

Health Beat

Issue 2

A photograph of three men smiling. The man in the center is a Black man with a shaved head, wearing a blue t-shirt. To his right is a white man wearing a tan baseball cap and a blue t-shirt, with his hand on the Black man's shoulder. On the far left, a portion of a third man with glasses and a mustache is visible. The background is a bright, slightly overcast sky.

Supplements
for Optimal
Men's Health

Optimizing
Testosterone
Levels at Any Age

Drinking Your Way to
Prostate Health

The
Men's Health
Issue



Vitamin D3

Benefit your health with the power of the sun



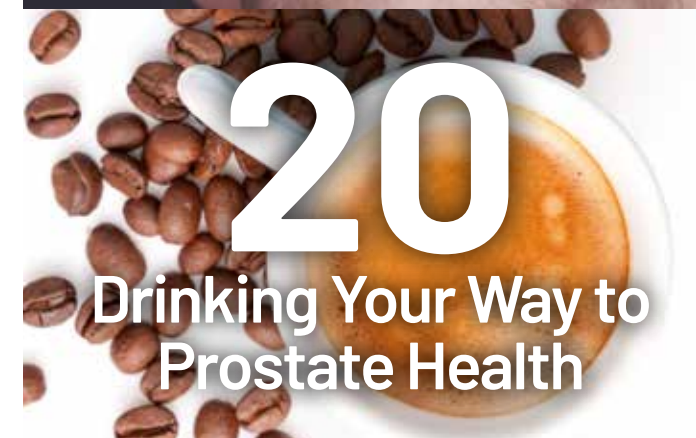
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Supplements to Help Optimize Men's Health

Men are notorious for ignoring their health until problems become so serious or bothersome, they are forced to seek help. There is this perception that going to a doctor for an annual health check and physical is a sign of weakness. However, nutrition and supplements are a natural way for people to boost their overall health and immune system. From protein powder to vitamin D, supplementation helps men restore their bodies. With a shift in culture, more men are starting to pay attention to their health and are adopting preventative health practices.

For many, supplementing is an important way to stay on top of their health. Many people do not achieve the recommended amount of nutrients they need from food, which can be caused by factors such as a diet laden with refined foods, lack of sleep and hydration, and not eating enough fruits, vegetables and whole grains among other contributing factors. Having a diet rich in whole foods, vitamins and nutrients is perhaps one of the best ways to optimize health and supplementing can ensure you're getting what you need.

But choosing supplements that are best for your health should be a decision based on appropriate advice from your health care professional. There is a time and place for supplements and strong evidence for their many benefits. As no two humans are the same, what works for one person will not work for all.

Three Foods to Support Men’s Health

The Problem: Poor Blood Flow

Cardiovascular disease is public enemy number one because it’s the leading cause of death among men.¹ Pomegranate and beet juice are the ultimate duo to improve blood flow and heart health. There has been a number of published studies showing that pomegranate and beet juice can lower blood pressure, increase exercise stamina and improve erectile dysfunction.² Both these juices (taken together or separately) are a man’s secret weapons for optimal performance in the gym and in the bedroom.

The Problem: Cancer

Cooked tomatoes contain a powerful anticancer nutrient called lycopene.³ This nutrient is very valuable to men as studies have found that it inhibits cancer cells in the prostate. It can also improve overall prostate health by reducing PSA (a marker of prostate health) and abnormal prostate enlargement.⁴ It’s important to note that the highest amounts are found in cooked tomatoes rather than the fresh fruit.

The Problem: Prostate Enlargement and Poor Sleep

Pumpkin seeds are a super food for men. They are packed with essential vitamins and minerals including vitamin E, magnesium and zinc.⁵ Additionally, they contain phytosterols that can lower cholesterol and reduce symptoms of prostate enlargement like frequent and nighttime urination.⁶ They are also a good source of protein for muscle recovery, plus they contain the amino acid L-tryptophan which helps promote good sleep and relaxation. They are also a great snack option for men on the go.

Three Supplements to Support Men’s Health

The Problem: Low Energy and High Stress

Often called the “king of herbs,” ginseng has been used for centuries in Asian cultures as the most important men’s health herb. Research is now starting to unveil its many benefits including increasing resistance to stress, combating fatigue and reducing the incidence of cold and flu.⁷ Recently, there have been a number of studies that have shown benefit for heart health and improvement of erectile dysfunction.⁸ Ginseng can help with increased stamina in all aspects of your life but use it only for two months at a time before taking a break for a few weeks.

The Problem: Poor Memory and Energy

Acetyl L-carnitine has been touted as a weight loss supplement. However, the majority of the research on this power nutrient is on improving memory and cellular energy.⁹ Additionally, it protects the heart, blood vessels and nerves from free radical damage. One of the favorite benefits of acetyl L-carnitine is its ability to reduce muscle soreness after exercise. Its broad range of powerful benefits makes it a jack-of-all-trades when it comes to men’s health.

The Problem: Enlarged Prostate and Frequent Urination

When it comes to prostate health and benign prostate hyperplasia (BPH), it has been suggested that sex hormones; androgen, testosterone and dihydrotestosterone (DHT) may be contributing factors to prostatic enlargement.¹⁰ Defined pollen extract from Secale cereal, found in Prostate Support, has been beneficial in reducing symptoms of prostate enlargement, chronic prostatitis and chronic pelvic pain syndrome. Preclinical studies have revealed the role of pollen extracts could improve patient’s quality of life significantly.¹¹

Men’s bodies are unique and come with many nutritional demands. Taking advantage of personalized nutrition and well researched supplements formulated specifically with men in mind can help you meet your body’s needs and move toward optimal health. If you are a man that wants to take your health and performance to the next level, consider the above options as powerful health allies.



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P.E.A.k Pain Relief

Alleviate chronic pain and inflammation,
Maximize your life





Exploring Your Genes and Health

What are Epigenetics?

Epigenetics refers to the chemical changes in DNA that alter genes expression, without changing the DNA sequence itself. The term “epigenetics” comes from Greek, loosely meaning “above genes”, referring to how these chemical tags switch genes on and off to alter gene activity. There are a few different types of epigenetic modifications. The most common is called methylation, which involves attaching small molecules called methyl groups to segments of DNA. This causes the gene to turn off, so that no protein is produced from that gene.^{1,2}

The Benefits of Genetic Testing

1. Chemicals cause a low-grade systemic inflammation, blocking bone metabolism
2. Certain gas and metal compounds damage the airway and bone cells
3. Endocrine disruptors alter the hormonal regulation of bone functioning
4. Air pollution can directly and indirectly cause vitamin D deficiency

In a survey, those who received results from a genetic test were significantly more likely to seek out information about a disease, discuss results with their health care provider, change their diet, and start exercising more.⁴

Impact on Health

Scientists continue to investigate the connection between the genome and environmental factors that modify it and human health.⁵ Recent epigenetic studies have shown that epigenetics plays a pivotal role in the cause of complex disorders.⁶ Changes in nutritional requirements⁷ and development of diseases such as, inflammatory bowel disease (IBD),⁸ cardiovascular disease,⁸ obesity, diabetes, and other chronic conditions⁹ are intimately linked to epigenetics. As men have an increased risk of developing cardiovascular disease and diabetes, learning how their genes play a role in these conditions is valuable information.

Part of the reason there are wide variations in individual responses to different diets and nutrition is due to genetic variation. People are unique at every single level of their being, from their hair color to their cells, which are influenced by our environment, dietary traditions and genetic individuality. Advances in understanding the complexities of human metabolism, including the nutrient pathways, enzymes and genes that those pathways depend on, uncover how certain versions of genes (SNPs) may act as metabolic “roadblocks”. As we will see, these genetic changes account for variations in an individual's predisposition to disease and response to dietary interventions. In addition, SNPs can help predict the most appropriate dose and form of certain nutrients.

Prostate Support

Find relief from
the pain of BPH



Exercise and Epigenetics

Regular exercise positively impacts epigenetics and reduces the development of chronic diseases, including cardiovascular disease, obesity, hypertension, and type 2 diabetes, all of which are of particular concern for men.¹⁰ Nonetheless, genetic variations influence individual response to exercise.

For long-term benefits of exercise, the key is consistency. Intellectually, most know that exercise is good for them; however, while some seem to carry an innate motivation for regularity, others are lacking. The BDNF gene not only affects the likelihood for one to continue exercising when given the option to stop, it also moderates benefits of exercise.¹⁰ In a randomized trial, those with the 'met' allele had a more positive mood and the largest increase in aerobic tolerance following a series of exercises.¹⁰

Predisposition towards power exercises versus endurance is modified by genetics. Endurance athletes more commonly carry certain versions of the ACTN3 and ACE genes.¹¹ Those with the T/T version of the SOD2 gene are more prone to exercise associated oxidative stress.¹²

Knowing these individual tendencies towards exercise, changes in motivational strategies, choice of activities and supplementation to improve aerobic capacity during exercise training, such as ginseng or NAC, may improve training outcomes.¹²

Long Term Benefits

To impact health long term, it is important to take into consideration both the genetic blueprint and epigenetic factors. By having a clear understanding of the unique genetic makeup, such as individual nutrient requirement, sensitivity to stress, tendency for hormone imbalances and disease predilections, strategies to combat genetic predispositions can be implemented according to the individual. This is the basis of personalized medicine. The strategies implemented, such as increasing particular foods, or engaging in meditation, or regular exercise will be customized to not only improve the success of those strategies but have long-term benefits through epigenetics.

Overall, knowing your individual genetic susceptibility not only unveils predispositions to disease, it also guides strategic interventions to modify the impact on health. Scientific and technological innovations now make it possible for the public to access the key for us all to unlock our genetic potential.

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Optimizing Testosterone Levels at Any Age

Both men and women produce the steroid hormone testosterone (T). In men, it is critical for many male characteristics, including the maturation of male sex organs, sperm development, muscle mass development, voice deepening and hair growth. Testosterone levels peak by early adulthood and drop as people age but, in some cases, declining testosterone is experienced at a younger age. Certain medical conditions can hasten the decline in testosterone, but unhealthy lifestyle habits, environmental factors, and nutritional deficiencies can be major contributors. Low T can cause a variety of symptoms and health challenges, so it is important to identify it and correct it.

Testosterone 101

Testosterone is the major androgenic hormone. It is responsible for the development of the male external genitalia and secondary sexual characteristics. It exerts anabolic effects and influences behaviour. In men, testosterone is secreted by the testicular Leydig cells and to a minor extent by the adrenal cortex. Its production is regulated via pituitary-gonadal feedback involving luteinizing hormone (LH), inhibins and activins. Most circulating testosterone is bound to sex hormone-binding globulin (SHBG), a protein produced by the liver that acts as a transporter. A lesser fraction of testosterone is albumin bound, and an exceedingly small proportion is found as free testosterone.

Measuring Testosterone Levels

Total and free testosterone are the most frequently used tests. Measurement of total testosterone may be insufficient for diagnosis of mild abnormalities of testosterone homeostasis, particularly if abnormalities in SHBG function or levels are present.¹ Additional measurements of free testosterone or bioavailable testosterone are recommended in this situation. Free testosterone is usually calculated by measuring the total testosterone and SHBG, using a specific algorithm.²

Total testosterone levels vary throughout the day. They are usually highest in the morning and lowest in the evening. In Canada, the reference range of total testosterone for adult males is between 270 to 1070 ng/dL (9 to 38 nmol/L) and 50 to 210 pg/mL (174 to 729 pmol/L) for free testosterone.³ According to Dr. Thierry Hertoghe, clinicians should not consider the lower reference limits for total and free testosterone in the serum as thresholds below which there is testosterone deficiency as the lower reference limit is purely statistical.⁴

Unfortunately, there is still uncertainty as to what constitutes an optimal physiological level of total testosterone among men across different age categories, and also to the effects that varying total testosterone levels have on disease risk.⁵

Declining Testosterone

The prevalence of total testosterone deficiency in men increases with age⁶ and the gradual modest, but progressive, decline in testosterone production starting between the fourth and sixth decades of life is widely accepted as the norm for most. The natural decline in testosterone is caused by the decrease in Leydig cells. Although new ones are formed daily, after age 25, more Leydig cells disappear than new ones appear. As men age, Leydig cells also decline in function and efficacy. To make matters worst, the level of SHBG increases, which means that more testosterone is bound in the blood, so there is less of it available to penetrate target cells, which also react less efficiently to testosterone with the aging process.⁷

However, this natural drop in testosterone seems to be exhibiting a steeper slope over the last few years. According to results presented at the 2020 American Urological Association Virtual Experience, testosterone levels have declined in adolescent and young adult men from 1999 to 2016.⁸ According to the researchers, some potential causes for these declines could be increased obesity/body mass index (BMI), diet/phytoestrogens, declined exercise and physical activity, marijuana use and environmental toxins.⁹

Signs and Symptoms of Testosterone Deficiency in Men

Although erectile dysfunction may be the main catalyst for men to get their testosterone evaluated, it is worth mentioning that the prevalence of hypogonadism among patients with erectile dysfunction is low.¹⁰ However, there are many non-specific somatic and psychological symptoms associated with hypogonadism. Investigation of testosterone deficiency should be undertaken in men with symptoms of reduced libido, erectile dysfunction, depression, fatigue, poor concentration and poor memory.¹¹

Symptoms and Signs of Testosterone Deficiency in Men, In Order of Specificity

Specific to testosterone deficiency	Supportive of testosterone deficiency	Not specific to testosterone deficiency
<ul style="list-style-type: none">• Loss of body (axillary, facial, pubic) hair• Very small testes (<6 mL)	<ul style="list-style-type: none">• Breast discomfort, gynecomastia• Eunuchoidal body proportions• Infertility, low sperm count• Height loss, low-trauma fracture, low bone mineral density• Hot flushes, sweats• Pervasive decrease in sexual desire (libido) and activity• Erectile dysfunction• Decreased frequency of morning erections or spontaneous erections	<ul style="list-style-type: none">• Fatigue or decreased energy• Depression or depressed mood• Poor concentration and memory• Sleep disturbance, increased sleepiness• Anemia• Decreased muscle bulk and strength• Increased body fat, body mass index (BMI)

Causes of Low Levels of Testosterone

A low level of testosterone may be caused by a problem with the testicles or the pituitary gland, long term (chronic) illnesses such as cirrhosis, inherited diseases, or certain treatments, as well as chronic alcohol use can cause a low testosterone level. Being obese, suffering from chronic pain, or taking pain medicines can lower the level of SHBG, decreasing total testosterone level.

Consequence of Low T

Sexual and nonsexual symptoms of testosterone deficiency can negatively affect quality of life and cause considerable general health concerns.¹² In a large population representative sample of U.S. men, a study published in 2018 found that total testosterone deficiency was robustly and independently associated with multimorbidity. Specifically, the lowest age-category-specific total testosterone and the middle levels were associated a greater than three fold and nearly 75% higher multimorbidity risk, when compared to the highest age-category-specific tertiles of total testosterone.¹³ Those results support the findings of several other large population-based prospective studies that indicate increased all-cause mortality and cardiovascular risks in both young and older men within the lowest ranges of total testosterone, in comparison to men in the highest.¹⁴

Supporting Natural Testosterone Production

1. Eat a balanced diet and avoid crash diets

Our diet has a major impact on testosterone as well as other hormone levels. Eating enough protein can help maintain healthy levels and aid in fat loss, which is also associated with testosterone.¹⁵ Carbs and proteins also play a role in maintaining optimal testosterone level.¹⁶

2. Exercise regularly

Exercise is one of the most effective ways to not only prevent many lifestyle-related diseases, but to also boost testosterone levels. All types of exercise work to some extent, but High intensity interval training (HIIT) has been shown to be more effective in terms of testosterone response than steady state endurance exercise.¹⁷

3. Managing stress levels and sleeping habits

Chronic stress elevates cortisol, which has an antagonistic effect on testosterone.¹⁸ These hormones work in a seesaw-like manner: as one goes up, the other comes down. Elevated cortisol also affects melatonin production and sleep quality. Research suggests around seven to 10 hours of sleep per night is best for long term health and optimal testosterone production. One study calculated that for every additional hour of sleep, testosterone levels rise 15% higher, on average.¹⁹

4. Maintain a healthy sex life

A study published in Gerontology showed that in men over 60 years old, those with higher levels of sexual activity (for age) had significantly greater levels of serum testosterone.²⁰

5. Avoid estrogen-like compounds (xenoestrogens)

High exposure to estrogen-like compounds such as plastics, pesticides, and chemicals may affect testosterone levels. It is best to minimize daily exposure to BPA, parabens and other xenoestrogens.²¹

6. Take a quality multivitamin and mineral formula

Although zinc²² and vitamin D²³ benefit from the strongest evidence as testosterone boosters, other micronutrients such as vitamin A²⁴, C²⁵ and E²⁶ may also have benefits.

7. Adopt herbal adaptogens

Different herbs can support the adrenal glands and modulate stress hormones, affecting testosterone production. The herb with the most research behind it comes from the Ayurvedic tradition and is called ashwagandha (*Withania somnifera*). For example, one study tested its effects on infertile men and found a 17% increase in testosterone levels and a 167% increase in sperm count.²⁷

Often called the “king of herbs,” ginseng has been used for centuries in Asian cultures as the most important men’s health herb. Research is now starting to unveil its many benefits including increasing resistance to stress, combating fatigue and reducing the incidence of cold and flu.⁷ Recently, there have been a number of studies that have shown benefit for heart health and improvement of erectile dysfunction.⁸ Ginseng can help with increased stamina in all aspects of your life but use it only for two months at a time before taking a break for a few weeks.



Conclusion

Although a natural decline in testosterone is unavoidable as men age, avoiding environmental exposure to endocrine disruptors such as BPA, excessive alcohol consumption, cannabis use and unnecessary medications will reduce the loss. Maintaining a healthy lifestyle, good eating habits, regular exercise, proper stress management and sleep hygiene will not only contribute to overall health and well-being, but it will also optimize testosterone level. Maintaining a healthy weight and sex life are also good means of supporting testosterone level, as well as incorporating a good quality multivitamins and minerals formula and adaptogenic herbs, such as ashwagandha.

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Drinking Your Way to Prostate Health

One of the many dietary debates that are rolling around in the scientific community is whether coffee should be deemed good or bad. Of course, like many good debates, dietary claims are rarely black and white and instead have some merit for and against them. Rather than explore the entire pros and cons list for coffee, here we will explore the impact of coffee on prostate health.

Getting Intimate with Prostate Cancer

Prostate cancer is the most common cancer among Canadian men, and the third leading cause of cancer death in men in Canada. According to the Canadian Cancer Society, approximately one in nine men will receive a prostate cancer diagnosis and one in 29 will die from it. It occurs in the prostate, a small walnut-shaped gland in males that produces the seminal fluid that nourishes and transports sperm.

Although it is not clear what causes it, there are risk factors that can increase a man's chances of prostate cancer. These include age (more common after 50), race, family history and genetics, along with obesity. Even with some of these risk factors being out of a person's control, there are preventative measures that can be taken.

The below steps help to reduce the risk of prostate cancer:

- Consume a healthy diet full of fruits and vegetables
- Move your body most days of the week
- Maintain a healthy weight

And... drink coffee? An observational study found, compared with the lowest category of coffee consumption, the highest category was associated with a reduction in prostate cancer risk of 9%.¹ Due to the observational design of the included cohort studies, unmeasured or uncontrolled factors in the original studies may have skewed the results, so this is preliminary information at best and needs further exploration to be confirmed.

Canada's Cuppa Joe

Coffee is Canada's most consumed beverage amongst adults – even more than tap water. In 2020, coffee drinkers in Canada drank on average nearly three cups of the hot caffeinated beverages per day. This figure has fluctuated over the years, with consumption peaking in 2008 at an average of more than three and a half cups per day.²

Many people can't imagine starting their day without a cup of coffee in the morning. About 49% of coffee drinkers would rather do without their mobile phone for a whole month than give up coffee. Coffee contains many biologically active compounds, including caffeine and phenolic acids, that have potent anti-inflammatory and antioxidant effects and can affect insulin metabolism, glucose metabolism and sex hormone levels.

This rich, aromatic beverage provides an energy boost and focus to start the day, has been touted to aid in burning fat, may lower your risk of type 2 diabetes as well as dementia, and it turns out it may also lower a man's odds of getting prostate cancer.

Can Coffee Help Reduce Your Risk?

The chemicals cafestol and kahweol are present in coffee and have well-documented cancer-fighting abilities.³ Kahweol and cafestol are the main representatives of the diterpenes class in coffee. Experimental findings have revealed that the two chemicals demonstrate multiple potential pharmacological actions such as anti-inflammation, hepatoprotective, anticancer, and antidiabetic activities.⁴ The antioxidant properties of these chemicals and the affects coffee has on sex hormone levels may influence the initiation, development and progression of prostate cancer.¹

Coffee consumption has been linked to a lower relative risk of liver, bowel, and breast cancers, but as previously mentioned, there is no conclusive evidence for its potential role in prostate cancer risk reduction. The amount of coffee consumed and the type of coffee and brewing methods varies among studies. However, in a 2012 study, researchers looked at cafestol yield from different coffee brewing techniques. Yields were shown to be dependent on the brew mechanism and roasting time, with the lightest roast coffee prepared by French press or boiled preparations having the highest cafestol extraction yield (6.5% and 5.84%) and dark roast Mocha and Turkish preparations had the lowest extraction yields of 2.42% and 2.88% respectively.^{3,5}

Noting that coffee consumption has been found to influence breast cancer as well, it may have some correlation with certain variations or expressions of the CYP1A2 gene. This gene is a protein coding

gene that catalyze many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids. The rs2472300 polymorphism has been linked to predictions of a person's risk of high blood pressure, and heart attack in relation to caffeine consumption, where the rs762551 polymorphism contributes to cancer susceptibility. It is still unclear how exactly reduced CYP1A2 activity contributes to an increased risk of prostate cancer, resulting in the need for further exploration. Both forms of cancer are influenced by the BRCA1 and BRCA2 genes as well, which may shed light on further genetic significance.

Conclusion

Though there is no conclusive evidence to support coffee as a prostate cancer prevention method, there are some positive indications that should be explored further. The preliminary evidence suggests drinking four to five cups of coffee every day can lower your chances of fatal and high-grade prostate cancer.⁶ Keep in mind that a cup is eight ounces. Most coffeehouses give you much more than that, as do most modern sized mugs used at home.

It is worth noting that high doses of caffeine can cause major health issues, such as irregular heartbeat and seizures. The Mayo Clinic cautions against ingesting more than 400 milligrams of caffeine a day, the equivalent of four cups (32 oz) of brewed coffee.

Gastro Relief

It's gut check time



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Sperm and Testicular Health

Sperm health isn't typically on men's radar unless they have been experiencing difficulty conceiving with their partner. Many men, unlike women, tend not to change many lifestyle or dietary factors when trying to conceive. Therefore, many continue to drink, smoke, have poor sleep habits, or maintain a high body fat percentage at the beginning of the fertility journey. These factors have been associated with sexual and reproductive dysfunction including decreased libido, erectile dysfunction and ejaculation issues.¹

What most men don't know is that spontaneous genetic mutations arise more often in the father's germ cell line and are majorly influenced by environmental and lifestyle factors. Sperm DNA health will then directly affect the health of the offspring – and prior to that will affect the ability of a fertilized embryo to survive. Higher DNA fragmentation of sperm cells is a cause of infertility as it decreases sperm quality, which can lead to increased rates of miscarriage.²

Even for men not looking to produce children, parameters of sperm health and quality can be indicators of chronic health. Physical and lifestyle factors can easily be modified and addressed to improve ejaculation volume, sperm quality and can help keep sex hormones such as testosterone in normal physiological levels.

Alcohol

For men, alcohol consumption is associated with poor sperm production and function, and has been linked to testicular atrophy, decreased semen volume and lower libido.³ Of those who have a daily drink (even one beer), 33% have moderately decreased sperm production, and therefore low sperm counts.⁴ The good news is that this effect is reversible when alcohol consumption ceases.

Smoking

Smoking tobacco has been associated with low sperm counts – even if the individual is otherwise healthy. Cigarette smoke contains toxic chemicals that can cause DNA mutations, cell death and decreased development of sperm cells. It can also introduce lead into seminal fluid and increases carbon monoxide levels, which decreases oxygen levels within the testes.⁴

One in vitro study suggests that cigarette smoking may reduce the mitochondrial activity in spermatozoa, and lead to a decreased fertilization capacity.⁵ Hormone function may also be affected as studies report higher serum levels of certain hormones and decreased concentrations of testosterone in men who smoke.³

Marijuana

The use of marijuana is fairly common and perhaps more so with the introduction of its legal use (both medically and recreationally) in many states and provinces in North America. Although there are many positive benefits to marijuana-based treatments for specific ailments such as pain, anxiety and inflammation, its chronic use is associated with dramatically decreased testosterone levels and a noticeable decrease in sperm motility, viability and function.⁴ In men, it has been reported that cannabinoids can reduce testosterone production and decrease sperm origin, development and motility.³

Phthalate Exposure

Phthalates are a group of chemicals and plasticizers used in food processing and packaging, in personal body products, fragranced products, and mosquito repellants. Phthalates seem to be more problematic for men than women in their reproductive effects. Phthalates increase oxidative stress which damages sperm and sperm DNA. It can also block testosterone and increase the risk of insulin resistance and diabetes.

One study found that phthalate concentrations in men were associated with a 20% decrease in incidence of positive pregnancy in couples trying to conceive.⁶ The majority of our exposure to phthalates comes from dietary consumption including beef, pork, cooking oils and cheese.⁶ Exposure can be decreased by avoiding processed foods and limiting those in plastic packaging; as well as limiting use of personal hygiene products that contain parfum/perfume or chemical fragrances.



Obesity and Physical Activity

Obesity affects sexual performance and function, but also sperm count and quality. Body fat is storage tissue and in excess can exert hormonal effects, specifically with testosterone, estrogen and insulin. A high body-mass index (BMI) has been associated with lower ejaculate volume, decreased sperm concentrations and sperm quality.⁷

Hormone imbalance can be a side effect of excess body fat which can lead to abnormally increased estrogen levels and a lower testosterone-to-estrogen ratio.³

One study showed that men who had a baseline BMI of 33 to 61 kg/ m2 had significantly lower sperm counts, lower motile sperm and fewer structurally normal sperm. They also had significantly lower testosterone levels and higher estradiol levels.⁸

When the men in the above study underwent a 14 week weight loss regimen consisting of dietary changes and physical activity, resulting in a median weight loss of about 15%, there was a significant increase in total sperm count, semen volume and testosterone levels. The group that lost the most amount of weight had significantly increased total sperm counts and increased percent of sperm with normal morphology.

Higher rates of DNA fragmentation have also been reported in men who are obese which is one cause of abnormal sperm parameters and less successful IVF cycles. Abnormal sperm has also been associated with an increased risk of testicular cancer.⁷

Supporting a healthy weight for sperm and testicular health starts with a healthy diet high in vegetables and antioxidant-containing fruits, and minimal amounts of processed foods and trans fats. Regular physical activity also plays a major role both in weight management but also in fertility in general.

However, men should be mindful of activities that can negatively affect testicular health. For example, those who ride bicycles

regularly and for long durations have an increased risk of testicular injury. Bruising, chaffing and damage to hair follicles are common among male cyclists, and cycling for more than five hours per week has been negatively correlated with total motile sperm counts and sperm concentration.³

This isn't meant to deter men from exercising or biking, however, it's important to be mindful of testicular safety by reducing or avoiding physical impact to the testicles and extensive heat exposure. Therefore certain activities should be modified when necessary. For example, cyclists should limit weekly hours spent on a bicycle saddle, try to take frequent breaks and try not to sit continuously.

Overall, sperm health and quality are associated with chronic health in men. Lifestyle factors and exposures are major influencers and can be modifiable to improve testicular and sperm health in as little as three to six months. Although many men may not be trying to conceive with their partner, these factors are still important as they influence sexual function and performance, and changes in sex hormones such as estradiol and testosterone can affect many other areas of men's health including mood, libido, energy, strength and endurance.

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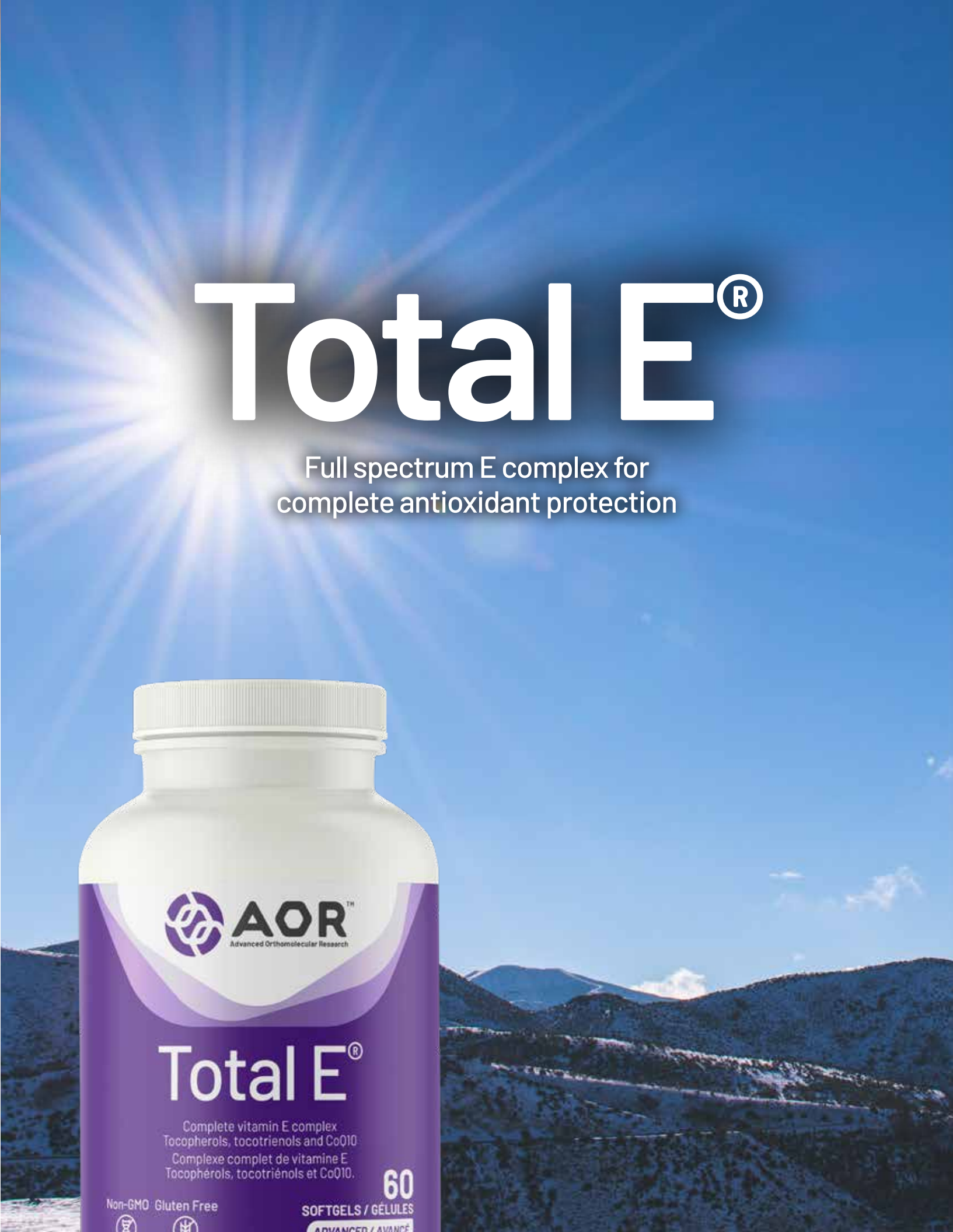
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