Effectiveness of a Movement Program for Elementary Students

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BACKGROUND

Overall

- Movement and physical activity are fundamental to children and youth of developmental age, with many physical and psychological benefits
- Early childhood is an ideal time to introduce children to motor skills they will use throughout their lives, allowing them to participate in educational and recreational activities throughout their lives (Sanders, 1992)

Primitive Reflexes & Attention

- In early development, reflexes serve a functional purpose in infants; however, it is important that children gain volitional control over these reflexes in order to participate in meaningful occupations
- If reflexes aren't integrated at typical age of development, there could be an effect on occupational performance, such as the ability to attend to activities in the classroom
- Additionally in early childhood, critical growth and development occurs in the brain, especially in the areas regulating attention (Pagani, Fitzpatrick, & Parent, 2012)

Movement-Based Programs

- Movement-based programs have been beneficial in improving math and reading scores and attention in the classroom in elementary children (Goh et al., 2017)
- Research exists regarding the importance of movement and physical activity for children, attention levels of children, and implications of reflex retention
- There is limited research on the effects a classroom-based movement & physical activity programs have on attention and primitive reflex integration

RESEARCH QUESTIONS

1. What is the effectiveness of a movement-based program on preschool or kindergarten students' attention in the classroom?
2. What is the effectiveness of a movement-based program on primitive reflex activity in children of preschool or kindergarten age?

METHODS

Program Details

- This study used a single cohort pretest-posttest design to specifically explore the effects of a movement-based program on attention in the classroom and primitive reflex activity of preschool students.
- This program was implemented at a parochial school in Omaha, Nebraska
- Two all-day pre-kindergarten classrooms were recruited to participate in this study, with 27 students participating overall.

Screening

- Two instruments were used to collect data on attention and primitive reflex activity
- **Attention:** SNAP-IV 26-Item Teacher and Parent Rating Scale
  - Uses a 4-point Likert-scale for 26 observation-based questions
- **Primitive reflex activity:** refined rating scale of Goddard's (2005) methods, as published by Konicarova and Bob (2012, 2013)
  - Uses a 3-point Likert-scale to rate reflex activity

Movement-Based Program

- 15 to 30-minute sessions per day in two pre-kindergarten classrooms
- Daily sessions included a variety of movements and activities
- A reference guide was also designed for teachers in order to facilitate movement-based program outside of student-led sessions

Sample of a Daily Session:

Wednesday

Introduction & warm-up (2-3 minutes)

- Quick stretching/dynamic warm up
  - Depending on time, consider allowing 2-3 students to choose an exercise to complete (such as jumping jacks, high knees, cross crawls, etc.)
- Yoga poses
  - Completing 3-5 kid-friendly yoga poses (diagrams attached)

Activity (10-15 minutes)

- Simon Says
  - Play a few rounds of Simon Says, but make the game more active by including dynamic movements, such as jumping jacks, animal walks, hopping, etc.
  - Consider adding movements that play on reflex integration, such as turning head, in quadruped, etc.

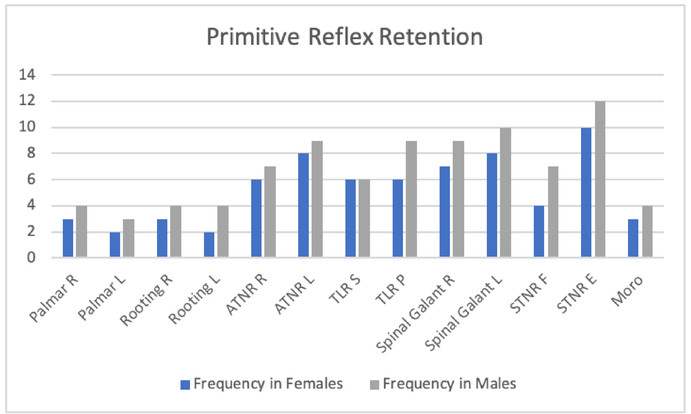
Cool down (2-5 minutes)

- Breathing exercise
  - Have students complete flower breath (diagrams attached) 3-5 minutes, time allotted, for 3 seconds in/3 seconds out

PRELIMINARY RESULTS

Frequencies of Primitive Reflexes

- 100% of students had at least 1 retained primitive reflex
  - Most frequently occurring: STNR E (81.4%)
  - Least frequently occurring: Palmar L (18.5%)
- Males & reflexes:
  - Most frequently occurring: STNR E (85.7%)
  - Least frequently occurring: Palmar L (21.4%)
- Females & reflexes
  - Most frequently occurring: STNR E (76.9%)
  - Least frequently occurring: Palmar L & Rooting L (15.3%)
- Other reflexes with high retention rates:
  - Males: Spinal Galant L/R, TLR, ATNR L
  - Females: Spinal Galant L, ATNR L



Relationship Between Primitive Reflexes & Attention

- Two statistically significant relationships for males
  - Retention of ATNR L & Opposition/Defiance subsection of the SNAP-IV
  - Retention of Moro & Inattention subsection of the SNAP-IV

ANTICIPATED RESULTS

It is anticipated that:

- A movement-based program will have a positive impact on attention in the classroom
- A movement-based program will have a positive impact on retained primitive reflexes
- Movement-based program will need to include both activities that incorporate reflexes and be implemented for a significant length of time (ex: entire school year)

BOTTOM LINE FOR OT

Movement and physical activity have many benefits to children of developmental age:

- Fundamental motor skills emerging
- Primitive reflexes becoming less active
- Cognitive development is growing and changing

Research exists regarding:

- Relation of primitive reflexes to gross motor skills and cognitive development
- The importance of physical activity for children, related to scholastic performance

There's limited research on the effects of movement and physical activity classroom programs on children's attention and primitive reflex activity. Therefore, the purpose of this study was to examine the effects of implementing a movement-based program in the preschool classroom on students' attention levels and primitive reflex activity.

Understanding the effects of this study can:

- Inform the need for movement in the classroom among early developing students
- Help therapists and teachers address active primitive reflexes, which can impact motor and cognitive development
- Help occupational therapists in both educational and clinic settings better design movement-based programs focused on their targeted audiences and and specific classroom goals and learning objectives

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