



OPTIONS CENTER EDUCATION TOPIC



PACE Part I: Water

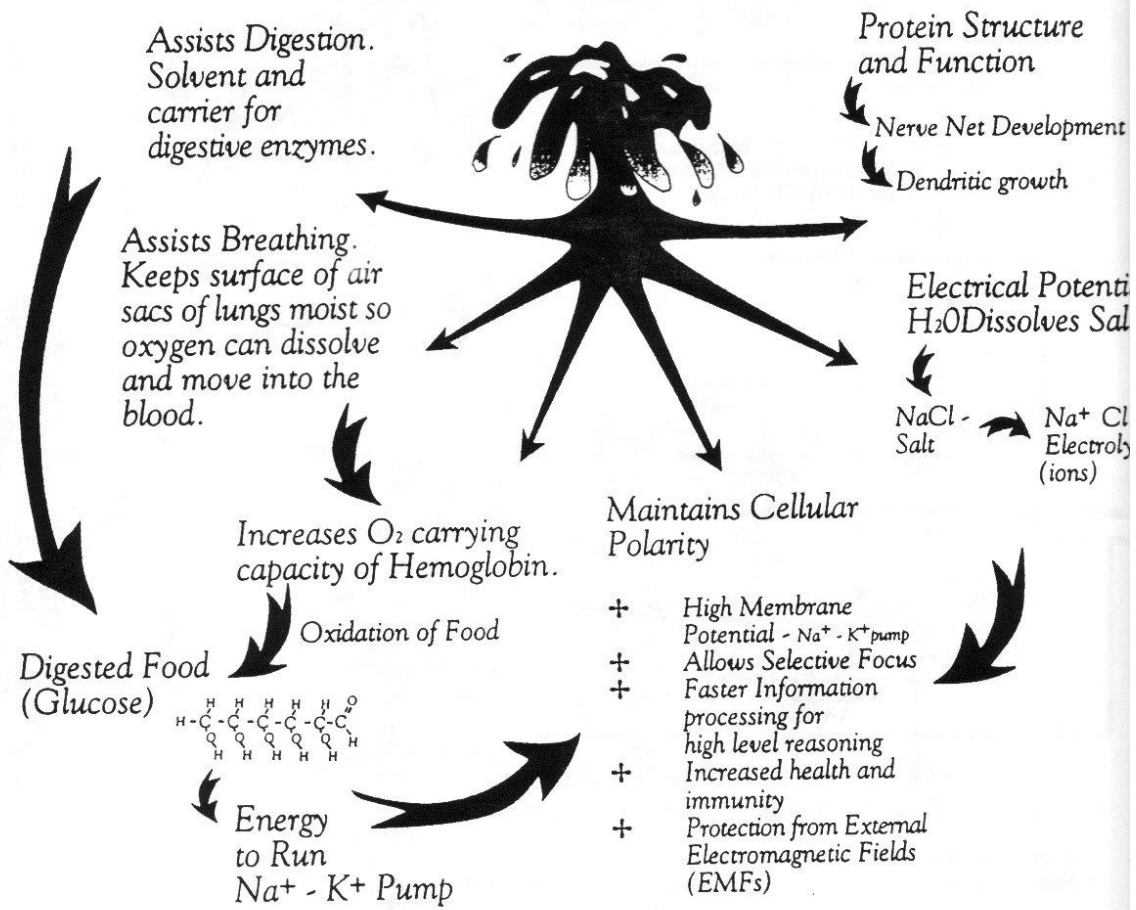
The following is the **first** in a series of articles about getting ready to learn through a process called PACE. To check for PACE, notice the four elements important to whole brain learning: a **Positive** attitude, **Active** participation, **Clear** focus of attention and an **Energizing** motivation or goal.

In this five-part series, I will describe the elements of P.A.C.E. P.A.C.E. is an acronym standing for: P = Positive attitudes, A = Actively participating, C = Clear focus of attention, E = Energizing motivation or goal. We do specific exercises for each letter, starting with the "E" and then going in reverse order. We begin by energizing with water. This Education Topic is devoted to the first part, **water** [*Brain Gym® Teacher's Edition Revised*, p. 24].

Water is a natural conductor of electrical energy and makes up 75% of our body weight. Water activates all the functions of the body including breaking down salts which form electrolytes (the positive and negative particles which allow electricity to flow). The brain and consequently the central nervous system are constantly producing on average 25 watts of electricity as messages are passed between the brain, sense organs, and muscles. When we learn new information, our brain attaches the information to neurons which form networks as more information is learned. Water helps the neurons and the networks function. When we are dehydrated, we cannot think properly; and we certainly cannot learn. This fact is backed by a study of the National Institute for Diabetes and Digestive Disorders in Bethesda, Maryland. It showed people who began drinking enough water increased the oxygen carried to their brains by as much as 100 to 1,000 times.

Water

Assists Learning and Thought



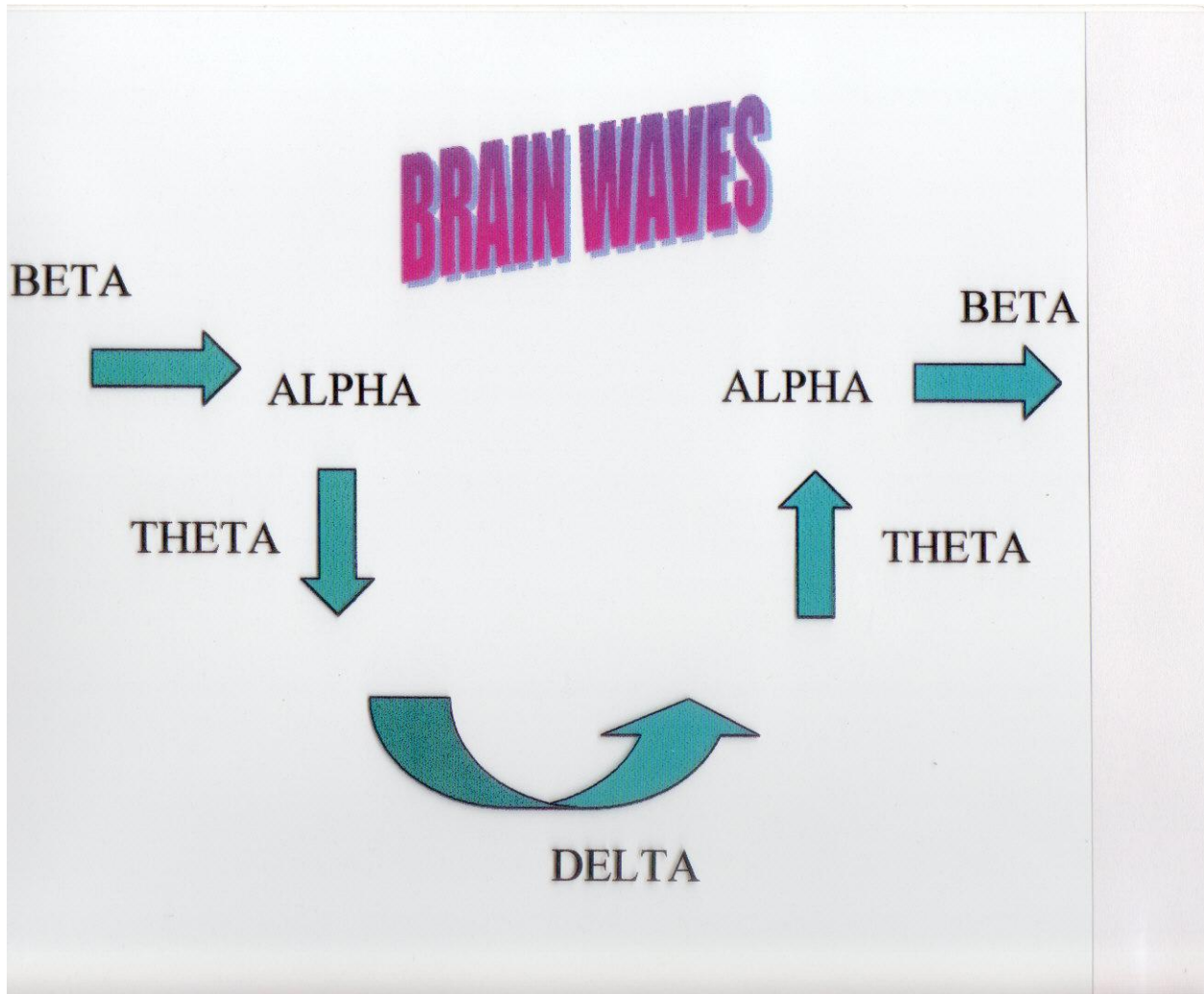
From *Smart Moves: - Why Learning is Not All in Your Head*
 Carla Hannaford, Ph.D. Great Ocean Publishers, Arlington Virginia 1997

Oxygen is carried by our blood; oxygen breaks down our food to give us energy. Stress can be detrimental to getting enough water. When we are under a great deal of stress, the adrenaline output in our bodies increases, allowing us to react quickly in order to survive. But the adrenaline also produces a hormone called cortisol, which decreases learning and memory functions within the body.

Consuming mass quantities of coffee or soda throughout the day instead of water is also detrimental to keeping hydrated. Caffeine -- found in coffee, tea, and soda -- is a diuretic, which actually takes water out of the body and depresses the system. The sugar found in most sodas (12 teaspoons per can) is also harmful in that it binds up the water and doesn't make it readily available to the cells. But switching to diet soda doesn't help and, in fact, makes the situation worse. Diet soda has lots of sodium, which also ties up the water so it is not accessible to the cells.

Sue Maes explains the brain waves by saying: This shows how we move through the different brain waves during a normal day cycle. When we are awake and consciously doing something, we are in Beta brain waves. When we get a wonderful visualization or get calm with meditation, we move into alpha brain waves. Theta brain waves happen just as we are falling asleep. When we get into a nice, deep sleep we have achieved Delta brain waves. Then as we start to awaken again we go through Theta, Alpha and back to Beta.

Normally, in a day we move through these brain waves. So when we wake up in the morning, we're in nice Beta waves and awake. As we get tired or creative we move into our alpha waves. Theta waves are where we're just awakening or just about asleep.



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Sue Maes uses an EEG [Electro Encephalograph] machine called ND 2000 which uses the Penniston protocol. Combined with a computer it is able to monitor the changes in the brain waves as her students/clients do Brain Gym® exercises. The person has electrodes hooked up to their head. A grounding wire is used to prevent shock. The information goes into a black box that converts the raw signals into easily read graphs.

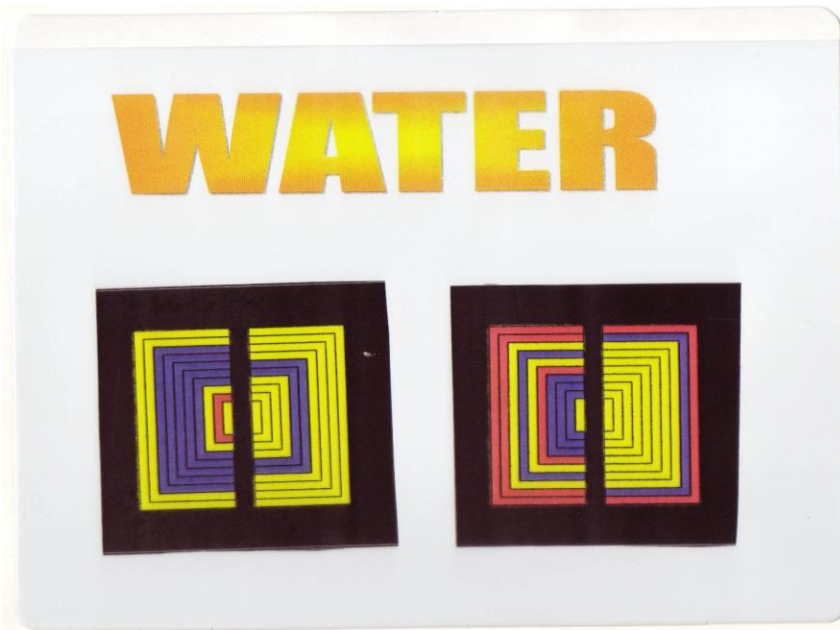
With EEG-biofeedback, the electricity is measured speeding from one cell to the next in hertz-speed [cycles per second] and in micro volts, which is how many cells are involved in the task.

The following graphs have been produced by Sue's machine as two people drank water. This is an explanation of Sue's for the graphs: Each new section starting in the center and working out to the periphery measures two second intervals of EEG activity. The different colors refer to the different kinds of brain waves. Both people start out in yellow Theta level. Theta level is the level right before falling into or arising from a deep sleep.

Person A's right brain soon goes into the purple, which signifies Beta Waves. Beta waves are very important because in this state peak performance is done. This is when we are awake and consciously doing something. It can be a state of vigilant concentration, sharp focus of attention. This is what ADD students need for conscious thinking, problem solving, memory retention, intelligence, efficient and strong energy output.

Person B's right brain ended in a few seconds in alpha which is when we get a wonderful visualization or get calm with meditation. It is located in the visual cortex.

Water allows the brain signals to work from one side of the brain to the other.



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PERSON A
Right Brain/Left Brain

PERSON B
Right Brain/Left Brain

****All of these reasons tell us to drink plenty of water.***

In summary, P.A.C.E. is an acronym for the five movements that prepare us for new learning -- to become Positive, Active, Clear, and Energized.

Again, PACE is PREPARATION FOR LEARNING!

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