

## Fertility and Lifestyle: A Summary of Current Findings

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The next couple pages provides a quick and concise overview of the current research available on the intersection between lifestyle and fertility. I've provided citations for nearly every statement made below in case anyone wants to delve a bit deeper into the research. For the vast majority of individuals and couples wanting to conceive, whether naturally or through assisted reproduction techniques, following the guidelines discussed below will improve outcomes.

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### Alcohol

For women, excessive consumption of alcohol (more than 7 drinks a week) is linked with increased time to conceive (Eggert *et al.*, 2004; Mutsaerts *et al.*, 2012), anovulation, luteal phase dysfunction, poor or abnormal embryo development and even early menopause (Gill, 2000). Women over age 30 who drank more than 7 drinks a week are more likely to be considered "infertile" than those who drink fewer (Tolstrup, 2003). More than four drinks a week during an IVF cycle results in a 16% lower live birth rate (Rossi, 2011). For men, excessive consumption is linked with lower libido and negatively effects sperm morphology and mobility parameters (Koch, *et al.*, 2004). While trying to conceive, it is best for men and women to consume no more than two alcoholic drinks a week (NICE, 2003).

### Tobacco

Tobacco increases the risk of miscarriage, ectopic pregnancy, semen quality, sperm count and reduces the efficacy of IVF treatments (ASRM, 2008), exacerbates existing fallopian tube dysfunction and poor endometrial receptivity (Hassan *et al.*, 2004; Soares *et al.*, 2007; Vine, 1994). If you smoke, make it your number one goal to quit.

### Caffeine

Caffeine consumption increases the average time to conceive (Bolumar *et al.*, 1997; Hassan & Killick, 2004). Women who consume seven or more cups of tea or coffee per day are 150% more likely to be sub fertile (Hassan & Killick, 2004) and are 80% more likely of having a stillborn baby (Wisborn, 2003). Even 100mg (0.5-2 cups of coffee/day) leads to a higher risk of miscarriage (Stefenindou, 2011). Because of these findings, I recommend limiting caffeine consumption when trying to conceive and during pregnancy. The occasional cup of coffee or tea is okay but definitely try not to drink caffeinated beverages every day.

### Diet

Excessive consumption of any type of food (fat, carbohydrate and protein) adversely affects fertility with specific emphasis given to high glycemic carbohydrates. Women who regularly consume high glycemic foods experience a 92% increase in anovulatory infertility (while low glycemic carbohydrates appear to have the opposite effect). Interestingly, low-fat dairy products is linked to anovulatory infertility while consumption of full fat dairy products have the opposite effect (Chavarro *et al.*, 2007). Oxidative stress negatively impacts sperm morphology and motility and is a cause for numerous factors of infertility including: endometriosis, polycystic ovarian syndrome (PCOS) and unexplained infertility (Agarwal *et al.*, 2012). A whole foods diet rich in antioxidants (from fruits, vegetables, grass-fed meats, nuts, seeds and wild seafood) reduces the effects of oxidative stress on the body and positively impacts sperm motility and morphology (Zareba *et al.*, 2013). Heavy metal exposure reduces fertility outcomes and fetal development. Avoiding exposure from dental amalgams and consumption of large fish (i.e. tuna) is advised (Choy *et. Al*, 2002; Chalupka *et al.*, 2010). Consumption of foods rich in Omega 3 fatty acids help slow ovarian ageing and may improve egg quality (Nehra *et al.*, 2012). Exposure to environmental toxins, like BPA in plastics, negatively impacts endocrine function and has been directly linked with lower sperm parameters, chromosomal abnormalities in oocytes and miscarriage (Sharma *et al.*, 2013). Minimizing exposure to plastics, pesticides, fertilizers and hormones directly improves fertility outcomes (Cannon, 2015). The simplest way to minimize unnecessary exposure to environmental toxins is to eat a predominantly plant-based, organic diet, cook with non-leaching pans (stainless steel, glass or cast iron), use glass instead of plastics or metals for drinking and avoid processed and pre-packaged foods and minimize the use of any

and all toxic cleaning products. For specific food recommendations, make sure to check out the "Anti-Inflammatory Foods" hand-out.

### Supplements

Dehydroepiandrosterone (DHEA) may increase ovarian reserve, egg quality and is linked with spontaneous pregnancy (*Fusi et al.*, 2013) and appears to improve IVF outcomes for those who are considered poor responders or have a history of failed IVF cycles (*Hyman et al.*, 2013). Coenzyme Q10 (ubiquinol) is associated with improvements in sperm morphology and motility (*Safarinejad et al.*, 2012). Vitamin D deficiency is directly associated with lower pregnancy rates for IVF patients (*Paffoni et al.*, 2014). Dosages for each of the above and any additional supplements and recommended herbal prescription will be discussed during your initial and follow-up office visits.

### Exercise

Too much or too intense an exercise routine is directly associated with difficulty conceiving and lower pregnancy rates for IVF patients. Boot camps and other vigorous exercise routines, including Bikram and other hot yoga classes and long, strenuous cycling, are all considered excessive and have a detrimental impact on fertility outcomes (*Wise et al.*, 2011). Moderate exercise improves fertility outcomes by improving circulation and mitigating oxidative stress (*Ignarro et al.*, 2007). Men who exercise more than 15 hours per week experience overall better sperm parameters contrasted with men who exercise less than five hours per week (*Gaskins, 2012*). Regardless, men should avoid overheating, whether through exercise or exposure (warm baths, cooking near an open flame, etc.) since there is a direct correlation with heat and low sperm counts (*Paul et al.*, 2008). Also, men are advised to always wear loose fitting underwear. Tight-fitting underwear has been shown to decrease sperm parameters by 50% (*Tiemessen et al.*, 1996). Men are also advised to avoid carrying cellular phones and using laptop computers close to their testicles since both have shown to decrease male fertility (*Kilgallon & Simmons, 2005; Agarwal et al., 2008; Avendano, 2011*). Based on the above, I strongly advise maintaining a daily, enjoyable, moderate exercise routine. While gym workouts provide great benefit and indoor classes like yoga and such are very helpful, I recommend that everyone include outdoor time as part of their exercise regimen. Nothing is better than fresh air and sunlight.

### Stress

Couples who report high stress levels are twice as likely to be infertile (*Lynch et al.*, 2014) and women undergoing IVF treatments who had experienced acute stress within 12 months of a retrieval cycle, produced fewer oocytes (*Clarke et al.*, 1999; *Sanders et al.*, 1997). Couples obsessed with fertility outcomes tend to report lower levels of overall happiness, sexual satisfaction, libido and social interaction with friends (*Cannon, 2010; Wasser et al., 1993*). Failed IVF cycles are directly correlated with an increase in stress for couples (*Campagne, 2006*). While stress may be a part of modern life, it doesn't have to be our driving force. To counteract the effects of stress, daily exercise and intentional stress management techniques like meditation are strongly advised. Try to remember that stress is a part of life and if you get "stressed out", don't beat yourself up. Just look at stress as a reminder to exercise or meditate (or even just to take a nap or a few deep breathes). The effort and intention is as important as the outcome!

### Sex Life

The more sex a couple has the higher their rates of conception (ASRM, 2008). Sperm quality degrades after just two days of abstinence. Men are advised to limit abstinence to periods of no more than 10 days in a row when trying to conceive. (*Levitas, 2005*). Couples should aim to have sex daily and if that is not possible, at least every three days to optimize the chances of conception (ASRM, 2008). Female orgasm results in a release of oxytocin. Oxytocin positively impacts tubal contractions. Tubal contractions are directly linked with improved sperm motility (*Odent, 2009*). While "good" sex may help conception rates, try not to focus on it. Couples attempting to conceive often experience anxiety, in part from their diligent coordination of intercourse with ovulation. While ovulation prediction kits are accurate, they are also linked with decreased frequency of intercourse and increased performance anxiety (*Cannon, 2015*). Likewise, vaginal lubricants (including saliva and oils) have been linked with lower sperm parameters (*Agarwal et al., 2008*). For women undergoing IVF, regular sex is still advised. Exposure to semen does appear to aid embryo implantation and development (*Tremellen et al., 2008*).

-Citations on Following Page-

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