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LOGICAL THINKING AND COMPUTATION SKILL OF THE UNDER PERFORMANCE SCHOOL CHILDREN WITH EFFECT TO AEROBIC DANCE EXERCISE BETWEEN THE AGES OF 12 TO 15

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ABSTRACT

In this study we have analyzed the effect of aerobic dance exercise with musical practice and performance on logical thinking, computation skill among the under performance school children between the ages of 12 to 15. After obtaining the written consent from their parents and school authorities, 30 students were randomly selected for the study (N= 30) from the tirupur District, Tamilnadu. The pre test was conducted for the group with the wonderlic contemporary cognitive ability test which included the logical thinking and computation skill test. 6 week aerobic exercise dance exercise with music was given to the group 30 minutes daily, 5 days per week. After 6 weeks post test was taken. To find out the results paired t test was employed. The Obtained value t at 0.95 confidence interval was 6.3643 which are higher than the table value 2.045 and found that the aerobic dance exercise with



musical practice had an overall positive association with logical thinking, computation skill of the under performance school children of ages 12 to 15.

KEYWORDS: Aerobic dance exercise, Logical thinking, Computation skill, under performance.

INTRODUCTION :

A different way of achieving cognitive enhancement may be to target the entire bodily system through physical training where such effects have been observed (Hillman, Erickson, & Kramer, 2008; Hotting & Roder, 2013). Another way to achieve this may be to regularly engage in a complex activity that requires one to use higher order opinion, such as aerobic exercise. Formal aerobic exercise with music practice involves several cognitively challenging elements. Associations between formal aerobic training and cognitive ability have mostly been reported in retrospective studies (Forgeard, Winner, Norton, & Schlaug, 2008; Ruthsatz, Detterman, Griscom, & Cirullo, 2008; Schellenberg, 2006). There are also reports of associations between the

number of months of aerobic exercise practice and academic performance in maths, reading and spelling (Forgeard et al. 2008). Extensive aerobic exercise training is known to affect the anatomy of the brain, with greater gray matter volumes observed in motor related areas (Elbert, Pantev, Wienbruch, Rockstroh, & Taub, 1995; Hyde et al., 2009; Pascual-Leone, 2001). The large majority of university-based, internationally published research in this field has found a positive association between children's physical activity participation and academic achievement. Physical activity intervention leads to significant improvements in children's maths scores (Gao, Hannan, Xiang, Stodden, & Valdez, 2013; Hollar et al.; Riley, Lubans, Morgan, & Young, 2014; Stevens et al., 2008). Stevens et al., 2008; Wittberg, Northrup, & Cottrell, 2012). Boys who were in the Healthy Fitness Zone (HFZ) for aerobic fitness or muscular endurance were found to be 2.5 to 3 times more likely to pass maths/reading exams. Girls who were in the Healthy Fitness Zone (HFZ) for aerobic fitness were 2 to 4 times as likely to meet or exceed reading and maths standards (Bass et al., 2013). The evidence indicates that physical activity enhances children's cognitive functioning, concentration and on-task behaviour. Intervention research relating to the effects of physical activity on cognitive processing indicates that Physical activity improves children's cognitive control, concentration, attention and logical thinking ability (Arday et al., 2014; Budde, Voelcker-Rehage, PietraByk-Kendziorra, Ribeiro, & Tidow, 2008; Hillman et al., 2014; Hillman et al., 2009; Taras H, 2005). With evidence that children who are involved in more organised, community sports or recreation are likely to perform better academically, Cognitive ability tests are designed to measure such things as how well an individual reasons, solves problems, plans, organizes, thinks abstractly, learns quickly, and grasps the nature of complex problems. Cognitive ability tests have various labels and are also called intelligence tests, IQ tests, ability tests, aptitude tests, assessments of problem solving, and assessments of general mental ability. As with any hiring tool (Interviews, background checks, assessments), Aerobic Exercise has also been associated with decreased anxiety (Russo-Neustadt, 2009) and improved mood (Arent et al., 2000), as well as deficits induced by stroke (Cotman et al., 2009). Fitness training has been shown to largely influence various cognitive processes. The largest positive impact is generally observed for executive control processes, such as planning, inhibition, working memory, and multitasking (Colcombe and Kramer, 2003). In an FMRI study, Colcombe et al. (2004) examined the effects of a 6-month aerobic training program on brain activation patterns using the Eriksen flanker paradigm. When compared to control participants (toning and stretching group), participants in the aerobic group (walking) showed a significant increase in activity in areas involved in attentional control and conflict resolution, accompanied by greater reduction in anterior cingulate cortex (ACC) activation. These results suggest that aerobic training leads to increased efficiency of conflict and error monitoring. Studies support the view of an overall beneficial effect of exercise on brain health, The fact that physical activity parameters (frequency, intensity, and duration) vary across studies might explain the conflicting results in the literature. Another problematic issue is how physical activity is measured. Dancing was associated with better balance and gait. Kattenstroth et al. (2010) studied the impact of multi-year amateur ballroom dancing in a group of 24 healthy elderly subjects who had an average record of regular dancing of 16.5 years. Analyzing aerobic dance emerges as a promising activity for every individual specifically; dance comprises physical activity, motor coordination, balance, memory, attention, perception, emotions, affection, social interaction, acoustic stimulation, and musical experience. Still, intervention studies employing dance as an aerobic activity and looking into its effects on cognitive measures are still lacking. In order to see how far the present study will influence the under performance students and help them to involve in physical activities and with the given limited literature, the present study investigated the effects of a 6 week aerobic dance exercise on the logical thinking and computation skill of the under performance school children of the aged 12 to 15.

MATERIAL AND METHODS

After getting the details and permission from the school authorities and the parents 30 students were selected randomly for the study tirupur District, Tamilnadu. Pre test was taken by using wonderlic contemporary cognitive ability test and the aerobic exercise training with music was given 30-40 minutes daily, 5 days per weeks. After 6 weeks post test was taken. The test included with logical thinking and computation skills.

Analysis of data

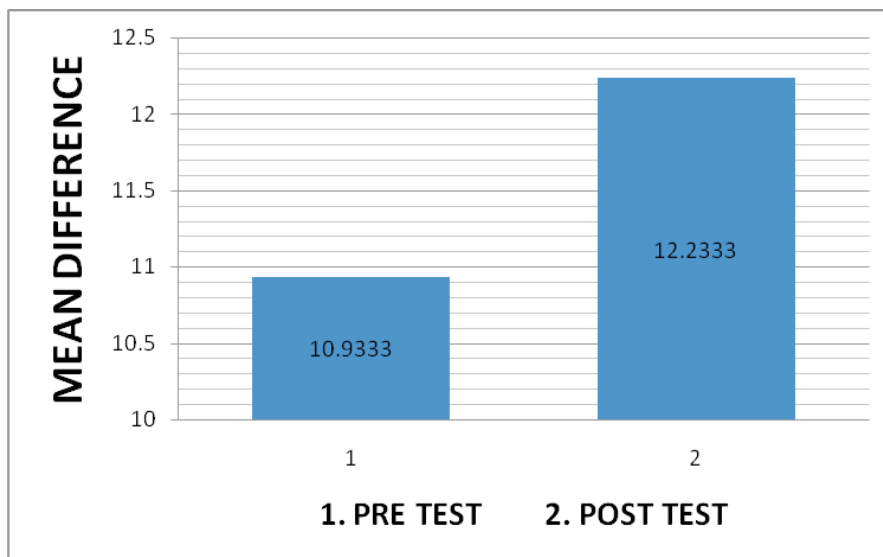
The results of the test are calculated by using paired t test.

Table 1

		Mean	N	SD	Std.Error mean	df	t value	Table Value
pair	Pre	10.93333	30	2.016	0.3743	39	6.3643	2.045
	post	12.2333	30	1.9945	0.3703	39		

Table 1 shows the mean the pre test mean value 10.93333 and the post test mean value 12.2333, standard deviation and standard error mean. And the obtained paired t value at 0.05 level of confidence is 6.3643 which exceeds the critical value of 2.045 shows that the aerobic dance exercise with music has been found significant in logical thinking and computation skill of under performance school children of ages 12 to 15.

Figure I Showing the mean difference of pre test and post test



FINDINGS AND CONCLUSION

Based on the results by using the paired t test is has been found that there is positive significant between the aerobic dance exercise with music and logical thinking ,computation skill of the school children of the aged 12 to 15. The obtained t value is 6.3643 and the table value is 2.045. Analyzing the aerobic dance exercise with music emerges as a promising activity for every individual specifically Memory, Attention, Perception, Social interaction, Acoustic stimulation and Musical experience of the under performance children and their performance in logical thinking and computation skill improves. Hence it is recommended that the aerobic exercises with music shall be imparted from the elementary level in order to obtain the good logical thinking and computation skill. This study will pass a message to the school authorities, teachers and parents to understand the scenario and help the under performing students by not avoiding or neglecting them from other students. The moral support will help those under performance students to come out of the inferiority complex and involve with other students and shall compete with them in a healthy manner.

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