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Nut Consumption and Prevention of Male Fertility Decline



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Recent scientific research has demonstrated that nuts can play an important role in preventing the decline in sperm quality.

In the last decades, diseases related with age have become a concern for researchers and the global society. One hallmark of aging, defined as the irreversible deterioration based on a physiological integrity decrease, is the impairment of fertility. According to the World Health Organization, infertility is considered a disease of the reproductive system leading to the failure to achieve pregnancy after 12 months. Nowadays, infertility affects 15% of the world's population and over the last years it has increased. Of the 70 million couples affected worldwide, male factors are responsible for 40–60% of these cases. Therefore, addressing infertility is important because this disease can have an influence on quality of life, mental health and on the way people interact with the community as well¹.

The reduction of sperm quality over the last 40 years has led to the need to investigate possible associations between lifestyle and environmental factors and sperm parameters². It has been reported by several studies that unhealthy habits such as smoking, alcohol consumption, adherence to unhealthy dietary patterns rich in sugar, salt or animal-origin fat (e.g. Western-style diet), sedentary lifestyle, environmental pollution, the use of pesticides or stress can have detrimental effects on semen parameters and may cause adverse effects in the male reproductive system. These factors have strong and significant presence in our day-to-day and can be considered as risk factors that could

play an important role in the decline of fertility that has been reported in the last decades³. That is why the research on infertility prevention is essential and an object of interest for scientists.

In relation to diet, several dietary and nutrition components, food or supplements can positively modulate specific sperm parameters. It has been demonstrated that some typical foods of the traditional Mediterranean diet such as vegetables, fruits, seeds or fish that contain large amounts of antioxidants and anti-inflammatory molecules can act as regulators decreasing the risk of sperm DNA damage through modulating the levels of reactive oxygen species. In fact, a systematic review of observational studies conducted by our research group showed that high adherence to healthy dietary patterns can not only result in positive changes in semen quality but also in improvements on fecundability rates⁴.

A key food that provides unsaturated fatty acids, fiber, minerals, antioxidant vitamins and other important phytochemicals are nuts. The regular consumption of nuts has largely demonstrated beneficial effects on human health through different mechanisms, such as reducing oxidative stress and inflammation, modulating endothelial function or reducing the risk of insulin resistance, diabetes, hypertension, cardiovascular disease, or cancer⁵. Because of these demonstrated positive effects of nuts on health and chronic disease prevention, a novel line of research regarding fertility has recently emerged.

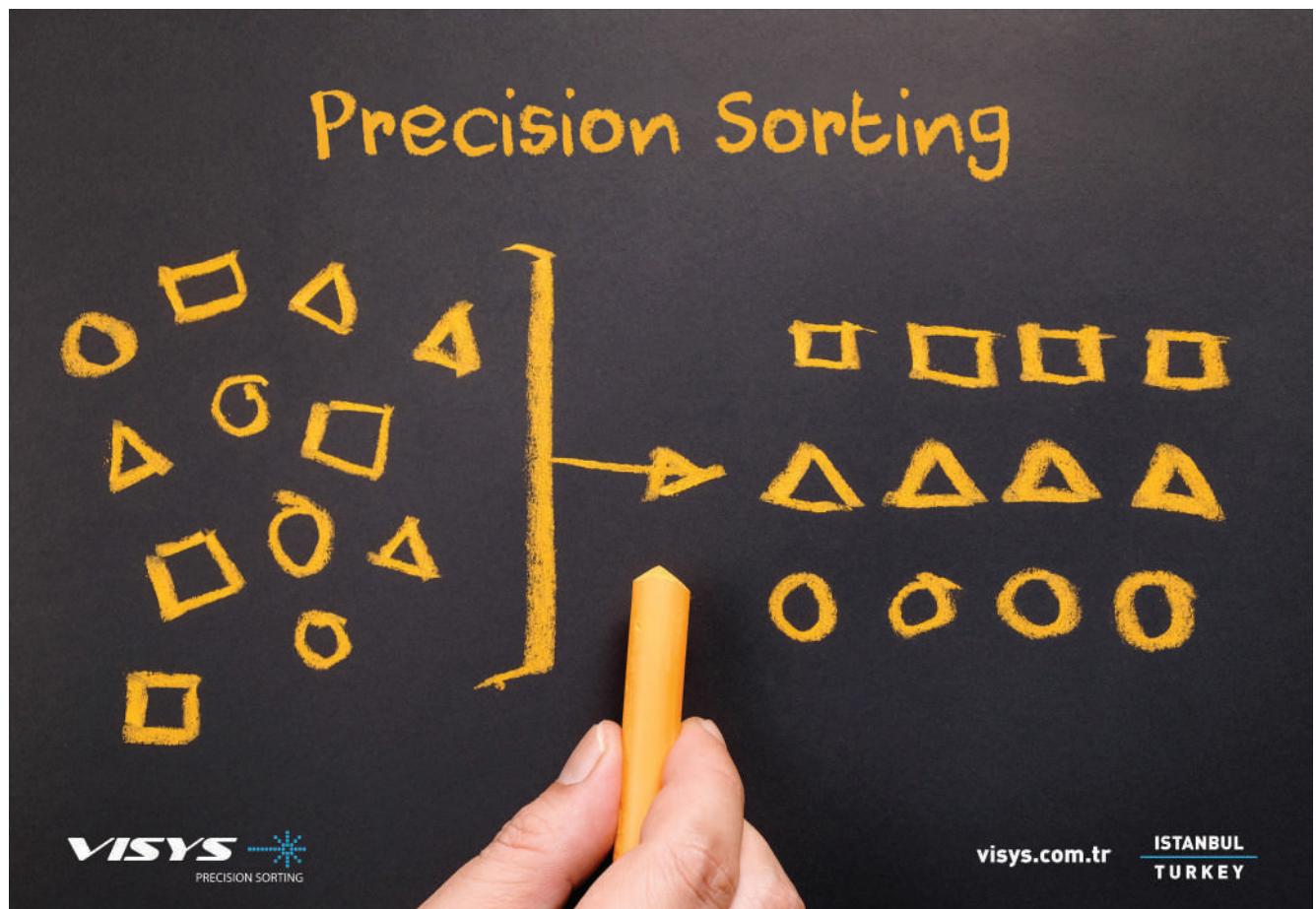
To the best of our knowledge, there are only two randomized controlled trials that have evaluated the effect of nut consumption on semen parameters. In 2012, Robbins and collaborators reported beneficial changes on sperm parameters after the consumption of 75 grams per day of

walnuts for 12 weeks using a randomized, parallel clinical trial conducted in 117 healthy men who routinely consumed a Western-style diet. The group consuming walnuts (n=59 participants) experienced an improvement in sperm vitality, motility, and an increase in the percentage of normal forms of morphology, but no change was seen in the group adhering to their usual diet while avoiding nuts⁶. A more recent randomized controlled trial performed by our research group in 119 young healthy men adhering to Western-style diet also revealed improvements on sperm quality after the consumption of 60 grams per day of mixed nuts (a mixture of walnuts, hazelnuts and almonds). This supplement of nuts induced a reduction of sperm DNA fragmentation and beneficial effects on several sperm parameters such as vitality, total motility and total sperm count compared to the effects observed in those participants avoiding nuts (the control group)⁷.

Therefore, although there is strong evidence regarding the positive effect of nuts on human health, the studies evaluating the association between nut consumption and sperm quality are limited. Nevertheless, these aforementioned controlled trials provide promising results suggesting the important role that has regular nut consumption in the prevention of male infertility through improvements on sperm parameters and perhaps functionality. However, further studies with larger sample sizes and longer intervention periods are needed to confirm these results and establish recommendations. ■

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