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The Effect of Archery Activities on Concentration Levels in Elementary School Children

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Abstract

Concentration is an important skill for elementary school children to support their learning success. This study aims to determine the effect of archery activities on the concentration levels of elementary school children. The research method used was a pre-experiment with a pretest and posttest one-group design. The research sample consisted of 15 children at SDN Duren Tiga 14 South Jakarta. Concentration levels were measured using the Concentration Grid Test (CGT). The results of the analysis showed a significant increase in concentration scores, with a pretest average of 2.33 and a posttest average of 9.47. Archery activities were proven to be effective in improving the concentration of elementary school children at SDN Duren Tiga 14, South Jakarta. Archery can be used as a means of cognitive stimulation in schools to improve children's concentration.

Keywords: *archery activities, archery sports, concentration.*

INTRODUCTION

Concentration is the ability to focus attention on an activity so that individuals can understand, remember, and complete tasks effectively (Fatchuroji et al., 2023). Primary school-aged children are individuals between the ages of 6 and 12. At this stage, children begin to enter formal education and show improvements in their cognitive, social, emotional, and moral abilities(Papalia, 2020). Schools, as one element of development in large cities, are also not immune to the threat of noise pollution caused by heavy daily traffic (Yusuf Andy et al., 2017). Elementary school children often have difficulty concentrating due to internal and external distractions, such as gadget use and sedentary lifestyles. Poor concentration reduces comprehension, lowers motivation to learn, and increases stress(Lingkungan et al., 2017).

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Physical activity plays an important role in supporting brain function, including attention and concentration, because it increases blood flow to the brain and stimulates the release of neurotransmitters associated with cognitive functions such as dopamine and serotonin (Charles H. Hillman, 2008). One promising physical activity is archery, which combines physical movement with focus and mental concentration. Archery requires calmness, self-control, and visual-motor coordination, thereby potentially improving children's concentration (Teresa Johnson, 2015)

Previous studies have shown significant differences in concentration levels between children who participate in archery extracurricular activities and those who do not, but studies examining the effects of archery on elementary school children are still limited. This study aims to fill that gab (F. , & T. E. Ustun, 2020).

METHODS

Research Design

This Study used a pre-experimental method with a pretest-posttest one-group design. Data were collected from elementary school students in south Jakarta, specifically at SDN Duren Tiga 14.

Participants

The Participants were students at SDN Duren Tiga 14, South Jakarta in 2025. Data collection took place over a period of one month. The study population consisted at SDN Duren Tiga 14, South Jakarta.

Instrument

The instrument used in this study was the Concentration Grid Test (CGT) to determine the level of concentration ability possessed by individuals. The CGT consists of a 10 x 10 grid, with each box containing two digits ranging from 00 to 99. The test was conducted within 1 minute (Harris, 1984). Here are some examples;

44	07	52	83	61	55	73	87	21	59
94	72	70	57	62	86	49	24	32	19
43	98	99	35	74	68	76	11	12	97
85	04	88	14	60	03	27	58	45	46
06	25	30	10	47	09	29	54	38	78
71	37	16	89	05	33	92	90	22	84
48	56	26	95	28	18	77	15	67	36
39	50	66	23	75	80	01	31	79	34
82	65	81	93	02	64	20	13	40	17
08	91	42	41	69	53	96	63	51	00

Figure 1. *Concentration Grids Test (CGT)*
Source: (Brian Cain, n.d.)

Procedure

The sampling technique used purposive sampling, considering the following inclusion criteria: elementary school children at SDN Duren Tiga 14 aged 9–12 years, not archery athletes, who gave their consent and were willing to participate in the research series until completion. The exclusion criteria included elementary school children at SDN Duren Tiga 14 who did not meet the requirements. The sample in this study consisted of 15 elementary school children.

Archery activities were conducted in six sessions, each lasting 60 minutes, covering basic techniques ranging from stance, nocking, hooking, set-up, drawing, anchoring, to release (Teresa Johnson, 2015). The research procedure began with a pretest to measure the children's initial concentration levels using the CGT, followed by an intervention in the form of archery activities for six sessions, and ended with a posttest to measure concentration levels again using the same instrument The steps in data collection are as follows: Pretest, the pretest is administered to obtain baseline data from the research sample regarding concentration; Research Impplementation (Treatment), the intervention is based on a pre-designed activity program. The research process consists of 6 sessions, each lasting 60 minutes. The intervention involves archery activities. Posttest, the posttest in this study used the CGT for both groups, aiming to determine the concentration levels of elementary school children after enganging in archery activities (in the experimental group) and without any intervention in the control group. The differences in posttest result can be compared between the pretest and

posttest scores for both groups. The data obtained were analyzed using the Shapiro-Wilk normality test. Since the pretest data were not normally distributed ($p<0.05$), the Wilcoxon Signed Rank Test was used to determine the difference between the pretest and posttest scores for concentration among elementary school children.

RESULTS

Results of data analysis of research on the effect of archery activities on concentration levels in elementary school children. The number of subjects in this study was 15 elementary school children, consisting of 6 boys (40%) and 9 girls (60%). The average age of the sample was 10 years, with the youngest being 9 years old and the oldest being 12 years old. The average height and weight of the subjects were 133.6 cm and 30.7 kg, respectively.

Table 1. Concentration Pretest and Posttest Data

Research Result Data	N	Mean	SD	Min	Max
Pretest	15	2,33	2,1	0	5
Posttest	15	9,47	4,6	3	17

Based on Table 1, the average concentration score increased from 2.33 on the pretest to 9.47 on the posttest. The minimum score increased from 0 to 3, and the maximum score from 5 to 17. These results indicate an increase in concentration after the archery activity.

Table 2. Hypothesis Test

Research Result Data	N	Z	Sig (2-tailed)
Pretest - Posttest	15	-3,327	0,001

Based on Table 2, it can be explained that the Z value = -3.327 with a significance (Sig. 2 tailed) of 0.001. The significance value is less than 0.05 ($p<0.05$), which means that there is a significant change between the pretest and posttest results. Thus, archery activities have a significant effect on increasing the concentration levels of elementary school children.

DISCUSSION

Attention deficit disorder is a brain disorder that causes a person to have difficulty concentrating and focusing their attention. 80% of children with ADD have a tendency to experience learning difficulties and behavioral disorders (Abdul Alim, 2009). The application of archery as a non-academic intervention to improve concentration in elementary school children. Archery requires emotional control, focus on the target, and visual-motor coordination, thereby stimulating the prefrontal cortex, the part of the brain associated with attention regulation(Patel, 2022).

The results of this study show that archery activities can increase the concentration levels of elementary school children, with a difference of 7.14 points between the pretest and posttest after the archery intervention. Based on these results, a physical activity-based approach can be integrated as a learning support strategy. This is reinforced by the statement that archery is an individual sport and requires a calm mind to achieve certain results, thereby expanding opportunities to improve temporal concentration and support the educational process(Peeva, 2021). In line with several other studies that say physical activity during childhood has a positive relationship with improved attention and concentration(Reigal et al., 2020). He also said that the attention span of children aged 9–13 years had a positive effect after participating in archery activities (F. Ustun & Tasgin, 2020). Previous research has found similar results: archery has an impact on students' ability to concentrate on their studies, as there is a significant difference in concentration ability between students who participate in archery as an extracurricular activity and those who do not. The impact is clearly positive, as the ability to concentrate on their studies is higher among students who participate in archery as an extracurricular activity than among those who do not (Hardi & Hastian, 2022)

However, this study has several limitations, including that it was only conducted in one school and on one age group, and did not compare it with groups that performed other physical activities associated with other variables.

CONCLUSSION

Archery activities have been proven to improve the concentration levels of elementary school children. The average CGT score increased from 2.33 to 9.47,

which shows the effect of archery activities on the concentration of elementary school children at SD Negeri Duren Tiga 14, South Jakarta. The significant improvement after the children participated in archery activities shows that archery can be an effective means of training children's focus and attention because it involves visual-motor coordination, emotional control, and skill development.

However, this study has several limitations, including a relatively small sample size and a scope limited to a single school; therefore, the generalizability of the findings should be interpreted with caution. Additionally, this study did not account for other variables that might influence concentration, such as psychological factors, the learning environment, and other levels of physical activity. Therefore, it is recommended that future studies use a larger sample size and involve subjects from various schools or different regions so that the research results can be generalized more broadly. Future research could also develop a stronger experimental design, such as using a control group, and include other relevant variables to provide a more comprehensive understanding of the effects of archery activities on concentration. Furthermore, a longer intervention duration could be considered to examine the long-term effects of archery activities on children's cognitive development

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