



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](http://www.theetgtrackclub.com)

# TheETG type 2 diabetes repair

**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.

As you continue to acquire and apply more information you continue to expand the area of what is possible. Data-less conclusions founded upon faulty assumptions are the mother of all screw-ups. They lead to human belief systems that quickly get set in stone. Put data ahead of dogma. Follow the data -not- the crowd.

### 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.]

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# Type 2 Diabetes

Blood sugar, also known as blood glucose.

Blood glucose gets out of the blood by way of things called Glucose Transporters. Glucose Transporters are located in the covering of cells, called cell membranes. They are activated by insulin, and by exercise. In distance running we do a number of workouts that cause an increase in the number of glucose transporters because that allows us to get more glucose [a.k.a. fuel] into brain, nerve, and muscle cells, allowing us to run faster for a longer period of time. In the average day to day Joe American, muscle is the main sink for blood glucose thus the stuff below will focus on that.

As blood glucose levels rise after you consume food or drink, the hormone called insulin is dumped into the blood, travels through the blood stream to muscle, exits the blood and enters muscle cell membranes where it activates a protein called F-actin, which in turn activates the main type of Glucose Transporters in muscle, called Glut-4.

The Glut-4 travel from the inner part of the muscle cell membrane to the outer part that's close to the blood vessels where they grab the glucose that's passing by in the blood vessels and drag it into the cell. Aside from insulin, exercise also activates Glut-4 glucose transporters. In humans, muscle is a massive sink for blood glucose. Place a cover over a large portion of a sink and you'll end up with a large amount of water -not- making it into the sink and going down the drain and you'll have a mess. Get enough water going everywhere and stuff is gonna get damaged.

In muscle, having a cover placed over a large portion of that sink leads to a large amount of blood glucose -not- getting out of the blood, a situation known as Type 2 Diabetes. Get enough blood glucose going everywhere and stuff is gonna get damaged.

The cover placed over the sink -----

The muscle cell membrane is comprised largely of protein and fat.

A majority of Americans that have Type 2 Diabetes have been significantly overweight for a while and perhaps have escalated to obesity. Some of that fat gets stored in the muscle cell membrane.

After a certain point of accumulation, that excess fat impairs the function of a protein called F-actin. F-actin is supposed to activate the main type of Glucose Transporter in muscle, called Glut-4. If activated, the Glut-4 travels from the inner part of the muscle cell membrane to the outer part that's close to the blood vessel, grabs the glucose that's passing by in the blood vessel and drags it into the cell. Poor F-actin function means poor Glut-4 signaling which means poor glucose transport out of the blood and into the muscle. That means lotta blood glucose failing to exit the blood stream. That's Type 2 Diabetes. Thus having a cover placed over a large portion of the sink leads to a large amount of blood glucose -not- getting out of the blood. Get enough blood glucose going everywhere and stuff is gonna get damaged.

That blood glucose that can't get into muscle accumulates. When it accumulates it engages in mischief with cells that produce blood vessel tissues. Those cells are called "endothelial cells".

Thus the -one- term....."Type 2 Diabetes".....because it results in blood vessel damage, and blood vessels go everywhere in the human body, things get quite messy from here. Talking about the function of multiple organs or limbs that can fall off a cliff health wise. All of which have to do with the destruction of cells that produce blood vessel tissue.

Blood vessels in the feet, kidneys, eyes, etc. have tended to get the most attention as being tied to Type 2 Diabetes.

Blood vessel degeneration in the feet can progress to pooling of blood in the feet, infection and foot amputation.

Blood vessel degeneration in the kidney can progress to kidney disease resulting in the need for dialysis.

Blood vessel degeneration in the eyes can progress to eye cell dysfunction leading to blindness.

In Type 2 Diabetes the Glut-4 glucose transporters in muscle stop responding to insulin. Hence the term "insulin resistance". But they do continue to respond to exercise. This is where human psychology comes into play in Type 2 Diabetes. Most people develop the disease process -not- just by way of low or no exercise, but also by way of long term eating issues. The eating issues are driven by usually unaddressed or denied psychological issues related to drama and trauma earlier in life.

--- You can't reverse Type 2 Diabetes without dealing with the psychological issues that drive the eating.

--- From there you can't reverse Type 2 Diabetes without getting people to see themselves as "exercisers", making it a part of their self-image, a part of how they see themselves. They'll drop out after a few weeks to a few months.

--- Many folks are resistant to addressing drama and trauma experiences early in life that drive present day eating, and resistant to exercise. Thus resistant to both in a situation where being resistant to just one is for all practical purposes, a guaranteed loss of feet, kidneys, eyes, etc, etc.

Removal of the excess fat from the muscle cell membrane via exercise is possible. Restoring insulin activation of Glut-4 glucose transporters is possible. Adding exercise activation of Glut-4 glucose transporters is possible. Restoring blood vessels to full functioning status following reversal of glucose accumulation is possible.

Thus full reversal of Type 2 Diabetes is possible.

Blood vessels contain cells that produce the blood vessels. When you stop shutting them down via glucose accumulation they not only return to full functioning, but they respond to exercise stimuli that force them to build new blood vessels to tissue. In elite distance running, designing workouts that increase the number of glucose transporters in brain and muscle, designing workouts that cause production of new blood vessels is basic, elementary, Exercise Physiology 101. One need only become an "exerciser" -not- a distance runner to achieve restoration of blood vessels and glucose transporter function. Nothing is irreversible unless you've decided that you're not gonna do the things necessary to reverse it.

Many choose to stay on the path to disability, painful, and medically expensive death. Many in the medical community are silent partners in that choice. They engage in "whack-a-mole medicine" as each predictable organ or limb issue presents itself, one by one. For those that want one, there is a different path than that one.

Like many medical decisions its a self-image, self-worth thing.

# Reversing Diabetes

By Marshall Burt

Diabetes being talked about as an irreversible disease process. Similar to how spinal cord paralysis, heart disease, cancer, etc, etc were talked about as irreversible.

Something to remember is that there are ---no--- cells in the human body that fail to be replaced. Your skin cells turnover at a given rate. Your entire skeleton each year. Your brain cells.

Thus the human body, by definition, is an ever changing organism. It responds to stimuli **and the lack there of**. Unless a limb is cut off, there is literally no such thing as irreversible damage.

Both Type I and Type II diabetes are reversible. I read one of the first studies on reversing Type I diabetes back around 1993. A kid had adult stem cells injected into his pancreas. They turned into insulin producing beta cells. The problem is that a Type I diabetic is a Type I diabetic due to their immune system attacking and killing off their insulin producing beta cells. Replacing those cells restores insulin producing ability but doesn't resolve the immune system problem, so the cells eventually get destroyed all over again. Many people are working on that, some more successfully than others.

Type II diabetes is much easier to reverse because the underlying mechanism behind Type II diabetes is the malfunctioning of a protein in the membranes of nerve and muscle fibers called Glut-4. It is a glucose transporter. The function of Glut-4 is critical in distance running. We spend a great deal of time in our sport doing workouts designed to increase the number of Glut-4 glucose transporters. The more Glut-4 we have, the more glucose we can extract out of our blood and transport into our nerves and muscles. Thus the faster we can run, and/or the longer we can go without fatigue. With weight gain comes fat deposits, and with fat deposits comes changes in the contents of the membranes of nerve and muscle fibers. With that comes malfunctioning, dysfunctioning Glut-4 glucose transporters.

Lower glucose transport from blood into nerve and muscle = higher blood glucose.

Making major changes in diet rather than focusing on making major changes in Glut-4 number and function [ie. exercise training] is highly unwise. Major changes in diet addresses a lot of health related things. Reversing Type II diabetes not being among them. With the weight loss and fat loss comes restoration of normal nerve and muscle membrane function. With that come normal Glut-4 function. With that comes reversal of Type II diabetes.

Prolonged muscle activity stimulates Glut-4 protein production.

The mechanism behind stimulating the Glut-4 gene to copy itself [gene transcription] and have the copy used as a blue print for production of the Glut-4 protein [gene translation] is the use of muscle activity for the depletion of the stored form of glucose in nerve and muscle, called glycogen. The more glycogen you deplete, the more Glut-4 you'll produce. That's because the body responds to depletion of carbo fuel sources by improving your ability to store more. To store more in nerve and muscle, you'll need to be able to transport more from the blood into nerve and muscle. Hence the increase in the Glut-4 glucose transporter.

Type II diabetes is an epidemic, and Traditional Medicine, not exercise physiology, has become the dominant approach to "treating" [ie. delayed death] rather than reversing the problem.

Lipitor does something different than Ambien. Thus all drugs are not the same. Likewise, be careful with the word "exercise". All exercise is not the same.

One of the reasons exercise physiology [and several other sport sciences] doesn't fall under the umbrella of "practicing medicine" is because it isn't taught at medical school. Neither is nutrition. At medical school, students are indoctrinated into the view of the human body being a slab of cement. Once cracks start to develop, there is no reversing them. Most doctors don't read research, let alone exercise physiology research, brain research, cancer research, heart disease research. Hence few get exposed to anything that causes them to question their medical training. As Americans, we don't behave like consumers when it comes to medical care. We examine our purchase of a toaster oven, cell phone, or computer more carefully than the competence of our medical providers. **Buyer beware!!!**

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# **It isn't a bunch of medical problems, its just one**

Complications of type-2 diabetes occur in many different parts of the body. Even so.....Type-2 diabetes isn't a myriad of different medical problems with feet or eyes or kidneys, etc. Its one problem-----blood vessel damage. That blood vessel damage just happens to present medical issues in different parts of the body that get presented to the patient in Traditional Medicine's standard "whac-a-mole" manner as if they are in fact each a different issue.

Complications of type-2 diabetes occur along a designated path. The onset of each one is a marker that provides an accurate GPS positioning that says how far down that path one has progressed towards the path's end. Blood vessel damage in the feet is a marker of being about midway down the path. Blood vessel damage around major organs such as the kidneys is among the last markers along the path prior to reaching its end. Several research groups around the country have come up with ways to repair damaged blood vessels in type-2 diabetes. Worth looking into since its the only way over the long term to get off this path before reaching its end.

Kidney issues, etc in Type-2 diabetes are about blood vessel damage.

In the human body, permanent damage is permanent only if we don't know how to fix it.

Research groups have developed ways to restore the lost function of an enzyme [fatty acid synthase] in its role in attaching nitric oxide to the cells that produce blood vessels. Stuff as simple as high dose vitamin C injections to various drugs that increase fatty acid synthase production.

The basics.....Endothelial cells line blood vessel walls. They produce new blood vessel tissue. They're activated by nitric oxide. Nitric oxide has to bind to the endothelial cells in order to activate their production of new blood vessel tissue. Endothelial cells must produce Fatty Acid Synthase to produce a fatty acid that nitric oxide can bind to. No nitric oxide binding = no endothelial cell activation and production of new blood vessel tissue = blood vessels that leak, and blood flow to organs pretty much sucks.

In type 2 diabetes, production of Fatty Acid Synthase gets shut down by the excessive buildup of blood sugar that damages endothelial cells.

The subject of blood vessels isn't primarily a medical issue.

In distance running specific types of workout designs result in production of Vascular Endothelial Growth Factor, and local blood vessel production of nitric oxide....all of which stimulate endothelial cells to produce new blood vessels. Among the reasons why high intensity exercise is becoming part of medical guidelines doctors are supposed to pass along to their patients during the early stages of type-2 diabetes to prevent progression to the later stages.

## **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 % VO<sub>2</sub>max for five repetitions) or MCT (sustained 60% VO<sub>2</sub>max) for 30 min/day, 5 days/week for 6 weeks, or to a control group that did not received exercise intervention."

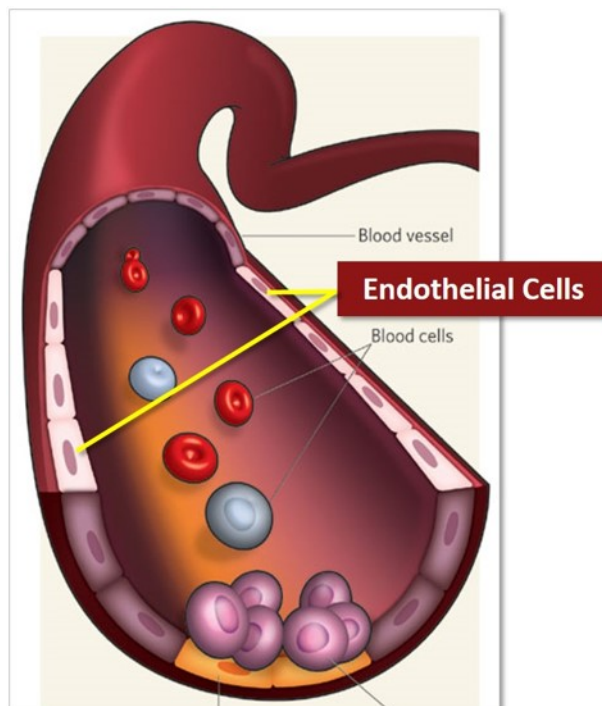
"High intensity interval training is superior...."

"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



## fish oil & blood vessel repair

definitions.....

- endothelial cells = cells that repair or produce blood vessels
- endothelial progenitor cells = cells that produce//become endothelial cells

"Emerging cellular markers of endothelial damage and repair include endothelial microparticles (EMPs) and endothelial progenitor cells (EPCs), respectively.

"A total of 84 subjects with moderate risk of Cardiovascular Disease completed a randomized, double-blind, placebo-controlled, 8-week crossover trial of **fish-oil supplementation that provided 1.5 grams per day.**"

"....there was a significant effect of fish-oil supplementation on cellular markers of endothelial function. **Fish-oil supplementation increased numbers of endothelial progenitor cells** and reduced numbers of endothelial microparticles relative to those with placebo treatment, which potentially favored the maintenance of endothelial integrity. There was no influence of genotype for any cellular markers of endothelial function, which indicated that effects of fish-oil supplementation were independent of eNOS genotype."

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Szu-Yun Wu, et al

Fish-oil supplementation alters numbers of circulating endothelial progenitor cells and microparticles independently of eNOS genotype  
American Journal Of Clinical Nutrition.....volume 100 #5....November 2014....page 1232 - 1243

**".....we find the dismissal of the Women's Health Initiative data surprising, considering that this study showed an adjusted increase of 48% in the risk of diabetes among women receiving statins."**

R.F. Redberg, M.H. Katz  
University of California at San Francisco  
Reassessing Benefits and Risks of Statins  
New England Journal Of Medicine.....August 23, 2012

"For every dollar we spend on prescription drugs, we spend a dollar to fix the complication."  
Dr. Mehmet Oz [Professor of Surgery, Columbia University]

"The reason why doctors are using all these statins is because they're told that's the right way to practice medicine.....its not getting through to the doctors that their information is coming from the drug companies."

[Dr. John Abramson , Lecturer, Harvard University, Consultant U.S. Dept. Of Justice & FBI.....stated on the Dr. Oz Show May 13, 2011]

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

**fish oil --vs-- statin drug  
large study about 7000 patients, Italy  
published 2008**

**"Italian group for the study of the survival of Myocardial Infarction trial"**

**cardiovascular deaths**

**fish oil.....deaths = 27%**

**statin placebo.....deaths = 28%**

**fish oil placebo.....deaths = 29%**

**statin drug.....deaths = 29%**

fish oil = 1 gram

statin = Crestor 10mg [rosuvastatin]



".....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 would likely be a surprise to most people in our country to learn that **there is more published research on what is unfortunately called "alternative medicine" than Traditional Medicine.** More comparative effectiveness research, **more evidence base in nutraceuticals than pharmaceuticals.** We have been indoctrinated from an early age to believe that the doctor knows all. That sprained ankle might be a broken ankle. See a doctor. That common cold might be pneumonia. See a doctor. That bug bite might be a tumor, see a doctor. And worst of all, "before starting an exercise program, see a doctor". "Before starting a diet, see a doctor". Though doctors have little or no training or research reading in exercise or nutrition.

## 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."

7

".....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

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"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

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"...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 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

# **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.**

# Eyes closed bed-rest [and/or Napping]

Laying down on a bed, floor, ground and close your eyes.

## **Purpose**

Split-up the amount of "up-time" and/or awake-time on a given day by inserting some down-time. Reduce the cumulative total amount of daily activity and stress loads on brain, nervous system, and immune system.

## **Duration**

-- 10 minutes to 2 hours

# Hot Jacuzzi or hot bath

Sit in a hot Jacuzzi or bath tub.

## **Purpose**

-- Provide temperature and relaxation related stimuli for production of growth and regeneration oriented substances in the brain and body [nerve growth factor, growth hormone, etc]. Increase blood flow and oxygenation in order to promote regeneration and recovery functions in brain, nerve, immune system, and muscle.

## **Temperature**

F = 98 - 105 degrees

C = 37 - 40

## **Duration**

-- 5 to 10 minutes

**Access to information and the ability to apply it** is the major mechanism of success in human performance in track & field, in medicine, in health and wellness. As you continue to acquire and apply more information you continue **to expand the area of what is possible.**

To be a good track coach one must -first- be a good physiologist.

To be a good medical doctor one must -first- be a good physiologist.

To be a good physiologist one must -first- be willing to.....

-- put data ahead of dogma

-- put science ahead of indoctrinated tradition

-- put logic and reason ahead of faulty assumptions

-- put mechanisms ahead of correlations and "risk factors"

-- put critical thinking and clinical reasoning ahead of memorized "if-then" statements

-- aggressively keep up with, read, and apply large amounts of published research

-- accept outcomes as the judge and jury of your work

# TheETG Exercise Program

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

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



## 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  
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