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# The Impact of Physical Activity on Leg Strength Among School-Aged Students

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*Abstract – This research looked at how physical exercise affects leg strength in schoolchildren. A stratified random sample selected 36 Punjabi students from Mansa. They participated in six 40-minute sessions per week for three weeks in a structured physical exercise program. The workouts focused on strengthening the legs. The effect of the intervention was measured by comparing leg strength before and after training using standard fitness assessment methods. Pre-test and post-test scores were compared with a dependent ‘t’-test. The significance threshold was set at 0.05. There was no noticeable change between the pre- and post-test leg strength ratings. This indicates that three weeks of physical exercise may not have been sufficient to increase leg strength in these individuals. In conclusion, while youth fitness requires physical exercise, this research indicates that longer or more intense programs might be necessary to build muscle. To confirm these findings, future studies should be longer, more intense, and include larger sample sizes.*

**Keywords – Physical Activity, Leg Strength, School Students, Exercise Intervention, Muscular Strength.**

## 1. INTRODUCTION

Education has existed since the dawn of humanity. From birth to death, it involves ongoing personal growth and development. The main goal of education is to shape individuals so they can lead progressive, cultural, and civilized lives. It is crucial for the growth of both individuals and their communities. Educating a person boosts their thinking, reasoning, problem-solving, and creative skills. It also enhances their intellect, talents, values, and attitudes. Education transforms people into social, moral, and spiritual beings. It is something we gain daily through our actions throughout our lives. Therefore, education is a continuous and evolving process relevant to the ever-growing individual in an ever-changing society.

A common saying suggests that if you take care of the roots of a tree, it will produce flowers and fruit naturally. Schools need to focus on children as the roots. They should nurture them with strong morals and useful skills while guiding them away from undesirable traits with wisdom. The goal is to help learners adapt and thrive in a changing world.

However, because education must prepare students for adulthood, it often gets mired in responding to societal pressures that shift continually. Educating a child is a costly and time-consuming process. Still, we must remain hopeful and prepare children for adulthood, so they can find fulfilling lives in the future. While in school, we should provide them with many opportunities to explore their potential and showcase their talents. Keeping them confined to classrooms and cramming them with facts makes them bored and disinterested.

A look at psychological factors highlights the importance of recognizing the unique differences among children and creating the right outlets for their energies. These activities are quite helpful in this regard. Modern education features "learning by doing," "learning by living," and "learning without tears." Thus, education is defined through seven R's: reading, writing, arithmetic, rights, responsibilities, response, and relationships (Venkateswarlu et al., 2004).

## 2. LITERATURE REVIEW

Some studies have examined how physical exercise and resistance training affect children's muscular strength. They always find that the degree of acceptance, the longevity and intensity of programs are critical conditions in gaining measurable beneficial effects. Faigenbaum et al. (2009) conducted a review of youth fitness and determined that structured resistance training is an effective way of promoting muscular strength and endurance in children when programs are of a duration of 8-12 weeks. Similarly, Behringer et al. (2011) performed a meta-analysis of 42 controlled trials, finding that resistance training induced small to moderate increases in strength among children, the gains being primarily related to the duration and structure of the program. Their results indicate however that short-term programs (i.e., 3-week training period in this study) may not produce major results.

Previously, Faigenbaum and Myer (2010) have commented that organised strength training is safe for children and makes them stronger and motorically more able, reduces the risk of injury too. Effectiveness is based on progressive overload and time. Payne et al. (1997) also found that gains in leg and arm strength of 72 school children were observed only after 8 weeks of training. Likewise, Faigenbaum et al. (2002) determined strength gains could be detected in prepubertal children after the sixth week of an eight-week resistance program and emphasized muscle adaptations take time to be measurable.

Observational research further support positive conclusions on exercise and youth development. Hasselstrom et al. (2008) reported an association between PA frequency and muscular strength, aerobic power, and bone density in Danish schoolchildren. Malina (2006) noted that with growth and maturation, individuals will inevitably get stronger, but when combined with consistent training these gains are amplified and individuals are even stronger.

Collectively, the studies highlight that exercise is key for children's growth and maturation. Yet, training time and intensity are important factors for the magnitude of the improvement in muscle strength. This further supports the results in the present study, revealing no major changes after the three weeks of training. Strength improvements in the leg will require longer interventions to be detected.

## 3. BENEFICIAL OUTCOMES OF PHYSICAL EDUCATION

Physical education programs should be carefully designed to meet their intended goals. By participating in appropriate types and levels of physical exercise, individuals can achieve several positive outcomes, including:

**Decreased risk of cardiovascular disease:** Physical education can mitigate key risk factors for coronary heart disease, such as obesity, inactivity, and high blood pressure.

**3.1 Total Body Condition Loved it:** A balanced program in physical education would improve a person's total physical condition, such as muscle strength, flexibility, muscle endurance, body composition (fat deposit to muscle mass ratio), and cardiovascular endurance. These ingredients are known to be important for a healthy, active life.

**3.2 Strong Bones:** Constant weight bearing exercises increases bone density, thus contributes to stronger skeletal structure in developing children.

- 3.3 Weight Management:** Physical activity controls weight through expending calories, increasing resting metabolic rate, and modifying body composition. This promotes healthy growth and cuts the risk of baby obesity.
- 3.4 Health Promotion and Disease Prevention:** Engaging in suitable physical exercises helps prevent lifestyle-related disorders and delays aging's negative effects, promoting long-term health.
- 3.5 Enhanced Decision-Making and Moral Development:** Quality physical education fosters decision-making skills and moral growth, offering students chances to develop leadership abilities and work together.
- 3.6 Growth in Self-Discipline:** As students participate in well-arranged activities, they become accustomed to rules, regulations, routines and system of being responsible for their health and fitness, leading to self-discipline.
- 3.7 Skill Development:** Key motor and sports skills are taught in physical education, increasing a child's ability to participate in lifelong physical activity. The better you get, the easier it is to become that next hit master or whatever.
- 3.8 Establishing and Achieving Goals:** The student will set realistic personal goals and work to achieve them steadily which will develop their motivation and feelings of accomplishment.
- 3.9 Increased Sense of Self-Confidence and Self-Esteem:** Participating is a great way to increase self-worth, emotional stability, independence and being assertive. They can give kids a sense of themselves that is positive and help them control their own emotions.
- 3.10 Reduces stress and anxiety** – Physical activity is a natural stress reliever and helps in managing anxiety, thus promoting good mental health.
- 3.11 Reduced Risk of Depression:** Regular participation in PE improves mental health and reduces risk of depression in children and teenagers.
- 3.12 Active Lifestyle Promotion:** Physical education promotes lifelong practices by creating a positive approach to exercising. It's got a real energy infusion to it and will make them more likely to play and socialize.

#### 4. METHOD AND PROCEDURE

To conduct the research, a stratified random selection method was used to choose 36 students from the Mansa district of Punjab, India, enrolled in grades one through six. Typical instruments were then utilized. A leg strength test was conducted by having the children's cross short hurdles, determining their performance based on their ability to cross them.

##### 4.1 Leg Strength

Equipment: Stopwatch

Procedure: Children will perform maximum crossings of the short hurdles.

Scoring: Total number of crossings of the short hurdles was recorded.

##### 4.2 Result, Discussion and Interpretation:

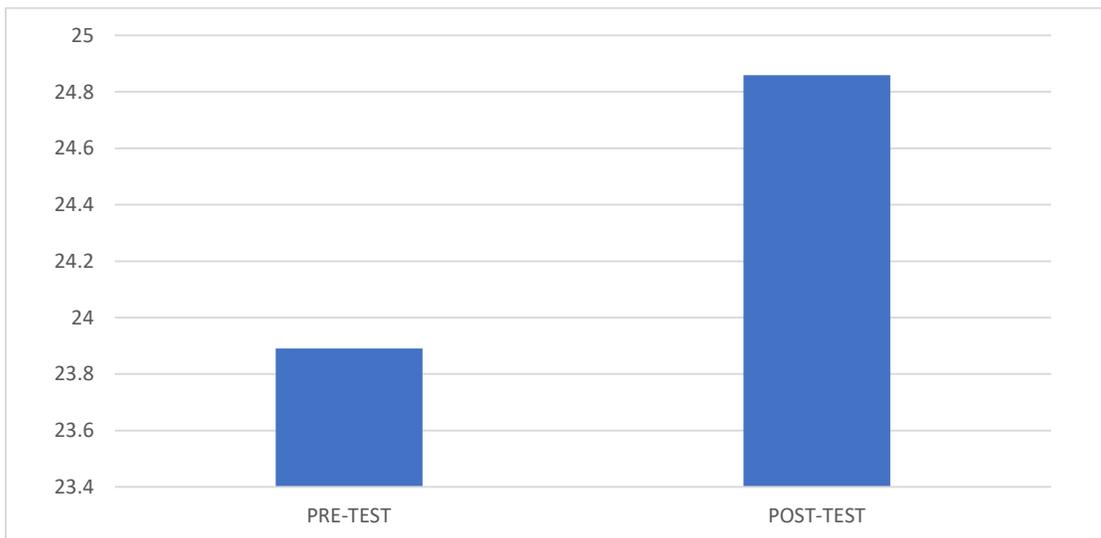
Training was conducted over 21 days, with Sundays observed as rest days. An analysis of the results is presented in the following tables.

**Table No. 1:** This shows the students' leg strength before and after the intervention, along with the corresponding mean values and t-values.

	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>t-value</b>
<b>Pre-test</b>	36	23.9	6.8	1.94
<b>Post-test</b>	36	24.87	7.81	

**Figure No.2**

Mean difference of leg strength between pre-test and post-test



The average leg strength before and after the intervention was 23.90 and 24.87, according to the data in the table. At the .05 confidence level, the t-value of 1.94 is not statistically significant. This suggests that leg strength did not differ much between the pre- and post-tests.

### 5. CONCLUSION

Children in school did not show significant improvement in leg strength when comparing pre-test and post-test results. This finding indicates that the three-week training program may not have led to noticeable growth in muscle strength. For better results in strength and muscle mass development, training should last at least six weeks. Therefore, it seems the lack of significant changes was likely due to the short duration, so future studies should look at extending the training time to achieve improved outcomes.

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