

Alphabet Circuit as a Child's Physical Activity

Apta Mylsidayu^{1,2}, James Tangkudung¹, Achmad Sofyan Hanif¹, Bujang^{1,2},

Veramytha Maria Martha Flora Babang³

Universitas Negeri Jakarta, Jakarta-INDONESIA

Universitas Islam 45 Bekasi, Jawa Barat-INDONESIA

Universitas Nusa Cendana Kupang, NTT-INDONESIA

Email: mylsidayu@gmail.com

Abstract

Physical activity with an alphabet circuit will improve a child's physical fitness. This study aims to produce a model of physical activity based on the alphabet circuit for first grade students of elementary school. The method used in this research is research and development (R and D) by adopting the research steps of Borg and Gall. This development research is modified from 10 to 4 stage, including: (1) a preliminary stage, (2) development stage, (3) field test stage, and (4) dissemination stage. A small-scale trial was conducted on 44 students in SDN Aren Jaya 04 Bekasi City and SDN Gandasari 01 Bekasi Regency. Large-scale trials were conducted on 144 students in MI Al-Wathoniyah Bekasi Regency, SD IT Darussalam Bekasi Regency, and SD Al-Azhar 17 Bintaro Tangerang. Instruments of data collection used observation and ratings sheets on the alphabet circuit model as a child's physical activity. Guttman scale data analysis technique was used to analyse the data. The result of the research are the physical activity model based on the alphabet circuit for first grade students of elementary school, each letter consisting of locomotor, non-locomotor, and basic manipulation movements. Based on the assessment of matter experts and teachers, it can be concluded that the alphabet circuit as a child's physical activity is appropriate for use in physical education learning for first grade students of elementary school.



Keywords: Alphabet circuit, child's, physical activity.

Introduction

Very strong scientific evidence, based on a wide range of well-conducted studies, shows that physically active people have higher levels of health-related fitness, a lower risk profile for developing a number of disabling medical conditions, and lower rates of various chronic diseases than do people who are inactive (Physical Activity Guidelines Advisory Committee, 2008). Being physically active is one of the most important actions individuals of all ages can engage in to improve their health (Piercy et al., 2018). Physical activity plays a critical role in achieving a greater level of life quality and independence (Khalili Moghaddam & Lowe, 2019). There appears to be a linear relation between physical activity and health status, such that a further increase in physical activity and fitness will lead to additional improvements in health status (Warburton, Nicol, & Bredin, 2006). Physical activity is defined as “any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level” (US Department of Health and Human Services, 2008; Agbuga, Xiang, & Mcbride, 2013).

Strong evidence demonstrates that the physical fitness and the health status of children and youth are both substantially enhanced by frequent physical activity. Compared to inactive young people, physically active children and youth have higher levels of cardiorespiratory endurance and muscular strength, and well documented health benefits include reduced body fatness, more favourable cardiovascular and metabolic disease risk profiles, enhanced bone health, and reduced symptoms of anxiety and depression (Physical Activity Guidelines Advisory Committee, 2008). Physical activity is a viable strategy for the prevention and treatment of low bone mass (Kohrt, Bloomfield, Little, Nelson, & Yingling, 2004). Epidemiological studies suggest that persons who engage in the recommended amounts of physical activity (150 min per week in moderate-intensity activity, 75 min per week in vigorous-intensity activity, or a combination of

the two intensities) have overall mortality rates (mortality from all causes) that are 20–30% lower than those of persons who do not reach these amounts (PAGAC, 2008; Fuchs, 2015).

Approximately 80% of US adults and adolescents are insufficiently active (Piercy et al., 2018). Additionally, many school districts across the US continue to reduce or eliminate physical education to the extent that up to 40% of the nation's youth are not even enrolled in physical education classes (USDHHS, 1996; Agbuga et al., 2013). Lack of physical activity is hypothesised to be an important contributing factor in the development and/or maintenance of childhood obesity (Troost, Kerr, Ward, & Pate, 2001). It is important to provide young people opportunities and encouragement to participate in physical activities that are appropriate for their age, that are enjoyable, and that offer variety. Children and adolescents aged 6 through 17 years should do 60 minutes (1 hour) or more of moderate-to-vigorous physical activity daily (Piercy et al., 2018). Children spend on average 8 to 9 hours/day in physical activities to increase 3 min per day per year in school-age children (Gao et al., 2018).

In Toronto, the Toronto Charter for Physical Activity is a call for action and an advocacy tool to create sustainable opportunities for physically active lifestyles for all (Global Advocacy Council for Physical Activity International Society for Physical Activity and Health, 2010). Children and adolescents participated in the recommended level of physical activity—at least 60 minutes daily— and multiple health benefits accrue (Centers for Disease Control and Prevention, 2010).

Physical education has been an institution in American schools since the late 19th century, and today almost all American children are exposed to physical education classes (Pate, O'Neill, & McIver, 2011). Physical education plays a critical role in educating the whole student. The benefits of physical education can affect both academic learning and physical activity patterns of students (Benefits, 2001). Students may improve academic achievement as a result of increased physical activity through physical education, including increased arousal and reduced

boredom, which may lead to increased attention span and concentration (Coe, Pivarnik, Womack, Reeves, & Malina, 2006). PES (Physical Education and Sport) have the potential to make distinctive contributions to the development of children's fundamental movement skills and physical competences, which are necessary precursors of participation in later lifestyle and sporting physical activities (Bailey, 2006).

The physical activity model for first grade elementary school students is very diverse and varied. The strength of physical activity that already exists is that learning related to physical activity has been adapted to the characteristics of first-year students of elementary school (aged 6-7 years). The disadvantage of learning is the teacher provides less varied models of physical activity for first grade elementary school students, because he/she is only guided by the package book. The teacher has never provided a circuit-based physical activity model for the physical freshness of first grade elementary school students. In schools across the United States, physical education has been substantially reduced—and in some cases completely eliminated—in response to budget concerns and pressures to improve academic test scores (Trost, 2009). In Indonesia, some schools eliminate physical education subjects and are used as extracurriculars on Saturdays.

Furthermore, the 2013 curriculum (K-13) is a curriculum that applies to the Indonesian education system and is a curriculum that is still applied by the government to replace KTSP (Curriculum 2006 which has been valid for approximately 6 years). The 2013 curriculum is considered very suitable for the formation of children's character but the system is not yet supportive. Some teachers stated that the 2013 curriculum carried out in schools was done by means of children being given video watching first (audio visual) then the child did what he saw, so that the learning time was felt to be lacking. Another opinion stated that the 2013 curriculum was considered ineffective for first grade elementary school students, because the age was still in the learning stage so it must be exemplified before the child did the motion assignments, the

language used in learning was not suitable for the child, and Physical education lessons were not necessarily held once a week because it adapts to the theme of learning.

Other findings, for the basic education program in schools that use the 2013 curriculum, are taught by classroom teachers who in fact do not have experience and knowledge in physical education. There are also a number of schools that are taught by physical education teachers but the physical education teachers teach according to their sub-themes (tentatively), so physical education is not necessarily implemented once a week. Even though the age of 6-7 years is the age of play, the goalpost is to be given physical education in elementary school so that children do physical activities happily, and children become healthy and fit.

The results of the author's observation on several elementary schools in Bekasi obtained the following information: (1) there are still many students who are less interested in exercising and just watching/seeing their friends exercising, (2) during school breaks, most students just sit in class and some students buy food, (3) the average student is picked up by parents using a car or motorcycle. So, students lack physical activity. This lack of physical activity needs to be studied further in order to make appropriate intervention (Mylsidayu, 2019).

Circuit training has been shown to be more effective at lowering body fat (Balachandran, Krawczyk, Potiaumpai, & Signorile, 2014). At one level circuit training consists of a series of reflexive body techniques, configured in a sequential structure (Crossley, 2004). The circuit training method is a method of organising physical training given in the form of a circuit with a specific training load setting to improve the ability of the physical condition (Hanif, 2014). For children used body weight as resistance during circuit training. For years, a growing body of research expanded on the benefits of this highly efficient mode of training (Klika & Jordan, 2013).

The advantages of circuit training, include: (1) increasing various components of the physical condition simultaneously in a relatively short time, (2) each athlete can practice according

to their respective progress, (3) each athlete can observe and assess his own progress, (4) it is easy to supervise training, and (5) it saves time and can be done by many people at once. However, the disadvantage is that the training load cannot be adjusted optimally according to the burden on special training, so that every physical element cannot develop optimally, except in the form of stamina (Hidayat, 2014). The age of children is the age of the introduction of sports. The principle in exercising for children is playing. Therefore, taking into account the advantages and disadvantages of regional training, the authors feel that the physical activity of children in schools is suitable for using the alphabet circuit model. Besides playing, children can learn to recognise letters. Physical activity with the alphabet circuit will improve children's physical fitness.

Therefore, this study aims to produce a physical activity model based on the alphabet circuit for first grade elementary school students.

Methods

The method used in this research is research and development (R and D) by adopting the research steps of Borg and Gall. This development research is modified from 10 to 4 stage, including: (1) a preliminary stage, (2) development stage, (3) field test stage, and (4) dissemination stage. The development research is a research that is used to create new products and develop existing products based on the analysis of needs contained in the field which include: observation, interviews and an initial needs questionnaire (Tangkudung, 2016).

Furthermore, the purpose of this research and development is not to test the theory but to develop effective products for use in learning physical activities given to first grade students of elementary school (aged 6-7 years). That is, the findings in the research are used to design new products and procedures which are then field tested, evaluated, and refined to meet the effective criteria.

The Study Group

The research subjects were first grade students of elementary school aged 6-7 years. Regarding the subject of this study, can be seen in more detail in Table 1.

Table 1. Research subject

No	School names	Number of research subjects	
		Small scale	Large scale
1	SDN Aren Jaya 04 Bekasi City	20	
2	SDN Gandasari 01 Bekasi Regency	24	
3	SD IT Darussalam Bekasi Regency	-	36
4	SD Al-Azhar 17 Bintaro Tangerang	-	62
5	MI Al-Wathoniyah Bekasi Regency	-	46
Total		44	144

In Table 1, A small-scale trial was conducted on 44 students in SDN Aren Jaya 04 Bekasi City and SDN Gandasari 01 Bekasi Regency. Large-scale trials were conducted on 144 students in MI Al-Wathoniyah Bekasi Regency, SD IT Darussalam Bekasi Regency, and SD Al-Azhar 17 Bintaro Tangerang.

Data Collection Tools

Instruments of data collection used observation, interviews, documentation (videos and photots), and ratings sheets for the alphabet circuit model as a child's physical activity. Documentation in the form of videos and photos was done to maintain research objectivity. So, the results of data analysis can be easily understood, and the findings can be informed to others. Guttman scale data analysis technique was used to analyse the data.

Data Analysis

Data Analysis is done by organising data, describing data into units, synthesising, arranging into patterns, choosing which ones are important and which will be studied, and making conclusions that can be told to others (Sugiyono, 2006). This study uses a qualitative and quantitative approach. Qualitative data were analysed at the time of data collection and after data collection was completed in a certain period, it was summarised to select the main and important things, then presented the data to be easily understood, what happened, and planned further work, then conclusions and verification were made, which was a new finding in the form of a description.

Other data in the form of field notes and documentation must be present in small and large scale trials so that there is feedback that can be used to repair and refine the game model in the next development to the optimization of the final form that is ready for use. To determine the feasibility category of circuit-based physical activity models for physical fitness of elementary school students, a questionnaire was given by experts and teachers in field tests (small and large scale). The questionnaire used in the study used a measurement scale, namely the Guttman scale used for expert judgment and a teacher with two feasible or inappropriate choices. The results of a proper or inadequate assessment by an expert are then converted into a score and the percentage calculated. After that it can be concluded that the results are feasible and not feasible from the model.

The Guttman scale data analysis technique is used to analyse the data. The scoring results of each item are summed and the total value is converted to find out the category. The value scale uses the Benchmark Reference Assessment (PAP). Benchmark reference assessment is an assessment that compares student learning outcomes to a predetermined benchmark (Nurhasan, 2001).

Furthermore, the researcher determined the Benchmark Reference Assessment (PAP) to develop a circuit-based physical activity model for elementary school students in small and large scale tests by dividing 3 criteria as follows.

Tabel 2. Small and large scale test rating scales

Value Scale	Percentage (%)	Criteria
34 – 50	68 – 100	Good/Accepted
17 – 33	34 – 67	Enough/Repaired
0 – 16	0 – 33	Less/Not Accepted

To find out the average value in the small and large scale test, the formula used is as follows.

$$\text{The average value of the physical activity model} = \frac{\text{Total score}}{\text{Number of item variations}}$$

Findings

The result of the research is the physical activity model based on the alphabet circuit for first grade students of elementary school, each letter consisting of locomotor, non-locomotors, and basic manipulation movements. The circuit-based physical activity designed and developed by researchers consists of 26 circuits, including Alphabet letters (26 circuits), consisting of: letters A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, AND Z.

The circuit-based physical activity model for elementary school students is arranged in a draft of the initial product and tested in the physical education learning activities. The implementation process is documented using digital cameras, mobile phones and camcorders. The function of documentation is to equate expert judgment perceptions about the arrangement

of tools, the number of students, and the implementation of circuit-based physical activities for first grade students of elementary school.

Validation of Early Product Draft Experts

The initial draft model of circuit-based physical activity for elementary school students is a further step, after conducting a needs' analysis and planning for the development of a circuit-based physical activity model. Before the product is carried out on a small scale trial, the initial product is validated first by expert judgment. Validation is done by giving the initial product draft with an evaluation sheet.

The following is a summary of the revised draft initial product, based on the results of the evaluation of the development of circuit-based physical activity for elementary school students by expert judgment and can be seen in the following table.

Table 3. Assessment of the initial product draft development of a circuit-based physical activity model for elementary school students

No	<i>Expert Judgment</i>	Number of item variations										Score
		1	2	3	4	5	6	7	8	9	10	
1	HAR	9.6	9	9	9	9.6	9.6	9.6	9	9	9.6	93
2	JT	9	9.2	9	9.2	9.5	9.5	9.5	9.5	9	9	92.4
3	EDM	9.5	9.5	9.5	9	9.5	9	9.2	9.2	9.2	9	92.6
Total											278	
Average											92.7	

Based on the assessment of matter experts and teachers, it can be concluded that physical activity is an ideal use in physical education learning for first grade students of elementary school. It can be seen that the average rating of 3 experts is 92.7 (see table 2), which shows that the initial product draft has very good criteria. Therefore, the development of the model is stated to be suitable and safe to be used for first grade students of the elementary school. Thus, it can be concluded that the development of circuit-based physical activity models for elementary school students can be continued to be tested on a small scale.

The following is a grid of physical activities that will be carried out by students when playing the circuit: (1) Basic locomotors motion, consisting of: walk, jogging, zigzag running, horse running, jumping, crawling, running like a bird, rabbit jumping, frog jumping, goalpost post jumping, running open foot cover, kangaroo jumping, walking on the line, tiptoe walking, Spiderman walking, walking while throwing legs, 180° spinning jump, sitting spinning like a top, running up, and running bending your legs backwards, (2) Non-locomotors base motion, consisting of: bending the head, turning the head, bending the body, stretching the arms, sitting crossing the body, latter L, S metre, rotating the arm, bending the legs (horses), bending the legs, hands like hitting a big ball, bottom ball volleyball, sitting stretching (waves), pair holding friend's shoulders, static backing up, sitting in Japan then bending to the front, wiggling body to right-left, sitting sila, kissing knees, crossing hands while bending, crossing your hands in front of your chest, and clap your hands, and (3) Basic manipulation movements, consisting of: running with a ball, rotating a ball clockwise, dribbling, throwing a catch of patchwork, throwing a catch of a ball, rolling a ball to the left and right while squatting, a tiptoe carrying a ball, jumping a rabbit holding the ball, walking the ball and touching it to the head-knee-leg, walking while squeezing the ball smile, jumping into a circle, walking while moving the ball to the left-right hand, running to touch cones, crawling while shifting cones, throwing circles into cones, walking while twisting patchwork, throwing balls in a box, throwing a ball, walking while carrying a ball in cones,

walking while swinging the ball like a wave, rolling the ball over the feet, sitting swinging the ball, walking while playing with a ribbon, touching the foot, touching the foot while pinning the ball, throwing the hula hoop and putting the body into the hula hoop, running zigzag with the hula hoop, and circling the ball on the body.

Final model draft

Physical education learning is divided into three parts namely, introduction, core learning, and closing. The contents of the draft material for circuit-based physical activity models for elementary school students are locomotor, non-locomotor, and manipulation. The physical activity for core learning consists of 26 alphabets, including the letters A-Z.

Small scale and revised trials

Assessment of observation results per item variation of circuit-based physical activity for physical fitness of first grade students of elementary school can be seen in Table 4 below.

Table 4. Observational data on circuit-based physical activity for physical fitness of elementary school students on a small scale

No	Variation	Max score	Results					Total	%	Criteria
			Expert 1	Expert 2	Expert 3	Teacher 1	Teacher 2			
1	Letter A	50	8	7	9	7	8	39	78	Good / Accepted
2	Letter B	50	7	8	8	8	8	39	78	Good / Accepted
3	Letter C	50	8	9	9	8	9	43	86	Good /



No	Variation	Max score	Results					Total	%	Criteria
			Expert 1	Expert 2	Expert 3	Teacher 1	Teacher 2			
									Accepted	
4	Letter D	50	9	9	8	9	9	44	88	Good / Accepted
5	Letter E	50	7	6	6	7	7	33	66	Enough / Repaired
6	Letter F	50	8	9	8	8	7	40	80	Good / Accepted
7	Letter G	50	8	8	8	8	9	41	82	Good / Accepted
8	Letter H	50	6	6	6	7	6	31	62	Enough / Repaired
9	Letter I	50	8	7	8	8	7	38	76	Good / Accepted
10	Letter J	50	8	8	8	7	8	39	78	Good / Accepted
11	Letter K	50	6	6	6	7	7	32	64	Enough / Repaired
12	Letter L	50	8	7	7	7	8	37	74	Good / Accepted
13	Letter M	50	6	6	7	7	7	33	66	Enough / Repaired
14	Letter N	50	8	9	8	8	8	41	82	Good / Accepted
15	Letter O	50	8	8	7	7	8	38	76	Good /



No	Variation	Max score	Results					Total	%	Criteria
			Expert 1	Expert 2	Expert 3	Teacher 1	Teacher 2			
									Accepted	
16	Letter P	50	7	8	8	7	8	38	76	Good / Accepted
17	Letter Q	50	6	7	6	7	7	33	66	Enough / Repaired
18	Letter R	50	8	8	8	8	8	40	80	Good / Accepted
19	Letter S	50	8	8	7	8	8	39	78	Good / Accepted
20	Letter T	50	7	7	8	7	8	37	74	Good / Accepted
21	Letter U	50	8	8	9	7	8	40	80	Good / Accepted
22	Letter V	50	8	9	9	7	8	41	82	Good / Accepted
23	Letter W	50	8	8	9	7	8	40	80	Good / Accepted
24	Letter X	50	6	6	6	7	7	32	64	Enough / Repaired
25	Letter Y	50	8	9	9	8	8	42	84	Good / Accepted
26	Letter Z	50	8	8	9	7	8	40	80	Good / Accepted

Based on Table 4 about the results of observations of circuit-based physical activity for elementary school students on a small scale, it can be seen that variations in physical activity in the criteria of good/received amounted to 87.5% (42 variations of physical activity), and sufficient/improved criteria of 12.5% (6 variations physical activity). That is, 48 models of proper physical activity are used to be continued on a large scale, with the note that 6 variations (letters E, H, K, M, Q, and X) of physical activity must be corrected.

Based on the results of the discussion with the validator, there are several things that must be corrected, namely the equipment given various colours to attract children, the arrangement of students when carrying out physical activities is limited to 4-5 people so students do not wait or clash with each other, before starting physical activities students are given questions to guessing waking up space / letters / numbers, and students who make motion mistakes must repeat the movement. Suggestions for improvement from experts and teachers were used as guidelines for revising small-scale trials for developing circuit-based physical activity models for elementary school students.

After getting the input and making improvements to the circuit-based physical activity model for the physical freshness of elementary school students to be used, the next step is to ensure that the results of the revision are consulted by expert judgment. Then, the revised results are tested in the next phase, namely large-scale trials.

Large scale and revised trials

Assessment of observation results per item variation of circuit-based physical activity for physical fitness of first grade elementary school students can be seen in Table 5 below.

Table 5. Observational data on circuit-based physical activity for physical fitness of elementary school students on a large scale

No	Variation	Max score	Results					Total	%	Criteria
			Expert 1	Expert 2	Expert 3	Teacher 1	Teacher 2			
1	Letter A	50	9	9	10	8	9	45	90	Good / Accepted
2	Letter B	50	8	8	9	9	10	44	88	Good / Accepted
3	Letter C	50	8	9	9	8	9	43	86	Good / Accepted
4	Letter D	50	9	9	10	10	10	48	96	Good / Accepted
5	Letter E	50	9	8	8	9	9	43	86	Good / Accepted
6	Letter F	50	8	9	8	8	8	41	82	Good / Accepted
7	Letter G	50	8	9	8	8	9	42	84	Good / Accepted
8	Letter H	50	9	9	9	10	10	47	94	Good / Accepted
9	Letter I	50	9	8	8	10	9	44	88	Good / Accepted
10	Letter J	50	9	8	9	8	8	42	84	Good / Accepted
11	Letter K	50	8	8	8	9	8	41	82	Good / Accepted



No	Variation	Max score	Results					Total	%	Criteria
			Expert 1	Expert 2	Expert 3	Teacher 1	Teacher 2			
12	Letter L	50	9	8	8	9	9	43	86	Good / Accepted
13	Letter M	50	8	8	8	8	8	40	80	Good / Accepted
14	Letter N	50	9	9	8	10	9	45	90	Good / Accepted
15	Letter O	50	10	8	8	9	9	44	88	Good / Accepted
16	Letter P	50	8	8	9	9	10	44	88	Good / Accepted
17	Letter Q	50	8	9	8	8	9	42	84	Good / Accepted
18	Letter R	50	8	8	8	9	10	43	86	Good / Accepted
19	Letter S	50	9	9	9	9	9	45	90	Good / Accepted
20	Letter T	50	8	8	8	8	8	40	80	Good / Accepted
21	Letter U	50	10	8	10	10	10	48	96	Good / Accepted
22	Letter V	50	9	9	9	8	8	43	86	Good / Accepted
23	Letter W	50	8	8	10	8	8	42	84	Good / Accepted

No	Variation	Max score	Results				Total	%	Criteria	
			Expert 1	Expert 2	Expert 3	Teacher 1				Teacher 2
24	Letter X	50	8	8	8	8	8	40	80	Good / Accepted
25	Letter Y	50	9	9	9	9	9	45	90	Good / Accepted
26	Letter Z	50	8	10	10	8	10	46	92	Good / Accepted

Based on revision, circuit-based physical activity for elementary school students is more effective. When doing physical activities you should choose several activities that use the same tools so that not much time is wasted preparing learning tools. After the results of discussions with experts, products are packaged in a guidebook that is equipped with procedures for carrying out physical activities with pictures, to see the effectiveness of the product which can be continued by conducting experiments for one semester. Suggestions for improvement from experts and teachers were used as guidelines for revising large-scale trials for developing circuit-based physical activity models for elementary school students.

Final Product

The results of the revised large-scale trial produced a draft final alphabet circuit for child's physical activity. The difference in the draft model with the final product can be seen in Table 6.

Table 6. Differences in the draft model with the final product

Draft initial model	The final product
<ul style="list-style-type: none">• The number of students has not been included• The number of tools used has not been included• Size of field for small circuits (<5 meters)• One colour goalpost post• Cones used are cone shaped cones	<ul style="list-style-type: none">• Number of students included• The number of tools used is listed• The size of the field for the circuit is larger (<8 meters)• More than one colour goalpost post• The two cones used are cone shaped cones and bowl shaped cones

Based on the results of the revision, a final product that is feasible and safe for use in grade 1 elementary school is produced. Here are some examples of circuit-based physical activity.

Circuit F

- 1) Target: locomotors, non locomotors, and manipulation.
- 2) Tools: (1) 5 cones, (2) 9 bowl cones, (3) 1 box, (4) metres, (5) 5 smile balls, (6) 4 pieces of hose, (7) whistles.
- 3) Play area: 8 x 5 metres.
- 4) Procedure: (a) run and touch the cones, (b) walk with applause in front of and behind the body (3) frog jump, (4) crawl while moving circles.

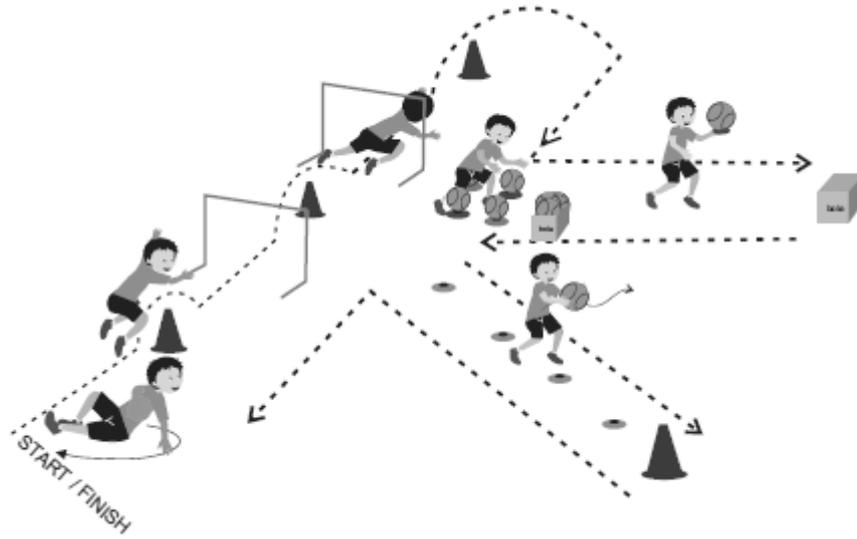


Figure 2. Circuit K

Circuit O

- 1) Target: locomotors, non locomotors, and manipulation.
- 2) Tools: (a) 5 pieces of patchwork, (b) 3 hula-hoops, (c) 2 goalposts with a height of 60 cm, (d) 2 goalposts with a height of 20 cm, (e) 3 cones, (f) 6 bowl cones, 2 boxes.
- 3) Play area: 5 x 5 metres.
- 4) Procedure: students do: (a) circle the back of the tree like playing skipping, (b) jump crawl, (c) swing the patch up and down, and (d) walk.

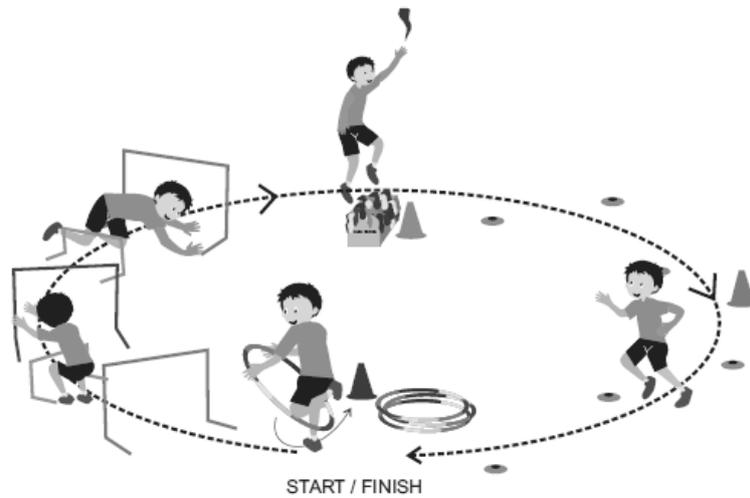


Figure 3. Circuit O

Circuit U

- 1) Target: locomotors, non locomotors, and manipulation.
- 2) Tools: (a) 2 boxes, (b) 5 colourful balls, (c) 5 pieces of patchwork, (d) 2 goalposts with a height of 20 cm, (e) 4 cones.
- 3) Play area: 7 x 5 metres.
- 4) Procedure: students do: (a) scroll the ball to the right and left with a squat position, (b) jogging, (c) throw a catch of patchwork (d) jump on one leg (left and right).

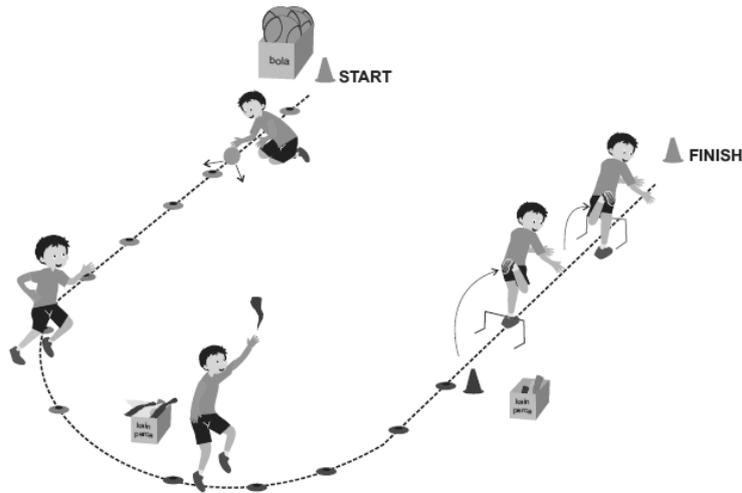


Figure 4. Circuit U

Circuit W

- 1) Target: locomotors, non locomotors, and manipulation.
- 2) Tools: (a) 5 cones, (b) 8 bowl cones, (c) 6 blue circles, (d) 2 squares, (e) 5 ribbons, (f) 2 goalposts with a height of 60 cm, and (g) goalpost with a height of 20 cm.
- 3) Play area: 8 x 5 metres.
- 4) Procedure: students do: (a) two-foot jump, (b) play with a ribbon in a circle, (c) run with high legs, and (d) crawl then jump.

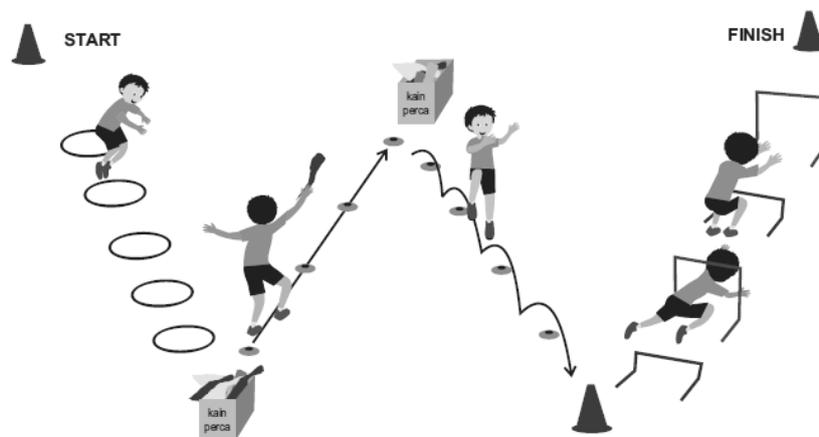


Figure 5. Circuit W

Discussion

This research and development produces a product in the form of a circuit-based physical activity model for elementary school students. After going through the field trial process and getting advice and input, a final revision of this development product was carried out. The reference for revising the final stage of this product is data obtained during field trials or large group trials on the development of circuit-based physical activities for physical fitness of elementary school students. Based on the results of the trial of large groups, it turns out that the product of circuit-based physical activity development for the physical freshness of these elementary school students doesn't need to be fundamentally revised; all indicators meet the standards and are feasible to use.

Based on data from small group trials and large group trials, it has been obtained that circuit based physical activity products for the physical fitness of elementary school students developed in this study are considered effective and eligible for application. The advantages of the product include: (1) achievement of learning outcomes including cognitive, affective, and psychomotor aspects, (2) the model developed can improve children's basic mobility, (3) the teacher can combine several materials in one meeting, so that physical activities are carried out and have a positive impact on children's physical fitness, (4) encourage children to be active, cheerful, and eager to carry out physical activities, and (5) equipment is used easily and safely for children, (6) has originality because it is the work of researchers who have differences with physical education learning that have been studied by other researchers, (7) have innovations in learning packaging, (8) learning models created have a good level of security for first grade students in elementary schools both in terms of equipment and learning models and (9) this circuit based physical activity learning model has complete supporting data, namely description of the implementation manual in the form of a circuit-based physical activity manual for the physical freshness of elementary school students.

Physical activity models that are made are guided by the first grade elementary school curriculum. Physical activity packaged in the form of a circuit combines several basic movements such as locomotors, non locomotors, and manipulation. Physical education classes must be inclusive, encouraging, and fun (Landry & Driscoll, 2012). The teacher can choose several physical activities at one time face to face. Based on the results of small and large scale tests, experts and teachers assess that the development of circuit-based physical activity for elementary school children is in a good and acceptable category. That is, physical activity based on a circuit is feasible and effective to be given to first grade students of elementary school.

Circuit-based physical activity given to first grade students of elementary school provides an increase in students' physical fitness. Physical fitness is needed by students to overcome fatigue. Because fatigue will have an impact on the brain's less optimal learning performance. Fatigue is usually associated with weakness or the disappearance of the ability to react to stimuli (Mylsidayu & Kurniawan 2015). This is reinforced by Anies which states that fatigue can interfere with work, reduce productivity, increase errors, and cause potential injury (Anies, 2005). This circuit-based physical activity model is an effort to reduce students' boredom, and foster students' curiosity about the various kinds of physical activities packaged in the game.

Conclusion

The results of this study are the development of the alphabet circuit for child's physical activity consisting of 12 buildings for heating, 26 letters (alphabet) for core learning, and 10 numbers for cooling. Based on expert judgment and teacher assessment, it can be concluded that the alphabet circuit for child's physical activity is appropriate and safe to use in physical education learning for first grade students of elementary schools.



Suggestions

The results can be used to help develop basic movements aimed at building confidence and courage in carrying out physical activities. Therefore, there is a need for advice on the use of this product to be on target. The suggestions are as follows; (1) The condition of the school, the availability of field in each school that is not yet possible for each school, (2) Knowing and understanding the characteristics of children aged 6-7 years, meaning that the teacher can know the ability of children both mentally and physically when doing basic motion learning, so that the physical activities provided are in accordance with the learning objectives of physical education, namely physical fitness, (3) Optimising facilities, infrastructure and equipment during the implementation of physical activities at school. The tools used can be purchased at affordable prices and made by the teacher, (4) For the time of effectiveness, the teacher must choose the same tools for use in physical education learning based on the circuit, (5) Optimising the physical education learning process can then be a benchmark in determining the goal to be achieved, and (6) Student safety becomes the main priority during the physical education learning process in the form of circuit-based physical activity.

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