

THE MEDICINAL
EFFECTS OF EXERCISE

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U.S. STATISTICS

▶ Overweight/Obese: 69%/39.5%

▶ Hypertensive: 36% M&W b/t 45-54, 65% M, 80% W over 75

▶ Heart Disease: 12%

▶ Diabetes: 10%

▶ Anxiety/Stress: 3% over 18

Source: CDC



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PHYSIOLOGICAL BENEFITS

▶ Muscular System

▶ Skeletal System

▶ Nervous System

▶ Cardiovascular System & Pulmonary Function

▶ Endocrine System

▶ Body Composition

▶ Blood Lipids





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MUSCULAR SYSTEM



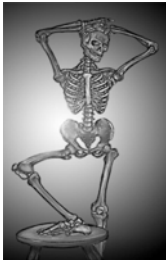
- Increases Absolute & Functional Strength
- Increases Power
- Improved Flexibility/Range of Motion
- Maintain Plasticity in Physiologic, Structural, & Performance Characteristics
- Slowing of Denervation Atrophy (loss of type II fibers/reduction of HGH) associated w/Aging
- Reduces Orthopedic Injuries via Structural Integrity



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SKELETAL SYSTEM

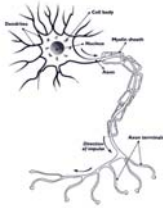
- Stimulates Osteogenesis (tissue turnover/repair)
- Increases Bone Mineral Density
- Increases Bone Mass
- Slows/Reduces Osteoporosis



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NERVOUS SYSTEM

- Improves Balance/Proprioception
- Improves Central Processing Time
- Improves Muscle Action Time
- Improves Hand-Eye, Hand-Foot Coordination
- Slows the Biologic Aging of Select Neuromuscular Functions



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CARDIOVASCULAR SYSTEM & PULMONARY FUNCTION

- Higher Aerobic Capacity
- Decreased Resting Heart Rate
- Decreased Blood Pressure
- Increase in Total Lung Capacity
- Slowing Decline of Maximum Exercising Heart Rate Associated w/Age
- Increased Stroke Volume

PH PERQUE
INTEGRATIVE
HEALTH
ACADEMY

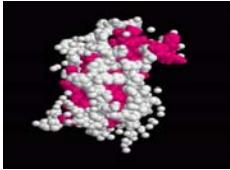


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ENDOCRINE SYSTEM

- Increase in Insulin Sensitivity
- Reduction in Cortisol
- Increased Testosterone
- Increased GH
- Increases Opioid Peptides (B-lipotropin, B-endorphin)

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BODY COMPOSITION

- Increase in Lean Body Mass (Muscle)
- Increase in Resting Metabolic Rate
- Decrease in Subcutaneous Body Fat
- Decrease in Visceral Body Fat
- Decreased Insulin Resistance

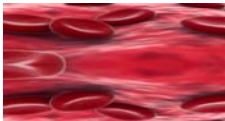
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BLOOD LIPIDS

- Decrease in Total Serum Cholesterol
- Increase in HDL-C
- Decrease in LDL-C (apo-B)
- Decrease in VLDL-C
- Increased FFA Mobilization/Oxidation



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EFFECTS ON OUR BRAIN

- Perception
- Reasoning
- Flexible Thinking
- Language
- Communication
- Spatial Relationships
- Memory
- Motivation
- Meta Cognition



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PERCEPTION

- Increased Awareness/Ability to Notice
- Improved Accuracy
- Increased Speed to Notice Things Around Us



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REASONING

➤ Improves Logical Thinking

➤ Systematic Thought/Analytical Capabilities





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FLEXIBLE THINKING

➤ Expands the Opening of New Neuro Pathways

➤ Increases Divergent Thought

➤ Stimulates Creativity





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LANGUAGE

➤ Enhanced Verbal Fluency

➤ Expand Alternate Meanings of Words

➤ Enlarged Vocabulary

Willkommen

Welkom Velkommen

Bienvenue

Bienvenido Benvenuto



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COMMUNICATION

- Improved Listening Skills
- Giving/Following Directions
- Increased Brain Derived Neurotrophic Factor (BDNF) stimulates cell growth, interconnectivity, and communication in new ways



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SPATIAL RELATIONSHIPS

- Improved Shape Recognition
- Improved Sense of Direction
- Better Sense of Location
- Enhanced Kinesthetic Senses



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MEMORY

- Retrieval
- Speed
- Information Processing



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MOTIVATION

➤ Increased Drive

➤ Improved Ability to Concentrate





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META-COGNITION

➤ Utilizing Strategies

➤ Self Reflection

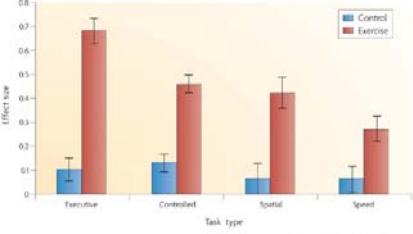
➤ Increased “Cognitive Reserve”

➤ Ability to withstand the challenges of aging





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Task type	Control	Exercise
Executive	0.10	0.68
Controlled	0.12	0.48
Spatial	0.08	0.42
Speed	0.08	0.28

Nature Reviews | Neuroscience



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PSYCHOLOGICAL BENEFITS

➤ Significantly Reduces Stress/Anxiety

➤ Improves or Eliminates Attention Deficit Hyperactivity Disorder (ADHD)

➤ Therapeutic Methodology for the Treatment of Depression

➤ Improves Self Esteem/Confidence

➤ Enhances Social Interaction

PH

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COUNT THEM!

66!

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WHAT IF?



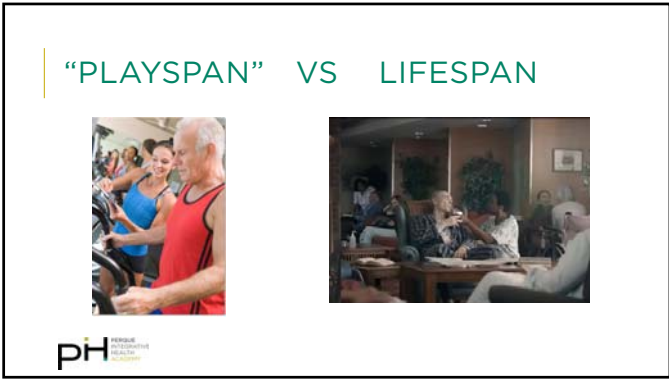
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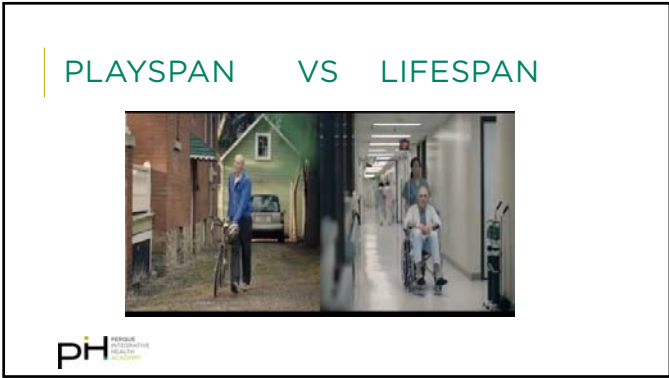
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KEYS TO THE “EXERCISE KINGDOM”

➤ FITT Principles

➤ Frequency

➤ Intensity

➤ Time

➤ Type

Variety





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ADDITIONAL BENEFITS FOR WOMEN

➤ Helps Counteract Hormonally Driven Mood Swings

➤ Estrogen Decreases – Menstruation, Menopause

➤ Serotonin Drop – Exercise ^ B endorphin

➤ Mitigates/Prevents Bone Loss and Osteoporosis

➤ Strengthens Bones

➤ Keeps Weight In Check

➤ Estrogen Decreases – Fat Redistribution

➤ Increased Lean Tissue

➤ Improves Sleep



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TIPS/RECOMMENDATIONS

➤ Try to Exercise 3 – 5 Times a Week

➤ Include Cardio, Resistance, Flexibility, and Balance In Your Program

➤ Types of Exercise to Include:

➤ Walking, Hiking, Cycling, Swimming, Dancing, Running, Tennis, Yoga

➤ Traditional Weight Training, Bands & Tubing, Bodyweight, Isometrics

➤ Stretching

➤ Balance



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MILLION \$\$\$\$ QUESTION:

- *How come we can't get our population to take the "pill" of regular exercise?*
- The answer would require another seminar, but there are some questions that we can ask ourselves:
- Is exercise enjoyable for the average person?
 - Are there programs that allow people to sample the benefits of exercise without a large financial commitment up front?
 - Are we thinking outside of the box as it relates to early childhood exercise participation?



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YOUR CHOICE!



OR



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BIBLIOGRAPHY

- Benefits & Harms of Exercise Therapy In People with Multi-Morbidity: A Systematic Review & Meta-Analysis of Randomized Controlled Trials. Bricca, A., Harris, LK., Jager, M., Smith, SM., Juhl, CB., Skou, ST. Aging Res Rev. 2020 Nov;63:101-166.
- Effectiveness of Physical Exercise in the Treatment of Depression In Older Adults As An Alternative to Antidepressant Drugs in Primary Care. Lopez-Torres Hidalgo, J. DEP Exercise Group. BMC Psychiatry, 2019 Jan 14; 19(121).
- Comparison of the Cardiovascular Benefits of Resistance, Aerobic, & Combined Exercise (CardioRACE): Rationale, Design, & Methods. Brillembin, AG., Lanningham-Foster, LM., Kohut, ML., Li, Y., Church, TS., Blair, SN., Lee, DC. Am Heart J. 2019 Nov; 217:101-111.
- Exercise Interventions for Cognitive Function in Adults Older than 50: A Systematic Review with Meta-Analysis. Northey, JM., Cherbinn, N., Pumpa, KL., Smees, DJ., Rathay, B. Br J Sports Med. 2018 Feb 52(3):154-160.
- Exercise, Not to Exercise, or How to Exercise in Patients with Chronic Pain? Applying Science to Practice. Daenen, L., Varkey, E., Kellmann, M., Nijls, J. Clin J Pain. 2015 Feb; 31(2):108-114.
- Effects of Physical Exercise on Depressive Symptoms & Biomarkers in Depression. Archer, T., Joesfsson, T., Lindwall, M. CNS Neurol Disord Drug Targets. 2014 13(10):1640-1653.



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BIBLIOGRAPHY –
TEXTS/SITES

- Lifestyle Medicine Handbook: An Introduction to the Power of Healthy Habits. Frates, B., Bonnet, J.P., Joseph, J., Peterson, J.A. Healthy Learning 2019
- Exercise Physiology: Nutrition, Energy, and Human Performance. McArdle, Wm., Katch, F.I., Katch, V.L. Lippencott: Williams & Wilkins 8th edition 2015.
- Go Wild: Free Your Body & Mind From the Afflictions of Society. Ratey, J., Manning, R. Little, Brown & Co. June 2014.
- Spark: The Revolutionary New Science of Exercise and The Brain. Ratey, J. Little, Brown & Co. Jan 2008.
- Sutter Health System: Health and Wellness/Women's Health/Health Benefits of Exercise for Women. 2021.
- CDC – General Info. 2021



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THANK YOU!

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