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## **The Effect of an Infant Exercise Class with Parental Guidance on Tantrum Levels**

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### **Abstract**

One of the areas that has remained unexplored in infant educational research is the effect of age appropriate exercises with a parent on tantrum levels and relaxation. Research has shown that baby exercises can have a positive impact on infants [1], however little evidence exists on how exercises impact infant tantrum rate and calmness. The setting of this study was Zumbini classes including 42 children ages 5 months to 60 months that have participated an average of 8.4 months in Zumbini classes. Certified Zumbini instructors led these classes where each child had at least one parent participate with their infant. Tantrum levels were measured before and after participation of these classes.

### **1. Introduction: statement of the problem**

The goal of this study was to assess the effectiveness of an infant exercise class on tantrum levels and relaxation on young children. Studies have shown that different types of exercises can assist children in many ways. The University of Montreal determined that these positive effects can actually occur before birth. This study discovered that women who exercised appropriately had infants that matured more rapidly. It was reported that eight-day-old newborns had brains as active as those of eight-month-olds.

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The findings suggest that only twenty minutes of exercise at three times a week enhanced a child's brain development and plasticity, meaning the ability to make new connections [2]. A child exercising after birth has been shown to be quite beneficial as well. In a recent survey at the Los Angeles College District, 88% of parents were concerned if it was dangerous to have an infant exercise at all. The idea of parents helping their infants to do physical exercise is a great way not only to interact with their babies but also to help promote their physical development according to several studies. Books, baby exercise classes and parenting videos are some sources where parents can get ideas on how to perform age appropriate exercises with their young children. Exercise promotes motor development in infants. Physical activity also plays an important role in babies' emotional, social, and cognitive development by encouraging brain activity through simple movements and exercises according to studies published by the National Institute of Health. The National Association of Sports and Physical Education [3], a non-profit professional membership association that sets the standard for practice in physical education and sport recently released its first ever Physical Activity Guidelines for infants, toddlers and preschoolers. The guidelines were developed by motor development experts, movement specialists, exercise physiologists and medical professionals chaired by Dr. Jane Clark to identify the physical activity needs of young children during the first years of life. According to Dr. Clark, professor and chair of the Department of Kinesiology at the University of Maryland, "Adopting a physically active lifestyle early in life increases the likelihood that infants and young children will learn to move skillfully. Promoting and fostering enjoyment of movement and motor skill confidence and competence at an early age will help to ensure healthy development and later participation in physical activity."

Below is NASPE's Physical Activity Guidelines for Infants:

### ***Guidelines***

- Infants should interact with parents and/or caregivers in daily physical activities that are dedicated to promoting the exploration of their environment.
- Infants should be placed in safe settings that facilitate physical activity and do not restrict movement for prolonged periods of time.
- Infants' physical activity should promote the development of movement skills.
- Infants should have an environment that meets or exceeds recommended safety standards for performing large muscle activities.
- Individuals responsible for the well-being of infants should be aware of the importance of physical activity and facilitate the child's movement skills.

Through these guidelines, parents are now informed to engage their infants in daily physical activity that promotes movement skills and health-related fitness. Based on the Physical Activity Guidelines developed by NASPE, here are some tips and ideas on how parents can help their infants with physical activities:

### ***Physical Activities to do with Infants***

- Hold, rock, and carry the infants to different places so they are exposed to new environments allowing

them to reach, kick, and roll. Places like the playground, the mall, or just outside the house when you take them on walks let the infants explore different settings and watch other young children, as well.

- Play peek-a-boo. This game stimulates communication and gives cognitive lessons to infants by teaching them that after objects disappear, it will come back and can be found.
- Allow enough tummy time such as playing with infants that let them lie on their stomach which promotes muscle development in the neck and shoulders.
- Dance to your favorite tunes while holding the infant in your arms.
- Place enticing toys (brightly-colored and easy-to-grasp) that are slightly out of the infant's reach to encourage gross motor skills. This way, infants will try to reach, crawl, or roll over to take it.
- On a pad, place the infant on his stomach to allow him to practice lifting his head and kicking his legs.
- While the infant is lying on his back, move his legs in bicycle movement.
- Hold the infant's waist to support her in upright position before letting her feet touch the ground.
- Encourage the infant to walk or crawl instead of using walkers.
- Raise infant in the air (cautiously) while supporting her abdomen.
- Play pat-a-cake. It's a fun rhyme to chant with infants while they learn to clap their hands.
- When the infant is propped in a sitting position (head and neck are supported), guide him to place his hands on a ball and assist him in rolling the ball forward. This helps the infant learn how to straighten his arms.
- While the infant is lying on her stomach, allow her to push off against her hands to encourage crawling.
- Gently pull the infant from lying to sitting position. It encourages head/neck control.

There are so many physical activities or exercises that parents can do to help promote the development of their infant's fine and gross motor skills, as well as their emotional and cognitive skills. The important thing for parents to remember is that when they engage in exercises with their infants, it should be in a place where it is safe to perform these activities and they have a joyful time while doing it with their infants.

### ***Benefits of Physical Exercise to Infants***

In the National Association of Sports and Physical Education's (NASPE) 2002 report [3], it stated that "Confining babies and young children to strollers, play pens, car and infant seats for hours at a time may delay development such as rolling over, crawling, walking, and even cognitive development." It also stated that "from the beginning of life, infants should be encouraged to be physically active." In the Physical Activity Guidelines for Infants, NASPE suggested engaging infants in a variety of baby games such as peek-a-boo and pat-a-cake and sessions in which the child is held, rocked and carried to new environments. These simple activities will help infants to learn to move skillfully.

According to Janet Doman, Director of The Institutes for the Achievement of Human Potential [4], the more the baby crawls, the better his/her breathing becomes. "Newborn babies have immature and irregular breathing. Babies who are moving all the time develop more mature breathing much more rapidly. This improved respiration has many wonderful neurological consequences for the baby. The lungs are the reservoir for oxygen, and oxygen is the primary food of the brain. The baby's brain requires much more oxygen than the adult brain

does. A moving baby is a better oxygenated baby. Better oxygen to the brain improves all areas of function to some degree.”

Parents should allow ample tummy-time, the amount of time infants spend lying on their stomachs while awake. According to Judy Towne Jennings, PT, spokesperson of The American Physical Therapy Association (APTA) [5], “lack of tummy time for infants can delay their developmental, cognitive and organizational skills. It can also cause eye-tracking problems and behavioral issues, to name just some complications.” Colleen Coulter-O’Berry, Physical Therapist at Children’s Healthcare of Atlanta [6] said “Increasing the amount of time your baby lies on his or her tummy promotes muscle development in the neck and shoulders; helps prevent tight neck muscles, and the development of flat areas on the back of the baby’s head; and helps build the muscles baby needs to roll, sit and crawl.” So, parents are encouraged to perform physical activities or exercises that include infants lying on their stomachs

In *Active Living: Physical Activities for Infants, Toddlers, and Preschoolers* (Early Childhood Educational Journal) written by Dr. Eastman president of the Canadian Association for Young Children and co-editor of *The Journal of Early Childhood Development* [7], stated that the motor skills of children develop the instant they are born and continues throughout life. Movement is an important part of a child’s physical, mental and emotional development. It also discussed that young children can deal with stress more effectively as a result of physical activity.

The American Heart Association (AHA) [8] stressed the importance of Physical Activity or Exercise to children. According to AHA, “Physical Activity produces overall physical, psychological and social benefits. Physical Activity also helps with controlling weight, reducing blood pressure, reducing the risk of diabetes and some kinds of cancer, to name a few. Increased physical activity has been associated with an increased life expectancy and decreased risk in cardiovascular disease.” Also, the AHA has determined that one in three children are obese and physical activity is a great weapon against overweight and poor health among young children.

Medical professionals, motor development experts, and movement specialists stressed the importance of physical activity or age-appropriate exercise to infants and young children. Physical activity fosters motor skills and cognitive skills, promotes physical development, and produces emotional and social benefits in infants. Exercise helps avoid developmental delays in babies. Parents who engage their infant in physical activities help build a foundation for a healthy habit. The health movement which arguably took off in the 1980s led to studies being developed to determine the impact of exercises on children as well as adults [9,10]. These studies determined that physical activity results in a variety of benefits that modify and regulate the structure and functions of the brain and body.

Nowadays, parents have a variety of sources to gather information and choose what types of exercises or physical activities they want to do with their infants. There are guides and tips that are available online (in terms of safety precautions) in performing exercises with young children. Books, DVDs and interactive videos are also educational sources for parents. Likewise, parents can attend exercise classes or yoga classes together with other

parents and children. The important thing is – parents should make the physical activities a fun experience for their young children. Kids will not realize they are doing physical exercises if they enjoy doing it.

Parents should act as role model to their children. To avoid the sedentary problem – too much sitting around, parents should encourage their young children to do physical activities with them and lessen the hours of watching television, playing videogames, or surfing the internet. The key to a healthy lifestyle is doing regular physical activity together with a healthy diet.

### ***Tantrums***

There are several studies to show how to decrease tantrums among infants. According to the National Association of School Psychologists, tantrums begin around 15 months of age and then peak around 32 months depending on the child. Based on a survey by *Diono* [11] of over 2,000 parents, 43% state that they deal with at least 2 tantrums per day of children 18 months or older. Over half of the parents deal with at least one tantrum daily. It is important to note that there is a difference between a “standard tantrum” and “aggressive tantrum.” Standard tantrums will last a few minutes at most and don’t involve a great deal of hitting, biting or throwing objects. Such behavior may exist in short durations. Aggressive tantrums will last up to 30 minutes and often involve hitting, biting and throwing objects with great intention to inflict harm or break items. If a child is engaging in these types of behaviors daily, then it is suggested to seek professional help.

The National Association of School Psychologists [12] recommends the following to prevent tantrums based on research:

- Schedules and Routines
- Prompts and Transitions
- Skill Building
- Provide meaningful tasks
- Teaching coping skills
- Choices and reinforcement

When a tantrum occurs the National Association of School Psychologists suggests:

- Ignoring behavior
- Differential reinforcement
- Brief time-out

## **2. Method**

Forty-two infant children and at least one parent from each child participated in a Zumbini class for an average of 13.5 months. The class included infant appropriate exercises with music and each class lasted an average of 45 minutes per week. An average of 10 children and 10 parents were in each class. The instructors were trained in the areas of:

- Early childhood education practices that focus on the whole child, through exposure, facilitation, participation, and process.
- The “Play” teaching methodology
- How to focus the class on energy, fun and play
- Classroom management techniques
- How to create the Zumbini class lesson plan
- Weekly song development + activities
- The “10 key points” of the Zumbini program

A survey developed by educational psychologists were administered to parents in order to receive data. The first measure was in terms of tantrums. Some parents did not answer the questions or simply had children too young to determine between a tantrum or simply crying because their child was hungry or needed changing. A tantrum was defined as screaming, crying, stomping feet, throwing things, hitting, biting, falling to the floor and/or banging one’s head, head or feet against the floor. Another key aspect of the definition was that when the parents witnessed the beginning of the tantrum, they had the right to hold the child, verbally try to calm down the child with words such as “quiet voice please”, put the child in a time-out or ignore the child. If none of the attempts calmed the child down within 10 seconds, it was considered a tantrum. The child according to a parent was also not physically hurt, hungry or needing changing and was behaving this way for attention purposes in a dysfunctional manner. The parents of any child that was attempting to bang his/her head, hurt himself/herself or others was recommended to immediately pick up the child and prevent injury.

### **3. Results**

Before Zumbini classes began, the infants had an average tantrum rate of 2.22 per day. After a period of Zumbini classes, the rate went down to 1.57 per day. A t-test was conducted to determine the impact of the Zumbini class on tantrum behavior. The results are below.

#### **P value and statistical significance:**

The two-tailed P value equals 0.0243 By conventional criteria, this difference is considered to be statistically significant.

#### **Confidence interval:**

The mean of Group One minus Group Two equals 0.65 95% confidence interval of this difference: From 0.09 to 1.22

#### **Intermediate values used in calculations:**

$$t = 2.3323$$

$$df = 44$$

standard error of difference = 0.280

**Table 1: Results**

| <b>Group</b> | <b>Group One</b> | <b>Group Two</b> |
|--------------|------------------|------------------|
| Mean         | 2.22             | 1.57             |
| SD           | 1.04             | 0.84             |
| SEM          | 0.22             | 0.18             |
| N            | 23               | 23               |

According to the results, there was a significant difference between the two groups with a sharp decrease in tantrum levels after Zumbini classes.

#### **4. Conclusion**

This study was conducted to determine if Zumbini classes would have an impact on tantrum behavior. Extraneous variables are in question here as one could argue that the children simply matured over time which was the real reason for the significant decrease in tantrum behavior. However, when the children began the Zumbini classes, the average age of the children was 24.5 months.

The average amount of time the children spent in Zumbini classes was 8.4 months. According to the National Association of School Psychologists, tantrum levels actually start to peak past 30 months. Therefore, the evidence suggests that Zumbini had a positive impact. One could still argue that this sample had other factors and more evidence is needed.

Perhaps the children were afraid of the Zumbini classes or very exhausted. However, 100% of the parents stated they were “very satisfied” with the classes and 95% stated their children enjoyed the class with 5% giving no opinion. This study gives some evidence that an age appropriate exercise program with parents can reduce tantrums. The factors could include:

- a child getting out some of the energy that is usually high among youngsters
- bonding time with their parents
- the chance to spend time with other children
- the intellectual and physical benefits of exercise and release of endorphins

More studies are needed to determine the true impact of infant exercise programs on children. It is important to note that the parents also stated that after using Zumbini, their children got to sleep an average of 60% sooner than before they started the class. It might be that the exercises helped children sleep better which made them less irritable.

## References

- [1]. Qing Du, Xuan Zhou, Xueqiang Wang, Sun Chen, Xiaoyan Yang, Nan Chen, Juping Liang, Weiwei Deng, and Kun Sun. "Passive movement and active exercise for very young infants with congenital heart disease: a study protocol for a randomized controlled trial" Published online 2015 Jun 30.
- [2]. Ellemberg, David "Exercise during pregnancy gives newborn brain development a head start" University of Montreal Monday at Neuroscience, the annual meeting of the Society for Neuroscience in San Diego, Calif. 2013.
- [3]. Clark, Jane. Department of Kinesiology at the University of Maryland. "Pregnancy and Baby" <http://pregnancyandbaby.com/baby/articles/944917/babies-toddlers-exercise>. 2016.
- [4]. Doman, Janet. "Frequently Asked Questions about Your Baby" The Institutes for the Achievement of Human Potential 2016.
- [5]. Jennings, Judy Towne. "For babies, tummy time crucial for development" The American Physical Therapy Association. 2008.
- [6]. Coulter-O'Berry, Colleen. "Lack of 'Tummy Time' Leads to Motor Delays in Infants, PTs Say" Physical Therapist at Children's Healthcare of Atlanta. 2008.
- [7]. Eastman, Wayne, "Understanding and Managing Young Children with Attention Deficit Hyperactivity Disorder: A Caregiver's Perspective," *Interaction*, 11 (4), Winter, 1998.
- [8]. Warner, John "Obesity in Infants to Preschoolers" American Heart Association. [http://www.heart.org/HEARTORG/HealthyLiving/HealthyKids/ChildhoodObesity/Obesity-in-Infants-to-Preschoolers\\_UCM\\_467702\\_Article.jsp#.WbHImNNK02w](http://www.heart.org/HEARTORG/HealthyLiving/HealthyKids/ChildhoodObesity/Obesity-in-Infants-to-Preschoolers_UCM_467702_Article.jsp#.WbHImNNK02w). 2014.
- [9]. Colcombe SJ, Kramer AF, McAuley E, Erickson KI, Scalf P. Neurocognitive ageing and cardiovascular fitness. *Journal of Molecular Neuroscience*. 24:9–14. 2004.
- [10]. Pereira AC, Huddleston DE, Brickman AM, Sosunov AA, Hen R, McKhann GM, et al. "An in vivo correlate of exercise-induced neurogenesis in adult dentate gyrus" *Proceedings of the National Academy of Science*. 104(13):5638–5643. 2007.
- [11]. Keller, Brad "Toddler Tantrums" Survey conducted by Diono on Tantrum Behavior. 2014.
- [12]. Watson Steuart; Watson, Tonya & Gebhardt, Sarah "Temper Tantrums: Guidelines for Parents and Teachers" National Association of School Psychologists. C:\Users\Todd Eller\Downloads\Temper\_Tantrums\_Guidelines\_for\_Parents\_and\_Educators.pdf. 2010.