sunday at the Experimental Biology 2011 meeting in Washington, researchers from the Kansas City University of Medicine and Biosciences revisited a group of 61 healthy women, ages 20 to 35, who had been part of a pilot study of exercise, pregnancy and fetal heart health. About half of the women had exercised regularly during their pregnancies, jogging, power-walking or otherwise working out at a moderate pace at least three times a week. Some also had lifted light weights or practiced yoga. But their primary activity had been aerobic. The other half of the mothers-to-be "were normally active but did not engage in formal exercise," said Linda E. May, an exercise physiologist who led the study.



To gather the necessary data, Dr. May originally asked the women to report to a lab three times during the latter stages of their pregnancies — at weeks 28, 32 and 36 — for a noninvasive examination of their babies' cardiac health.

What she hoped to discover was just how much a mother's workout would affect her unborn child's heart. Years ago, scientists showed that a fetus's heart rate increases while its mother is exercising. But many early researchers had considered this response transient, lasting only while the mother worked out.

Dr. May, however, wondered whether an unborn child's heart might be more permanently remodeled by a mother's workouts. In most people, exercise leads over time to a slower heart rate and greater heart-rate variability, or beat-to-beat variations between heartbeats. Both measures are generally accepted as indicative of heart health. This is known as the exercise training response and is considered evidence that a person's heart has grown stronger and more efficient.

Unborn children, as it turned out, did exhibit a training response, even though their mothers were seemingly doing all of the work. When Dr. May examined the fetal cardiac readings, in an earlier report published last year, she found that fetuses whose mothers had exercised showed lower heart rates and greater heart-rate variability than those whose mothers had not worked out.

For her most recent presentation, Dr. May asked the women to return to the lab again, this time a month after giving birth. The newborns, healthy and no doubt squalling, underwent another cardiac exam.

The previous results held, Dr. May reported at the Experimental Biology meeting. The babies born to exercising mothers continued to have lower heart rates and greater heart-rate variability four weeks after delivery than the babies born to the other women. The effect was especially robust in the children whose mothers had exercised the most, Dr. May said; they had the slowest heart rates and presumably the strongest hearts.

"It's exciting research," Dr. May said, though it is also preliminary and incomplete. Just how a pregnant woman's jogging or power-walking remakes her unborn child's heart remains unknown, she said. Mother and fetus have, after all, completely separate cardiac systems and blood circulations. But certain hormones released during exercise do cross the placenta, Dr. May said, and could be stimulating changes in the developing fetus's heart.

Or perhaps there is something more ineffable at work. A 2009 German study reported that when mothers-to-be were prompted to breathe fast and hard, as they would during exercise, their unborn children's hearts oscillated in response, synchronizing themselves, beat for beat, with their mothers'.

Hormones could be the cause, the researchers noted. But they preferred to imagine a kind of music of the blood. The gasping breaths drove up the mothers' heartbeats, they wrote, until, inside the body, the sound grew loud, insistent, propulsive and irresistible. The fetuses' hearts responded, the scientists hypothesized, settling into the same rhythm, with effects both physiological and poetic.

A "pregnant mother's special awareness to the unborn child" may "be reflected by fetal-maternal interaction of cardiac activity," the German researchers concluded. As a mother runs and remakes her heart, the child she carries does the same. Perhaps, the scientists suggested, both mother and child sense the process in the other as it occurs.

"The next step," Dr. May said, is to retest the babies involved after more time has passed and see whether the cardiac effects continue into toddlerhood and beyond. But for now, she said, if you

are pregnant and can bear the thought of jogging (or power-waddling, a more common, if less gainly, third-trimester workout) and have your doctor's approval, then "it does seem likely that you will be giving your child a head start on heart health.

Reference:

GRETCHEN REYNOLDS
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