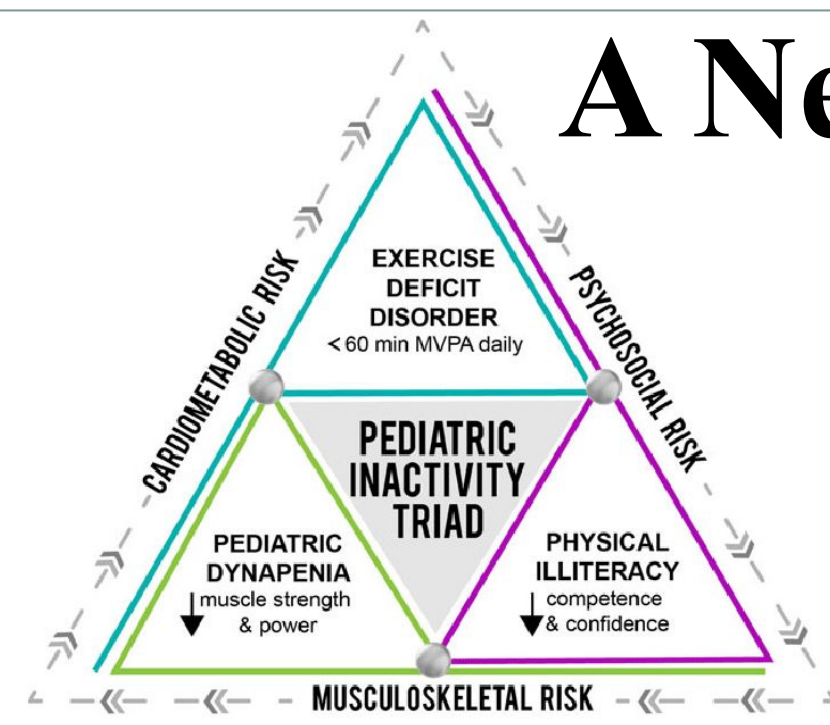


# A New Approach: Investigating the Relationship Between the Pediatric Inactivity Triad & Body Image Perception in Children



Ella Barlick<sup>1</sup> & Elizabeth Bailey<sup>2</sup>

1. Elon University, Public Health Major, Elon College Fellow 2. Elon University Department of Exercise Science

## Background Research

### Physical Inactivity

- 76% of American children are not getting enough daily physical activity and only 33% of children aged 6-19 years report less than 2 hours of screen time per day (Katzmarzyk et al., 2018).
- Only 42% of 6 to 12 year old American children have adequate cardiorespiratory fitness levels due to overwhelming lack of physical activity (Katzmarzyk et al., 2018).

### Body Image Perception

- Physical activity is positively related to increased self-esteem and improved body image perception, and individuals with a positive body image are often more likely to engage in physical activity than those with a negative body image (Dhankar et al., 2018; Smith, et al., 2014)
- Poor body image perception or body dissatisfaction can have lasting, negative psychosocial effects and can be a predictive risk factor in the development of restrictive eating patterns (Bowker, 2006; Davison & McCabe, 2006; Hassmén & Koivula, 2000).

### Pediatric Inactivity Triad

- Pediatricians currently use BMI and adipose percentage as markers of poor activity, which many argue is catching the problem too late.
- The *Pediatric Inactivity Triad* (PIT) was proposed in 2018 as a diagnostic tool for pediatric inactivity (Faigenbaum, Rebullido, & Macdonald, 2018)

## Methodology

### Participants

Participants were recruited from *Alamance Girls in Motion* and *CHAMPS* - programs on Elon University's campus that involve children. Participants were also recruited from local elementary schools in Alamance County, NC.

### Methodology

- Pediatric dynapenia** was measured through two tests measuring muscular strength and power: the hand held dynamometer (HHD) to observe grip strength and standing vertical leap.
- Physical Illiteracy** was measured using the *PLAYbasic Physical Illiteracy Score* (Kriellaars & Robillard, 2014). The score involves the observation of five tasks: run there and back, hop, overhand throw, ball kick, and balance walk (to-to-heel) backwards.
- Exercise Deficit Disorder** was measured using the *Evaluation of Activity Surveys in Youth (EASY)* questionnaire (Pate, McIver, Dowd, Schenkelberg, Beets, & Distefano, 2017).
- Body image perception** was measured using the *Rosenberg Self-esteem Scale*, which is a 10-question self-report questionnaire. The *Social Physique Anxiety Scale for Children (SPAS-C)* questionnaire was also used, a 9-item self-report scale developed to assess the degree to which children become anxious when others observe or evaluate their physiques (Hart, Leary & Rejeski, 1989).

## Research Question

Can the Pediatric Inactivity Triad (PIT) be tested in an empirical setting, and to what degree, if any, do the component parts of PIT and the composite PIT affect body image perception in children?

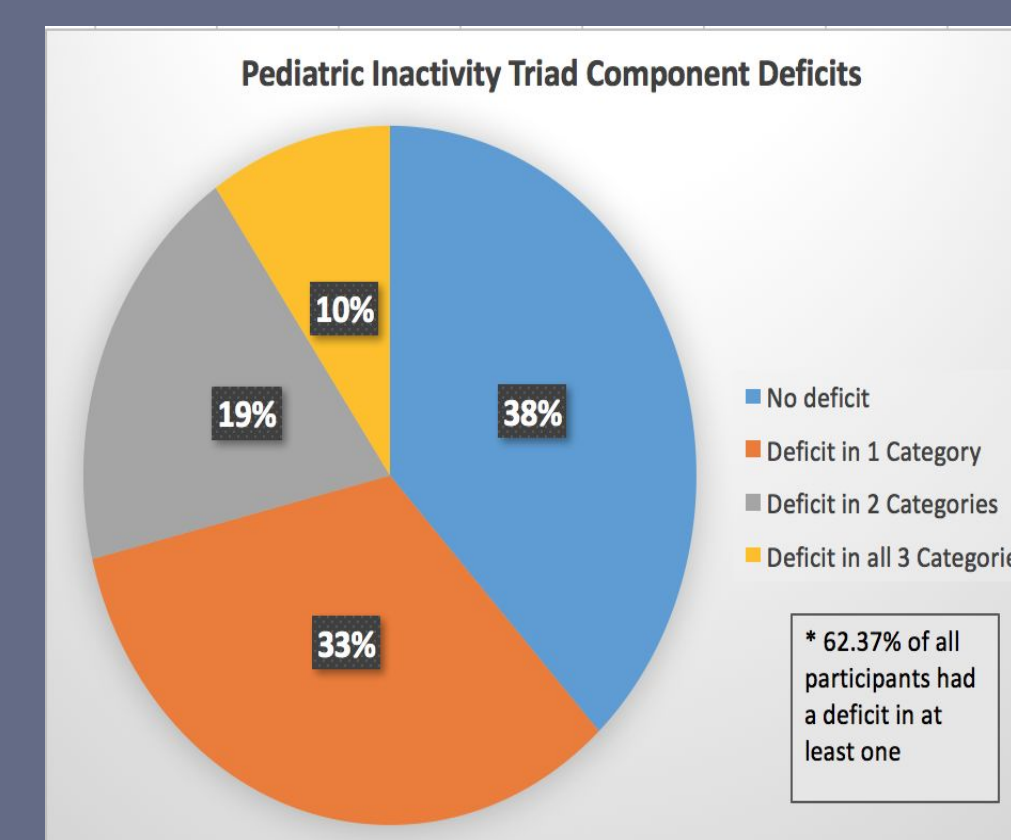


Image 1. This pie chart shows the percentage of participants who were deficient in 0, 1, 2, or 3 categories of PIT

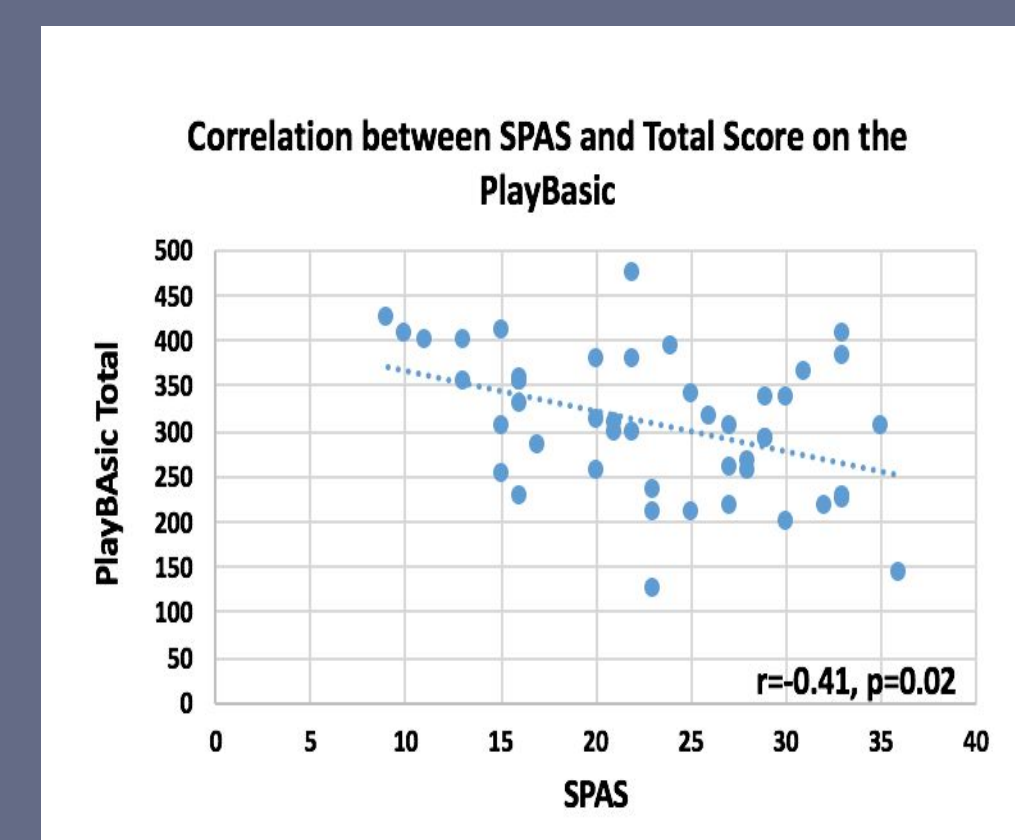


Image 2. This graph shows the inverse correlation between PLAYbasic composite and SPAS-C scores

Table 1: Participant Demographics (Mean and Standard Error)

	Male (n=55)		Female (n=38)	
	Average	Std. Error	Average	Std. Error
BMI	20.41	4.1	20.11	3.65
Weight	91.35 (lbs)	25.1	93.56 (lbs)	25.47
Waist	69.77 (cm)	14.5	64.87 (cm)	14.59
Height	55.8 (in)	3.25	56.77 (in)	3.44

## Results of PIT

**Physical Illiteracy:** physically illiterate if not competent in 3 or more categories of PLAYbasic

- 20/93 (21.5%)

**Physical Inactivity:** deficient in physical activity (i.e. does not obtain enough MVPA) if they scored below a 22 on the EASY questionnaire

- 45/93 (48%)

**Pediatric Dynapenia:** deficient in this category if he/she scored in or below the 25th percentile (for their age) for either the vertical leap test or the hand grip test

- 40/93 (43%) of participants were poor in vertical leap
- 15/93 (16%) of participants were poor in hand grip

After accounting for overlap:

- 31/93 (33%) of participants had a deficit in one component of PIT,
- 18/93 (19%) were deficient in 2 components
- 9/93 (9.67%) were deficient in all 3
- 62.36% of participants had a deficit in at least one category of PIT

## Results of Body Image Perception

### Body Image Perception & PIT

- Of the 32 students who took the SPAS-C, mean score was 22.73 (+ 1.39), suggesting a moderate amount of anxiety. A correlation was found between the SPAS-C and the composite PLAYbasic score ( $r = -0.0413$ ,  $p = 0.023$ ) indicating an inverse relationship between body image perception and physical illiteracy.
- The mean score on the Rosenberg was 21.9 ( $\pm 5.53$ ), with a child scoring below a 15 indicating low self esteem
- No correlation was found between Rosenberg any component of PIT

## Conclusion

- The results of this study verify the existence of PIT and its ability to be evaluated in an empirical setting.
- A correlation was found with PIT and SPAS-C, indicating increased physique anxiety correlating with deficits in skills important to physical activity, which supports previous research. Unfortunately, local schools would not allow the SPAS-C to be distributed and so these results are from a small sample size.
- Our sample group had good levels of self-esteem as per the Rosenberg scale. The school system for our sample was promoting body positivity during the time of our data collection, which could have impacted the results of our study.
- A larger sample size would provide more information on the potential relationship between PIT and perceived body image perception.
- PIT may have the potential to be used as a more multifaceted and holistic tool for assessing physical activity patterns and their implications on health in children.

## Implications

- To increase the utility of PIT and apply it in a clinical setting, a less time-consuming and cumbersome way of evaluating physical illiteracy must be explored.
- If the PIT can be used in a clinical setting, then providers could more effectively identify issues related to physical inactivity and better tailor their recommendations for individual patients.
- A potential future study could include a longitudinal analysis of children with PIT deficiencies and potential health outcomes later in life.