# *Kinesthetic Perception, Physical Activity and on-Task Behavior in Thematic Learning*

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**Abstract**
Objective: To investigate associations between kinesthetic perception, physical activity and on-task behavior in thematic learning, and evaluate how they correlate to academic performance in math, reading and science. Methods: This study included 25 children (age: 6-7 years, 14 girls). Kinesthetic perception was evaluated in space-visuomotor task accuracy test (kinesthetic perception test and measurement). Level of physical activity was estimated from the daily activity during normal school activity using pedometer and both relation with On-task behavior in thematic learning was investigated with standard test of completion tasks and cognitive tests, in math, reading and science. Results: Kinesthetic perception was associated with better performance in tests of completed tasks and academic performance ($P<0.003$), whereas physical activity was associated with better-sustained completion tasks ($P<0.038$) and academic performance ($P<0.047$). Kinesthetic perception and physical activity were all associated with better performance in cognitive tests (math, reading and science). The results expose that on the whole the academic performance was significantly correlated with physical activity and kinesthetic perception. Conclusions: The data demonstrate that kinesthetic perception and physical activity are positively correlated with on-task behavior in thematic learning and with academic performance in math and reading. Future interventions should investigate associations between kinesthetic perception, physical activity and on task behavior in academic performance to expound the causation of these associations

Keywords: Kinesthetic Perception, physical activity, on-task behavior

## Introduction

Teachers have responsibility to provide their student the beneficial learning experiences. Teachers should note all factors and variables that effect students learning and suit student's need in the classroom and learning. Comprises the formula for engaging students to be more active in movement during lesson and facing problem that students are continually being faced with mostly sitting in their seats during classroom. Some various strategies to engaging student in physical activity, unfortunately they do not physically stimulate students through movement interactions.

The association between kinesthetic perception, physical activity, and academic achievement has been studied in recent years. Some studies showing that active and fit children tend to perform cognitive test better than not active and lower fit children. Physical activity improves and contributes to quality of life, mental health, and the ability to accomplish physical task demands. Low level of physical activity can predispose children to obesity

Prior studies have found positive associations between kinesthetic perception and physical activity in academic performance, recent studies have also documented positive associations between physical activity and academic performance. Further, it emphasizes a potential positive role of physical activity in preschool children, children and preadolescence and suggests that motor skills development is positively related to learning process at school. Other studies on aerobic fitness in children found positive associations with performance in academic performance. The investigation to the associations between children perceptual abilities (visual perception, auditory perception, kinesthetic perception and tactile perception) and the academic performance reveal that a significant percentage of the sample academic under-achievers scored low in the three perceptual channels – visual, auditory and kinesthetic. On an average one fourth of the children were poor in these perceptual areas. Tactile perception was the only area where only a few children faced problems. (1).

Off-task and on-task behavior during learning in class, has an association with academic performance. There are three type of off-task behavior, including motor-OTM, verbal-OTV and passive-OTP. Off-Task Motor (OTM) is the behavior of children during lesson, instead of working on assigned task, the student is out of seat, constant and noticeable fidgeting, playing with objects and/or other children, making inappropriate gestures, acting silly, hitting, biting, or throwing things, fighting with others, etc. While off-task verbal (OTV) is the behavior of children in class, instead of working on assigned task, the student is calling out, talking to someone when prohibited, making noises, etc. And off-task passive (OTP) is when instead of working on assigned task, the student is looking around, daydreaming, looking out window, skipping school, coming to class late, delaying starting assigned task, etc.

On-Task Behavior is the behavior when student or children are: Looking at teacher when giving lesson, directions and/or instructions (L); b. Participating in class discussion (P); Working on seat work (S); and Working cooperatively on cooperative project (C)

We found no previously study focused on concurrent assessment of kinesthetic perception, physical activity and on-task behavior with academic performance for cohort children and it is the aim of this study to investigate the potential associations between kinesthetic perception and physical activity with academic performance in children.

The research study then: If physical activity and kinesthetic perception affected on-task behavior therefore student with high physical activity level and level of kinesthetic perception will reach high performance in completion of task.

Definition of term: For the purposes of this study, several terms are used in conjunction to its methods, results, and past research. Physical activity in this instance refers to the physical movement of students' bodies, where they are up and moving about the classroom setting. This term is specifically used in contrast to direct instruction teaching methods. Physical activity should not be confused with physical education, which refers to the supplemental class students attend in a given amount of time throughout the school week to receive the instruction of a separate physical education teacher.

On-task behavior is used as a measure of students' levels of task completion. When students are considered to be fully on-task, they are completely focused on the given assignment that the teacher has provided and are not influenced by any sort of distraction within the classroom setting. In contrast, when students are considered to be off-task they are giving into distractions around them or are in turn becoming an interruption themselves. Off-task behavior may be categorized into three separate categories: motor, verbal and passive. Students' movement within their workspace that results in their concentration being averted from the given task at hand categorizes off-task motor.

Similarly, off-task verbal behavior describes incidences when students use verbal language that results in their focus moving away from being on-task. Off-task passive behavior occurs when students are not moving physically or talking verbally but is still not actively participating to the extent that their concentration is clearly on the given task.

Physical activity is defined as any bodily movement produced by skeletal muscles that result in energy expenditure and several elements of physical activity have been identified. . The amount of energy required to accomplish an activity can be

measured in kilojoules (kJ) or kilocalories (kcal); 4.184 kJ is essentially equivalent to1kcal. Technically, the kJ is preferred because it is a measure of energy expenditure; Expressed as a rate (kcal per unit time), the amount of energy expended by each person is a continuous variable, ranging from low to high. The total amount of caloric expenditure associated with physical activity is determined by the amount of muscle mass-producing bodily movements and the intensity, duration, and frequency of muscular contractions. Everyone performs physical activity in order to sustain life; however, the amount is largely subject to personal choice and may vary considerably from person to person as well as for a given person over time. The most common units of time used to refer to kcals spent in physical activity are the week and the day. Physical activity during monthly, seasonal, or yearly periods may also be examined to establish the stability of physical activity for longer time periods.

Physical activity can be categorized in a variety of ways. A commonly used approach is to segment physical activity on the basis of the identifiable portions of daily life during which the activity occurs. The simplest categorization identifies the physical activity that occurs while sleeping, at work, and at leisure. A simple formula can be used to express the caloric contribution of each category to the total energy expenditure due to physical activity. For this research purposes, Physical Activity Level will measure using some test. The **physical activity level** (PAL) is a way to express a person's daily physical activity as a number, and is used to estimate a person's total energy expenditure. In combination with the basal metabolic rate, it can be used to compute the amount of food energy a person needs to consume in order to maintain a particular lifestyle.

Thematic learning is the selecting and highlighting of a theme through an instructional unit or module, course, multiple courses. It is often interdisciplinary, highlighting the relationship of knowledge across academic disciplines and everyday life. Themes can be topics or take the form of overarching questions. Thematic learning is closely related to interdisciplinary or integrated instruction, topic-, project- or phenomenon-based learning.

The conjunction and interaction between all variables can be described in this following figure:

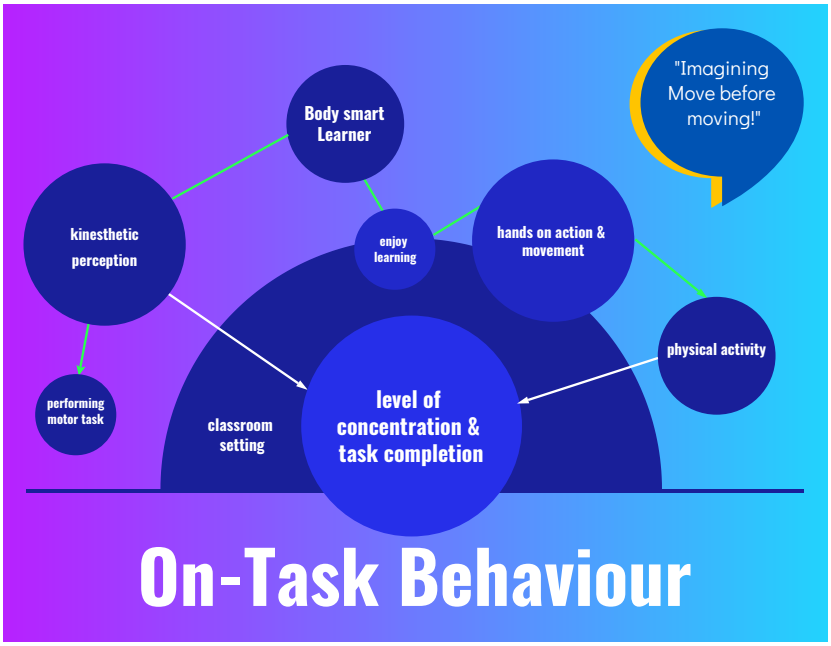

Figure 1: The Kinesthetic perception-physical activity and On-Task Behavior Model

Level of physical activity was estimated from the daily activity during normal school activity using pedometer and both relation with On-task behavior in thematic learning was investigated with standard test of completion tasks and cognitive tests, in math, reading and science.

**Conclusion**

The results of the study indicate that: (1) There is a relationship physical activity and on-task behavior; (2) There is a relationship kinesthetic perception and on-task behavior; (3) Both Physical activity and kinesthetic perception are related to on-task behavior in completing math, reading and science test. Kinesthetic perception was associated with better performance in tests of completed tasks and academic performance ($P<0.003$), whereas physical activity was associated with better-sustained completion tasks ($P<0.038$) and academic performance ($P<0.047$). Kinesthetic perception and physical activity were all associated with better performance in cognitive tests (math, reading and science).

The results expose that on the thematic learning academic performance was significantly correlated with physical activity. Reading and science both were significantly associated not only with one another but also with perceptual areas. Instead, mathematics was found to be significantly correlated with kinethetic perception. Conclusions: The data demonstrate that kinesthetic perception and physical activity are positively correlated with on-task behavior in thematic learning and with academic performance in math and reading. Future interventions should investigate associations between kinesthetic perception, physical activity and on task behavior in academic performance to expound the causation of these associations

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