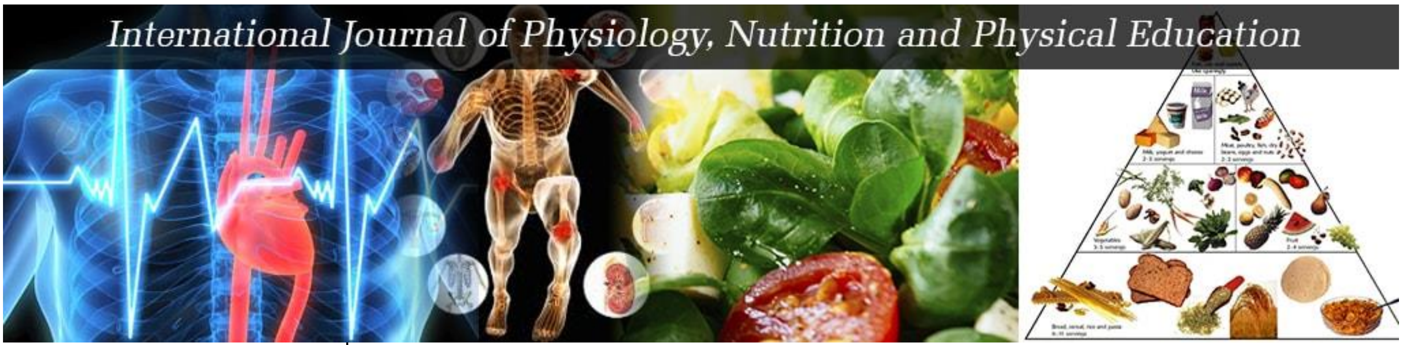

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Effects of aerobics on the development of gross motor skills of the middle school girls

T Bagavathi Subitha and Dr. P Arthur Daniel

Abstract
The purpose of the study was to find out the effect of aerobics on developing gross motor skill (GMS) among middle School girls (MSG). For this purpose, fifty girls were selected from Kanyakumari District, Tamil Nadu, India. The participants' age ranged between 10 to 12 years. The selected participants were divided into two groups of n=25 participants each namely Aerobic training group (ATG) and control group (CG). Group I underwent AT for 6 weeks for 3 days (alternate) per week. The selected GMS variables are horizontal jumping and Hopping. The selected outcome variables were assessed by using the standardized test manual for Test for Gross Motor Development Edition 2 (TGMD – 2). The collected data on the selected variables were treated with paired sample "t" test and Univariate Analysis of Covariance at 0.05 level of significance. The results of the study indicate that there was significant improvement on GMS because of 6 weeks AT and there was a significant difference between intervention and control group on GMS.

Keywords: Aerobics, Gross Motor skill, Coordination, balance, TGMD-2

Introduction
Aerobic exercise is enough to lead to immediate improvements on cognitive learning and memory tests (winter, Breitenstein, Mooren, Voelker, Fobker, Lechtermann, & Knecht, 2007) [12]. Aerobic exercise affects the brain indirectly through improvements in general health and fitness and through alterations in molecular signaling pathways that act directly on the CNS (Cotman, Berchtold, & Christie, 2007; Cotman, & Berchtold, 2002) [4, 3]. Converging evidence suggests that aerobic exercise is a valuable intervention for improving brain function Converging evidence suggests that aerobic exercise is a valuable intervention for improving brain function (Lambourne, & Tomporowski, 2010; Kramer, Erickson, & Colcombe, 2006; Colcombe, & Kramer, 2003; Colcombe, & Kramer, 2003, Kluding, Tseng, & Billinger, 2011) [7, 6, 1, 2, 5] and that these effects are mediated, in part, by upregulation of brain-derived neurotrophic factor (BDNF).
Aerobic exercise can reduce the risk of death due to cardiovascular problems. In addition, high-impact aerobic activities (such as jogging or jumping rope) can stimulate bone growth, as well as reducing the risk of osteoporosis for both men and women. In addition to the health benefits of aerobic exercise, there are numerous performance benefits:
- Increased storage of energy molecules such as fats and carbohydrates within the muscles, allowing for increased endurance
- Neovascularization of the muscle sarcomeres to increase blood flow through the muscles
- Increasing speed at which aerobic metabolism is activated within muscles, allowing a greater portion of energy for intense exercise to be generated aerobically
- Improving the ability of muscles to use fats during exercise, preserving intramuscular glycogen
- Enhancing the speed at which muscles recover from high intensity exercise

Gross motor skills, as well as many other activities, require postural control. Infants need to control the heads to stabilize their gaze and to track moving objects. They also must have strength and balance in their legs to walk (Santrock, & John 2008) [9].

Purpose of the study

The purpose of the study was to find out the impact of aerobics on developing GMS among MSG.

Methodology

The purpose of the study was to find out the influence of aerobics on developing GMS among MSG. For this purpose, (N=50) girls were selected from Kanyakumari District, Tamil Nadu, India. The participants' age ranged between 10 to 12 years. The selected participants were divided into two groups of n=25 participants each namely Aerobic training group (ATG) and control group (WG). Group I underwent AT for 6 weeks and 3 days (Alternate) per week. The selected GMS variables such as horizontal jumping and hopping. The selected outcome variables were assessed by using the standardized test manual for Test for Gross Motor Development Edition 2 (TGMD – 2). The collected data on the selected variables were treated with paired sample "t" test at 0.05 level of significant and Univariate Analysis of Covariance

Analysis of data

Table 1: The summary of mean and paired sample t-test and ANCOVA values

Variable	Test	ATG		WG		F Value
		Mean	SD	Mean	SD	
Hopping	Pre test	4.12	0.11	4.13	0.09	19.9*
	Post test	6.13	0.18	4.14	0.10	
	T test	5.69*		0.67		
Vertical jump	Pre test	4.10	0.12	3.33	0.10	20.7*
	Post test	5.25	0.07	3.36	0.09	
	T test	6.75*		0.72		

*Significant at .05 Level. Table value required for significance at .05 levels for 't' with 24 is 2.06 & 'f' with 1,47 is 4.05.

The paired sample t-test value of ATG is greater than the table value 5.69<df 2.06 on Hopping at 0.05 level of significance. The paired sample t-test value of ATG is greater than the table value 6.75<df 2.00 on vertical jump at 0.05 level of significance.

The paired sample t-test value of CG is lesser than the table value 0.67>DF 2.00 on hopping at 0.05 level of significance. The paired sample t-test value of CG is less than the table value 0.72>DF 2.00 on Vertical jump at 0.05 level of significance.

The ANCOVA F- ratio value on hopping is 19.9 and vertical jump is 20.7 which is greater than the table value with DF 1,47 is 4.05. This means that there is significance difference between WG and ATG on GMS.

Discussion on findings

The result of the study indicates that the ATG had significant improvement on selected dependent variable on Hopping, and vertical jump due to the effect of AT among MSG. CG didn't found any improvement on hopping and vertical jump among MSG.

However, ATG and CG had significant improvement difference on selected outcome variable such as hopping and vertical jump. The present findings of the study is confirmed by the studies conducted already related this area such as Ramakrishnan, & Sethu, (2018) [8]; Sethu, & Ramakrishnan; Donahoe-Fillmore, & Grant, (2019) [11]; Pise, Pradhan, & Gharote, (2018); Folleto, Pereira, & Valentini, (2016); Sethu, & Ramakrishnan, (2018) [10].

Conclusions

From the statistical analysis the following conclusions were drawn

1. ATG found significant improvement on hopping due to 6 weeks of AT among middle school girls.
2. ATG group found significant improvement on vertical jump due to 6 weeks of AT among MSG.
3. CG did not found significant improvement on hopping among the MSG.
4. CG did not found significant on vertical jump among the MSG.
5. Significant improvement difference exists between ATG and CG on hopping among MSG.
6. Significant improvement difference exists between ATG and CG on horizontal jump among MSG.

References

1. Colcombe S, Kramer AF. Fitness effects on the cognitive function of older adults: a meta-analytic study. Psychological science. 2003;14(2):125-130.
2. Colcombe S, Kramer AF. Fitness effects on the cognitive function of older adults: a meta-analytic study. Psychological science. 2003;14(2):125-130.
3. Cotman CW, Berchtold NC. Exercise: a behavioural intervention to enhance brain health and plasticity. Trends in neurosciences. 2002;25(6):295-301.
4. Cotman CW, Berchtold NC, Christie LA. Exercise builds brain health: key roles of growth factor cascades and inflammation. Trends in neurosciences. 2007;30(9):464-472.
5. Kluding PM, Tseng BY, Billinger SA. Exercise and executive function in individuals with chronic stroke: a pilot study. Journal of neurologic physical therapy: JNPT. 2011;35(1):11.
6. Kramer AF, Erickson KI, Colcombe SJ. Exercise, cognition, and the aging brain. Journal of applied physiology. 2006;101(4):1237-1242.
7. Lambourne K, Tomporowski P. The effect of exercise-induced arousal on cognitive task performance: a meta-regression analysis. Brain research. 2010;1341:12-24.
8. Ramakrishnan R, Sethu S. Effects of Yogasanas practice on motor skills among school children. 2018;14(4):581.
9. Santrock, John W. A Topical Approach to Lifespan Development (4th Ed.). New York: McGraw-Hill. ISBN 978-0-07-338264-7. OCLC 171151508, 2008.
10. Sethu S, Ramakrishnan R. Analysis of balancing abilities between government and private school children aged 6-8 years, 2018.
11. Sethu S, Ramakrishnan R. Physical Activity intervention on Locomotor Skills among school children–Pre and post randomised controlled study, 2019.
12. Winter B, Breitenstein C, Mooren FC, Voelker K, Fobker M, Lechtermann A, *et al*. High impact running improves learning. Neurobiology of learning and memory. 2007;87(4):597-609.