



TheElite Training Group track club

Expanding the area of what is possible

In Track & Field Distance Running & Competent Self-Care in medicine and psychology

alcohol & caffeine are drugs Don't use drugs

A major part of TheETG mission is to expand the area of what is possible in competent self-care in medicine and psychology. TheETG's primary method of achieving that is to proliferate applied science based information by way of – free– packets containing plain language info for “the average joe” seeking to move themselves or others forward in these areas. The mail problem TheETG packets attempt to address.....

“...takes an average of 17 years to translate 14% of original research into benefit.....average of 9 years for interventions recommended as evidence-based practices to be fully adopted.”

M.Tinkle, et al
Dissemination and Implementation
Nursing Research and Practice...Volume 2013

Competent Self-Care: Medicine.....The best medicine comes with no risk-versus-benefit equations to contemplate, no daily violations of “first, do no harm”, no whac-a-mole medicine being practiced to medicate each health issue as it pops up. To be a good doctor one must -first- be a good physiologist. And in order to have a fully functioning health care system available to all human beings in America its core must be comprised of competent self-care and good physiologists.

Competent Self-Care: Psychology.....So-called “mental health professionals” should practice more mental health and less pharmacology. The goal of applied psychology is to empower people to achieve self-mastery. This should be the goal of competent self-care and all psychologists. Parenting....dysfunction moves from the parents, into the home, into the kids, into the streets, into the norm. Personal growth toward being a fully functional human being can move from the parents, into the home, into the kids, into the streets, into the norm.

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**"You can narcotize
your body, you can
distract your brain,
but one day your
body will present its
bill."**

[Alice Miller]

America's drugs of choice caffeine and alcohol.....

alcohol

- alcohol metabolism product = acetaldehyde....a pro-oxidant
- acetaldehyde inhibits DNA repair enzymes
- acetaldehyde alters cell membranes, causes inflammatory reactions
- acetaldehyde leads to increases in homocysteine
- acetaldehyde leads to glutathione depletion [the human body's anti-oxidant defense]
- alcohol increases estradiol [estrogen] levels 300% for 4 - 5 hours [to levels above that achieved via estrogen replacement therapy]. The effects are cumulative.

caffeine

- 250mg increases cortisol [stress hormone] levels for 12 hours
- causes constriction of brain blood vessels
- increases oxidation of brain cells
- alters function of brain hypothalamus
- alters function of brain pituitary gland
- negatively impacts conversion of brain tryptophan to serotonin, potentially leading to low serotonin related issues such as depression

"There is increasing research evidence about the causal role of alcohol in cancer, accompanied by unclear and conflicting messages in the media."

"...the epidemiological evidence can support the judgement that alcohol causes cancer of the oropharynx, larynx, oesophagus, liver, colon, rectum and breast."

"....epidemiological studies also commonly report protection from cardiovascular disease associated with drinking but a high level of scepticism regarding these findings is now warranted."

"There is strong evidence that alcohol causes cancer at seven sites in the body and probably others."

J. Connor

Alcohol consumption as a cause of cancer

Addiction — July 21, 2016

"The objective of this study was to evaluate the effects of maternal caffeine intake on the neuromotor development of rat offspring and on acetylcholine degradation and acetylcholinesterase expression in the hippocampus of 14-day-old infant rats."

"We found decreased acetylcholinesterase activity in the caffeine group compared to the other groups..."

"Chronic maternal exposure to caffeine promotes important alterations in neuromotor development."

"These results highlight the ability of maternal caffeine intake to interfere with cholinergic neurotransmission during brain development."

A.C.Souza, et al

Maternal caffeine exposure alters neuromotor development and hippocampus acetylcholinesterase activity in rat offspring

Brain Research....Volume 1595.... January 21, 2015.....page 10 - 18

"In many studies, higher consumption of alcohol has been associated with an increased risk of breast cancer."

"However, the effect of low levels of drinking as is common in the United States has not been well quantified. A few studies showed increased risk, but in most, no significant association was observed. Many of these studies did not regularly update assessments of alcohol intake, which may change over a person's lifetime and obscure the ability to detect an effect. In addition, most lacked information on drinking patterns, such as regularity of drinking and heavy episodic ("binge") drinking. Because some breast cancer risk factors, such as....ionizing radiation, have different effects depending on age at exposure, it is important to evaluate the role of alcohol intake at different times in a woman's life."

".....observational study of 105,986 women enrolled in the Nurses' Health Study followed up from 1980 until 2008....."

".....7690 cases of invasive breast cancer were diagnosed."

"Increasing alcohol consumption was associated with increased breast cancer risk that was statistically significant at levels as low as 5.0 to 9.9 g per day, equivalent to 3 to 6 drinks per week...."

"Binge drinking, but not frequency of drinking, was associated with breast cancer risk after controlling for cumulative alcohol intake. Alcohol intake both earlier and later in adult life was independently associated with risk."

W.Y. Chen, et al

Moderate Alcohol Consumption During Adult Life, Drinking Patterns, and Breast Cancer

Journal Of The American Medical Association.....Volume 306 #17.....November 2, 2011

"A study of nearly 1.3 million British women offers yet more evidence that moderate alcohol consumption increases the risk of a handful of cancers."

"Each extra drink per day increased the risk of breast, rectal and liver cancer, University of Oxford researchers reported Tuesday in the Journal of the National Cancer Institute. The type of alcohol — wine, beer or liquor — didn't matter."

[February 24, 2009] MSNBC...More evidence links alcohol, cancer in women

Don't Use drugs....Caffeine & Alcohol.....are.....Drugs -----

Immune suppression can be caused by stress (high cortisol and/or adrenalin levels) and/or long term intake of drugs (stimulants such as caffeine, or depressants such as alcohol).

"Sobriety.....can't open the gates of heaven to let you in. But it can open the gates of hell to let you out."

Effects Of Caffeine -----

Caffeine is an extremely powerful stimulant that has receptors for it on all major cells of the body. Immune cells have beta adrenergic receptors on their cell surface. Activation of the receptors leads to production of a substance called cAMP [cyclic adenosine monophosphate] which is a signal that inhibits the function and activity of immune system cells. It can reduce their ability to adhere to other cells, such as tumor cells, a necessary ability if they are to destroy cancer.

Caffeine & Immune System Function -----

Caffeine contributes to cancer and heart disease by decreasing the number and working capacity of immune cells. It increases production of the stress hormone called cortisol [250mg can elevate cortisol for 12 hours] which in turn can downregulate production and function of natural killer cells which are one of the major tumor killers. It decreases immune cell production of TNF-alpha [Tumor Necrosis Factor-alpha], a substance immune cells use to destroy cancer cells. Caffeine decreases production of IL-1 [interleukin-1], the primary substance produced by nerve and immune system cells that activate other immune system cells. Caffeine may contribute to or exacerbate conditions such as arthritis and asthma. It decreases production of IL-10 [interleukin-10], the substance produced by command and control immune cells allowing them to regulate immune function by being able to "turn-off" other immune cells.....a function that is lost in the "auto-immune diseases" such as arthritis and asthma, where IL-10 levels are low, and immune cell attack on joint and lung tissues goes on uncontrollably.

Caffeine & Cancer -----

When oxidants attack and damage the DNA of a cell, the cell's DNA repair functions are activated. If this repair function fails, the cell can commit cell suicide. If this function fails, the cell will replicate using damaged DNA [a damaged set of instructions of how to build more cells], thus creating cancer cells. Caffeine inhibits DNA-repair. It does this by inhibiting a delay at various checkpoints where DNA damage is detected during the cell replication process.

Caffeine & Brain Cell Aging & Death -----

Caffeine accelerates the aging process within the brain. Caffeine causes blood vessel constriction within the brain, which can potentially decrease oxygen delivery to brain cells, leading to brain cell damage and cell death, the mechanisms of accelerated aging. Caffeine causes the inhibition of SOD-1 [superoxide dismutase], the brain cell anti-oxidant. This increases oxidant induced damage of brain cells, leading to cell death, thus accelerated aging.

Caffeine & Brain Cell Function -----

Caffeine is the most widely consumed psycho-tropic drug. Caffeine can decrease the conversion of the precursor [tryptophan] of the major neurotransmitter called serotonin. This can lead to any of the various so-called "mental illnesses" that involve lowered serotonin production. Chronic caffeine consumption causes a down regulation [decrease] of beta-receptors on brain cells in similar manner as antidepressant drugs used in psychiatry.

19
“These results suggest that caffeine consumption may exaggerate the deleterious effects of stress in daily life and aggravate the damage to health that stress can cause.”

J.D.Lane, et. al.
Caffeine Affects Cardiovascular And Neuroendocrine Activation At Work And Home
Psychosomatic Medicine..... Volume 64.....2002.....page 595 - 603

“.....the importance of caffeine in inducing migraine attacks and thwarting treatment efforts. Variations in caffeine levels, which are inevitable in persons with substantial intake of caffeine, often induce withdrawal or rebound migraine headaches. The elimination of dietary caffeine frequently results in much greater responsiveness to treatment or even makes long-term pharmacologic intervention unnecessary.”

A.Werner
Treatment Of Migraine
New England Journal Of Medicine..... Volume 347 #10....September 5, 2002.....page 764

Effects Of Alcohol ----

Alcohol consumption causes cancer and heart disease. Following consumption of alcohol, it is broken down into acetaldehyde, a highly toxic compound. Acetaldehyde is alcohol, minus ... hydrogen. Acetaldehyde (AA) is generally broken down further into acetate by an enzyme called acetaldehyde dehydrogenase. Unfortunately, when presentation of alcohol exceeds quantities and rate of function of the acetaldehyde dehydrogenase enzyme, significant amounts of AA will not get broken down. AA causes an alteration of cell membranes that result in serious injury to cells. AA has cancer and heart disease promoting effects. AA causes depletion of the antioxidant called Glutathione. This antioxidant functions inside our cells to protect our DNA from damage by "oxidants". Antioxidants are able to take up "oxidants", to prevent them from causing harm to our cells and/or cell DNA. AA prevents this function by inactivating the enzyme called methionine synthase, an enzyme necessary for the production of glutathione.

AA inhibits the function of enzymes inside the nucleus of cells in the body that repair damage to our DNA. These DNA repair enzymes are generally referred to as "tumor suppressors", because they can stop the production of tumor cells (cancer), and repair the damage/mutations in our DNA that create those cells. AA inhibits the function of these DNA repair enzymes, thus facilitating tumor growth. AA suppresses Tumor Necrosis Factor (TNF) alpha production by immune system cells called "Natural Killers". TNF-alpha is a substance that tells tumor cells to commit suicide, thus allowing our immune system cells to kill cancer cells. AA's suppression of TNF-alpha production facilitates cancer cell growth. Alcohol consumption leads to relatively high levels AA in the colon as compared to other tissues. Approximately 136,000 new cases of colon cancer are diagnosed each year.

In cancer cells, the production of an enzyme called cyclooxygenase-2 is increased substantially. The enzyme causes production of substances that stimulate blood vessel formation around the tumor, thus contributing to growth of the tumor. The enzyme is inhibited by substances called Retinoids that are produced from vitamin A or beta carotene (retinol). Retinoic acid causes dose-dependent inhibition in growth and increase in cell suicide of breast cancer, leukemia, and Epstein-Barr. AA inhibits production of retinoic acid from retinol (vitamin A or beta carotene).

Alcohol increases estrogen production substantially (as much as 300%), allowing estrogen to act as a growth promoter of cancer cells in women's breasts.

AA destroys folate, a B vitamin necessary to convert an amino acid called "homocysteine" into methionine, and onward to the antioxidant glutathione. The subsequent accumulation of homocysteine induces the production of oxidants that will attack blood vessel walls as well as LDL, the carrier of cholesterol. This results in clogging of the arteries and blood vessel degeneration (heart disease).

“The association of alcohol consumption with increased risk of breast cancer has been a consistent finding in a majority of epidemiologic studies during the past 2 decades.”

“Increased estrogen and androgen levels in women consuming alcohol appear to be important mechanisms underlying association.”

K.W. Singletary, S.M. Gagstur
Alcohol And Breast Cancer
Journal Of The American Medical Association..... Volume 286 #17.....November 7, 2001.....page 2143

"The present findings regarding female sex steroids may be of relevance in the association between moderate to heavy alcohol consumption and the development of breast cancer."

T.Sarkola, H.Makisalo, T.Fukunaga, C.J.Eriksson

Acute Effect Of Alcohol On Estradiol, Estrone, Progesterone, Prolactin, Cortisol, And Luteinizing Hormone In Premenopausal Women
Alcoholism: Clinical & Experimental Research.....Volume 23 #6.....June 1999.....page 976 - 982

".....findings on MRI of the brain are associated with poorer cognitive and neurological function among older adults. We sought to determine how alcohol consumption is related to these findings."

"As part of the Cardiovascular Health Study, 3660 adults aged 65 years and older underwent MRI of the brain from 1992 to 1994."

"We assessed self-reported intake of beer, wine, and liquor at the annual clinic visit closest to the date of the MRI....."

"Moderate alcohol consumption is associated with.....a dose-dependent higher prevalence of brain atrophy on MRI among older adults."

K.J. Mukamal, et al.....September 2001

Alcohol Consumption And Subclinical Findings On Magnetic Resonance Imaging Of The Brain In Older Adults: The Cardiovascular Health Study

Stroke.....Volume 32 #9.....September 2001.....page 1939 - 1946

"Patients treated with human pituitary growth hormone had significantly raised risks of mortality from cancer overall, colorectal cancer, and Hodgkin's disease. Incidence of colorectal cancer was also greatly raised."

A.J.Swerdlow, C.D.Higgins, P.Adlard, M.A.Preece

The Lancet.....Volume 360 #9329.....July 27, 2002.....Page 273-277

Alcohol & Caffeine in athletes

"Alcohol decreases protein synthesis and mammalian target of rapamycin-mediated signaling and blunts the anabolic response to growth factors in skeletal muscle."

J.L. Steiner, C.H. Lang

Alcohol impairs skeletal muscle protein synthesis and mTOR signaling in a time-dependent manner following electrically stimulated muscle contraction

Journal of Applied Physiology.... Volume 117 #10.....November 2014....page 1170 - 1179

"The purpose of this project was to further elucidate the effects postexercise alcohol ingestion."

"10 resistance-trained males and 9 resistance-trained females completed 2 identical acute heavy resistance exercise trials (6 sets of Smith machine squats) followed by ingestion of either alcohol or placebo."

".....alcohol ingestion seemed to only attenuate resistance exercise-induced phosphorylation of the mTORC1 signaling pathway in men."

"This study provides evidence that **alcohol should not be ingested** after resistance exercise as this **ingestion could potentially hamper the desired muscular adaptations** to resistance exercise by reducing anabolic signaling, at least in men."

A.A. Duplanty, et al

Effect of acute alcohol ingestion on resistance exercise-induced mTORC1 signaling in human muscle.

Journal Of Strength & Conditioning Research -- Volume 31 #1, January 2017 -- page 54

"Beer is promoted by popular media as a good choice for rehydration, but there is limited support for the claim. After consuming ≈ 1.6 L in 1 h, urine output was greater for BEER (1218 ± 279 mL) than for LAB (745 ± 313 mL) and WATER (774 ± 304 mL)."

"In conclusion, rehydration with BEER resulted in higher diuresis, slower RT, and impaired VCoP than rehydration with LAB or WATER."

"Postexercise rehydration with beer impairs fluid retention, reaction time, and balance."

R.Flores-Salamanca, et al.

Canadian Journal Of Applied Physiology....Volume 39 #10....October 2014...page 1175 - 1181

"This study investigated the effects of ethanol consumption on recovery from traditional resistance exercise in recreationally trained individuals."

"9 recreationally trained volunteers conducted four resistance exercise sessions and consumed a low or a high dose of ethanol 1 – 2.5 hours after exercise on two occasions."

"Compared with those in the control, cortisol increased and the free testosterone/cortisol ratio were reduced after the high ethanol dose."

"...the increased cortisol levels and reduced testosterone/cortisol ratio after the high ethanol dose could translate into long-term negative effects."

A. Haugvad, et al

Ethanol Does Not Delay Muscle Recovery but Decreases Testosterone/Cortisol Ratio

Medicine & Science in Sports & Exercise -- Volume 46 #11 -- November 2014 -- page 2175

"The placebo effect--- a change attributable only to an individual's belief in the efficacy of a treatment--- might provide a worthwhile improvement in physical performance."

"The present study explored the placebo effect in laboratory cycling performance...."

"...a likely beneficial 2.2% increase in power associated with experimental trials in which **subjects believed they had ingested caffeine**. A dose-response relationship was evident in experimental trials, with subjects producing 1.4% less power than at baseline when they believed they had ingested a placebo, 1.3% more power than at baseline **when they believed they had ingested** 4.5 mg caffeine, and 3.1% more power than at baseline **when they believed they had ingested** 9.0 mg caffeine."

"All subjects reported caffeine-related symptoms."

"Quantitative and qualitative data suggest that **placebo effects are associated with the administration of caffeine** and that these effects may directly or indirectly enhance performance in well-trained cyclists."

C.J.Beedie, et al

Medicine & Science in Sports & Exercise.... Volume 38 #12....December 2006....page 2159-2164

“Recent data suggest that ghrelin is involved in the pathophysiology of alcohol use disorders, affecting alcohol self-administration and craving.”

“Gastric ghrelin secretion is reduced by stomach distension.”

“In this randomized human laboratory study, we included 23 alcohol-dependent male inpatient subjects who underwent alcohol cue exposure. Participants of the intervention group drank 1000 ml of mineral water within 10 minutes directly thereafter, compared to the participants of the control group who did not.”

“In the intervention group, a significant decrease in acetylated ghrelin in plasma compared to the control group was observed.”

“This decrease was correlated to a reduction in patients’ subjective level of craving.”

“In the control group, no decrease of acetylated ghrelin in plasma and no association between alcohol craving and changes in plasma concentrations of acetylated ghrelin were observed.”

“Our results present new evidence that the modulation in the ghrelin system by oral water intake mediates the effects of volume intake with craving reduction in alcohol use disorders.”

A. Koopmann, et al.

Drinking water to reduce alcohol craving? A randomized controlled study on the impact of ghrelin in mediating the effects of forced water intake in alcohol addiction

Psychoneuroendocrinology — Volume 85 — November 2017 — page 56