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# Development of Test and Physical Fitness Measurements for Early Children Age Group 4-6 Years

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## Abstract:

This study aims to develop a valid and reliable model of physical fitness tests for early childhood in the age group of 4-6 years, physical fitness tests must be adjusted to the characteristics of the child, tests consisting of muscle strength, agility, muscular endurance, balance and cardiovascular. The research method used is research and development. Research and development methods are research methods used to produce certain products and test the effectiveness of these products. The feasibility test is carried out based on the assessment of material experts, the expert judgment shows that the development of tests and physical fitness for early childhood age groups (4-6 years), the data compiled is declared valid. It is hoped that the results of the development of a physical fitness test model for early childhood in the 4-6 year age group will be used as a guideline for Early Childhood education teachers in kindergarten in giving grades and development of physical fitness in kindergarten, namely at the age of 4-6 years in Indonesia so that it triggers the emergence new ideas in the future.

**Keywords:** Development, testing and measurement, physical fitness, early childhood

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## Introduction

Performance sports are one of the pillars of sports fostering regulated in the Sports System Law in Indonesia, in addition to educational sports and recreational sports as mandated in the 2005 National Sports System Law Article 17 concerning the scope of sports including; 1) sports education, 2) recreational sports, and 3) sports achievements (Rustiadi, 2015). Achievement sports are sports that foster and develop athletes in a planned, tiered, and sustainable manner through competitions to achieve achievements with the support of sports science and technology (Rustiadi, 2015). (Maksum et al., 2017) achievement in sports is an effort to increase the dignity of the nation. (Safiuddin et al., 2017) Sport is not only a necessity to maintain body fitness, but has penetrated all sectors of life. According to (Diamond et al., 2021) Exercising outdoors with physical distance is relatively safe, especially if there is no sharing of athletic equipment (for example, towels, clothes, shoes, balls, or special sports equipment) and there is no body contact. Although sports achievement is a benchmark for the success of sports coaching in Indonesia, the reality is that

achievement is more complicated than the other two sports pillars, because it requires a long and relatively long process and is very expensive.

Determining the quality of Human Resources needs early attention. This includes health, nutrition, brain stimulation, intellectual, movement and emotions of children through various activities that can support the achievement of the aspects that are expected to support the lives of the younger generation who will later become the nation's successor. According to (Oliveira et al., 2020) Physical inactivity is the fourth largest contributor to global mortality, accelerating the development of non-communicable diseases (NCD). Physical inactivity is responsible for 6% to 10% of the disease burden from conditions such as type 2 diabetes, coronary heart disease, and cancer. In 2008, 9% of global premature deaths were attributed to complications of physical inactivity. Because physical inactivity is a substantial risk factor for death. According to (Mustafa & Sugiharto, 2020) Early childhood is a crucial time to provide various experiences of movement because the rapid growth and development of children occurs at this time. Children's brains account for 75% of the adult brain weight by age three and nearly 90% by age six. The development of myelin around neurons (myelination), which is mostly complete by the end of early childhood, makes the passage of impulses nerve faster so that the child can respond to stimuli more quickly. The movement patterns of children also continue to increase in a complex manner following the process of myelination in the cerebellum. Therefore, early childhood is the ideal period for children to develop and refine a variety of motor tasks, from fundamental movements in early childhood to sports skills in mid-childhood.

Kindergarten schools in Indonesia as a place for Early Childhood learning are able to become facilitators in determining the quality of Human Resources which are expected to provide learning facilities and activities that are able to direct students towards quality Human Resources. According to (Gråstén, 2017) A modified sports curriculum is an effective strategy for increasing physically active behavior, because it reaches all children and adolescents, regardless of school size, resources, or population characteristics. According to (Miller et al., 2009) Regular physical activity can reduce body fat and metabolic risk factors, improve immune function, regulate antioxidant mechanisms, protect against *Helicobacter Pylori* infection and gastric ulcers. In kindergarten learning, if there are children who feel depressed, it will have a negative effect on the psychological development of the child. According to (Miller et al., 2009) that children who are under pressure are likely to experience increased aggression and anger. Through physical education learning, it is hoped that the child's knowledge, attitudes and psychomotor skills will be obtained correctly. In addition, through physical education learning, physical fitness will be maintained and even attained. Of course, through an interesting and creative and innovative learning process will make students repeat every learning process that is obtained when learning takes place outside of class hours or in spare time.

Attempts to obtain a description numerical of the level of physical fitness for

each student regarding the characteristics of his good fitness is a must. After obtaining physical fitness from the learning process carried out, of course, it is necessary to maintain physical fitness and have the right measuring instrument and according to the conditions of the child's growth and development. According to (Giriwijoyo & Sidik, 2010) literally the meaning of Physical Fitness is physical fitness or physical fitness. Thus physical fitness is the conformity of physical requirements to the tasks that must be carried out by the physical, both anatomical requirements and especially physiological requirements that must be possessed by the individual concerned. Physical fitness measuring instruments such as the Indonesian Physical Fitness Test (TKJI) have long been used to measure the level of physical fitness of children starting from Elementary School to Senior High School levels. TKJI is divided into 4 age groups, namely: 1) 6-9 years, 2) 10-12 years, 3) 13-15 years, and 4) 16-19 years.

By looking at the instruments / test kits that are applicable in all regions of Indonesia, namely the Indonesian Physical Fitness Test (TKJI) prepared and adapted to the conditions of Indonesian children, further researchers conducted field observations with Kindergarten teachers in several Kindergarten schools in Cirebon City. Following are the results of a Focus Group Discussion (FGD) with Kindergarten Teachers on tests and physical fitness that apply throughout Indonesia, including.

**Table 1.** Focus Group Discussion (FGD) with Kindergarten Teachers Teacher Responses to the Physical Fitness Test.

No	School	Name Teacher's	Conclusion Teacher
1	Kindergarten Al-Fath	1. Nulu W. S	Just heard the TKJI test for AUD
		2. Olivetti R	The existing test does not meet the characteristics elements of AUD
2	TK. Pelitalbu	1. Murtini	It is necessary to revise and develop the test with Games
		2. Suharyati	It is necessary to develop another test for AUD
		3. SitiMukaromah	test is not only physical but also cognitive, AUD
3	TK. Permata Bunda	1. TutikImfani	Tests are good but not all of them have elements of physical fitness
		2. FerianaSetyowati	The tests are too difficult for AUD
4	TK. Teratai	1. AsihDjumarni	test does not contain elements of flexibility
		2. NurIsnaeni	test does not contain elements of balance

		3. AstutiDwi P	test does not contain elements of Reaction
5	TK. Islam Ananda	1. Dharmastuti	Tests do not contain elements of accuracy
		2. Training	tests do not contain elements of Coordination
		3. Thessalonica	tests do not contain elements of Power
		4. WiwikRohmiyah	Physical fitness tests need to be carried out research and redevelopment of
6	Kindergartens. Islam Integrated Alhikmah	1. Hastarini	Test should fulfill the elements of physical fitness with games
		2. Any Irwin	Fitness tests need to be developed and with games for AUD The

Table above is the conclusion that the researchers got from kindergarten teachers in Cirebon City, after the researchers conducted preliminary observation activities related to physical fitness tests, the conclusions obtained are; 1) There is no physical fitness test specifically for Early Childhood, 2) Physical fitness tests for Early Childhood aged 4-6 years must adjust the characteristics of the child, 3) Research and development is needed on AUD physical fitness and tests, 4) Testing and further development should meet the elements of physical fitness with games and in accordance with the characteristics of the AUD. The same opinion is conveyed according to (Giriwijoyo & Sidik, 2010) the application of the Physical Fitness Test must pay attention to who the population is to be tested for the achievement of test objectives and the efficiency of its implementation, because basically the Physical Fitness test is carried out to know the degree of dynamic health of the population concerned at that time. From the results of field observations and from these conclusions, the researcher wants to carry out research and development on tests and measurements of physical fitness for early childhood in the 4-6 year age group

### Research Methods

The research method used is research and development, the research and development method has stages that must be followed before producing a product. According to Borg and Gall (1996: 570) states that the basis of research and development consists of two main objectives, namely developing products and testing the effectiveness of products to achieve goals. The first objective is called the validation function while the second objective is called the effectiveness test. By dividing the development steps into 10 main steps, namely: 1) research and data collection, 2) planning, 3) development, 4) initial field trials, 5) revision of trial results, 6) second field trials, 7) improvement of field test products, 8) field implementation tests, 9) improvement of final products, 10) dissemination and implementation.

*Time and Place of Research*

The test model and physical fitness were tested from September 2019 to January 2020. The trial was conducted at PG-TK Putra Nirmala, Kesambi District, Cirebon City.

*Research Subjects*

The population of this study were kindergarten students in the city of Cirebon. The sample technique used is cluster sampling, which is to determine the sample if the object under study or the source of the data is very broad, for example the population of a country, province or district (Sugiyono, 2013). The research sample used purposive sampling, sampling namely the technique with certain considerations (Sugiyono, 2013). Male and female PAUD students aged 4-6 years were used as samples. The number of research samples in the test were 12 students at the Putra Nirmala PG-Kindergarten, Kesambi District, Cirebon City.

The data collection instrument in this study was a form of psychomotor test of a component of physical fitness using a battery test system. Battery test because the fitness test must not be reversed, it must be in order from items 1 to 3, the test consists of three test items, namely: 1) grabbing the flag, 2) moving the flag, 3) the bat perching. The basis for the sample trial is as follows, the preparation stage of the tools and facilities; flat and non-slip running track / court, stopwatch, start flag, multicolored flag, cone, chest number, single bar / horizontal ladder for hanging elbows, scaled board for diving board, chalk powder, eraser, test form, whistle and test officer. Implementation stage; 1) grab the flag, this test aims to measure speed and muscle strength, the participant stands behind the starting line, on the signal "READY" the participant takes a standing start standing ready to run, on the command "YES" the participant runs as fast as possible to the line finish, the run can still be repeated if the participant; stealing a start, not crossing the finish line, being distracted by other runners, falling / slipping, measuring the time from the time the start flag is raised until the runner crosses the finish line, the recorded result is the time reached by the runner to cover a distance of 20/30 meters in seconds. 2) move the flag (4x5 m back and forth), this test aims to measure speed and agility, the participant stands behind the starting line, on the signal "READY" the participant takes a standing start stance ready to run, on the signal "YES" participants run as fast as possible to the finish line, the run can still be repeated if the participant; stealing a start, not crossing the finish line, being distracted by other runners, falling / slipping, measuring the time from the time the start flag is lifted until the runner has finished collecting the flags, the recorded result is the time the runner takes to cover the distance of 4x5 meters back and forth in units second. 3) the bat perches (lift the body), this test aims to measure the strength and endurance of the arm and shoulder muscles, the participant stands under a horizontal rung with both hands holding on to a shoulder-width rung, lifting the body on a horizontal ladder there are five steps then while hanging One of the student's hands takes turns reaching for the rung to move his body to the last ladder, the result that is counted / recorded is the number of steps reached to move the body.

After the Test model is developed, the Test model will be tested by Expert examiners:

1. An expert examiner in the field of physical fitness is an expert in the field of physical fitness with the aim of assessing whether this fitness test is feasible to be tested or improved or additional and input on the test. So that this physical fitness test is in accordance with what is needed in early childhood in the 4-6 year age group.
2. An expert examiner in the field of physical education is someone who is an expert in physical education to assess this test starting from the stages of preparation, implementation, appropriateness of the tools used and safety (sefty).
3. An expert examiner in the field of early childhood education is someone who is an expert in early childhood education to assess whether the physical fitness test is in accordance with the characteristics of early childhood.

### Result and Discussion

The results of this study are the creation of a physical fitness test for Early Childhood in a series consisting of three test items and by adjusting the characteristics of Early Childhood. By doing a physical fitness test, it will be known how much the level of early childhood physical fitness of the age group (4-6 years). Scale compilation and norms

**Table 2.** Physical Fitness Test Scores for Early Childhood (4-6 years)

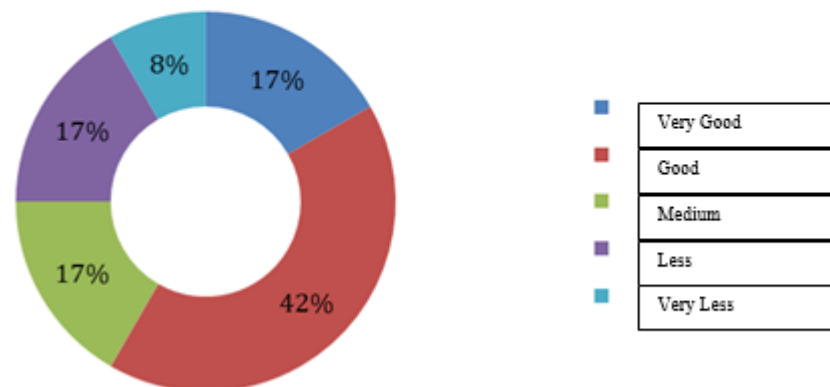
No	Obtaining Flags (20 meters)	Moving Flags (4x5 meters back and forth)	Bat perching (hanging body)
1	etc - 5.5	etc. - 6.5	etc. – 21
2	5.6 - 6.1	6.6 - 7.1	20 – 15
3	6.2 - 6.9	7.2 - 7.9	14 – 10
4	7.0 - 8.6	8.0 - 8.6	9 – 6
5	8, 1 - etc	8.7 - etc	5 - 0 sec

**Table 3.** Norms of physical fitness tests for early childhood (4-6 years)

No	Total score	Classification
1	13-15	OK ONCE (BS)
2	10-12	GOOD (B)
3	7-9	MEDIUM (S)
4	4-6	LESS (K)
5	<3	LESS (KS)

**Table 4.** Percentage of Test Results of the Model Test Physical Fitness for Early Childhood (4-6 years)

No	Total	Score Classification	Percentage	Total
1	13-15	ONCE GOOD (BS)	17%	2
2	10-12	GOOD (B)	42%	5
3	7-9	MEDIUM (S)	17%	2
4	4-6	LESS (K)	17%	2
5	<3	LESS (KS)	8%	1

**Percentage of Physical Fitness AUD  
(4-6 years)****Figure 1.** Percentage of Physical Fitness Test Results For Early Childhood (4-6 years).**Conclusion**

Based on the research results, it can be concluded that the development of tests and physical fitness for Early Childhood age groups (4-6 years) with 3 test items using the battrey test, among others; 1) Grabbing the flag (running 20 meters), 2) Moving the flag (running 4x5 meters back and forth), 3) The bat lands (hanging by the body). The test model is in accordance with the characteristics of early childhood and in accordance with the level of safety in carrying out the test activities. The feasibility test is carried out based on the assessment of material experts, the expert judgment shows that the development of tests and physical fitness for early childhood age groups (4-6 years), the data compiled is declared valid.

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