# Smarter Babies Through Water?

## Research shows that swimming can actually improve your child's brain development

**By Lana Whitehead**

**SWIMMING HAS BEEN ENJOYED SINCE PREHISTORIC TIMES.** It is a fun, full-body exercise that's easy on the joints and a great competitive sport. For children, learning to swim can help them feel more confident around water and, ultimately, keep them safer around water. Additionally, swimming brings another benefit to kids and it may surprise you. Swimming is beneficial for a child's brain development.

Fascinating new research shows that a baby's brain develops through bilateral cross patterning movements like the movements required for swimming.

Queensland University School of Nursing is using swimming to help people diagnosed with dementia access their memories because the bilateral cross patterning movement aids overall efficiency in brain processes. For children, the more bilateral cross patterning movements, the more nerve fibers develop in the corpus callosum. The corpus callosum is a tract of nerve fibers — 200 million nerve fibers that connect the right and left hemispheres of the brain and facilitate the communication, feedback and modulation from one side of the brain to the other. Cross patterning movements such as swimming activate both cerebral hemispheres and all four lobes of the brain simultaneously, which can result in heightened cognition and increased ease of learning.

Recent studies have also shown the amount of person's movement affects the size and memory capacity of the hippocampus. The hippocampus is a memory and learning area of the brain located in the medial temporal lobes. Art Kramer and his colleagues at the University of Illinois and the University of Pittsburgh discovered that people who move more or "higher fit people" have bigger hippocampi. They concluded that more tissue in the hippocampus equates with increased ability in certain types of memory.

Scientific studies of young swimmers at the German Sports College, Cologne, have shown that early water movement develops the child physically, mentally and emotionally. As compared with a control group which did not take year-round lessons, the children who swam consistently from infancy (3 months) were significantly stronger and more coordinated when tested at 2, 3 and 4 years of age.

The children also scored higher for intelligence and problem-solving, which carried over into excellence in academic achievement. Emotionally, they were found to be more self-disciplined with greater self-control and an increased desire to succeed. From consistent goal setting and skill achievement in swimming, they rated higher in self-esteem. Finally, the children were more independent and comfortable in social situations than the control groups.

Earliest learning is stimulated by reflexes which develop into movement exploration. When the exploration experiences are repeated, nerve pathways are created. These new nerve pathways set down intricate neural networks that direct a child's higher level brain development. The more plentiful and diverse the experiences, the more complex patterns for memory, learning and reasoning will be established.

Research in Australia has also demonstrated that early participation in swim lessons can accelerate a child's cognitive development. Starting in 2009, Griffith University embarked on a four-year early years swimming research project with 45 swim schools across Australia, New Zealand and the United States. The preliminary results show that children, younger than age 5 involved in learning to swim, are more advanced in their cognitive and physical development than their non-swimming peers. The results also show minor benefits to social and language development. In 2011 researchers in Melbourne, Australia, reported intellectual and physical benefits for early swim lessons. The scientists determined, children who were taught to swim by 5 years of age, had statistically higher IQs. The research also showed that by moving in high water, resistance strengthened the child's muscles more rapidly than, for example, playing on the floor, because swimming activates more large muscle groups.

Scientific studies have shown participation in swim class helps to strengthen a child's self-confidence. In a longitudinal study, Dr. Liselott Diem and her colleagues reported that children, who took part in baby swim lessons from the age of 2 months to 4 years, were better adapted to new situations, had increased self-confidence and independence than non-swimmers. In swim class the child cooperates within a social structure to take turns, to share and to cooperate. This fosters a sense of belonging, which builds self-esteem and develops social confidence. More recent research has shown that swim lessons for babies advanced their physical development.

Studies conducted at Norwegian University of Science & Technology with Dr. Hermundur Sigmundsson and his colleagues found baby swimmers developed better balance, movement and grasping techniques than non-swimmers. This difference persisted even when the children were 5 years old; the baby swimmers still outperformed their peers in balance, movement and grasping skills.

So, whether your child wants to be an Olympian or just a safe, skilled swimmer, parents and educators can use this information to make sure aquatic training is given top priority and is recognized as an invaluable tool to their child's learning experiences.

**Lana Whitehead** *is the founder of SWIMkids USA in Mesa. Conceived as a child-development center, the facility supplements its pioneering swim instruction with child-friendly programs in gymnastics, dance, and jujitsu. Lana holds degrees in exercise physiology and special education and her involvement in the world of swimming as an author, educator, swimming official and speaker has also taken her all over the world including to the U.S. Olympic Training Center and the World Aquatic Baby Congress. For more info, visit www.swimkidsusa.us.*

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