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JohnRateyMD
ON FACEBOOK
WHAT DO WE NEED TO

- Raise Test Scores and Achievement
- Reduce Discipline Problems, Up Attendance
- Reduce Depression, Anxiety, Stress
- Reduce Bullying
- Enhance Creativity and Motivation
- Improve Attention & Reduce ADHD
- Reduce Addiction Potential
- Improve Physical Health Reduce Obesity
LIKE A LITTLE BIT OF RITALIN AND A BIT OF PROZAC

AH, if there were a pill that could work wonders like lowering bad (LDL) cholesterol, raise good (HDL) cholesterol, improve how are bodies translate food into energy, stop us from getting Diabetes 2, improve: mood, sex, sleep, anxiety, stress and our proneness to addictions, change fat into muscle, improve our cognitive functioning, all with the main side effect of being we will likely be more social and have fun.
EMOTIONAL REGULATION

EXERCISE PLAY

OPTIMIZING COGNITIVE FUNCTIONING
Brain-Derived Neurotrophic Factor (BDNF)

**BDNF** is a **THE MOTHER OF ALL BRAIN GROWTH FACTORS** which regulate the survival, growth & differentiation of neurons during development and is vital to continue our Brain’s job of Adapting to the world- LEARNING.

**BDNF** functions to **translate activity into synaptic** & nerve plasticity in the adult animal.

**BDNF** is **MIRACLE GRO** for the brain and is Evolution’s great gift to us that is made when we use our brain cells.

**BDNF** is an anti-depressant, anti-toxic stress factor and correlates with intelligence and memory.
MAYO CLINIC

- OVER 1600 SCIENTIFIC PAPERS REVIEWED
- SHOWED THAT EXERCISE IMPROVES BRAIN
- PREVENT COGNITIVE DECLINE
- LESSENS THREAT OF ALZHEIMER’S
- IMPROVES TEST SCORES AT ANY AGE
- ALSO IMPROVES MOOD, ENERGY, MOTIVATION
Movement of muscles
Primary motor cortex

Perceptions and memories are translated into plans and actions by the frontal lobes
Motor association cortex

Plans for movements
Primary auditory cortex
Auditory information
Temporal lobe pulled down to show primary auditory cortex

Perceptions and memories
Sensory association cortex

Sensory information from body
Primary somatosensory cortex

Perceptions and memories
Visual information
Primary visual cortex (mostly on inner surface)
The height of each bar shows the average (median) SAT-9 national percentile rank of those students with a particular fitness score.

**THE X-AXIS IS THE NUMBER OF FITNESS STANDARD REACHED BY EACH INDIVIDUAL.**

Higher academic achievement is associated with higher levels of fitness in grade 5,7,9. The relationship between academic achievement and fitness in grade 5,7,9 was greater in mathematics than in reading, particularly at high fitness levels.
Eagle Mountain Elementary in Fort Worth, Texas, has been giving kindergarten and first-grade students two 15-minute recess breaks every morning and two 15-minute breaks every afternoon to go play outside.

Teachers say the kids are actually learning more because they’re better able to focus in class and pay attention without fidgeting.

After five months, the students are paying better attention in class, they’re following directions better, attempting to learn more independently and solve problems on their own, and there have been fewer disciplinary issues.

This of course is what Finland does that in part has them ranked third in the world in the Programme for International Student Assessment (PISA), the Trends in International Mathematics and Science Study (TIMSS) and other ratings of student achievement.
A Social Justice Issue- Exercise can help even the Playing Field.

Figure 1 Mean percentages time-on-task with standard error bars of SDC and non-SDC during post-control and post-intervention lessons at start (1), midway (2) and end (3) observation. *Significant difference between SDC and non-SDC (p < 0.05).

TIME ON TASK EVENS OUT WITH EXERCISE

22 WEEKS, 3 TIMES/WEEK

Phenomenon

- Woodland Elementary School
  - 2005 Fall
    - PE one day per week / 50 minutes.
  - 2006 Jan - June
    - PE4life Program
      - Five days a week / 45 minutes.

- Inner city school with
  - 80% of kids on free lunch program

- PE4LIFE added
  - Cardiac monitored watches,
  - Dance Dance Revolution,
  - A few exercise bicycles/fitness machines.

AND A NEW ATTITUDE
Kids who move while learning may absorb more, study says


The research, involving 500 Grade 2 and 3 children in the Netherlands, found those who learned in physically active classes tested better academically than kids who sat at their desks.

The kids learned using a range of movements including jumping, taking large and small steps, squatting and air punches as they recited answers to questions.

The lessons using moderate to vigorous physical activity were aimed at tasks involving repetition and memory, such as math calculations and spelling. The students’ academic levels were measured before the intervention, and several times throughout.
The Power of PLAY

Play evolved – to promote survival. Play makes the brain smarter - more adaptable - higher animals.

Play is the basis of social contact and group interaction - fostering empathy – The core of creativity and innovation.

Play gives us the ability to become smarter and more creative, to learn more about the world than the genes could ever teach, to adapt to a changing world.

In a world of continuously presenting unique challenges and ambiguities.. Play Prepares the Player to cope with the evolving planet.

The more recess... the better behaved and attentive the student or worker.
Spring 2012 Survey Results
Parents and Participants

Parents and Participants Agree with the Following Statements:

- **Would sign up again**: 96% (Parent), 90% (Participants)
- **Has fun at BOKS**: 95% (Parent), 93% (Participants)
- **Excited for School**: 89% (Parent), 83% (Participants)
- **Gets More Exercise**: 85% (Parent), 84% (Participants)
- **Eating Healthier**: 70% (Parent), 76% (Participants)

These results based on a sample size of parents n=412 and participants n=1087 from schools in Natick, Boston, D.C. and New York.
Sweden, The Proof

1.2 million boys born 1950-76; tested at 15, finished H.S. and all entered military 18.

270,000 brothers, 1300 identical twins

Tested cardio IQs, cognitive appraisal - both at 15 and 18.

Those that improved cardio fitness improved IQ

Also, those that improved went on to be better at education, more satisfaction with life, and higher socio-economic standing.
EXERCISE OPTIMIZES LEARNING

SYSTEMS

NEW Cell Growth

Cellular
Exercise Prepares The Learner

- Improves Impulse Control
- Improves Behavior
- Improves Attention
- Decreases Nudginess
- Improves Arousal – Lessens Fatigue
- Improves Motivation
- Helps Mood and Anxiety Regulation
- Combats Depression
- Improves Self-esteem
- Reverses “Learned Helplessness”
- Combats Toxic Effects of Stress Hormones
Role of PA in diabetes management and prevention

Hayes, Kriska

Lifestyle plays a vital role in both management of type I diabetes and prevention and management of type 2 diabetes. PA weight loss and weight management improves insulin/glucose profile for people with pre-diabetes, glycemic control with people with type 2 diabetes, and quality of life for everyone. Type 2 diabetes—prevents decreases in risk of cardiovascular cause mortality.

Average composite of 20 students brains taking the same test

BRAIN AFTER SITTING QUIETLY

BRAIN AFTER 20 MINUTE WALK

Research/scan compliments of Dr. Chuck Hillman University of Illinois
IF YOU’RE IN A BAD MOOD, GO FOR A WALK...

IF YOU’RE STILL IN A BAD MOOD, GO FOR ANOTHER WALK.

HIPPOCRATES
Exercise & Learning – The JACK Effect
NO RECESS
MICHAEL PHELPS OFF RITALIN
Exercise Protects against Opioids

• Many Epidemiologic studies throughout the years
• Now in US 1997 thru 2014- 191,000 students in high school
• If they had daily exercise or sport, they were less likely to use Opioid or Heroin
PRONE TO ADDICTIONS AND SUBSTANCE ABUSE ISSUES- BULIMIA, ETC.
When the Dog walker did not show up
Harvard on the Move, a new initiative sponsored by President Drew Faust (from left), kicked off with a panel discussion at Sanders Theatre on Wednesday. Panelists included Daniel Lieberman, professor of human evolutionary biology and department chair of human evolutionary biology in the Faculty of Arts and Sciences, Christopher McDougall ’85, author of "Born to Run: A Hidden Tribe, Superathletes, and the Greatest Race the World Has Never Seen," and John Ratey, an associate clinical professor of psychiatry at Harvard Medical School.
SITTING IS THE NEW SMOKING