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What is the relationship between ADHD, physical activity and diet?

Attention Deficit Hyperactivity Disorder (ADHD – previously known as attention deficit disorder) is a neurobehavioral disorder characterized by pervasive inattention and hyperactivity-impulsivity that often results in functional impairment (CDC, 2005). ADHD becomes apparent in some children in the preschool and early school years (NIMH, 2008). It is hard for these children to control their behavior and/or pay attention. It is estimated that between 3 and 5 percent of children have ADHD, or approximately 2 million children in the United States. This means that in a classroom of 25 to 30 children, it is likely that at least one will have ADHD (NIMH, 2008). In Massachusetts about 5.5% of all children ages 4-17 have ADHD (CDC, 2005).

There are three patterns of behavior that indicate ADHD (NIMH, 2008).

1. The predominantly hyperactive-impulsive type
2. The predominantly inattentive type
3. The combined type - displays both inattentive and hyperactive-impulsive symptoms.

Those with ADHD have been described as prisoners of the present. It is difficult for them to defer the achievement of goals so it might seem as if they lack motivation or focus. Dr. John Ratey of Harvard Medical School (2008), an expert in ADHD, suggests seeing ADHD as a continuum and that everyone has a different degree of attention deficit.

ADHD and Diet

More and more evidence is showing that healthy eating plays a vital role in reducing hyperactive behavior. The peer reviewed medical journal the Lancet (McCann et al, 2007) published research that found artificial colors and preservatives promote ADHD. The study stopped short of a cause and effect relationship. However, upon release of the study the United Kingdom promptly recommended that children avoid food additives such as synthetic colors (e.g., FD & C Yellow #5, FD & C Red #3, FD & C Yellow #6, Cochineal, Quinoline yellow, FD & C Red #40, and sodium benzoate – These additives are some of the most common ingredients in packaged foods Winter, 2004). For a thorough discussion of these food additives see Winter, 2004.

Over thirty years ago Dr. Ben Feingold claimed that artificial colors and other food additives (AFCA) negatively affected behavior in children. The main effect of AFCA is to produce overactive, impulsive and inattentive behavior (i.e., hyperactivity). Dr. Feingold's program currently recommends avoiding ALL synthetic/artificial food additives.

In summary, common food additives and colorings can increase hyperactive behavior and decrease attention in a broad range of children, not just for those whom hyperactivity has been diagnosed as a learning problem (McCann et al, 2007). Food additives exacerbate hyperactive behaviors (e.g., inattention, impulsivity and overactivity) at least into middle childhood (McCann et al, 2007; Rosenthal, 2007). Lastly, this study lends more support to a whole food diet (Willett, 2005).

ADHD and Physical Activity

Dr. Ned Hallowell and Dr. John Ratey (1994a, 1994b, 2005; Ratey, 2008) describe ADHD as attention variability disorder; the deficit is one of consistency. They note that inattention is always part of this

disorder and sometimes hyperactivity is present as well. It is called ADHD regardless of whether hyperactivity is involved.

Paradoxically, one of the best treatments for ADHD is rigid structure (Ratey, 2008). Hallowell and Ratey recommend highly structured forms of physical activity such as martial arts, figure skating, gymnastics or dance as benefits to one who has been diagnosed with ADHD.

Generally, the problem for people with ADHD is that their attention system is discontinuous and uncoordinated. The attention system ties in with movement and exercise. The areas of the brain that control physical activity also coordinate the flow of information.

It was once thought that the only function of the cerebellum was to control movement. When we learn a new physical activity such as serve in tennis or a folk dance our cerebellum is working hard. The cerebellum makes up 10% of the brain's volume, but it contains half our neurons, which means it is a densely packed area filled with activity. We now know that the cerebellum also updates and manages the flow of information through the brain. People with ADHD can have parts of their cerebellum that are smaller and don't function properly, causing disjointed attention (Ratey, 2008).

There is a strong relationship between movement and attention. They share overlapping patterns. This is why activities like dance, gymnastics, and martial arts work well for ADHD children. They have to pay attention while learning new movements. This engages and trains both systems. Exercise is a tool to help those with ADHD to help manage their symptoms along with their medication (Ratey, 2008). The best strategy is physical activity/exercise in the morning. Ratey (2008) suggests regular aerobic workouts at 65% to 75% of maximum heart rate for twenty to thirty minutes each school day or a minimum of thirty minutes of daily aerobic activity. It is believed that each workout provides sixty to ninety minutes of subsequent calm, focus and clarity for those with ADHD.

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