

The Science

WHOLE BODY

ACTIVE & PASSIVE

**HYPERTHERMIC WELLNESS
& FITNESS RECOVERY**



HYPERTHERMIC CONDITIONING

Hyperthermic Conditioning provides wellness benefits similar to exercise:

EFFECTS ON THE THE BODY:



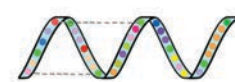
INCREASED CORE BODY TEMP.



INCREASED METABOLISM



INCREASED HEART RATE



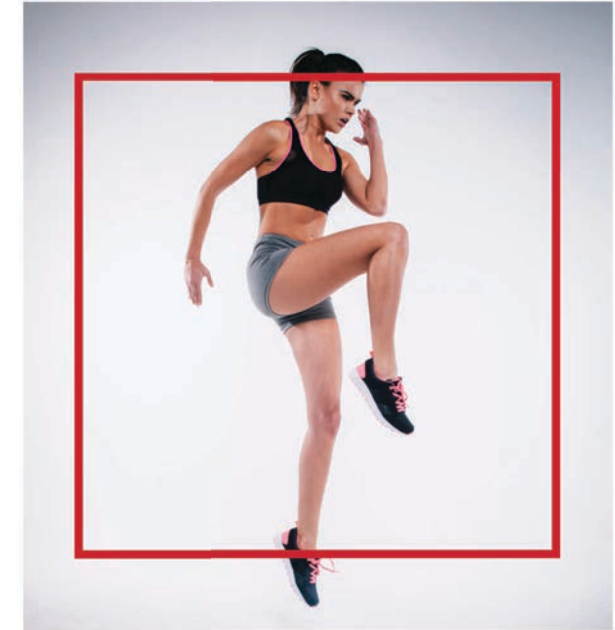
**ACTIVATION OF HSPs
(HEAT SHOCK PROTEINS)**



INCREASED PERSPIRATION

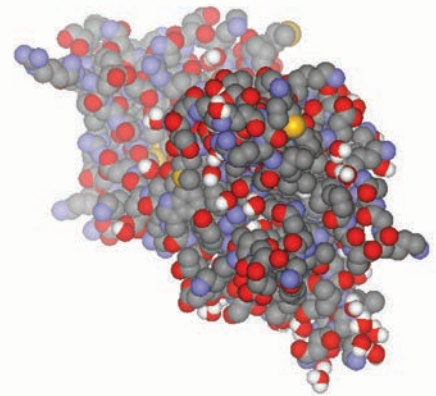


GROWTH HORMONES



HYPERTHERMIC CONDITIONING

EFFECTS ON THE THE BRAIN:

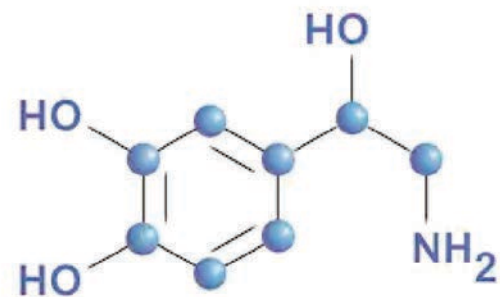


Increase the Expression of BDNF

(Brain Derived Neurotrophic Factor)

Important growth factor for growing new neurons.

BDNF plays important roles in memory, learning, mood disorders, food intake and energy metabolism



Increase **NOREPINEPHRINE**

Improves attention and focus



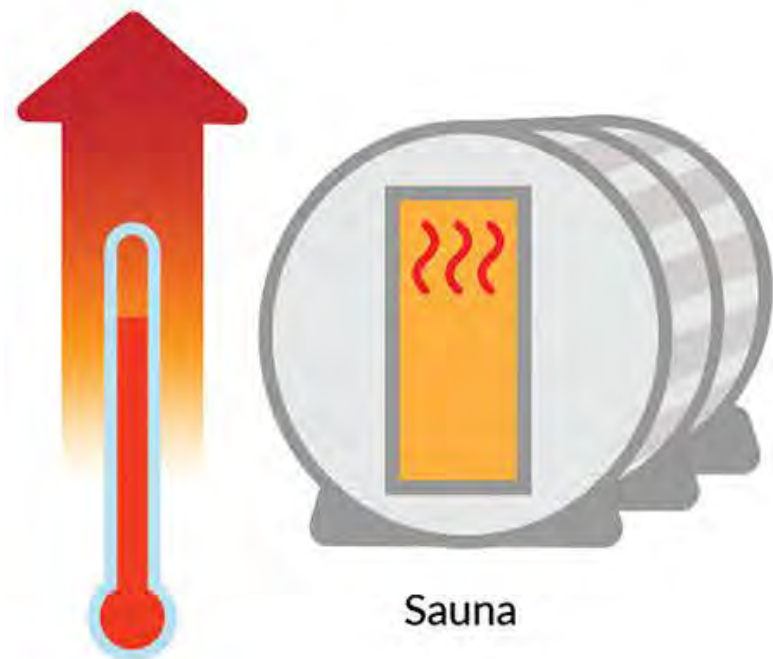
Increase **PROLACTIN**

Causes your brain to function faster



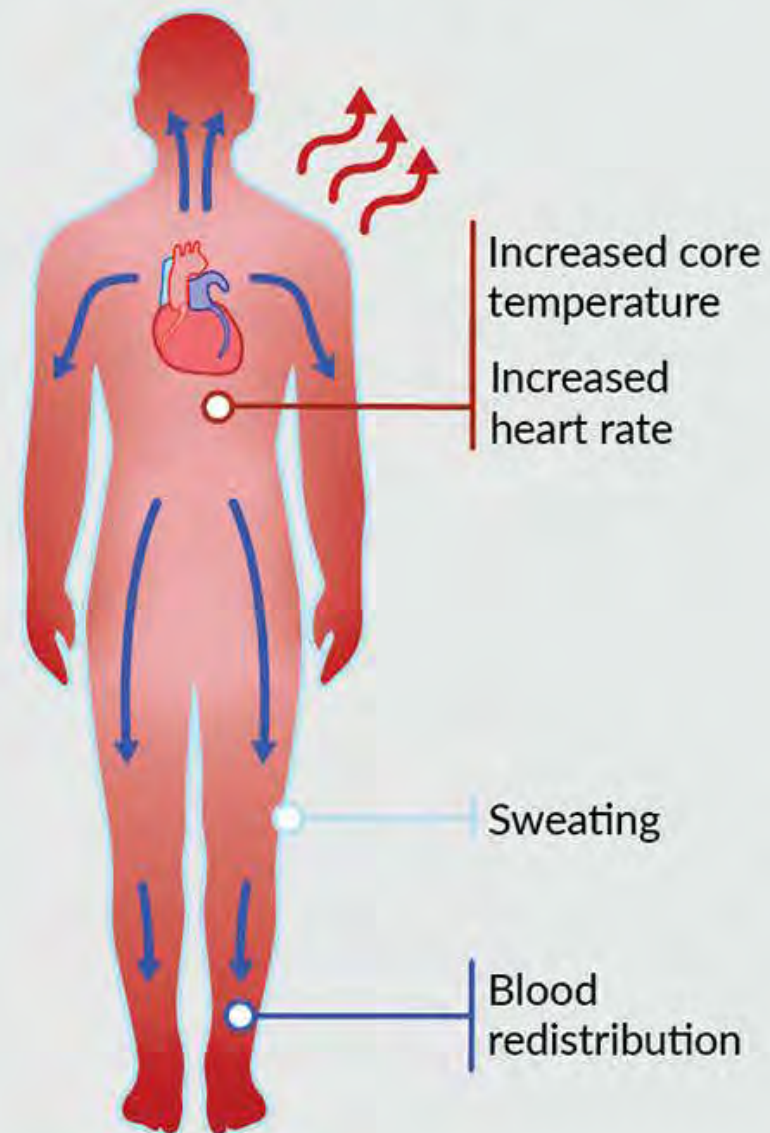
HYPERTHERMIC CONDITIONING

HEAT STRESS

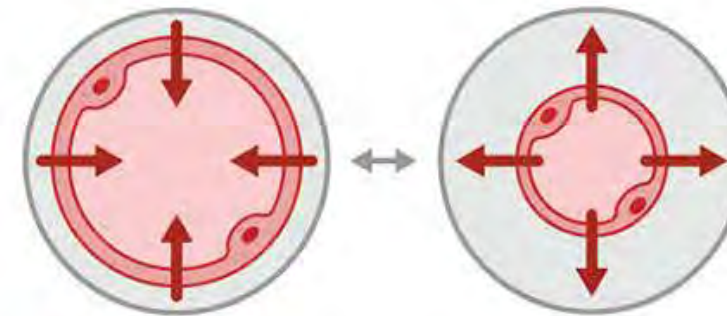


- ↓ Cardiovascular disease
- ↓ Muscle atrophy
- ↓ Neurodegenerative disease
- ↑ Healthspan

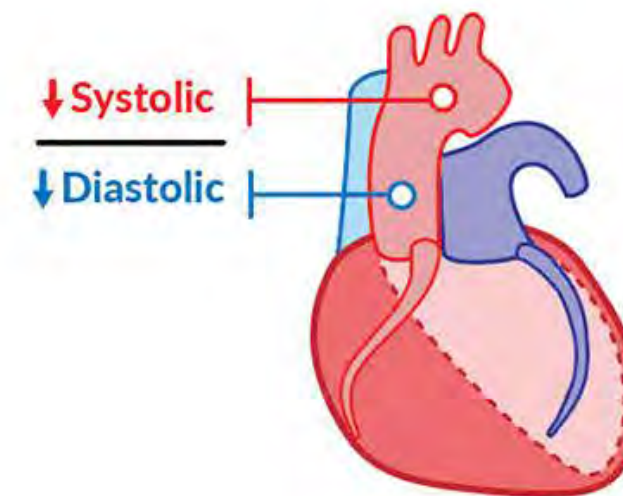
Mimics exercise-induced physiological responses



Improves vascular compliance



Improves resting blood pressure



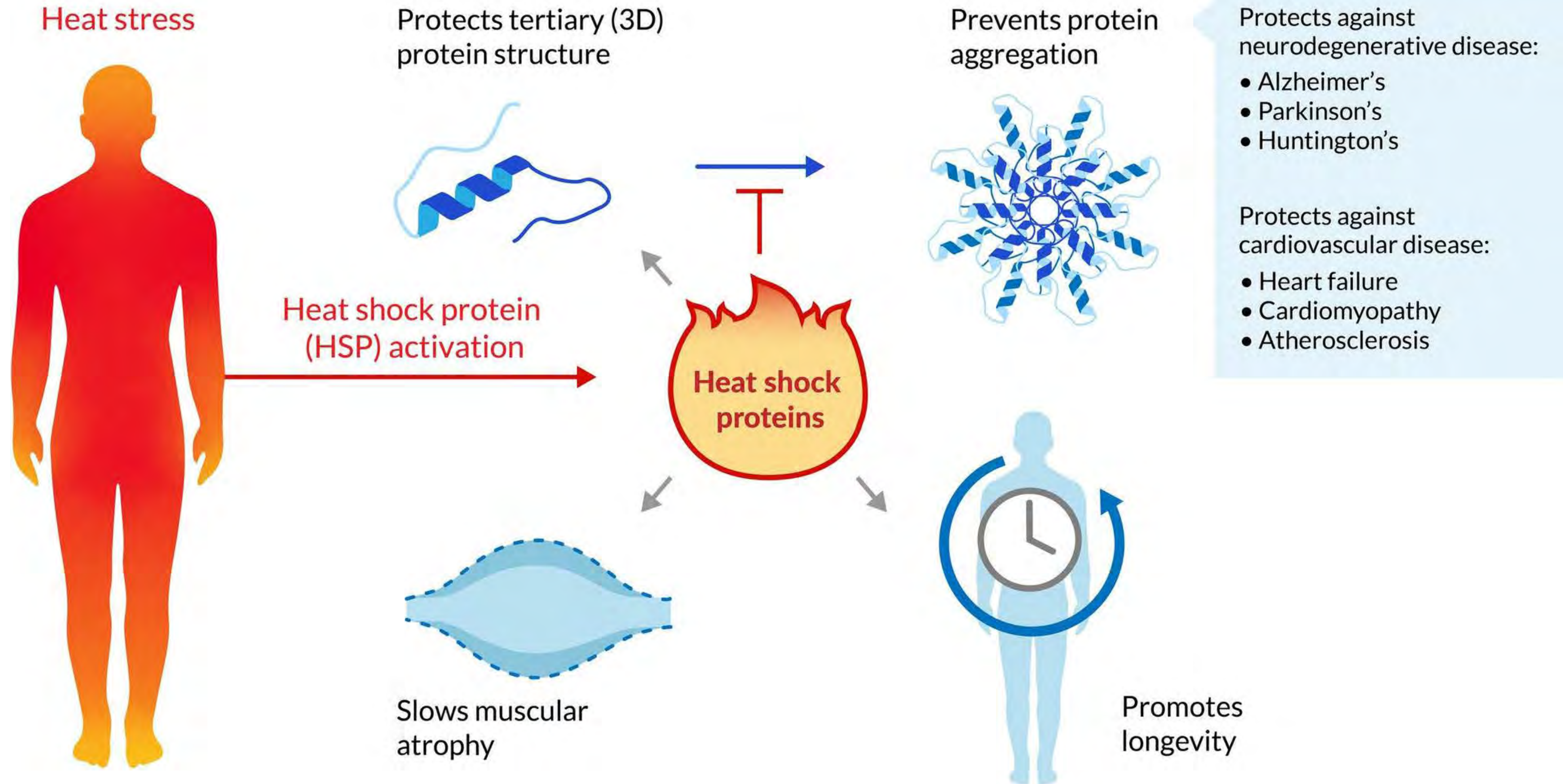
Activates heat shock proteins



Prevents protein aggregation



HYPERTHERMIC CONDITIONING





WHOLE BODY
PASSIVE HYPERTHERMIC
WELLNESS & FITNESS RECOVERY

BRAIN BENEFITS

HYPERTHERMIC CONDITIONING IS SIMILAR TO TRADITIONAL EXERCISE

**INCREASE GROWTH OF
NEW BRAIN CELLS**

INCREASE SYNTHESIS OF BDNF BY

OVER 300%

Goekint M. Influence of citalopram and environmental temperature on exercise-induced changes in BDNF. Neuroscience Letters [06 Mar 2011, 494(2):150-154]

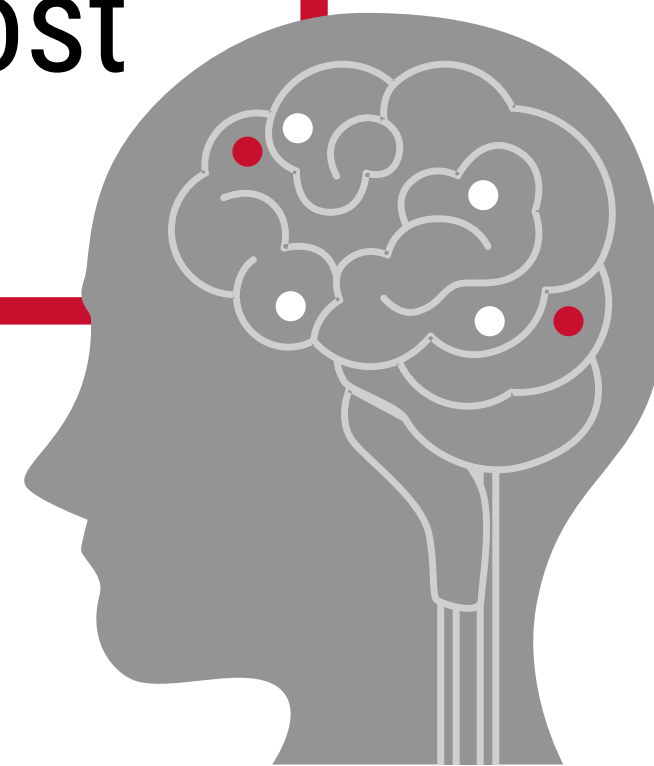


HYPERTHERMIC CONDITIONING PROMOTES BDNF & THERMOGENESIS

**INCREASE BDNF TO PROTECT AGAINST
NEURODEGENERATIVE DISEASES***

***such as Alzheimer's, Parkinsons, Huntington,
Dementia. Help prevent protein aggregation & boost
repair of damaged proteins**

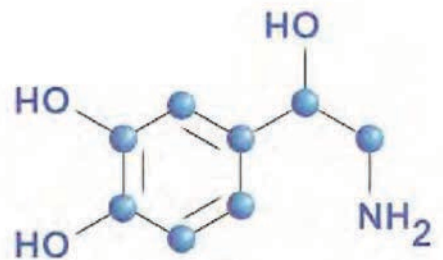
J Cell Commun Signal. 2014 Dec;8(4):293-310. **Heat shock proteins in neurodegenerative disorders and aging.** Leak RK.



HYPERTHERMIC CONDITIONING IS SIMILAR TO TRADITIONAL EXERCISE



HELP BRAIN FUNCTION FASTER,
INCREASE FOCUS & ATTENTION



INCREASE **NOREPINEPHRINE** BY

310%



INCREASE **PROLACTIN**
BY AS MUCH AS

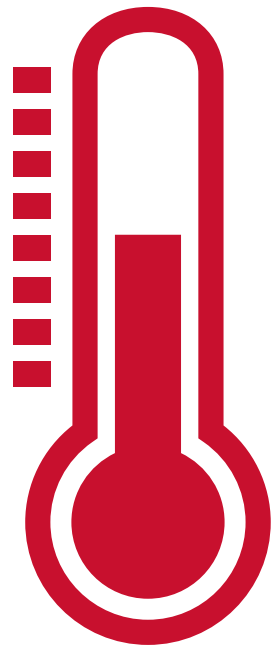
1000%



WHOLE BODY PASSIVE HYPERTHERMIC WELLNESS & FITNESS RECOVERY

PERFORMANCE | ENDURANCE | FITNESS RECOVERY

HYPERTHERMIC CONDITIONING IS EQUIVALENT TO TRADITIONAL EXERCISE



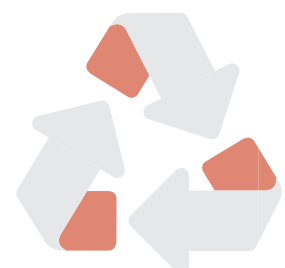
HYPERTHERMIC CONDITIONING CAN
INCREASE YOUR CORE BODY TEMPERATURE
BY UP TO **4 DEGREES F / 2.5 C.***



* LANDSBERG L, YOUNG JB, LEONARD WR, LINSENMEIER RA, TUREK FW. DO THE OBESE HAVE LOWER BODY TEMPERATURES? A NEW LOOK AT A FORGOTTEN VARIABLE IN ENERGY BALANCE. TRANSACTIONS OF THE AMERICAN CLINICAL AND CLIMATOLOGICAL ASSOCIATION. 2009;120:287-295.

HYPERTHERMIC CONDITIONING IS EQUIVALENT TO TRADITIONAL EXERCISE

Hyperthermic Conditioning **Increases Metabolism** by **10% - 13%** for Each Degree Fahrenheit (*18%* for each Degree Celsius) the Core Body **Temperature Increases**

 **INCREASE IN BODY TEMPERATURE IS ALSO ASSOCIATED WITH A FASTER METABOLIC RATE***

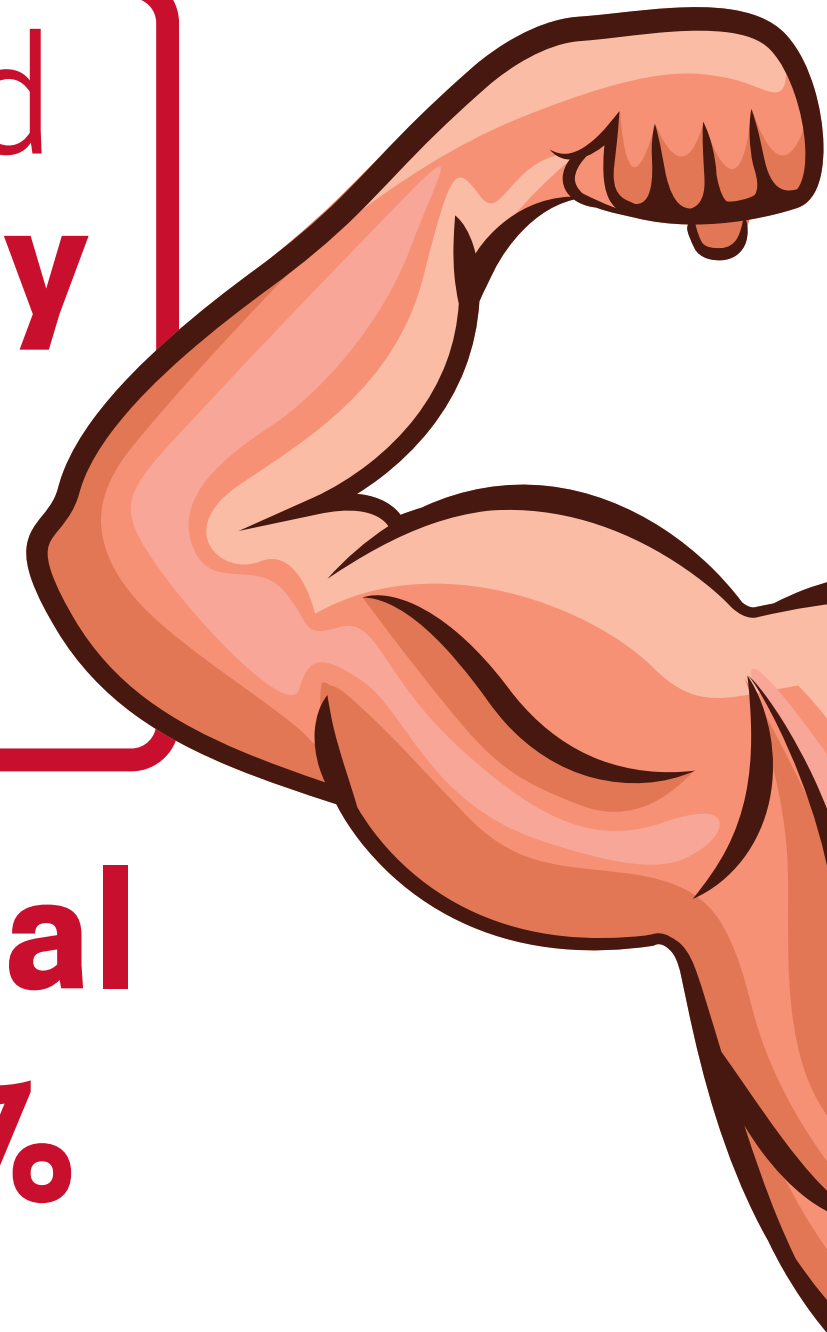
* Landsberg L, Young JB, Leonard WR, Linsenmeier RA, Turek FW. Do the Obese Have Lower Body Temperatures? A New Look at a Forgotten Variable in Energy Balance. Transactions of the American Clinical and Climatological Association. 2009;120:287-295.

HYPERTHERMIC CONDITIONING IS SIMILAR TO TRADITIONAL EXERCISE

HC helps retain Muscle Mass and
reduces **Skeletal Muscle Atrophy**

BY 37%

+ Enhances MUSCLE **Mitochondrial
Biogenesis** and **Function by 28%**



Daily heat treatment maintains mitochondrial function and attenuates atrophy in human skeletal muscle subjected to immobilization

Paul Samuel Hafen_02 MAY 2019 <https://doi.org/10.1152/jappphysiol.01098.2018>

HYPERTHERMIC CONDITIONING IS SIMILAR TO TRADITIONAL EXERCISE

**HSPs' INCREASE
MUSCLE RE-GROWTH
OVER 30%**



Sesby, J T. et al. **intermittent hyperthermia enhances skeletal muscle regrowth and attenuate oxidative damage following reloading.** J Appl Physiol (1985). 2007 Apr;102(4):1702-7. Epub 2006 Nov 16.

HYPERTHERMIC CONDITIONING IS EQUIVALENT TO TRADITIONAL EXERCISE



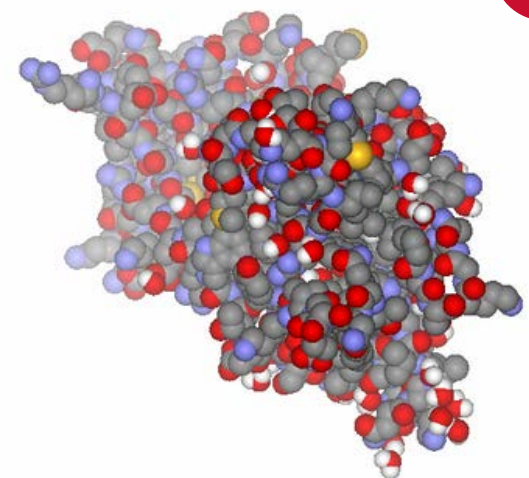
**HC INCREASES FITNESS
ENDURANCE UP TO 32%**

J Sci Med Sport. 2007 Aug;10(4):259-62. Epub 2006 Jul 31.

Scoon GS, Effect of post-exercise sauna bathing on the endurance performance of competitive male runners.

HYPERTHERMIC CONDITIONING PROMOTES BDNF

**BDNF CIRCULATION IS HIGHER
WHEN EXERCISE IS
PERFORMED IN THE HEAT.**



Goekint M, Roelands B, Heyman E, et al. (2011). **Influence of citalopram and environmental temperature on exercise-induced changes in BDNF.** *Neurosci Lett* 494:150-4



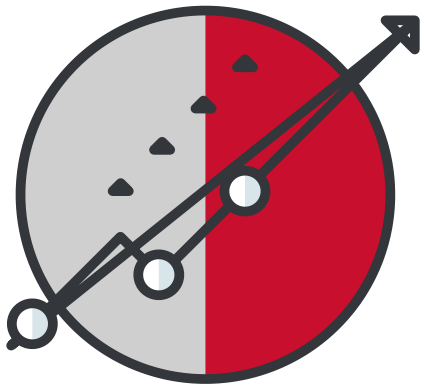
HYPERTHERMIC CONDITIONING IS SIMILAR TO TRADITIONAL EXERCISE

**INCREASE DELIVERY OF NUTRIENTS
& PERFORMANCE OF MUSCLE
GLYCOGEN BY UP TO 50%**

Glycogen reserves provide energy to power the muscles



HYPERTHERMIC CONDITIONING IS SIMILAR TO TRADITIONAL EXERCISE



**HC MAINTAINS MUSCLE MASS
WITHOUT EXERCISE & BOOSTS
MUSCLE STRENGTH UP TO 17%.**

Passive heat acclimation improves skeletal muscle contractility in humans. Am J Physiol Regul
Integr Comp Physiol. 2017 Jan 1; Racinais S, Wilson MG, Périard JD.



HYPERTHERMIC CONDITIONING PROMOTES RECOVERY & IMPROVES PERFORMANCE



“

Passive heating of the organism stimulates secretion of **Growth hormone (hGH)** to a greater extent than does elevation of the body temperature induced by physical activity

Biology of Sport, Vol. 24 #4, 2007

HYPERTHERMIC CONDITIONING PROMOTES RECOVERY & IMPROVES PERFORMANCE



BOOST YOUR PERFORMANCES WITH HEAT

“

Heat is a shock to the system, generating some of the same cellular responses that exercise and altitude do

Chris Minson, University of Oregon Physiologist

HYPERTHERMIC CONDITIONING IS SIMILAR TO TRADITIONAL EXERCISE

**INCREASE GROWTH HORMONE
UP TO 1600%**



Sesby, J T. et al. intermittent hyperthermia enhances skeletal muscle regrowth and attenuate oxidative damage following reloading. J Appl Physiol (1985). 2007 Apr;102(4):1702-7. Epub 2006 Nov 16.

BETTER WELLNESS. BETTER LIFE.

WHOLE BODY
PASSIVE HYPERTHERMIC
WELLNESS & FITNESS RECOVERY

CLEANSING-DETOX BENEFITS

HYPERTHERMIC CONDITIONING IMPROVES DETOX PATHWAYS

SWEAT CLEANSING is **SUPERIOR TO URINE** for **EXCRETION OF** certain **HEAVY METALS**

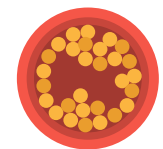




- 500%  ALUMINUM IS EXCRETED **5X GREATER** IN SWEAT THAN URINE.
- 1000%  CADMIUM IS EXCRETED **10X GREATER** IN SWEAT THAN URINE.
- 1400%  LEAD IS EXCRETED **14X GREATER** IN SWEAT THAN URINE.

* **Blood, urine, and sweat (BUS) study:** monitoring and elimination of bioaccumulated toxic elements. Genuis SJ1, Birkholz D, Rodushkin I, Beeson S. Arch Environ Contam Toxicol. 2011 Aug;61(2):344-57. doi: 10.1007/s00244-010-9611-5. Epub 2010 Nov 6.

HYPERTHERMIC CONDITIONING IMPROVES DETOX PATHWAYS

Hyperthermic Conditioning may enable your body to **eliminate environmental toxins through sweat.**

**15-20% OF INFRARED SAUNA-INDUCED SWEAT IS
COMPOSED OF:**

-  CHOLESTEROL
-  FAT-SOLUBLE TOXINS
-  HEAVY METALS
-  SULFURIC ACID
-  AMMONIA

150%



HYPERTHERMIC CONDITIONING IMPROVES DETOX PATHWAYS

Certain chemicals (Cytokines) in the body lead to **INFLAMMATION**.

...some are known as "**OBESOGENS**" and cause **water retention and bloating**, leading to a greater number of **fat cells, stress hormones, endocrine disruption, lymph congestion**.



Sweating also eliminates **hormone-disrupting polycarbonateplastics (Bisphenol A)** which accumulates in your fat cells.





WHOLE BODY PASSIVE HYPERTHERMIC WELLNESS & FITNESS RECOVERY

MENTAL HEALTH

HYPERTHERMIC CONDITIONING

Hyperthermic conditioning **relieves**
the SYMPTOMS OF MAJOR
DEPRESSION with a prolonged
therapeutic benefit

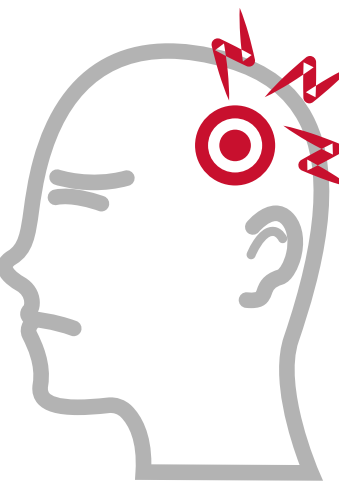


Whole-Body Hyperthermia for the Treatment of Major Depressive Disorder. A Randomized Clinical Trial; JAMA Psychiatry | Original Investigation. August 2016. Clemens W. Janssen, PhD; Christopher A. Lowry, Charles L. Raison, MD.

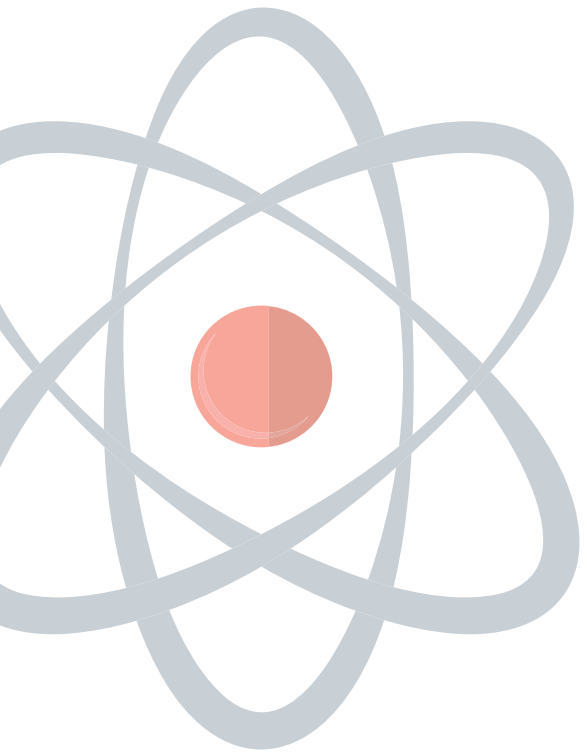
HYPERTHERMIC CONDITIONING

HYPERTHERMIC CONDITIONING REDUCES STRESS

- ➡ HC helps **minimize stress, Increase Relaxation and reduce Anxiety**
- ➡ HC **increases "feel good" Endorphins for greater Vitality, Mental Health and Emotional Well-being.**
- ➡ HC helps **reduce chronic metabolic imbalances caused by stress**



HYPERTHERMIC CONDITIONING



HC INCREASES BETA-ENDORPHINS **TO HELP**
THE SYMPTOMS OF DRUG ADDICTION &
PSYCHOLOGICAL DEPENDENCE

HC INDUCES GREATER **DYNORPHIN & BETA ENDORPHIN** INTERACTION
FOR A **NATURAL 'FEEL GOOD' MU OPIOID REWARD STATE**

J Neurochem. 2003 Jun;85(5):1171-9. Heterologous mu-opioid receptor adaptation by repeated stimulation of kappa-opioid receptor: up-regulation of G protein activation and antinociception. Narita M



WHOLE BODY PASSIVE HYPERTHERMIC WELLNESS & FITNESS RECOVERY

CARDIOVASCULAR

HYPERTHERMIC CONDITIONING IS SIMILAR TO TRADITIONAL EXERCISE

Cardiovascular Improvements



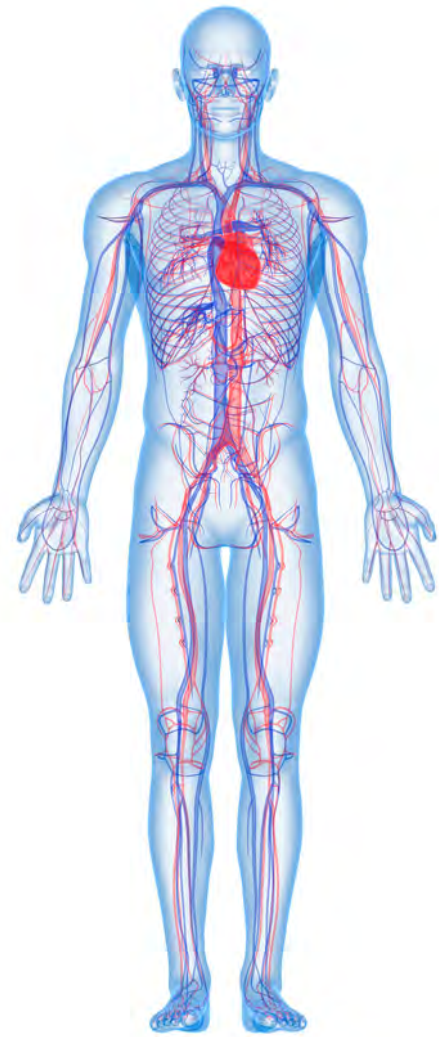
HC INCREASES **FAVORABLE BLOOD CIRCULATION**

PROFILES AND **VASCULAR ADAPTATIONS**

SIMILAR TO TREADMILL RUNNING.*

* Kate N Thomas, André M van Rij, Samuel J E Lucas, and James D Cotter, Lower-limb hot-water immersion acutely induces beneficial hemodynamic and cardiovascular responses in peripheral arterial disease and healthy, elderly controls, Am J Physiol Regul Integr Comp Physiol 2017 Mar 21;312(3):R281-R291. Epub 2016 Dec 21.

HYPERTHERMIC CONDITIONING HAS BENEFITS SIMILAR TO EXERCISE



IMPROVEMENT OF QUALITY OF LIFE: AMONG
65 PATIENTS, **THERMAL THERAPY REDUCED
CARDIAC DEATH AND REHOSPITALIZATION**

by 31.3%.

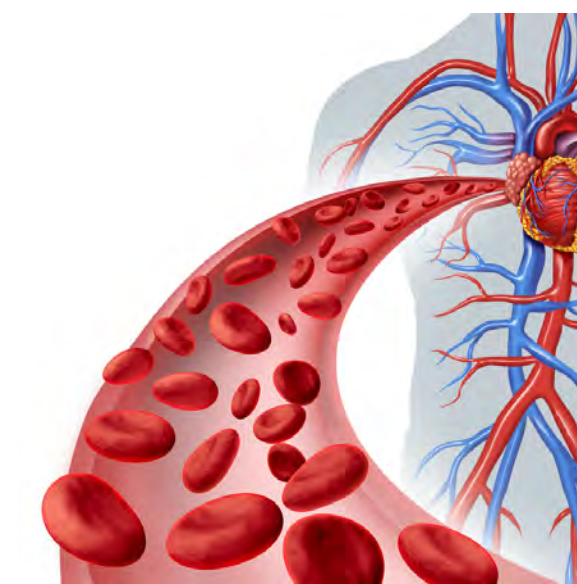
Conclusion: A slight increase in core body temperature is a promising, non-invasive, effective, and complementary therapy for patients with heart failure.

“

In the next 10 years sauna bathing
*(sic **HYPERTHERMIC CONDITIONING**)* will
become part of the STANDARD OF CARE
for the prevention and treatment for heart
disease and a variety of heart conditions. ”

DR. RHONDA PATRICK, PHD

Renown Wellness & Longevity Expert



BETTER WELLNESS. BETTER LIFE.

A top-down view of various medical supplies scattered on a grey surface. Visible items include a pair of surgical scissors, a blue digital blood glucose meter, a silver stethoscope, several blister packs of pills (some orange, some white), adhesive bandages, a syringe, and a pill bottle. The items are arranged in a somewhat circular pattern around the center of the page.

WHOLE BODY PASSIVE HYPERTHERMIC

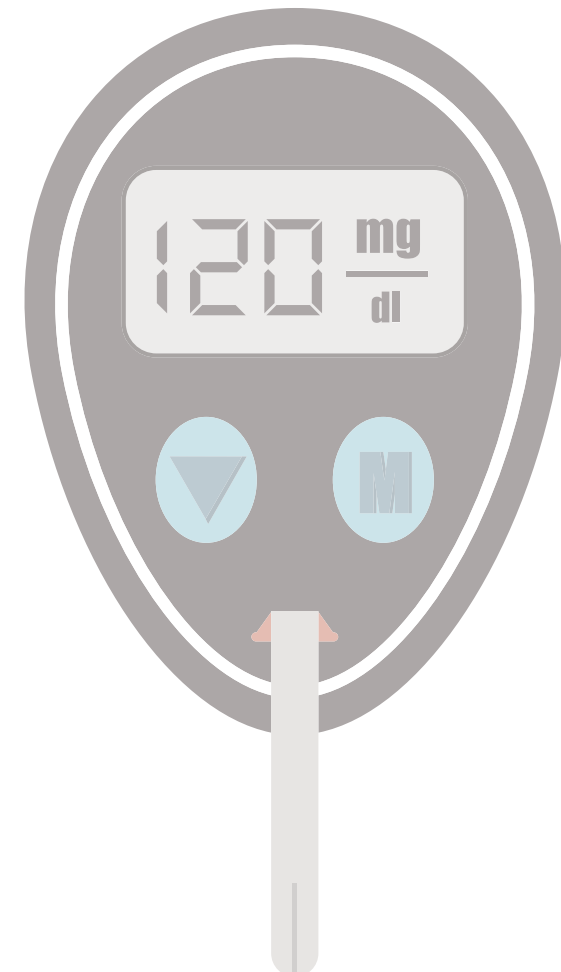
WELLNESS & FITNESS RECOVERY

METABOLIC | LIFESTYLE | AGE RELATED DISEASES

HYPERTHERMIC CONDITIONING IS SIMILAR TO TRADITIONAL EXERCISE

REDUCE RISK OF DIABETES

HSP's Reduce Blood Sugar Level and
Increase Insulin Sensitivity by **30%**



* Kokura, S. et al. International Journal of Hyperthermia; Int J Hyperthermia. 2007 May;23(3):259-65.

HYPERTHERMIC CONDITIONING IS SIMILAR TO TRADITIONAL EXERCISE

HEAT SHOCK PROTEINS AND HEAT THERAPY FOR TYPE 2 DIABETES

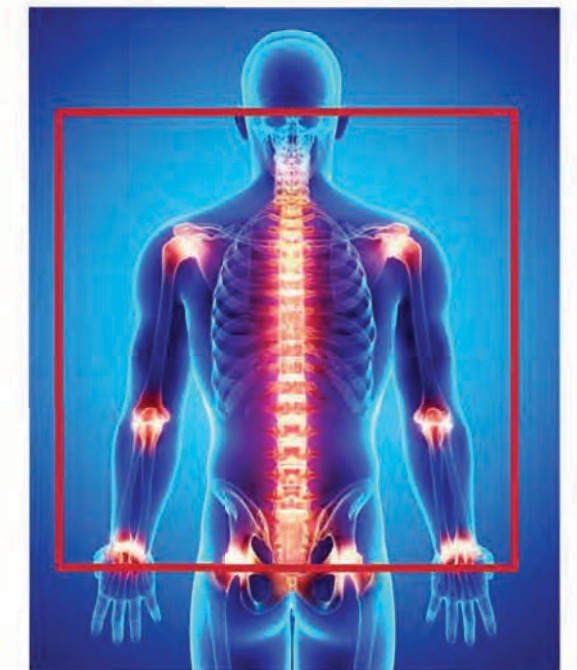
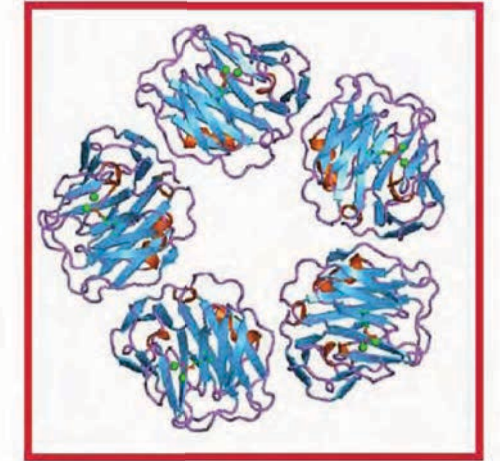
"Transient increments in **nitric oxide and heat shock protein 70** levels may **explain the benefits of heat therapy**. Together, higher (or normalized) nitric oxide levels, HSP70, AMPK, and eNOS **will improve insulin signaling, body composition, endothelial dysfunction, and the low grade inflammation found in people with diabetes.**



HYPERTHERMIC CONDITIONING

HYPERTHERMIC CONDITIONING **LOWERS**
BLOOD LEVELS OF C-REACTIVE PROTEIN
in a dose-dependent manner and **increases**
anti-inflammatory biomarkers.

CRP is a **protein** made by your liver. It's **sent into your bloodstream** in response to **inflammation**. During an inflammatory process in the body, the levels of **C-reactive protein (CRP)**, a **pro-inflammatory cytokine**, rise dramatically.



Heat Shock Proteins (HSPs)

- **HYPERTHERMIC CONDITIONING**
increases HSP levels by 50%
- **INCREASED HSP levels stay elevated for 48 hrs.**

Heat shock proteins have been shown to **prevent and slow the progression of neurodegenerative diseases like Alzheimer's disease and Parkinson's disease, slow human muscle atrophy**, and are associated with human longevity.

HYPERTHERMIC CONDITIONING IS SIMILAR TO TRADITIONAL EXERCISE

HC STRENGTHENS THE **IMMUNE SYSTEM'S MASTER
FOXO3 GENE** AND INCREASES YOUR **CHANCES TO
LIVE TO BE 100 YEARS OLD BY**

270%

FOXO3A genotype is strongly associated with human longevity. Bradley J. Willcox. Proc Natl Acad Sci U S A. 2008 Sep 16; 105(37)



HYPERTHERMIC CONDITIONING

Regular Hyperthermic Conditioning
**Reduces Risk of Cardiovascular
Disease (40%) & Stroke (50%)**



*Laukkanen T, Khan H, Zaccardi F, Laukkanen JA. Association Between Sauna Bathing and Fatal Cardiovascular and All-Cause Mortality Events. JAMA Intern Med. 2015;175(4):542-548. doi:10.1001/jamainternmed.2014



HYPERTHERMIC CONDITIONING

HC SESSIONS 4-7 TIMES A WEEK,
LOWERED THE RISK OF DEMENTIA BY 66%

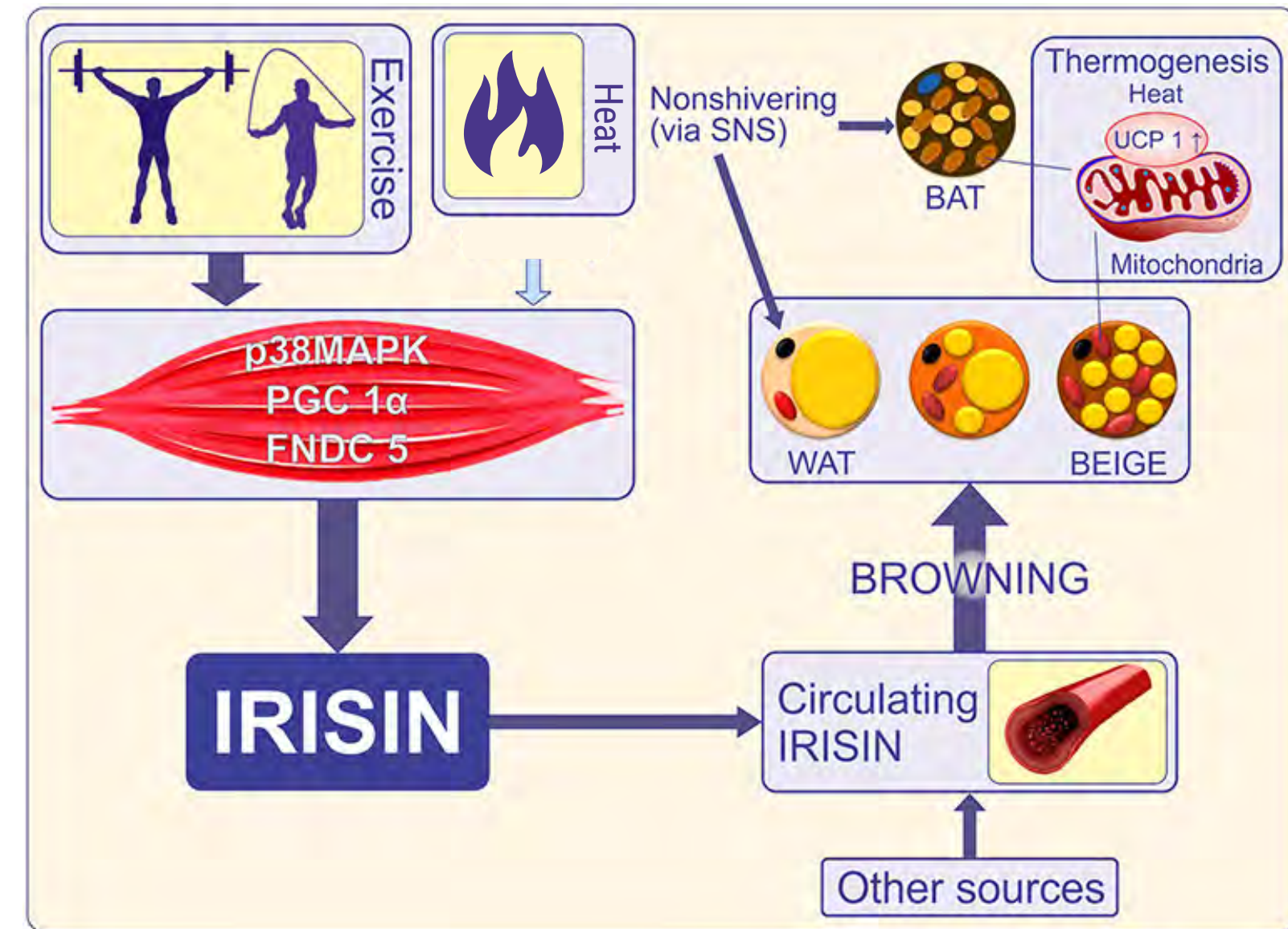
...AND LOWERED
THE RISK OF ALZHEIMER'S DISEASE BY 65%

* Laukkanen, T., Kunutsor, S., Kauhanen, J., Laukkanen, J.A., Sauna bathing is inversely associated with dementia and Alzheimer's disease in middle-aged Finnish men Age Ageing first published online December 7, 2016



HC For WEIGHT MANAGEMENT

⊕ Role for **passive heating (PH)** and **Heat Shock Proteins (HSP)** in improving cardio-metabolic health or **IRISIN**, a skeletal muscle-secreted myokine, also produced in response to physical exercise which has protective functions in both the central and the peripheral nervous systems, including the regulation of **Brain Derived Neurotrophic Factor (BDNF)***.



Irishin, primarily known as a myokine and as a chemical messenger, transmits the beneficial effects of physical exercise to the adipose tissue (browning and thermogenesis) and other organs involved in metabolism.

HC For **WEIGHT MANAGEMENT**

- + Passive Whole Body Hyperthermia (PH)** performed with our Cocoon Pod (Alfa Basic) leads to the **increase in IRISIN levels and caloric uptake of fat burn.**
- + Indicative of a new role for hyperthermia** as a potentially useful, non-pharmacological, **non-invasive treatment, alternative to exercise for people suffering from metabolic diseases and/or obesity.**

HYPERTHERMIC CONDITIONING PROMOTES BDNF & THERMOGENESIS

BDNF STIMULATION REDUCES OBESITY & DECREASES APPETITE

Lack of BDNF cause significant problems, including dramatically increase appetite (HYPERPHAGIA) and severe obesity



Cell Metab. 2015 Jul 7;22(1):175-88. doi: 10.1016/j.cmet.2015.05.008. Epub 2015 Jun 11.
Discrete BDNF Neurons in the Paraventricular Hypothalamus Control Feeding and Energy Expenditure.



HC For WEIGHT MANAGEMENT

IMPROVED BODY COMPOSITION THROUGH REDUCED ADIPOSITY AND IMPROVED WEIGHT CONTROL*

⊕ **Increased lean mass** causes increased **calorie burning** (muscle tissue burn over 90% of the Calories we consume)



⊕ Both exercise and **heat exposure** cause **heat shock** and promote **mitochondrial biogenesis** (2–3-fold increases in muscle mitochondria) leading to increased muscle mass

* Tremblay A, Despres JP, Leblanc C, et al. Effect of intensity of physical activity on body fatness and fat distribution. Am J Clin Nutr 1990;51:153-7. Kelley, D.B., Goodpaster, B. Skeletal muscle fatty acid metabolism in association with insulin resistance, obesity and weight loss, American Journal of Physiology Vol 277, Dec. 1, 1999.

HC For WEIGHT MANAGEMENT

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* Tremblay A, Despres JP, Leblanc C, et al. Effect of intensity of physical activity on body fatness and fat distribution. *Am J Clin Nutr* 1990;51:153-7.

Skeletal muscle fatty acid metabolism in association with insulin resistance, obesity and weight loss, *American Journal of Physiology* Vol 277, Dec. 1, 1999. *Free Radical Biology and Medicine*, Vol. 11 (1991) 239-246, HSP70 and other possible heat shock or oxidative stress proteins are induced in skeletal muscle.

HC For WEIGHT MANAGEMENT

- ⊕ Hyperthermic conditioning has been shown to triple the synthesis of **BDNF (BRAIN DERIVED NEUROTROPIC FACTOR)** in the human brain



- ⊕ Studies show that BDNF is important for controlling appetite and satiety