THE MANY BENEFITS OF ACTIVE THERMAL EXERCISE
I. CARDIOVASCULAR CHANGES, INCLUDING THE FOLLOWING:
a. Increased stroke volume
b. Increased heart rate (up to 150 beats per minute!)
c. Increased cardiac output
d. Increased sweating rate (as much as 26%)
e. Increased core temperature
f. Increased blood flow to muscles
g. Increased blood plasma volume (as much as 13%!)
h. Increased red blood cell count (3.5% and higher!)
i.Reduced muscle glycogen use (as much as 50%)
j.Enhanced endurance (i.e., increased duration from 48 minutes to 80 minutes)
II.BIOCHEMICAL CHANGES, INCLUDING THE FOLOWING:
a.Reduced rate of glycogen depletion (as much as 50%)
b. Increased release of HGH (increases by as much as 16 times after three days of heat conditioning have been shown in studies!)
c. Increased protein synthesis
d.Inhibited cellular protein degradation
e.Reduced blood lactate levels
f. Increased concentrations of HSPs
g. Increased prolactin release
III.BENEFITS FOR THE BRAIN: INCLUDING THE FOLLOWING
a. Increased levels of prolactin
b. Increased endorphin levels
c.Increased HSP production
d. Increased BDNF (as much as **tripled** in some studies with certain types of exercise!)
e.Increases perfusion and size of hippocampus
f.Improved cognitive processes and memory
IV.BENEFITS FOR THE MUSCLES SUCH AS:
a. Increased muscle mass due to:
1.Increased HSPs Increased blood flow to muscles (blood perfusion)
2.Increased muscle mitochondria (doubled or even tripled biogenesis!)
3.Increased levels of HGH
b.Increased production of muscle proteins (by as much as 30% !)
c.Reduced protein degradation/protection against degenerative muscle tissue conditions
d.Reverses age-related muscle atrophy (sarcopenia)
e.Reduces levels of lactic acid in the blood
f.Reduced muscle glycogen use (reduced by as much as 50%)
g.Increased lactate threshold
h. Improved recovery from muscle injury
i.Reduced neuro-motor degradation
j.Improved insulin sensitivity (31% decreases in insulin levels have been shown

in animal studies)
VI.GREATER LONGEVITY
a.ATE and greater longevity
b. Increased HSPs (in flies and worms, heat exposure has been shown to increase lifespans by as much as 15%)
c.Foxo3 (humans with increased Foxo3 genes are almost **three times** more likely to live to the age of 100 than others. Mice have been shown to increase their lifespans by over 30%).
VII.HEAT ACCLIMATION
a. Improved thermo-regulatory control
b.Reduced resting core temperature and greater heat-dissipating capacity
c.Prolongs ability to continue exercising before exhaustion
d.Reduced lactate accumulation
e.Increased intracellular HSPs