

Musculoskeletal Functioning In Intellectually Disabled Children: Outcome Of Physical Activity Programme

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ABSTRACT

An experimental research was designed to study the impact of a physical activity programme on musculoskeletal functioning of intellectually disabled children. **Methodology:** To determine the effects of physical activity programme, 40 intellectual disabled boys from Government Rehabilitation Institute of Intellectual Disabilities (GRIID) were selected as subjects. The purposive sampling technique was used to select the subjects. The subjects were assigned arbitrarily to the experimental group (20) and the control group (20). The age of subjects ranged between 13 to 17 years. The Brockport Physical Fitness Test (Winnick and Short 2014) specially constructed for the intellectually disabled children was selected for the study. **Conclusion:** The musculoskeletal functioning (flexed arm hang, strength) performance significantly increased by the implementation of the programme on the intellectually disabled children. The treatment had significantly improved musculoskeletal functioning (modified curl-up, endurance) performance of the intellectually disabled children. **Recommendation:** Physical activity should be made an indispensable part of the school curriculum and special education curriculum for the intellectually disabled children.

INTRODUCTION

Physical Activity

In the present times, health can only be maintained by adopting proper physical activity which also affects other important factors of daily routine. By avoiding stimulants, undertaking regular physical activity and following a proper nutritious diet an individual can improve and achieve good health. As physical activity maintains our physiological functioning and shapes the anatomical structure of the human body, thus, it is considered important for the intellectually disabled people. Various factors like rapid economic progress and development of automated technology have made our daily chores very easy. People have adopted westernized diet patterns and physical activity has lessened. These life style changes have resulted in many cases of over nutrition and because of lack of physical activity a number of new diseases have started affecting us (Harris, 2001).

Physical activity should be treated as a therapy of physical human movements whereas it is understood that the physical activity is natural and basics of human body movements including the different skills which helps human body to perform a specific task (Disability Information Sheet, 2001). One of the research work advocated that the aquatic exercises are the one of the best exercises to improve the heart efficiency. Researcher also

proved that aquatic exercises are the effective therapy for the heart disease which reduces the risk factor by enhancing the blood circulation positively (Ussher et al., 2003).

Health Related Fitness

The health related fitness and physical fitness are both different terms but both are inter linked and related to each other. Many have misconception that the health related fitness is related to medical terms only but it has relation with physical as well as physiological improvements. According to Harris, physical strength is further distributed in health fitness and physical fitness. The variables of health fitness are cardio-respiratory endurance, muscle strength, muscle endurance, body composition and flexibility. The variables of physical fitness are burst power, agility, equilibrium, coordination, power and speed (Harris, 2001). The main reason of poor health of intellectually disabled is because of physical inactivity and greater level of obesity (Foley et al., 2008; Smith, 2015).

Musculoskeletal Functioning

Your musculoskeletal system supports and helps to move. It includes bones, joints, muscles, tendons, and ligaments. Physical fitness components like strength, speed, endurance, agility, flexibility and coordination are also dependent on musculoskeletal functioning.

METHODOLOGY

An experimental research was designed to study the impact of a physical activity programme on musculoskeletal functioning of intellectually disabled children. The experimental group participated in a physical activity programme for Twelve weeks whereas the control group was not exposed to any treatment.

To determine the effects of physical activity programme, 40 intellectual disabled boys from Government Rehabilitation Institute of Intellectual Disabilities (GRIID) were selected as subjects. The purposive sampling technique was used to select the subjects. The subjects were assigned arbitrarily to the experimental group (20) and the control group (20). The age of subjects ranged between 13 to 17 years.

Dependent variable

The aim of the research was to access the health-related physical fitness of disabled children. Different variables related to the health-related physical fitness were considered with the consultation of the supervisor and subject experts. Extensive literature survey had been conducted. Many previously conducted studies like Asonitou et al. (2018) explored “the impact of a specially designed program on physical fitness of grown-ups suffering from intellectual disabilities” and Graham and Reid (2013) did a research to trace the changes that occur over a span of 13 years in Bodily (physical) fitness of middle-aged adults having some intellectual incapacity. Thus, the investigator selected the Musculoskeletal Functioning (Muscular strength and endurance) as a dependent variable.

Independent Variable

A special physical activity programme for disabled children was constructed with the help of the supervisor, subject expert and through an extensive literature survey. This physical activity programme was implemented on the intellectually disabled children.

TESTS / TOOLS USED

The Brockport Physical Fitness Test (Winnick and Short 2014) specially constructed for the intellectually disabled children was selected for the study. The Brockport Physical Fitness Test provides a variety of test items to assess a specific variable.

VARIABLES AND TESTS

INDEPENDENT VARIABLE	DEPENDENT VARIABLES	TESTS/ TOOLS
PHYSICAL ACTIVITY PROGRAMME	Muscular Strength (Musculoskeletal Functioning)	Flexed-arm hang
	Muscular Endurance (Musculoskeletal Functioning)	Modified curl-up

RESULTS

Table-1

SIGNIFICANT DIFFERENCES BETWEEN PRE-TEST AND POST-TEST MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUP OF THE VARIABLE MUSCULOSKELETAL FUNCTIONING (FLEXED-ARM HANG)

Groups	Pre Test		Post Test		Standard error of differences	t-ratio	Sig.
	Mean	SD	Mean	SD			
Experimental	2.31	1.22	3.98	1.20	.25	6.73*	.000
Control	2.55	1.20	2.11	1.04	.11	4.06*	.001

* Significant at 0.05 level

df =19

Table - 1 depicted the results were significantly different in mean scores of pre-test and post-test of the variable musculoskeletal functioning (flexed-arm hang) of the experimental and control group. The results of the study show that the musculoskeletal functioning which was measured by flexed-arm hang, had improved after the implementation of the 12 week physical activity programme as significant differences were reported between the pre and posttest mean scores of the experimental group of the variable musculoskeletal functioning ($t=6.73, p<0.05$). Whereas, the pre and posttest mean scores of the control group were also found to be significantly different but the musculoskeletal functioning of this group decreased during the period of this experiment ($t=4.06, p<0.05$).

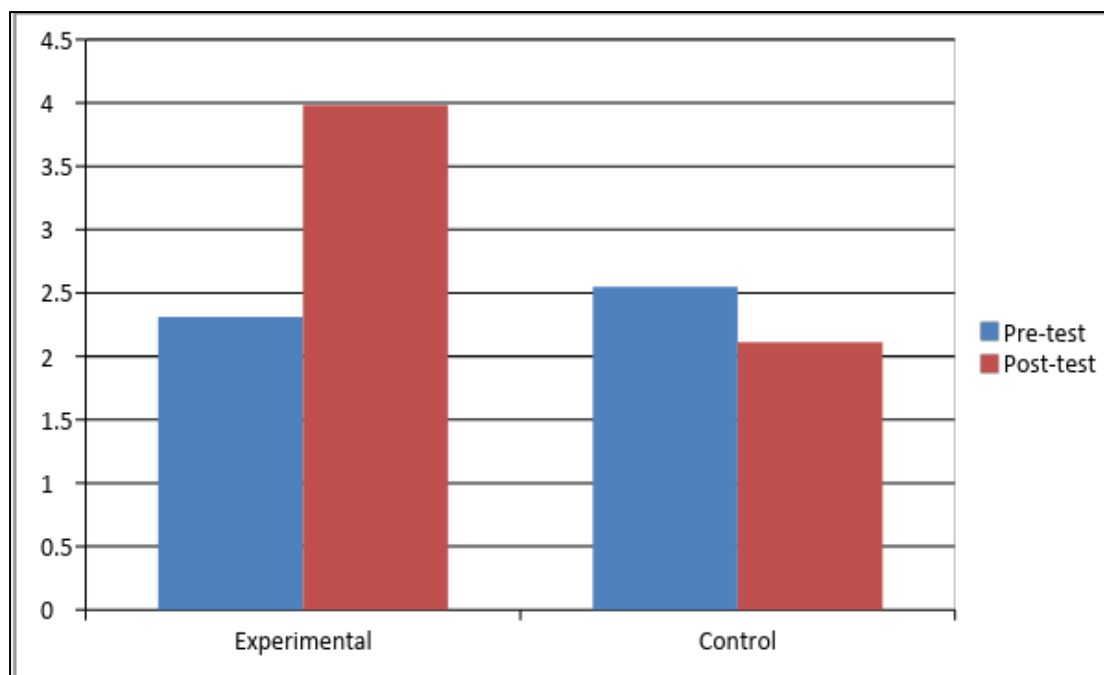


FIGURE -1 MEAN SCORES BETWEEN PRE-TEST AND POST-TEST OF THE EXPERIMENTAL AND CONTROL GROUP OF THE VARIABLE MUSCULOSKELETAL FUNCTIONING (FLEXED-ARM HANG)

TABLE - 2

SIGNIFICANT DIFFERENCES BETWEEN PRE-TEST AND POST-TEST MEAN SCORES OF THE EXPERIMENTAL AND CONTROL GROUP OF THE VARIABLE MUSCULOSKELETAL FUNCTIONING (MODIFIED CURL-UP)

Groups	Pre Test		Post Test		Standard error of differences	t-ratio	Sig.
	Mean	SD	Mean	SD			
Experimental	14.10	5.71	19.60	5.53	.67	8.15*	.000
Control	12.70	4.04	13.80	3.47	.43	2.53*	.020

* Significant at 0.05 level

df =19

Table -2 revealed that there were significant differences between the pre-test and post-test mean scores of the variable musculoskeletal functioning (modified curl-up) of the experimental and control group. The results of the study show improvement after the treatment implemented on the subjects which was measured by modified curl-up test, as significant differences were reported between the pre and posttest mean scores of the experimental group of the variable musculoskeletal functioning ($t=8.15, p<0.05$). the control group also improved during the treatment, as significant differences found between the pre and post test means for the variable of musculoskeletal functioning ($t=2.53, p<0.05$).

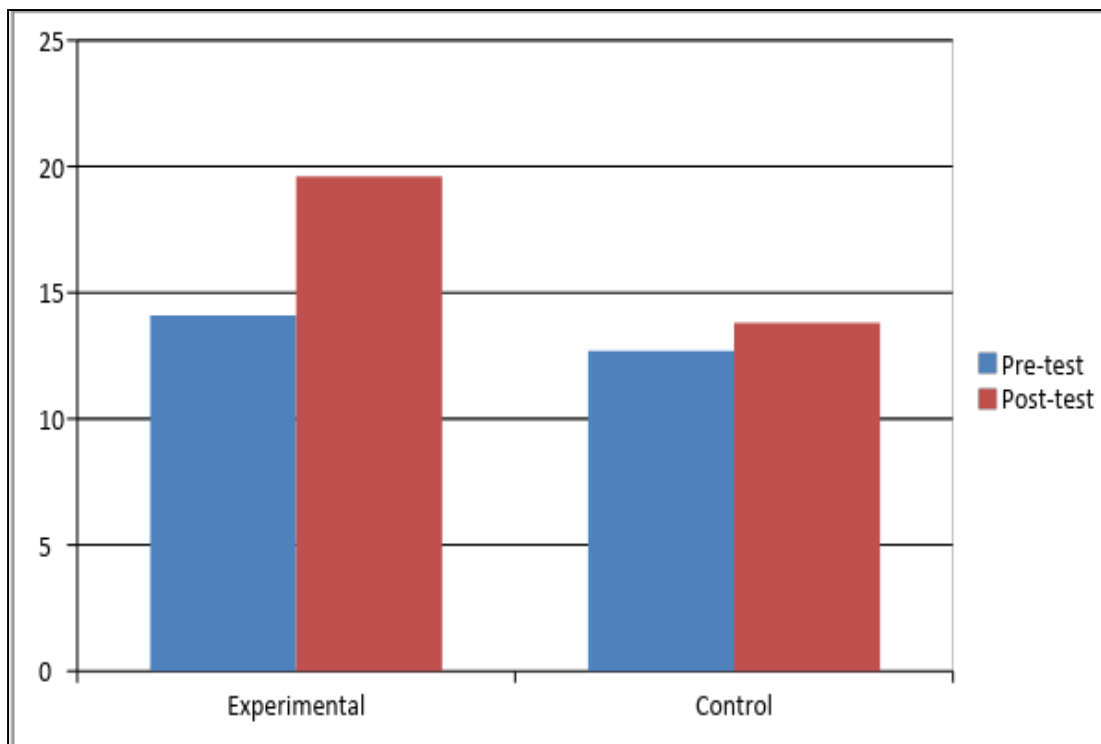


FIGURE - 2 MEAN SCORES BETWEEN PRE-TEST AND POST-TEST OF THE EXPERIMENTAL AND CONTROL GROUP OF THE VARIABLE MUSCULOSKELETAL FUNCTIONING (MODIFIED CURL-UP)

FINDINGS

Findings with regard to the effects of physical activity programme on muscular strength among intellectually disabled boys

For musculoskeletal functioning (flexed-arm hang), significant differences were reported between the prior and subsequent test scores of the experimental group ($t=6.73$, $p<0.05$) and the control group ($t=4.06$, $p<0.05$) by implementing the treatment.

It presents the comparison between pre-test mean scores of both the groups and between post-test mean scores of both the groups of the variables of health related fitness. In regard to musculoskeletal functioning (flexed-arm hang), an insignificant difference was reported between the pre-test mean scores ($t=.65$, $p>0.05$) and significantly different ($t=5.24$, $p<0.05$) for the post-test mean scores for both the groups.

Findings with regard to the effects of physical activity programme on muscular endurance among intellectually disabled boys

The musculoskeletal functioning was (modified curl-up) found significantly different in the pre and post-test mean scores of the experimental group ($t=8.15$, $p<0.05$). The control group also improved during the treatment, as significant difference was found between both the test mean scores of the variable musculoskeletal functioning ($t=2.53$, $p<0.05$).

It presents the comparison between pre-test mean scores of both the groups and between post-test mean scores of both the groups of the variables of health related fitness. For

the variable of musculoskeletal functioning (modified curl-up), insignificant differences were reported between the pre-test mean scores of both the groups ($t=.89$, $p>0.05$). Whereas, significant differences were reported between the post-test mean scores of both the groups ($t=3.97$, $p<0.05$).

CONCLUSION

The musculoskeletal functioning (flexed arm hang, strength) performance significantly increased by the implementation of the programme on the intellectually disabled children. The treatment had significantly improved musculoskeletal functioning (modified curl-up, endurance) performance of the intellectually disabled children.

RECOMMENDATIONS

1. Similar study can be conducted on the children with other disabilities such as autism, visually impaired, hearing impaired and learning disability (dyslexia).
2. Physical activity should be made an indispensable part of the school curriculum and special education curriculum for the intellectually disabled children.
3. Adapted physical education courses as a specialization should be introduced in the domain of physical education in colleges and universities.

BIBLIOGRAPHY

- Asonitou, K., Mpampoulis, T., Irakleous-Paleologou, H. & Koutsouki, D. (2018). *Effects of an Adapted Physical Activity Program on Physical Fitness of Adults with Intellectual Disabilities*. Advances in Physical Education. Volume-8, Page no- 321-336. ISSN Online: 2164-0408. ISSN Print: 2164-0386. <http://www.scirp.org/journal/ape>.
- Foley, J. T., Lieberman, L. J. & Wood, B. (2008). *Teaching strategies with pedometers for all children*. Review: 39 (4), page no 206-212.
- Graham, A. |& Reid, G. (2013). *Physical Fitness of Adults with an Intellectual Disability: A 13-Year Follow-up Study*. Research Quarterly for Exercise and Sport, 71, Page no.152-161.
- Harris, J. (2001). *Health-related exercise in national curriculum*. Champaign, IL, Human Kinetics.
- Ussher, M., West, R., McEwen, A., Taylor, A. & Steptoe, A. (2003). *Efficacy of exercise counseling as an aid for smoking cessation: a randomized Controlled trail*. Addiction; 98, page no 523-532.
- Smith, P. (2015). *The failure of special education: Life outcomes for people with disabilities and a call for revolutionary change*. 31st Annual Development Disabilities Conference, East Lansing, MI.
- Winnick, J.P. & Short, F.X. (2014). *Brockport Physical Fitness Manual: A Health-Related Assessment for Youngsters with Disabilities (2nd Edition)*. United States, Canada, Europe, Australia & New Zealand: Human Kinetics. ISBN-13: 978-1-4504-6869-5.