Session Title: **Better Brains, Better Bodies: Building Mental Muscle (Parts 1 & 2)**
Presented by: **Lawrence Biscontini (FindLawrence.com) & Jonathan Ross (AionFitness.com, AbsRevealed.com)**

PART 1

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1) MEET YOUR BRAIN

a) Old Brain/New Brain
   i) Old Brain – "lizard" brain; deepest part of the brain (Limbic system); 60-200 million years old
      (1) Most important parts are amygdala (emotions), hippocampus (memories), substantia nigra (movement)
      (2) Very old, very well-established, but susceptible to injury
   ii) New Brain – "human" brain; outer part (cortex); cortex 6 million years old; pre-frontal cortex 150k years old)
      (1) Our brains are all wired differently – what you do and what you learn physically changes the way your brain is wired. (eg., Language not always located in the same place in everyone's brain)
      (2) Stress makes us more likely to bypass cortex and think and act according to "old" brain drives.

2) BRAIN GONE BAD

a) Most of the brain damage that occurs during usual aging is identical to the brain damage found in **all** common neurodegenerative diseases. Key point: Brain disease isn't genetic (Michael J. Fox example)
b) Although your brain is less than 2% of your body weight, it uses about 20% of your oxygen. Free radical injury to the mitochondria progressively reduces the ability of the mitochondria to make ATP.
c) How do mitochondria decay?
d) 4 main processes of mitochondrial decay
   i) Decline in energy supply, mostly from free radical damage to the mitochondrial membrane
   ii) Cumulative free radical damage to lipids and proteins inside the cell which turns them rancid
   iii) Chronic inflammation in the brain, caused by free radical driven overexpression of the inflammatory cascade.
   iv) Free radical damage to mitochondrial DNA, which destroys bits of genetic code.
e) Saving your mitochondria and your brain – only through mitochondrial antioxidants.
f) Fight or Flight – Not Anymore
   Fight/flight reaction occurs automatically by triggering the sympathetic branch of the autonomic nervous system. Sympathetic nerves involved in fight or flight use acetylcholine as a neurotransmitter, as does your hippocampus. Acetylcholine + glutamate + NO together inflame the hippocampus. Repeated life situations, loosely called "stress," that generate vast numbers of inflammatory free radicals in the hippocampus induce genetic expression of inflammatory cytokines. Adding inflammatory zenobiotics (toxins in environment like aluminum and mercury in food and carbon monoxide and sulphur dioxides in the air). CDC report that Alzheimer's is the fastest growing category of disease over the last 20 years.
g) Most brain degeneration is from mitochondrial decay…how it manifests depends on what brain structure is most effected…but it means that brain diseases all fundamentally have the same origin.
   i) Alzheimer's – decay occurs in the hippocampus
   ii) Parkinson's – decay occurs in the substantia nigra

3) CHANGING THE WAY PEOPLE THINK AND FEEL ABOUT EXERCISE AND NUTRITION

a) Skill/Talent
   i) Struggling isn't an option, it's a biological requirement
   ii) Brains constantly look for cues for where to spend energy now. Goals/motivation predates consciousness. "The Scrooge Effect" = brains are always unconsciously keeping energy locked in a vault and is stingy. When "Scrooge" is hit with the right cues, the vaults open.
   iii) Eisenstadt's research: great historical figures often have lost a parent at an early age. It sends a primal cue that "you are not safe." This heightens the focus at a time when the brain is most receptive to learning and mastering new skills. The mechanism of "ignition" was the primal cue.
   iv) Skill-building starts as confidence-building
   v) Carol Dweck's research into effort-praise vs. intelligence-praise: praising someone's "intelligence" makes them work less hard…praising their effort (even if they did well) makes them continue to work hard.
   vi) Skill is the insulation that wraps neural circuits w/myelin and grows according to certain signals (which makes them fire more easily)

vii) Why do young people make bad decisions? All the circuits are there, but they have little myelin (Bartsokis' research) myelin = wisdom

viii) Teaching is the process of making yourself progressively unnecessary

b) Change
   i) "People resist change." Not really…example of having a baby
   ii) Framework:
      (1) The Rider (rational side – your cortex)
      (2) The Elephant (emotional side – your amygdala)
      (3) The Path (your environment, surroundings, lifestyle)
   iii) To Guide Change in any Situation:
      (1) *Direct the Rider* – what looks like resistance is often a lack of clarity. So provide crystal-clear direction. (e.g., "drink 1% milk")
      (2) *Motivate the Elephant* – What looks like laziness is often exhaustion. Critical to engage people's emotional side.
      (3) *Shape the Path* – What looks like a people problem is often a situation problem.
   iv) Direct the Rider
      (1) Big problems are rarely solved with commensurately big solutions.
      (2) Our rider has a problem focus when needs a solution focus.
      (3) The most familiar path is always the status quo.
      (4) Ambiguity is the enemy. Any successful change requires a translation of ambiguous goals into concrete behaviors. In short, to make a switch, you need to script the critical moves. (an example of doing this poorly is the mypyramid.gov graphics.)
      (5) When the Elephant wants something badly, the Rider can be trusted to go along – what choice does he have? – and he may actually begin to formulate rationalizations to excuse the breach.
      (6) To appeal to the Rider, the game plan should be simple. First, follow the bright spots (study what has worked, even in a tough situation.) Next, give direction to the Rider, both a start and a finish.
   v) Motivate the Elephant
      (1) We know there's a difference between knowing how to act and being motivated to act. But when it comes time to change the behavior of other people, **our first instinct is to teach them something**.
      (2) The elephant tends to take the rosiest interpretation of the facts (e.g., everyone considers themselves above average drivers.) This is called a "positive illusion."
      (3) In fighting for change, we've got to find the feeling.
      (4) Negative emotions tend to have a "narrowing effect" on our thoughts. Positive emotions are designed to broaden and build our repertoire of thoughts and actions.
      (5) People find it more motivating to be partly finished with a longer journey than to be at the starting gate of a shorter one.
      (6) When you engineer early success, what you're really doing is engineering hope. It's "Elephant Fuel."
      (7) Select small wins that have two traits: (1) They're meaningful, and (2) They are "within immediate reach."
      (8) When people make choices, they tend to rely on one of two basic models of decision making: the consequences model or the identity model.
         (a) How can you make your change a matter of identity rather than a matter of consequences?
      (9) 3 Identity Questions:
         (a) Who am I?
         (b) What kind of situation is this?
         (c) What would someone like me do in this situation?
      (10) People are receptive to developing new identities…that identities grow from small beginnings.
      (11) How do you keep the elephant motivated when it faces a long, treacherous road? You need to create the expectation of failure. (not the expectation of failure of the "mission" but failures on the route to success.)

(12)"Everything is hard before it is easy."
(13)Create the expectation of failure so that you don't trust the initial flush of good feeling at the beginning of any big change (because often what comes next is hardship, toil, and frustration.)
(14)Motivation comes from feeling – knowledge isn't enough to motivate change. But motivation also comes from confidence. The Elephant has to believe that it's capable of conquering the change.

vi) Shape the Path
(1) What looks like a character problem is often correctible when you change the environment.
(2) Developing a mental plan is called an "action trigger." Action triggers have a profound power to motivate people to do the things they know they need to do. The value of action triggers is in preloading a decision. By preloading the decision, we conserve the Rider's self-control. Action triggers protect goals from tempting distractions, bad habits, or competing goals.
(3) When behavior is habitual, it's "free" – it doesn't tax the Rider's resources.

4) THIS IS YOUR BRAIN ON EXERCISE

a) The brain appears to be designed to solve problems related to **surviving** in an **unstable environment**, and to do so in **nearly constant motion**.
b) Integrating exercise into those 8 hours (is that all?) of work or school will not make us smarter; it will return us to *normal*.
c) Important to mix in some form of activity that demands coordination beyond putting one foot in front of the other. Greenough worked on an experiment in which running rats were compared to others that were taught complex motor skills, such as walking across balance beams, unstable objects, and elastic rope ladders. After 2 weeks of training the acrobatic rats had a 35% increase of BDNF in the cerebellum, whereas the running rats had none in that area. POINT: Your workout regimen has to include skill acquisition and aerobic exercise.
d) With the repetition, you're also creating thicker myelin around the nerve fibers, which improves the quality and the speed of signals and, in turn, the circuit's efficiency.
e) Since exercise influences metabolism, it serves as a powerful way to influence synaptic function, and thus the way we think and feel.
f) In neurological terms, fear is the memory of danger.
g) We can't erase the original fear memory, we can essentially drown it out by creating a new memory and reinforcing it. By building up parallel circuitry to the fear memory, the brain creates a neutral alternative to the expected anxiety, learning that everything is OK.
h) Simply by taking action we're circumventing the mechanism for the fear memory. The basal nucleus is the action pathway, and we can even spark it with thought.
i) Outrunning the fear with exercise:
i) It provides distraction
ii) It reduces muscle tension
iii) It builds brain resources
iv) It teaches a different outcome
v) It reroutes your circuits (use sympathetic nervous system to move instead of wait and worry)
vi) It improves resilience (learn to control anxiety and not let it become a panic)
vii) It sets you free (literally…if you're locked down, you'll feel more anxious)
j) Exercise with somebody. It offers a sense of safety, but it also increases levels of serotonin immediately, just from being around another person.
k) Our brains can repair themselves if we keep our bodies moving. From an evolutionary perspective, exercise tricks the brain into trying to maintain itself for survival despite the hormonal cues that it is aging.

5) PRACTICAL EXERCISES – TAKE NOTES!

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---------- **PART 2** ----------

1) INTRODUCTIONS

a) Nämaste! ("*My inner peace meets, greets, and salutes your inner light*")
b) Gratitude
c) Our Purpose:
d) Buzzwords: "neuroplasticity"
e) Music
f) Recent Research:
   i) .
   ii) .
   iii) .
   iv) .
g) Learning Tools/Equipment: (small box w/7 objects, handouts, Classical music, cultural sensitivity…)

2) THEORY

a) Major Sections/Areas of the Brain

PARIETAL LOBE	
FRONTAL LOBE	
OCCIPITAL LOBE	
TEMPORAL LOBE	
CEREBELLUM	
BRAIN STEM	

Take-Away for Trainers/Group Ex:

	LEFT	RIGHT
CENTER	SPEECH, LANGUAGE, MATH	
	RIGHT SIDE OF BODY	LEFT SIDE OF BODY
	VISUAL DETAILS	PATTERNS OF DETAILS
	MEMORY OF NAMES	MEMORY OF IMAGES & FACES
	ACCOUNTING & ANALYTICAL	CREATIVE
FRONT	HAPPINESS	NEGATIVE EMOTIONS, WORRY
BACK	SPATIAL ZONES	SPATIAL ZONES

Take-Away for Trainers/Group Ex:

CENTER BRAIN
EMOTIONS
EXECUTIVE AND SOCIAL FUNCTIONS
FRONT — LONG TERM AND SHORT TERM MEMORY
MEMORY OF SOUND, SIGHT, SMELL IN SEPARATE PLACES

b) Major Functions of the Brain

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MEMORY: both LONG AND SHORT TERM, plus EXECUTIVE & SOCIAL, EMOTIONAL, LANGUAGE, MATH, AND SPATIAL SKILLS

Take-Away for Trainers/Group Ex:

c) Factors Affecting Function

MEMORY WORKS BEST UP TO 7 ITEMS
↑CORTISOL = ↓ MEMORY (CORTISOL KILLS OFF BRAIN CELLS!)
↑ SLEEP + REST = ↑COGNITIVE PROBLEM SOLVING
↑GLUCOSE = ↑MEMORY
↑ANTIOXIDANTS + CHOLINE= ↑ MEMORY
↑BACKGROUND MUSIC + NOISE = ↓MEMORY
↑STORIES = ↑MEMORY, ↑LISTS = ↓MEMORY
↑DEPRESSION = ↓MEMORY
↑STRESS = ↓MEMORY
ALCOHOL

d) What You CANNOT Change
e) What you CAN Change by Training

3) PRACTICAL

Class Sample Script:
This class will help train your brain like a muscle. The more you use it the more results you will get. Your brain can get stronger. Just like in the gym, you will get tired after a certain number of repetitions, so only do what's comfortable. You will find some of these exercises easy and some difficult, just like working the other muscles.

SHORT TERM MEMORY WITH NO ORAL CUES

1. OPEN THE BOX AND TAKE OUT ITEMS 7 FOR GUESTS TO SEE.
2. PUT CONTENTS BACK IN THE BOX.
3. ASK GUESTS TO RECALL TO THEMSELVES THE ITEMS IN SILENCE ONLY

SHORT TERM MEMORY WITH ORAL CUES

OPEN THE BOX AND TAKE OUT ITEMS FOR GUESTS TO SEE, THIS TIME ONLY SAYING OUT LOUD THE NAME OF EACH ITEM

1. HAVE GUESTS REPEAT OUT LOUD TO THEMSELVES THE CONTENTS
2. PUT CONTENTS BACK IN THE BOX
3. HAVE GUESTS RECALL OUT LOUD TO THEMSELVES THE OBJECT NAMES

SHORT TERM MEMORY WITH A STORY

TELL A STORY WITH OBJECTS FOR EASIER RECALL OR MAKE ANAGRAM

1. ASK GUESTS TO RECALL WHAT IS YOUR NAME
2. Party Idea: My name is ____ _____. I'm coming to a party and I'm bringing (L___) and (B____). What are you bringing? You can or cannot come.
3. I'm going to the grocery storE and getting milk. Next person repeats and adds one item. Continue until at least 7 items are chosen and repeated.
4. Rita's Party Introduction: My name is Rita and I'm from Puerto Rico and I love to dance on a table. Next person

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Summary:

Homework:

To encourage mental training, also visit (both PAID and FREE areas):
6seconds.org (FREE) brainmap.com (FREE), www.implicit.harvard.edu (FREE), opencenter.org (FREE),
Brainage.com (PAID), science.education.nih.gov
mensa.org (FREE and PAID), funeducation.com,
myersbriggs.org (FREE and PAID),
mentalstrength.com (PAID),
hbdi.com (PAID), (Hermann brain dominance indicator) (PAID)

Final Take-Home Messages:

For more details on some of the sources used and further exploration of brain-related concepts, books, and resources:
http://www.aionfitness.com/brain.html

Contact:

Jonathan Ross, www.AionFitness.com; video series on Discovery Health, blog and more!
Abs Revealed Products and Information:
Main site: www.AbsRevealed.com
- **Book**, **iPhone app**, **video library** available: www.AbsRevealed.com/buynow.php
- Extra exercises not included in the book available on the "Deleted Scenes" page

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