Active Intelligence

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Definitions

- **Active**:
  - Body movement. Motion that increases the heart rate and circulates the blood to the systems of the body.

- **Intelligence**:
  - Brain power. The ability to think, to learn, to remember and to use the brain's power to impact one's life.

Active Intelligence

To increase
brain power
through
physical activity

The phenomenal power of the human mind

I cdnuolt blveiee taht I cluod aulaclty uesdnatnrd waht I was rdanieg. The phaonmneal pweor of the hmuan mnid! Aoccdrnig to a rscheearch at Cmabrigde Uinervtisy, it deosn't mttaer inwaht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frist and lsat ltteer be in the rghit pclae. The rset can be a taotl mses and you can sitll raed it wouthit a porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe. Amzanig huh? Yaeh, and I awlyas thought slpeling was ipmorantt.

Activity Break #1

High Knee Cross-Over

The Brain

- **Positive** neuroplasticity –
  - strengthen dendritic connections
  - increase cognitive reserve

- **Negative** neuroplasticity –
  - atrophy and weaken dendritic connections
  - decrease cognitive reserve

Positive Neuroplasticity

Factors that promote positive neuroplasticity include:

- physical activity,
- education,
- social interaction,
- intellectual pursuits, and
- cognitive remediation

Vance DE; Roberson AJ; McGuinness TM; Fazeli PL;
Journal of Psychosocial Nursing & Mental Health Services,
2010 Apr; 48 (4): 23-30

Negative Neuroplasticity

Factors that promote negative neuroplasticity include:

- poor health,
- poor sleep hygiene,
- poor nutrition,
- substance abuse, and
- depression and anxiety

Vance DE; Roberson AJ; McGuinness TM; Fazeli PL;
Journal of Psychosocial Nursing & Mental Health Services,
2010 Apr; 48 (4): 23-30

Brain Research (1/2)

- Compared brain structure and function in 10 athletes and 10 sedentary people.
- Average age 73
- Types of brain function included:
  - muscle control,
  - executive function
    - a type of cognition that includes working memory, self-monitoring and the ability to suppress distractions

Brain Research (2/2)

- Results: the brain's white matter fiber was better preserved among the athletes than the inactive people
- White matter plays critical role of transmitting messages between different regions of gray matter

Unpublished presentation at ACSM meeting in Denver, CO. June 2011

Reported on Health Day “Regular Exercise May Benefit the Brain as Well as the Body”

Activity Break #2

Heel Tap Cross-Over

Front and Back

Research: Physical Fitness and Academic Performance (1/2)

Fitness testing results of 800,000 CA students revealed a significant positive correlation between physical fitness and reading and math achievement tests.

Trost SG. & van der Mars, H.
Educational Leadership. 2010, 67(4), 60-65

Research: Physical Fitness and Academic Performance (2/2)

A study of children in Illinois found that those who performed well on two measures of physical fitness scored higher on state reading and math exams than low physical performers, regardless of gender and SES.

Trost SG. & van der Mars, H.
Educational Leadership. 2010, 67(4), 60-65

Research: Physical Activity and Academic Performance (1/2)

National health surveys of children and teens in the US, Australia, Iceland, Hong Kong, and U.K. have all reported statically significant positive correlations between physical activity and academic performance.

Trost SG. & van der Mars, H.
Educational Leadership. 2010, 67(4), 60-65

Research: Physical Activity and Academic Performance (2/2)

Data analyzed “from nearly 12,000 U.S. high school students who reported participating in school-based physical activity or playing sports with their parents were 20 percent more likely than their peers to earn an A in math or English.”

Trost SG. & van der Mars, H.
Educational Leadership. 2010, 67(4), 60-65

Research: Physical Activity and Cognitive Performance

- The Swedish National Study on Aging and Care
  - investigated the relationship of exercise intensity with different components of cognitive function
- 813 Swedish participants, age 60-96
- Light intensity exercise several times a week had the highest cognitive test score
- Inactive group had the lowest scores

Lindwall M; Rennemark M; Berggren T; Aging & Mental Health, 2008 Mar; 12 (2): 212-20

Activity Break #3

High Knee Cross-Over

With

Heel Tap Cross-Over

Physical Activity vs. Stress

- Stress erodes nerve cell connection in the brain and can lead to depression
- Physical Activity increases neurotransmitters:
  - Serotonin – provides a sense of well-being and happiness
  - Norepinephrine – attention and controls fight or flight response
  - Dopamine – plays a role in behavior and cognition, voluntary movement, motivation

Physical Activity and Behavior

- Evaluated on-task behavior 30 minutes before and 30 minutes after physical activity
  - 10 minutes of in class physical activity
- 8% improvement on-task behavior overall
- Least on-task students improved on-task behavior by 20%

Mahar, et al., Medicine and Science in Sports and Exercise, 2006, 38 (12): 2086-2094

Effects of Physical Activity on Brain Power

Increases:

- Happiness & well-being
- IQ – Learning potential (increased dendrites)
- Concentration
- Memory/retention
- Achievement (based on standardized tests scores and GPA)
- Perceptual skills
- On-task behavior (performance)

How to Increase Brain Power (1/2)

- **Increase physical activity**
  - throughout the day 60-10 Rule
- **Eat for Brain Power**
  - Fruits
  - Vegetables
  - Whole grains
- **Rest your Brain**
  - Quality sleep – no SCREENS (TV/computer/etc.) before bed

How to Increase Brain Power (2/2)

- **Challenge your Brain**
  - Do the math in your head
  - Read quality material
  - Learn something new
- **Protect your Brain**
  - Control stress
  - Wear a helmet
  - Careful with cell phone use

Activity Break #4

High Knee Cross-Over

With

Heel Tap Cross-Over

Plus

Extension

Putting it into Practice

- 60-10 Rule
- Organized vs. free play
- Competitive vs. recreational
- Plan It!

Story:

- Behavior management and listening skills

Active Intelligence

To increase brain power through physical activity

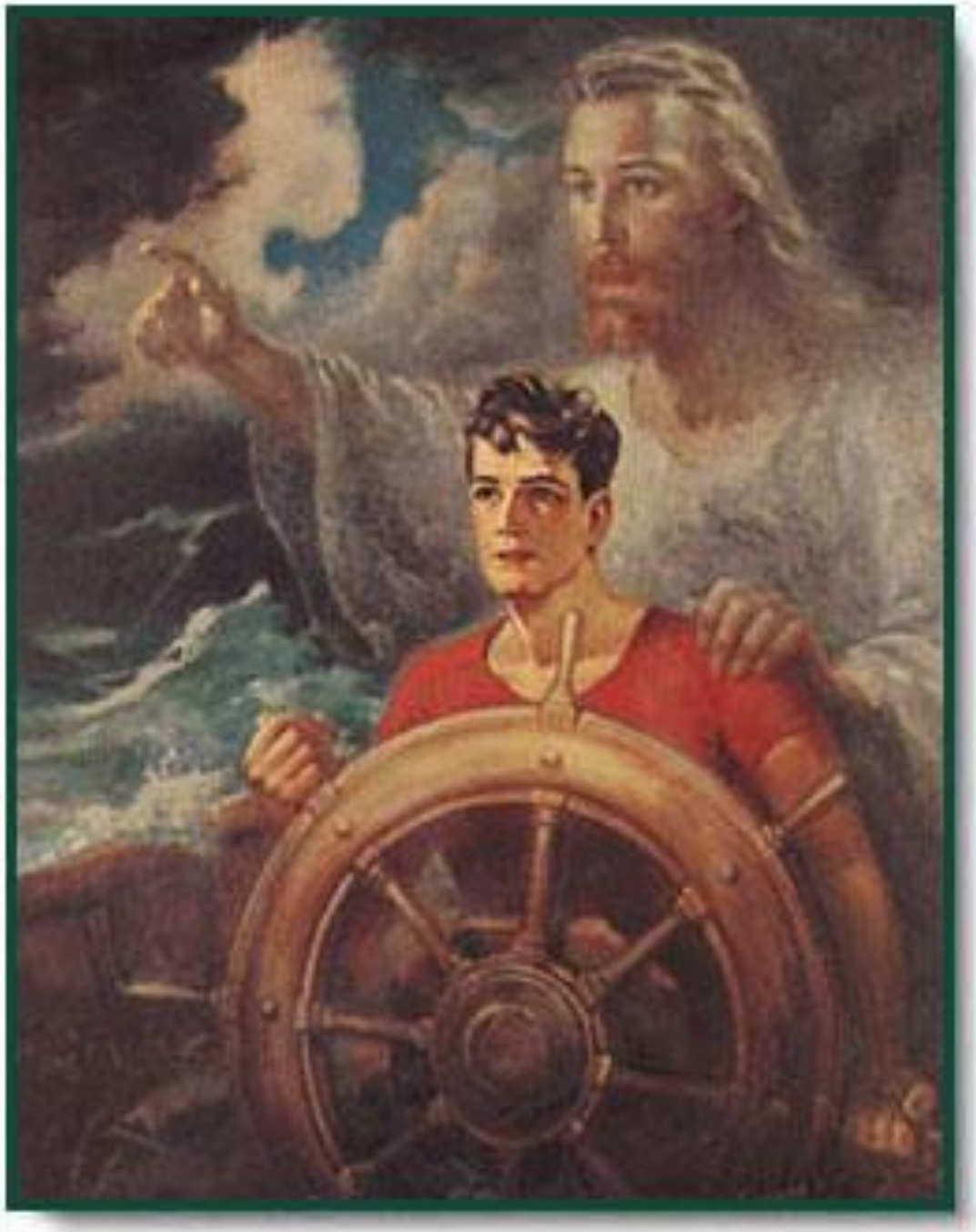
It's Time to MOVE !

2 Timothy 1:7

For God hath
not given us the
spirit of fear;

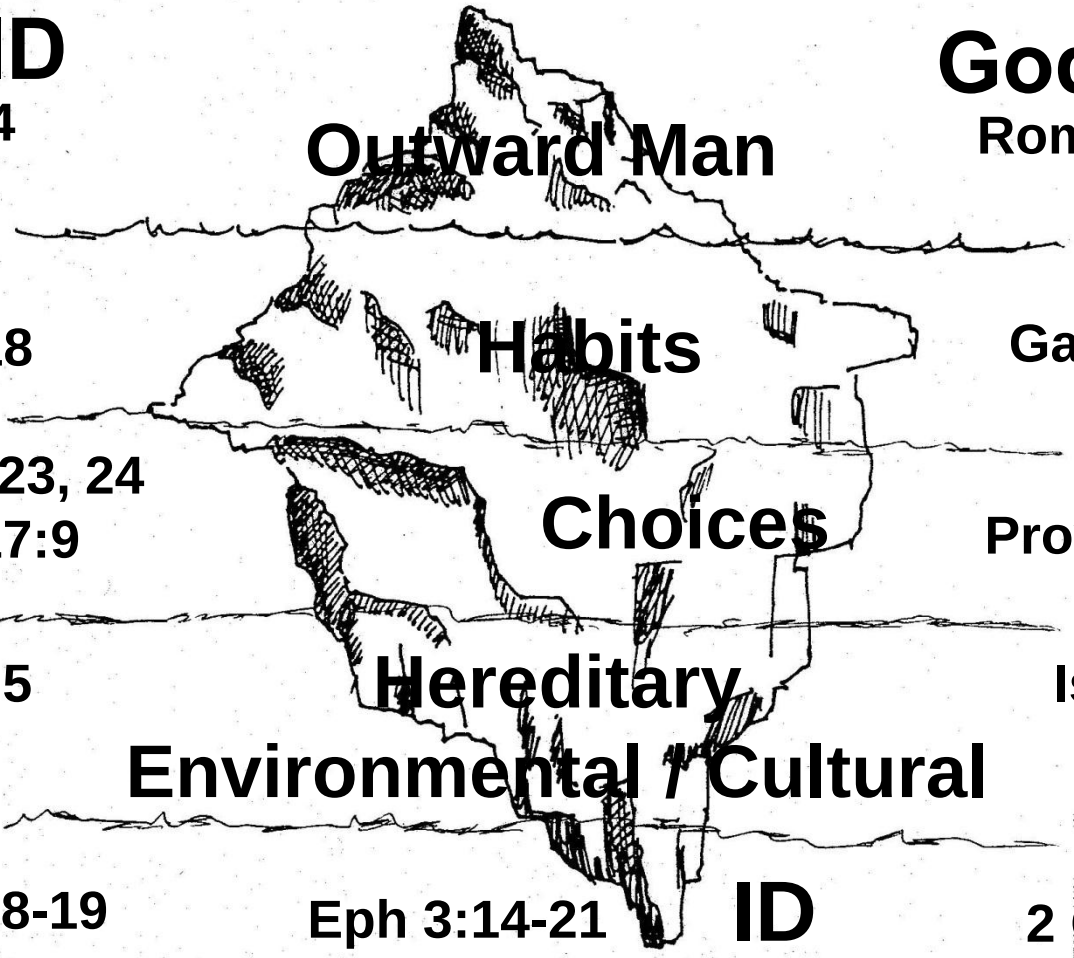
but of power,
and of love,

and of a
sound mind.



What do you Think?

Matt. 21:28



Man's ID
I Cor. 2:14

God's ID
Rom 1:20

Gal 5:19
Rom 7:18

Gal 5:22

Jer 13:23, 24
Jer 17:9

Proverbs 3:5-6

Ps. 51:5

Isa. 1:18

Jude 1:18-19

Eph 3:14-21

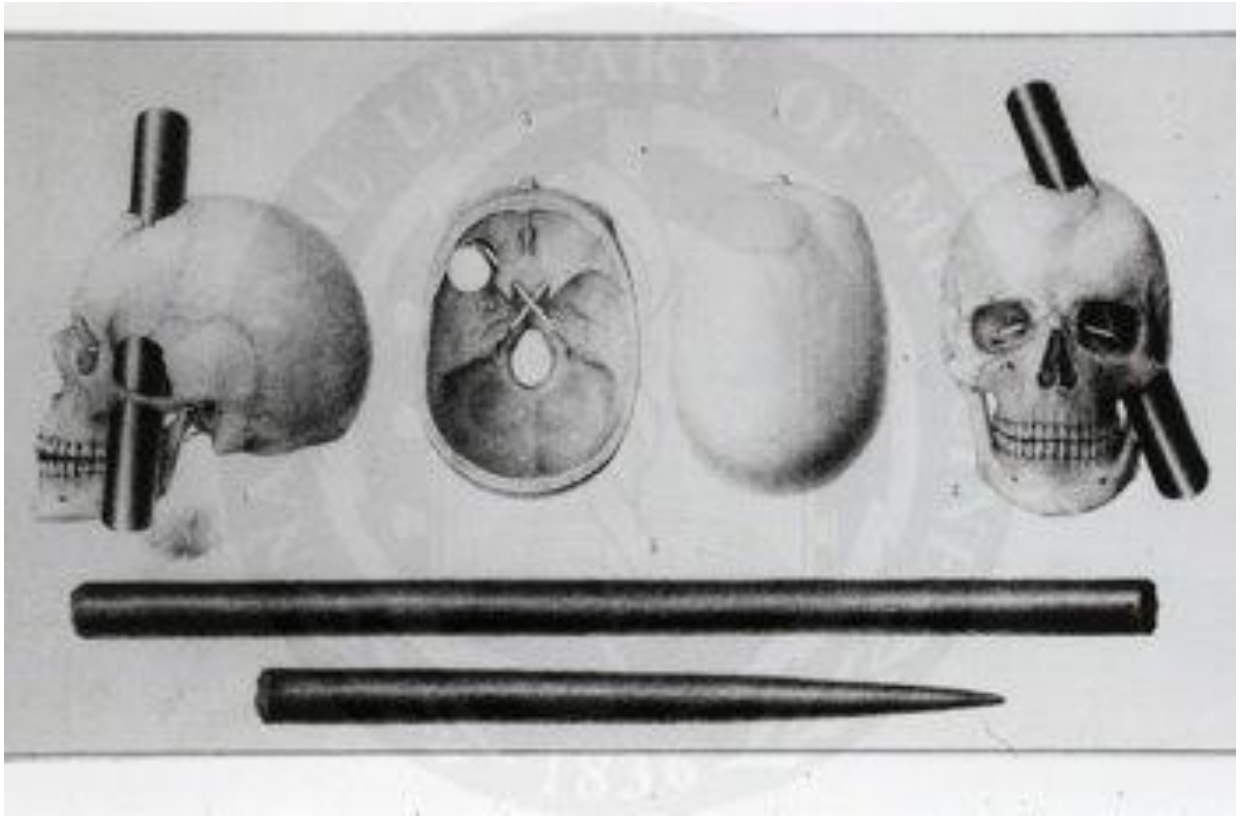
2 Cor. 5:17

EGO

SuperEGO

1 Sam. 16.7

Phineas Gage's accidental lobotomy



Magnificence of the Brain