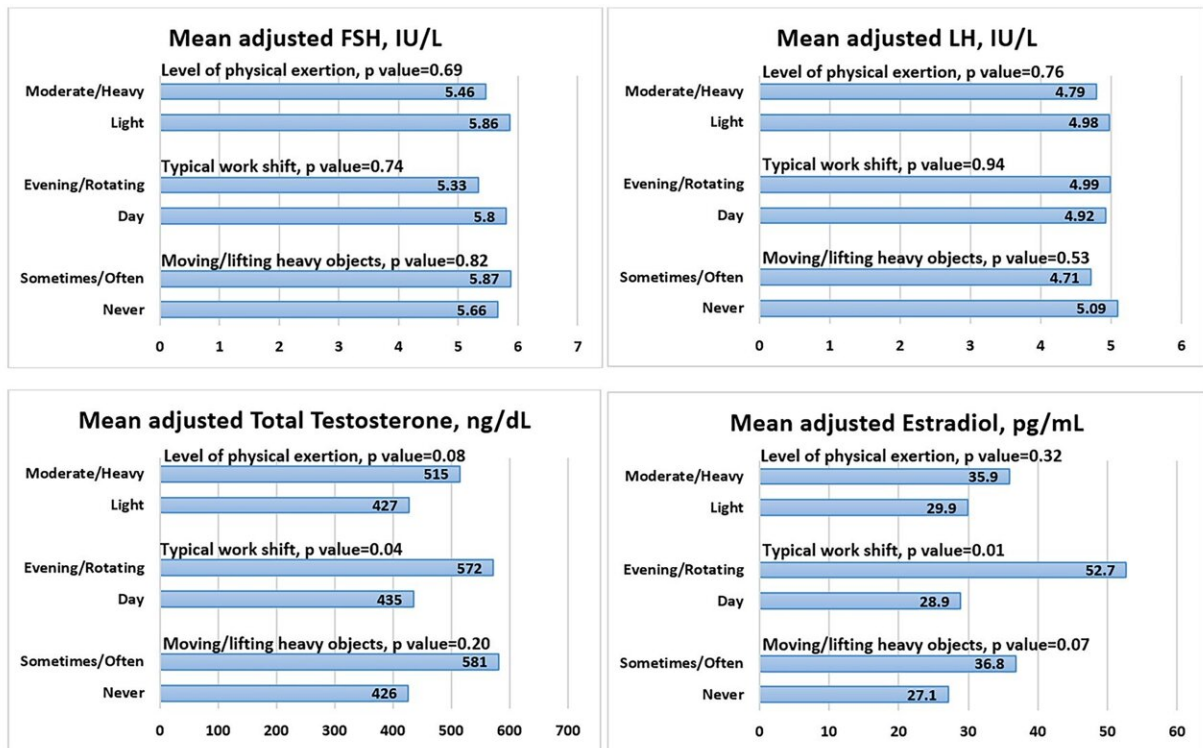


Physically demanding work tied to higher male fertility, study suggests

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Adjusted circulating blood reproductive hormones by self-reported occupational factors among 145 men in the Environment and Reproductive Health (EARTH) study. Data are presented as predicted marginal means (95% CI) unless otherwise noted and were adjusted for age, BMI, education, race, and smoking. Credit: *Human Reproduction* (2023). DOI: 10.1093/humrep/dead027

A new study from researchers from Brigham and Women's Hospital, a

founding member of the Mass General Brigham healthcare system, suggests that men who regularly lift heavy objects at work have higher sperm counts. The study, published in *Human Reproduction*, is part of the Environment and Reproductive Health (EARTH) cohort, a clinical study which aims to explore how exposure to environmental chemicals and lifestyle choices affect reproductive health.

"We already know that exercise is associated with multiple [health benefits](#) in humans, including those observed on [reproductive health](#), but few studies have looked at how occupational factors can contribute to these benefits," said first author Lidia Mínguez-Alarcón, a reproductive epidemiologist in Brigham's Channing Division of Network Medicine and co-investigator of the EARTH study. "What these new findings suggest is that physical activity during work may also be associated with significant improvement in men's reproductive potential."

Infertility is a growing problem, and it can be caused by a wide variety of complex factors. However, about 40% of [infertility](#) cases can be traced to male factors, such as sperm count, semen quality and sexual function. In particular, sperm count and semen quality are thought to be the major drivers of growing infertility rates among males—a previous analysis led by the EARTH study team found that among men seeking [fertility treatment](#), sperm count and quality declined by as much as 42% between 2000 and 2017.

"Further, there is increasing evidence that male infertility is associated with common chronic diseases such as [cardiovascular disease](#) and autoimmune disease, highlighting the broader importance of male reproductive health," said Mínguez-Alarcón.

The EARTH study is a collaboration between the Harvard T. Chan School of Public Health and Mass General Brigham to evaluate the effect of environment and lifestyle factors on fertility. EARTH has

collected samples and [survey data](#) from over 1,500 men and women, and the current study focused on a subset of these participants, including 377 male partners in couples seeking treatment at a fertility center.

The researchers found that men who reported often lifting or moving heavy objects at work had 46% higher sperm concentration and 44% higher total sperm count compared to those with less physical jobs. Men who reported more physical activity at work also had higher levels of the male sex hormone testosterone and, counterintuitively, the female hormone estrogen.

"Contrary to what some people remember from biology class, 'male' and 'female' hormones are found in both sexes, but in different amounts," said Mínguez-Alarcón. "In this case, we hypothesize that excess testosterone is being converted into estrogen, which is a known way for the body to keep normal levels of both hormones."

While the current study found a relationship between [physical activity](#) and fertility in men seeking fertility treatment, it will take further research to confirm if these findings hold true for men from the general population. The researchers also hope that future studies will reveal the underlying biological mechanisms at play.

"Reproductive health is important in its own right, but more and more evidence suggests that male infertility can give us insight into broader public health issues, including the most common chronic diseases," said Mínguez-Alarcón. "Uncovering actionable steps people can take to improve their fertility stands to benefit all of us, not just couples trying to conceive."

More information: Lidia Mínguez-Alarcón et al, Occupational factors and markers of testicular function among men attending a fertility center, *Human Reproduction* (2023). [DOI: 10.1093/humrep/dead027](https://doi.org/10.1093/humrep/dead027)

Provided by Brigham and Women's Hospital

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