



TheElite Training Group track club

Expanding the area of what is possible

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

www.theetgtrackclub.com

TheETG exercise program

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 anyone seeking to move themselves or others forward in these areas.

TheETG packets attempt to address the following;

".....the benefits that US health care currently deliver may not outweigh the aggregate health harm it imparts."
[Journal Of The American Medical Association...Volume 302 #1..July 1, 2009...page 89 - 91]

"Not enough doctors adapt appropriately to new scientific findings.....An insufficient number of medical faculty members are well prepared, effective educators, and too few medical schools prepare their students for a lifetime of learning and change."
[J.Hilliard, et al. -- The Lancet -- Volume 385 #9969 -- February 21, 2015 -- page 672]

"...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]

".....1.5 million U.S. residents are harmed or killed each year because of medication errors, according to an Institute of Medicine report."
[Nature Medicine -- Volume 12 #9 -- September 2006 -- page 984 - 985....News In Brief]

"It is estimated that more than 700,000 individuals are seen in hospital emergency departments for adverse drug events each year in the United States."
[Centers For Disease Control -- 2015]

"Most drugs are only effective for a small percentage of people who take them."
[Michael Leavitt -- U.S. Secretary of Health & Human Services 2005 - 2009]

".....A recent study for example, found that only half of all cardiac guidelines are based on scientific evidence."
[President Barack Obama -- Speech to the American Medical Association -- June 15, 2009]

"All the good things....they don't teach us in medical school, because the drug companies pay for our education."
[Dr. John Sessions M.D.]

You may copy any and all contents of this packet, with exception and exclusion of using such copies for purposes of producing revenue, profit, or any direct or indirect compensation.

Exercise: Why?

Cells of the human body function in a manner that requires the body to be exercised periodically for those cells to maintain their proper level of function. Failing to exercise results in cellular dysfunction.

Exercise: How?

The brain affects all cells of the body by way of its "connections" to most cells through the nerves that exit the brain and spinal cord. The brain affects the function of the muscles, immune system, and hormone system which are generally all of the major cells that most affect health. Improving and maintaining the high level functioning of these systems is easily accomplished through having a productively active brain and nervous system. Thus the "how" of exercise is.....engage in activities that give you a productively active nervous system. The nervous system makes the muscles contract, therefore movements of large muscles requires the nervous system to be active [ie. lifting weights, running, fast walking, etc]. The higher the intensity of exercise, the more active the nervous system will be.

Exercise: When & Where

Weight bearing exercise is best. Meaning fast walking, jogging, running either outside, in a mall, or on a treadmill.....should be the mode of exercise in most of your exercise sessions. These types of exercise modes require you to have large amounts of your nervous system active. Weight lifting should also be done each week, focusing primarily on exercising your large muscle groups such as your forearm muscles, upper arm and shoulder muscles, upper and lower back muscles, glutes [butt], and upper and lower leg muscles.

Exercise Effects On.....

--- Heart Disease [blood vessel disease]

--- Cancer [change in cells or genes into one's that don't work]

High intensity, low volume Exercise.....Heart Disease Prevention

----- Cholesterol is used to form cell membranes in nearly all tissues of the body including muscle. It is used to produce various substances in the body that are used by muscle, such as steroid hormones. Short duration, high intensity exercise effectively increases cholesterol utilization. The more cholesterol one uses, the less there will be left over to cause problems in one's blood vessels.

High intensity, low volume Exercise.....Cancer Prevention

----- In most people who "get cancer" their cells fail to function properly to repair DNA that had been damaged, and the cell's built-in cell suicide mechanism [apoptosis] also fails to work when there is a failure to repair the damaged DNA. High intensity, low volume exercise increases levels of the substances [DNA repair enzymes] that repair damaged DNA thus reducing the number of cells that can become cancerous.

----- In Breast Cancer, tumor growth is aided by estrogen that would ordinarily act as growth factors in tissues which are active during exercise [ie muscle, brain, nervous system] but which ends up acting as growth factors for tumor cells in the breast of women who have a sedentary lifestyle. This is one mechanism by which sedentary women, women with high estrogen levels, and women undergoing "estrogen replacement therapy" end up with accelerated tumor growth which the immune system is unable to cope. The more estrogen used by tissues as a result of high intensity, low volume exercise, the less there will be left over to cause problems in one's breast cells.

----- In Prostate Cancer, tumor growth is aided by testosterone that would ordinarily act as growth factors in tissues which are active during exercise [ie muscle, brain, nervous system] but which ends up acting as growth factors for tumor cells in the prostate of men who have a sedentary lifestyle. This is one mechanism by which sedentary men, men with high testosterone levels, and men undergoing "testosterone replacement therapy" end up with accelerated tumor growth which the immune system is unable to cope. The more testosterone used by tissues as a result of high intensity, low volume exercise, the less there will be left over to cause problems in one's prostate cells.

----- Cancer cells can be killed off by the immune system, especially by a group of cells called "Natural Killer Cells". High intensity, low volume exercise improves functioning of the immune system in general and improves Natural Killer Cell number and functional ability.

All exercise programs are -not- the same and do -not- yield the same results. Many doctors are quick to conclude that "exercise" per se, is ineffective because whatever arbitrarily designed training program they put a patient on failed to result in lowered cholesterol levels. Thus the doctor's conclusion is that "exercise" doesn't work for this patient rather than concluding that the particular exercise program the patient was given was ineffectively designed.

"Telomere length is a primary biomarker of cellular aging. Recently, both telomere length and telomerase activity have been shown to be influenced by various environmental factors such as oxidative stress, psychological stress, and socioeconomic status.....results indicate that moderate physical activity levels may provide a protective effect on...telomere length compared with both low and high exercise energy expenditure levels.

A.T.Ludlow, et al

Relationship between Physical Activity Level, Telomere Length, and Telomerase Activity

Medicine and Science in Sports and Exercise...Volume 40 #10.....October 2008....page 1764 - 1771

TheETG Exercise Program

Begin this exercise program at where-ever your fitness level happens to be today

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Workout #1		Workout #2		Workout #3		Workout #4

Tuesdays/Thursdays/Saturdays = walk 100 yards, jog 100 yards. Do 8 repetitions of this, walking faster and jogging faster as you go.

Workout #1 = Fast walk or run on hilly course

The distance.....1 to 2 miles

Where.....on a -very- hilly course with mega-size hills....perhaps go to in a hilly neighborhood

The workout.....do a 1 to 2 mile walk or run at a pace that is fast for you

Workout #2 = Sprint & Jump Day

Do 4 repetitions, start conservatively in pace for your first few workouts, over time progress to doing a full all-out sprint

The distance.....about 5 parked-car-lengths in distance [about 25 yards....a quarter of the distance of a football field]

Where.....do on a flat road or at a local high school running track

The workout.....do one sprint, rest for a full recovery, then start the next one, complete a total of 4 reps.

Workout #3 = Fast walk or run on hilly course

The distance.....1 to 2 miles

Where.....on a -very- hilly course with mega-size hills....perhaps go to in a hilly neighborhood

The workout.....do a 1 to 2 mile walk or run at a pace that is fast for you

Workout #4 = Strength Day & Stretch Day

Strength Day.....start conservatively in weight you lift in each exercise, progress over time to working with weights that are heavy for you.

For all exercises do 4 repetitions with a weight you can't lift more than 6 or 7 repetitions

strength exercise.....do a squat [go no more than one-quarter of the way down]

strength exercise.....do a calf raise

strength exercise.....do an arm curl [hold a weight in your hand, curl it upward toward your shoulder]

strength exercise.....do one-leg jumping [lift one leg off the ground, then jump up.....or jump onto a small box, stair,etc]

strength exercise.....do a pull-up [go up as far as you can. Over time as you get stronger, go up further until you can get all the way up.

strength exercise.....do a wall handstand [push-up in a hand-stand position]

[put your back to a wall, put your hands on the floor and walk your feet up the wall, then do a push-ups. Over time as you get stronger, walk your feet further up the wall. When you can go close to vertical, turn around facing the wall, use the wall as a backstop and do a pushup in the full hand-stand position]

Stretch Day

pictures of the stretches.....see the next page

Hold each stretch.....for 4 minutes

The stretches.....hip flexor muscles, hamstrings muscles, calf muscles

Optional Supplement Exercises

If you want to do them, try 2 days per week

1 ---- Repetitive motion exercise for the neck

-- start with your head in a level position

-- motion = tilt the head back to look straight up at the ceiling, then return to being level

-- do 20 repetitions of that tilting your head back to look at the ceiling

2 ---- Retraction of shoulder girdle

-- start with your arms straight and out in front of you, elbows locked

-- motion = pull your shoulders back, then return

-- do 20 repetitions of that pulling your shoulders back

3 ---- Floor press-ups

-- start with laying face down on the floor, hands under your shoulders like a "push-up" position

-- motion = push --only-- your chest off the floor, then return to the ground

-- do 20 repetitions of that pushing your chest off the floor

At the beginning of each year, very large numbers of Americans decide to take up an exercise program, join a gym, etc.

Exercise Psychology is a PhD degree program at many of our country's universities.

There are several research journals dedicated solely to this subject.

Some applied info from the last 30 – 40 years.....

Most people that begin an exercise program will quit within about 3 weeks.

To stick with a program it helps to have the brain programming, a.k.a. self-image of an exerciser. It takes about 3 weeks to significantly change one's self-image. When exercising becomes who you are rather than just something you do, you will stick with it long term.

Until you see yourself as an exerciser, until you adopt the self-image of an exerciser, it takes an investment of self-discipline and dedication to your fitness/weight loss goal to utilize intrinsic motivation to get you through the first 3 weeks. This time frame is where you'll need to repeatedly overcome sabotage attempts by one's current brain programming.

The further away your self-image is from that of an exerciser, the greater will be the required effort invested in getting through the 3 week critical period of taking on the mindset of an exerciser. Stopping, changing, overcoming one's self-talk is a necessary path all folks have to successfully navigate.

The exercise program.

Keep it easy or reasonable....meaning, do things you can stick with for 4 to 5 decades of life.

Avoid fads.

Avoid fad fitness equipment.

Avoid fad fitness classes.

If you aren't gonna be getting up at 4am for 40 years to exercise, you probably won't stick with the 5am boot camp stuff.

Keep it easy or reasonable. Do things you can stick with for 4 to 5 decades of life.

If you join a gym, keep in mind that **its the weights, not the cardio machines** that are the most important aspect of your long term health and wellness, especially if you didn't lift weights in your childhood, teenage, or young adult years.

And if you join a gym, the good news is that long term health comes not just from activity, but from simply sitting in the Jacuzzi or sauna for several minutes.

Nerve growth factor.

Brain derived neurotrophic factor.

Other brain neurotrophins.

Growth hormone, and many other anabolic, tissue building substances and various "heat shock" proteins.

All of this can come with sitting down and doing nothing in a Jacuzzi or sauna.

Lastly, **not all exercise programs are the same.**

They don't all yield the same results.

Once you get through that 3 week period, invest in learning. Superior exercise programs yield superior results.

There is much activity taking place at your local gym that is nonsense. You may like your personal trainer that's telling you nothing but crap. You may love your fitness class and instructor that's got you sweating through an hour, getting you less than what you could get in 10 to 15 minutes.

Buyer beware!

Though long term exercise [or lack thereof] dramatically impacts long term medical health, this subject is about the practice of Exercise Physiology not the practice of Medicine. Exercise Physiology is not taught at medical schools in America.

By definition, a doctor is not an expert in this huge area of human health. The TV commercial advice saying "ask your doctor" before starting an exercise program should actually be "ask your state medical board" why Exercise Physiology and Human Nutrition don't comprise most of the medical licensing educational requirement for your medical doctor.

Have at it!!!

Our changing health care system

Here are --your-- new doctors.
There are many.

Several are specialists.
Meet with them regularly.

They will help you add decades of youthful living to your life.
Here are their names.....

Dr. Walking

Dr. Sleep

Dr. Sunset-watching

Dr. Down-Time

Dr. Nutrition

Dr. Laughter-StandupComedy

Dr. Strength training

Dr. Relaxation

Dr. Sunlight-Exposure

Dr. Yoga

Dr. Meditation

Dr. Jogging

Dr. Nutrient-Based-Medicine

Dr. Mind-Body Medicine

"Better health care will depend, not on some new therapeutic standard, but on the level of willingness and competence to engage in self care."

[Dr. I. Illich....1978]



stretching vs heart disease [a.k.a. vascular disease, a.k.a blood vessel issues]

"Maintenance and enhancement of vascular endothelial function contribute to the prevention of cardiovascular disease and prolong a healthy life expectancy. Given the reversible nature of vascular endothelial function, interventions to improve this function might prevent arteriosclerosis."

"Accordingly, we studied the effects of a 6-month static stretching intervention on vascular endothelial function and arterial stiffness and investigated the reversibility of these effects after a 6-month detraining period following intervention completion."

"The study evaluated 22 healthy, non-smoking, premenopausal women aged ≥ 40 years. Subjects were randomly assigned to the full-intervention ($n = 11$; mean age: 48.6 ± 2.8 years) or a half-intervention that included a control period ($n = 11$; mean age: 46.9 ± 3.6 years)."

"Body flexibility and vascular endothelial function improved significantly after 3 months of static stretching."

"In addition to these improvements, arterial stiffness improved significantly after a 6-month intervention. However, after a 6-month detraining period, vascular endothelial function, flexibility, and arterial stiffness all returned to preintervention conditions, demonstrating the reversibility of the obtained effects."

"A 3-month static stretching intervention was found to improve vascular endothelial function, and an additional 3-month intervention also improved arterial stiffness. However, these effects were reversed by detraining."

All exercise programs are -not- the same

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“Telomere length is a primary biomarker of cellular aging. Recently, both telomere length and telomerase activity have been shown to be influenced by various environmental factors such as oxidative stress, psychological stress, and socioeconomic status.....results indicate that moderate physical activity levels may provide a protective effect on...telomere length compared with both low and high exercise energy expenditure levels.

A.T.Ludlow, et al
Relationship between Physical Activity Level, Telomere Length, and Telomerase Activity
Medicine and Science in Sports and Exercise...Volume 40 #10.....October 2008....page 1764 - 1771

".....exercise is medicine....."

"Exercise is the first line of intervention for many clinical presentations and has been repeatedly shown to outstrip pharmacological and surgical approaches to the management of a wide range of medical, musculoskeletal and psychological conditions."

".....we regularly prescribe exercise programmes to patients with a host of different symptoms."

"In a sense our first question when considering treatment options should be, 'What type of exercise should I prescribe?' rather than 'Should I prescribe exercise?'....."

P.Glasgow

Exercise prescription: bridging the gap to clinical practice

British Journal Of Sports Medicine....Volume 49 #5....March 2015....page 277

"Mild cognitive impairment is a well-recognised risk factor for dementia and represents a vital opportunity for intervening. Exercise is a promising strategy for combating cognitive decline by improving brain structure and function."

"Specifically, aerobic training improved spatial memory and hippocampal volume in healthy community-dwelling older adults. In older women with probable mild cognitive impairment, we previously demonstrated that resistance training and aerobic training improved memory."

"Methods.....86 women aged 70–80 years with probable mild cognitive impairment were randomly assigned to a 6-month, twice-weekly programme of: (1) Aerobic training, (2) Resistance training or (3) balance and tone training.

Compared with the Balance training group, Aerobic training significantly improved left, right and total hippocampal volumes."

L.F.Brinke, et al

Aerobic exercise increases hippocampal volume in older women with probable mild cognitive impairment: a 6-month randomised controlled trial

British Journal Of Sports Medicine....Volume 49 #4....February 2015....page 248

Repair your DNA

The human body is a construction site. Our cells contain construction workers, called ribosomes. Our genes are instructions or blue prints the construction workers [ribosomes] use to build certain items needed for normal and/or improved cell function. This process causes specific genes to get copied a.k.a. gene transcription. The copies of the genes go to the construction workers [ribosomes] and they use those blue prints to build required items a.k.a translation. Hence the term gene transcription and translation.

When the construction workers are given damaged blue prints a.k.a damaged genes, damaged DNA, they may build some problematic stuff. We call that cancer.

The blue prints get damaged by stuff called oxidants a.k.a. free radicals. Anti-oxidants that we eat [Vitamins C, E, A, etc] or anti-oxidants our cells produce [ie glutathione, melatonin, etc] lessen those attacks. Oxidants come from stuff in the air we breath a.k.a. air pollution. Oxidants come from the breakdown of stuff we eat or drink a.k.a. alcohol, caffeine. Oxidants get created by stuff we're exposed to such as radiation, etc. Most importantly, oxidants get created by a series of events that take place due to long term elevated levels of stress.

Cells have an outer shell covering a.k.a. cell membranes. The fat in cell membranes periodically get attacked by oxidants causing damage to our cells. Inside our cells, oxidants attack our DNA. They break our strands of DNA. We call that "DNA strand breaks". Thus our blue prints get damaged. When the construction workers [ribosomes] receive damaged instructions or blue prints [damaged genes] they may build a bunch of stuff that doesn't work well. We call that cancer.

Damage to the instructions or blue prints is the initiating event that requires several more preventable steps to take place before cancer cells are created, grow, and proliferate to become a tumor.

Our cells have the ability to repair the instructions or blue prints. We call that DNA Repair. We have genes for things called DNA Repair enzymes. High intensity exercise optimally causes the blue prints [genes] for DNA Repair Enzymes to be copied and sent to the construction workers [ribosomes]. The construction workers then build the DNA Repair enzymes.

Low or no high intensity exercise a.k.a. sedentary life style.....

= low or no DNA Repair enzyme production

= low or no DNA repair abilities

Chronic stress results in production of a stress hormone called cortisol. Cortisol suppresses DNA Repair.

Long term stress and/or sedentary life style can become problematic by themselves and in combination with one another.

To "get cancer", the following ---has to--- happen very early on in the process that follows initial damage to DNA that precedes cancer cell growth and spread.....

1 --- Cell must lose ability to repair damaged DNA

2 --- cell must lose ability to commit suicide once damaged DNA is detected

3 --- normal functioning immune system must lose ability to kill cancer cells at a rate that exceeds cancer cell production

4 --- this situation must persist for years or decades

"Anything and everything we need to know about cancer, we know it."

Bharat Aggarwal PhD. [MD Anderson Cancer Center] Lecture at the University Of Texas at Austin....March 3, 2011

".....too many doctors and patients are making decisions without the benefit of latest research....."

President Barack Obama...Speech to the American Medical Association [June 15, 2009]

Doctors Urged to Prescribe Exercise

By Todd Zwillich WebMD Health News....Nov. 5, 2007]

"The groups, including the American Medical Association (AMA) and the American College of Sports Medicine, want doctors to order regular exercise for practically all their patients."

"The new campaign is called '**Exercise is Medicine**'."

"Doctors must now take moderate exercise 'and prescribe it liberally to their patients,' says Robert Sallis, MD, president of the American College of Sports Medicine. 'Every physician, every specialty has to be on this same message'."

"Exercise is really a free medication," AMA President Ron Davis, MD, told reporters at a briefing in Washington. Davis said that exercise should not be an "option" but should be as critical as blood pressure or cholesterol tests."

The Genetics Of Weight Loss

Muscles, blood cells, and other tissues in the body are “proteins” comprised of things called “amino acids”. Genes (DNA) are codes or instructions of which amino acids are to be placed together to build specific proteins. The purpose of exercise in weight loss is to turn on a process called “gene transcription”. Exercise creates a chemical signal in our bodies that is received by the genes inside specific cells (ie. nerve cells, muscles, blood, etc.). Exercise causes the genes to make copies of themselves (gene transcription), which are sent to the builders of new proteins (ribosomes) at the construction sites in our muscles and blood cells. The builders follow the instructions detailing which of 20 amino acids to place together and in what order (translation), to build specific types of proteins in our tissues. The subsequent increase in fitness and function of our bodies are the result of the production of new proteins comprised of specific amino acids that have been placed together in a specific order. The purpose of exercise is not to burn fat during the exercise session, it is to build cell proteins such as “mitochondria”, which consume fat as a fuel to supply energy for our body tissue functions. Mitochondria are located in between muscle fibers, and they use fat and carbohydrates as fuel sources to combine with oxygen to produce ATP (energy for muscle contraction). The more mitochondria you have, the more fat you can burn 24 hours a day. The important thing isn't how much fat you burn during exercise, but how much you can burn the rest of the day. Muscle is the main consumer of carbohydrate and fat. Strength training is the single most effective manner to lose fat and keep it off. Strength training addresses the mechanism of increasing and/or maintaining a higher Resting Metabolic Rate (RMR). RMR is the rate at which you burn energy while at rest (while not doing exercising). If you go on a diet and fail to strength train, your resting metabolic rate is likely to decrease due to the loss of muscle mass. "Eating one's emotions" is the primary mechanism of the inability to keep fat off. One must also adapt the self image/programming of the person you want to become. You must learn to "see" yourself the way you want to be. Otherwise, you are highly likely to engage in self-handicapping or self-sabotaging behavior that prevents you from reaching your goal.

Weight Loss

The beginning of getting control over your food consumption.....

- Give away or throw away the plates you have today.
- replace the plates you use with plates that are --no larger-- than 6 to 7 inches across
- eat out one fewer time per week.
- at fast food places, move away from the large drinks, get the small drink plus a water.
- Binge eating....if you binge on snack foods several times per week [or per day] focus on stopping --one- of them
- Binge eating....focus less on how much you're eating and more on aggressively getting to the bottom of "what's eating you".

"Begin with the end in mind"

[Stephen Covey]

The greatest act of self-sabotage is to engage in dieting. For example....

- person X weighs 250, wants to weigh 200
 - person X diets and thus eats like someone that weighs 120, rather than someone that weighs 200.
 - person X losses weight
 - person X gradually discovers he/she can't keep eating like a 120 pound person forever
 - person X stops the diet and regains the weight that was lost, plus a few more pounds
- Begin with the end in mind. If you want to weigh 200 then eat like you will eat when you weigh 200 pounds.

Perform This Task

Visit an antique shop. Look at the standard plate size in the 1920's - 50's. Compare them to what you have in your kitchen cabinets today. The first thing that goes through people's minds when they go to smaller plates is...."how do I fit all my food on such a small plate". That's pretty much the point. You don't fit [and can't] fit all the volume of food you're accustomed to eating on the small plate.

Update Your Brain's Programming

Adopt the self-image and life style of the person you want to be. Take advantage of the brain and its ability to be programmed. Write sentences of positive Affirmations. Use Visualizations...."The me I see is the me I'll be".

"Maximal weight loss observed in low-calorie diet studies tends to be small, and the mechanisms leading to this low treatment efficacy have not been clarified."

S.B. Heymsfield, et al

American Journal of Clinical Nutrition....Volume 85 #2....February 2007....page 346-354

Why do obese patients not lose more weight when treated with low-calorie diets? A mechanistic perspective

"In 2005, 60.5% of adults in the United States were overweight...."

"Obesity-attributable medical expenditures reached **\$75 billion** in the United States in 2003...."

Lawrence O. Gostin, JD

Law as a Tool to Facilitate Healthier Lifestyles and Prevent Obesity

Journal Of The American Medical Association.....Volume 297 #1.....January 3,2007....page 87

Weight Loss

Awareness of The Process Of Personal Change

To implement significant changes in one's behavior all of the following must be acquired.....

1. A desire to change
2. Aggressiveness in overcoming past programming which will seek to sabotage change.
3. Aggressiveness in consciously making new positive choices, avoidance of going on "automatic pilot" which allows old programming to take over.
4. Create an environment that facilitates and supports change. Post goals and positive affirmations all around you, in your home, in your bedroom, at your desk.

Awareness Of The Stages Of Personal Change

1. Pre-contemplation = Not intending to change
2. Contemplation = Thinking about making changes
3. Preparation = Making small changes
4. Action = Initiating behavior change
5. Maintenance = Sustained behavior change

Weight loss.....

Muscle is your friend.

Muscle and brain is where stuff gets burned off.

An act of self-sabotage is to choose an approach to weight loss that causes significant loss of muscle or to choose an approach that doesn't include lifting weights to increase or maintain muscle mass.

"Healthy 50 to 60-yr-old men and women were studied before and after 12 months of weight loss by Caloric restriction or Exercise."

"Significant decreases in thigh muscle volume and composite knee flexion strength occurred in the Caloric restriction group only."

"These data provide evidence that muscle mass and absolute physical work capacity decrease in response to 12 months of Caloric restriction but not in response to a similar weight loss induced by exercise."

E.P. Weiss, et al

Lower extremity muscle size and strength and aerobic capacity decrease with caloric restriction but not with exercise-induced weight loss
Journal Of Applied Physiology.....Volume 102 #2.....February 2007.....634-640

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"Since not only maximal strength but the ability of the leg extensor muscles to develop force rapidly are both important performance characteristics contributing to several tasks of daily life such as climbing stairs, walking, or even prevention of falls and/or tips, this should taken into consideration when constructing strength training programs for both middle-aged and older men and women."

"In order to induce increases in explosive strength and power capacities, heavy resistance training also in older people should be combined with power type of strength training performed with lower-load exercises but emphasizing higher movement velocities of the exercises performed."

K.Hakkinen, et.al.

Effects Of Heavy Resistance/Power Training On Maximal Strength, Muscle Morphology, And Hormonal Response Patterns In 60-75-Year-Old Men & Women

Canadian Journal Of Applied Physiology

Volume 27 #3.....June 2002.....page 213

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".....a study of U.S. male physicians suggest that habitual vigorous exercise diminishes the risk of sudden death during vigorous exertion."

C.M.Albert, et.al.
Triggering Of Sudden Death From Cardiac Causes By Vigorous Exertion
New England Journal Of Medicine..... Volume 343# #19.....2000....pg.1355

"Exercise training-induced improvements in intrinsic cardiac contractile function in normal hearts have been well established. When instituted after myocardial infarction, exercise training has also been shown to exert beneficial effects on cardiovascular function in both humans and animals."

".....a program of high-intensity sprint training instituted shortly after myocardial infarction was effective...."

L.Zhang, et.al.
Sprint Training Restores Normal Contractility In Postinfarction Rat Myocytes
Journal Of Applied Physiology.....Volume 89.....2000....page 1099

"...much of the decline in functional capacity with advancing age in physically-inactive people is due to progressive disuse atrophy rather than the aging process per se".

Sport Science Exchange
Roundtable, Winter 1992
Gatorade Sport Science Institute

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“Dynamic and high-magnitude loading, which elicits a high strain rate in bones, is known to be effective for anabolic loading.”

“.....high-impact exercise is considered to be very beneficial for bones.”

Y.Umemura, N.Sogo, A Honda
Effects Of Intervals Between Jumps Or Bouts On Osteogenic Response To Loading
Journal Of Applied Physiology..... Volume 93.....2002.....page 1345

Exercise during pregnancy

"Evidence suggests that maternal and fetal immune dysfunction may impact fetal brain development and could play a role in neurodevelopmental disorders...."

"Stress, malnutrition and **physical inactivity are three maternal behavioral lifestyle factors that can influence immune and central nervous system functions in both the mother and fetus**, and may therefore, increase risk for neurodevelopmental/psychiatric disorders."

"....regular physical activity has been shown to promote neuroplasticity and an anti-inflammatory state in the adult...."

"Implementing stress reduction, proper nutrition and **ample physical activity during pregnancy** and the childbearing period may be an efficient strategy to counteract the impact of maternal stress and malnutrition/obesity on the developing fetus."

"Such behavioral interventions could have an **impact on early development of the central nervous system and immune system and contribute to the prevention of neurodevelopmental and psychiatric disorders.**"

A.H. Marque, et al

Maternal stress, nutrition and physical activity: Impact on immune function, CNS development and psychopathology

Brain Research -- Volume 1617 -- August 17, 2015 -- page 28

"Exercise training reduces colon cancer and inflammatory bowel diseases, but the mechanisms remain unknown."

"Mice exercised for 6 weeks...."

"Exercise training differentially altered the community structure of the microbiome at both intestinal sites..."

"Further evaluation revealed that exercise altered many bacterial taxa in both the feces and the cecum. Notably, voluntary exercise reduced ceca and fecal concentrations of *Turicibacter* spp., a genus of bacteria implicated in ulcerative colitis in humans and mice."

"Acute, high intensity (but not moderate intensity) exercise increased the levels of potentially beneficial acetate, propionate, and butyrate...."

"Acute and chronic exercise invokes changes in the microbiome and metabolome that may be beneficial to the prevention or treatment of inflammatory bowel diseases and colon cancer."

J.A. Woods, et al
Exercise alters the gut microbiome and microbial metabolites: Implications for colorectal cancer and inflammatory bowel disease
Brain, Behavior, and Immunity.....Vol.49.....October 2015
PsychoNeuroImmunology Research Society's 22nd Annual Scientific Meeting.....Abstract # 1533

“....exercise intensity was associated with reduced.....heart disease....”

“...intensity of walking is more important than time spent.”

“.....greater risk reduction can be obtained with more intense exercise.”

“.....there is increasing evidence for the beneficial effects of strength training on coronary heart disease...”

“...increasing intensity of aerobic exercise.....and adding weight training to the exercise program are among the most effective strategies to reduce the risk of coronary heart disease....”

M. Tanasescu, et.al.

Exercise Type And Intensity In Relation To Coronary Heart Disease In Men

Journal Of The American Medical Association.....October 23/30, 2002.....Volume 288 #16...page 2000

type 2 diabetes -vs- short duration high intensity training.....

"This study investigated effects of high-intensity aerobic interval training on....Hemoglobin type A1C, insulin resistance....blood pressure, and blood lipid profile among persons with Type 2 diabetes."

"38 individuals with Type 2 diabetes completed 12 weeks of supervised training. high-intensity aerobic interval training consisted of 4 × 4 minutes of walking or running uphill at 85–95% of maximal heart rate...."

".....a reduction in HbA1c by –0.58% points (from 7.78 to 7.20%) was found in high-intensity aerobic interval training."

"These improvements were significant different from Moderate intensity training."

"High-intensity aerobic interval training is an effective exercise strategy to improve aerobic fitness and reduce risk factors associated with Type 2 diabetes."

E.M.Støa, et al

**High-intensity aerobic interval training improves aerobic fitness and HbA1c among persons diagnosed with type 2 diabetes
European Journal of Applied Physiology -- Volume 117 #3 -- March 2017 -- page 455**

"We tested the hypothesis that low-volume high-intensity swimming has a larger impact on insulin sensitivity and glucose control than high-volume low-intensity swimming in inactive premenopausal women with mild hypertension."

"62 untrained premenopausal women....."

"15-week intervention period, high-intensity performed 3 weekly 6 - 10 × 30-seconds all-out swimming intervals interspersed by 2-minute recovery periods....."

"....low-intensity swam continuously for 1 hour at low intensity..."

"These findings suggest that low-volume high-intensity intermittent swimming is an effective and time-efficient training strategy for improving insulin sensitivity, glucose control and biomarkers of vascular function in inactive, middle-aged mildly hypertensive women."

L.J.Connolly, et al

**Low-volume high-intensity swim training is superior to high-volume low-intensity training in relation to insulin sensitivity and glucose control in inactive middle-aged women
European Journal of Applied Physiology -- Volume 116 #10 -- October 2016 -- page 1889**

[one of several reasons why "weekly long runs" are --not-- superior to high intensity short stuff for building blood vessels in distance runners. And this is among the reasons why there are no "weekly long runs" in TheETG training program]

".....endothelial progenitor cells contribute to vascular repair process by differentiating into endothelial cells. This study investigates how high-intensity interval and moderate-intensity continuous exercise training affect circulating endothelial progenitor cell levels and endothelial progenitor cells functionality....."

"60 healthy sedentary males were randomized to engage in either HIT (3-minute intervals at 40 and 80 % VO₂max for five repetitions) or MCT (sustained 60% VO₂max) for 30 min/day, 5 days/week for 6 weeks, or to a control group that did not received exercise intervention."

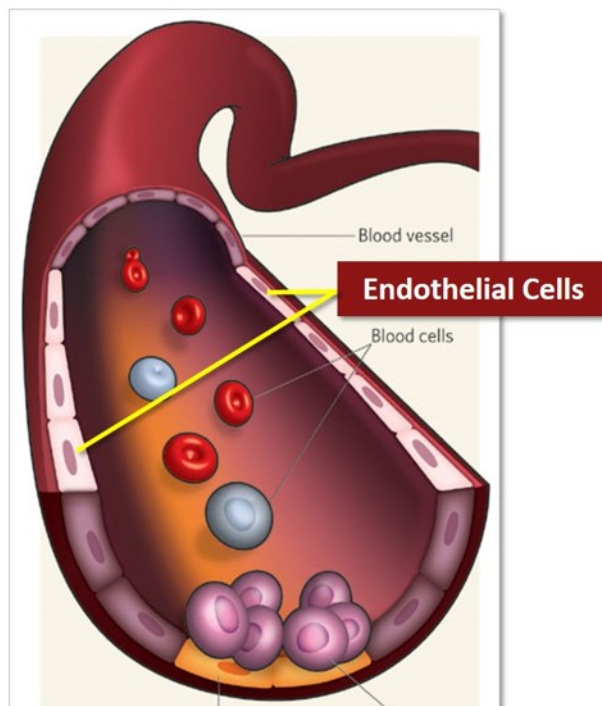
"High intensity interval training is superior...."

"Moreover, high intensity interval training effectively enhances endothelial progenitor cell functionality and suppresses endothelial injury....."

Hsing-Hua Tsai, et al

High-intensity Interval training enhances mobilization/functionality of endothelial progenitor cells and depressed shedding of vascular endothelial cells undergoing hypoxia

European Journal of Applied Physiology -- Volume 116 #11 --December 2016 -- page 2375



Prepare For Old Age

Do the training now....that will prepare you to live to the way you want to live when you're 100 years old.

The training that prepares your muscles to be strong, your mind to function, your eyes to see, your vital organs to function the way they're designed to function.

Train it or lose it.

So called "performance enhancing drugs" are prescription drugs.

Some examples of the effectiveness of prescription drugs in sport.....

"The drug erythropoietin, often called EPO.....a new systemic review of existing research reveals that **there is no scientific evidence that it does enhance performance**, but there is evidence that using it in sport could place a user's health and life at risk."
EPO [erythropoietin] doping in elite cycling: No evidence of benefit, but risk of harm
Science Daily.....December 5, 2012.

"...**there is no scientific basis from which to conclude that rHuEPO has performance-enhancing properties** in elite cyclists." "The use of rHuEPO in cycling is rife but scientifically unsupported by evidence, and its use in sports is medical malpractice."
J.A.Heuberger, et al
Erythropoietin doping in cycling: lack of evidence for efficacy and a negative risk-benefit.
British Journal Of Clinical Pharmacology.....Volume 75 #6.....June 2013...page 1406

"The **over-exaggeration of the effects of growth hormone** in muscle building is effectively promoting its abuse...."
"....there is the question of disinformation on rhGH....Part of this problem may, paradoxically, derive from the anti-doping authorities themselves. By ignoring the evidence the **rhGH does not work** in normal healthy subjects, the athletic establishment could be accused of effectively promoting its use."
"**We must tell athletes the truth: growth hormone does not 'work'** or at least not as they think it does and that its is associated with all kinds of immediate and long term hazards-----everything from decreased performance to cancer."
"....none of us scientists, doctors, coaches, or sports bodies should continue to suggest that this dangerous doping practice works."
M.J. Rennie
British Journal Of Sports Medicine.....Volume 37 #2....April 2003....pages 100-103

"**Testosterone prohormones** such as androstenedione, androstenediol, and dehydroepiandrosterone (DHEA) have been heavily marketed as testosterone-enhancing and muscle-building nutritional supplements for the past decade."
"Contrary to marketing claims, research to date indicates that the use of prohormone nutritional supplements (DHEA, androstenedione, androstenediol, and other steroid hormone supplements) **does not produce either anabolic or ergogenic** effects in men. Moreover, the use of prohormone nutritional supplements may raise the risk for negative health consequences."
G.A.Brown, et al
Testosterone Prohormone Supplements.
Medicine & Science in Sports & Exercise.....Volume 38 #8....August 2006.....pg 1367-1537

So called "performance enhancing drugs" are prescription drugs.

Some examples of the effectiveness of prescription drugs in American medicine & health care.....

"Most drugs are only effective **for a small percentage** of people who take them."
Michael Leavitt [U.S. Secretary of Health & Human Services 2005 - 2009]

".....the benefits that US health care currently deliver **may not outweigh the aggregate health harm** it imparts."
Journal Of The American Medical Association...Volume 302 #1..July 1, 2009...page 89 - 91

"It is estimated that more than 700,000 individuals are seen in hospital emergency departments for adverse drug events each year in the United States."
[Centers For Disease Control.....2015]

"106,000 deaths/year **from non-error**, adverse effects of medications"
B. Starfield
Is US Health Really the Best in the World
Journal of The American Medical Association.....Volume 284 #4....July 26, 2000....page 483 - 485

".....1.5 million U.S. residents are harmed or killed each year because of medication errors, according to an Institute of Medicine report."
Nature Medicine....Volume 12 #9.....September 2006.....pg 984 - 985.....News In Brief

Pursue becoming a

**Master Of
Sport**