



Indonesian Tes and Measurment Instrument for Deaf-Male Students Aged 13-15 Years

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History Article

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Abstract

The main problem of this research is the absence of parameters and evaluation tools on the physical fitness test of deaf students in SLB. This research method uses a development method with procedural models and indicators used in TKJIT-03 including: (1) speed, (2) endurance of arm and shoulder muscles, (3) abdominal muscle strength, (4) leg muscle explosive power, and (5) heart endurance. Results: 1) 50 m sprint average 11.25 SD 3.50. 2) average push dynamometer 14.71 SD 6.77. 3) average dynamometer pull of 17.37 SD 8,20. 4) lie down sitting 60 seconds on average 18.33 SD 9.65. 5) vertical jumps averaged 33.5 SD 14.99 and 6) average 10.80 SD 4.61. The TKJIT-03 test is ideal for use in physical fitness tests for deaf children as well as evaluating learning fitness subjects in an SLB.

How to Cite

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INTRODUCTION

Physical fitness is a physical condition that is concerned with the ability and ability to function at work optimally and efficiently. According to Trudeau & Shepherd (2005) a quality physical education program can help in maintaining positive body conditions and further enhance physical activity and can become human provisions to achieve life goals (Hanief and Sugito, 2015) . Whether we realize it or not, physical fitness is actually one of the necessities of human life because physical fitness is combined with human life.

A person's physical well-being is one indicator of quality of life (George: 2016). Physical fitness is closely related to human activities in doing work and moving. Someone can be said to have good physical fitness, if the person fulfills a good degree of fitness according to certain parameters (Budayati: 2011). Physical fitness needed by humans to move and do work that each individual is not the same, in accordance with the movements or characteristics of the person. A good level of physical fitness is needed by every student (Nurchahyo: 83). For children, physical fitness is very much needed in helping their growth and development (Suharjana: 2011) . Physical fitness needed by children with special needs is certainly different from normal children in general because when viewed from the level of needs are very individual and special, children with hearing impairment are no exception.

To find out and assess the physical fitness level of hearing impaired children, of course, must be done by carrying out measurements. Measurement of physical fitness is carried out against the Indonesian Physical Fitness Test (TKJI) as a form of instrument to measure the level of physical fitness. However, the parameters and physical needs must be adjusted to the characteristics and needs of the deaf child. In a physical fitness workshop in 1984 TKJI was agreed and set to be an instrument that applies throughout Indonesia. The basic consideration is that these instruments are all arranged with the conditions of Indonesian children. TKJI is divided into 4 age groups, namely 6-9 years, 10-12 years, 13-15 years and 16-19 years.

This research is specifically for deaf children aged 13-15 years. The parameters also only apply to children with hearing impairment aged 13-15 years. Thus this parameter also cannot be used to measure the level of physical fitness of deaf children who are not included in this age group.

TKJI research for children aged 13-15 years is very good and appropriate when used

in schools and similar educational institutions, because children of that age are almost entirely students in schools / institutions. Physical fitness is one of the materials contained in every level of education contained in the subjects of physical education, sports, and health (Asnando: 2016). This clearly can be read in the applicable school curriculum. In the curriculum it is written that one of the specific objectives of physical education, sports and health in schools is to improve physical fitness. Physical education plays an important role in realizing educational goals. According to the results of the Eurydice Report on physical education and sports in Europe (EACEA, 2013), all European countries recognize the importance of physical education in schools. According to Sulistiono (2014), the development of physical education must consider: 1) the fundamentals of program development, 2) patterns of child growth and development, 3) the basic encouragement of children and 4) the characteristics and interests of children. In addition, physical fitness is one of the goals of implementing adaptive physical education for children with special needs. (Friskawati: 2015) Physical education is not only provided for normal students, but also for students with special needs (ABK). (Tarigan, 2008: 15)/ Adaptive physical education is one form of service in the field of education, so that the potential for students with disabilities can grow and develop optimally.

The study entitled «Development of Indonesian Physical Fitness Test Parameters for Deaf Students» includes instructions on how to carry out physical fitness tests for deaf students. This research is also expected to bring up standard classification norms for deaf students so that it can be used as a guide for physical education teachers in schools in an effort to improve physical fitness for deaf students. Based on the results of observations and observations of researchers in SLB schools in the city of Semarang, almost 100% of teachers do not have standard parameters in improving physical fitness for deaf students. The problem of physical fitness parameters is not yet very complex as the results of observations made by researchers, namely: 1) Physical education teachers in SLB schools in Semarang 94% are other subject teachers, 2) Adaptive physical education curriculum has not been mastered by Physical Education teachers in SLB, 3) the teacher does not have a lesson plan when learning adaptive education. So hopefully with this research first, confusion in conducting tests can be avoided. Second, the emergence of new norms of TKJI tests for deaf students aged 13-15 years as a guide for teachers implementing the Physical Education curriculum in schools.

The Novelty Of Reseraches Result

This study was designed based on previous research, the following is the previous research that serves as a benchmark in designing this study:

Research Dwi Gansar Santi Wijayanti. The instrument used in the Indonesian Physical Fitness Test was retarded children aged 13-15 years old. The tests used to find out physical fitness are 1.) Running 50 meters, 2.) Pull Up, 3.) Sit Up, 4.) Vertical Jump, 5.) Running 1000 meters.

Research Fredericus Suharjana. Physical fitness needs to be fostered and developed from children, because physical fitness is very necessary for growth and development. The tests used in this study are (1) normalization (relaxation, elongation, strengthening and release), (2) balance, (3) strength, (4), walking and running, (5) jumping and jumping.

Halim Susilodinata Research. Physical fitness tests used in this study are: Several types of physical tests: 1. Running test 2,400m.2. LAN Test .3. 4.800 m fast walking test, 4. Running test c. 5. Bench up and down test (Har, ^ artl sr .: <Bench and Bench Test Sharke> .. Bench and Bench Kash Method, 8. Static test using the Astrand method, 9. Treadmill test.

Novi Setyawan Putra, research on the decision of mentally retarded students produced 5 physical fitness instruments used to assess the physical fitness status of mentally retarded students. The results of previous studies are as follows: (1) speed is measured using a 50 meter sprint instrument; (2) strength and endurance of the arm and shoulder muscles using the instrument of the elbow hanging test and body lift test; (3) strength and endurance of the abdominal muscles were measured using a 60-second reclining instrument; (4) leg muscle explosive power is measured using a vertical jump instrument; (5) lung-heart endurance is measured using 1000 m and 800 m running instruments.

The test items were then used as a reference for researchers to develop initial products that were previously discussed by experts in the FGD forum. There were 3 experts invited to the FGD forum with details: 2 adaptive Physical Education lecturers, 1 Special Education Physical Education teacher.

METHOD

This research uses the research and development (R&D) method of Sugiyono (2012: 407). Where the R&D research method is a method used to produce certain products, and test the ef-

fectiveness of the model. The steps of this research development using the Borg & Gall mode. And data analysis techniques using descriptive percentage Anas Sudijono (2006: 43).

The technique used by purposive sampling is to determine the sample based on predetermined criteria, namely SLB children with hearing impairment aged 13-15 years.

After conducting the analysis, the researchers conduct the development of models or products by conducting tests that have been prepared previously. After the model is made, the next step is testing the variables that have been determined by the researcher to ensure the success of the product to be made.

This study uses test design and measurement as a trial design. The design of this trial went through two stages, namely a small group test with two different characteristics of students, normal students and deaf students, which were conducted at SLB Ungaran with a total of 8 students and SMP 22 of Semarang City totaling 30 students with a time allocation of 1 meeting, and group testing The number of students conducted in SLBs in the city of Semarang was 26 research subjects with a time allocation of 1 meeting.

A trial was conducted to obtain the amount of information that was important for the sake of revision and to find out the level of effectiveness of the product and in terms of utilization of the product being developed. This trial involves several subjects, namely: (1) two lecturers (adaptive physical education experts), (2) one adaptive physical education teacher, (3) Ungaran SLB students and SMP 22 Semarang City students (small group trials) and SLB students as a whole Semarang City (field trial).

Picture 1. Product Trial Implementation Chart



RESULTS AND DISCUSSION

Initial product development is obtained from the results of preliminary studies through interviews, literature review and FGD (Focus Group Discussion). Furthermore, after obtaining information through field studies, researchers conducted a literature review related to the results of the preliminary study and conducted FGDs to obtain further data by making the previous research compiled by Novi Setyawan Putra in 2014 as a reference for compiling the TKJI test parameters for deaf students.

Previous research is about the development of mental retardation instrument students produce 5 physical fitness instruments used to assess the physical fitness status of mentally retarded students. The results of previous studies are as follows: (1) speed is measured using a 50 meter sprint instrument; (2) strength and endurance of the arm and shoulder muscles using the instrument of the elbow hanging test and body lift test; (3) strength and endurance of the abdominal muscles were measured using a 60-second reclining instrument; (4) leg muscle explosive power is measured using a vertical jump instrument; (5) lung-heart endurance is measured using 1000 m and 800 m running instruments.

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Small-scale product trials are intended to test the feasibility of using the product and get input or suggestions. The target of small-scale product trial is the ungaran SLB students, amounting to 24 people. The results of small-scale product trials can be seen in the following **Table 2**.

Expert assessments on small-scale trials aimed at three experts namely 2 adaptive Physical Education lecturers and one adaptive Physical Education teacher showed a good average. This means that this instrument is suitable for use in the next stage, namely large-scale trials or field trials. Judging from the aspect of average speed experts agreed to give a good percentage of 33.33% and very good 66.67% for using the 50m running instrument. In the aspect of strength and endurance of the arm and shoulder muscles the experts gave a good value of 100% for using push and pull dynamometer instruments. The strength and endurance aspects of the experts give a good value of 66.67% and very good 33.33% for using

a 60-second recline as an instrument. The explosive power aspect of the experts gives a good value of 33.33% and a very good 66.67% for using the upright jump instrument as an instrument. And cardiovascular endurance experts have different views, namely the value of less 33.33%, 33.33% good and 33.33% very good so that running 1000m is still quite feasible to be used as an instrument to measure the heart's lung endurance.

After going through a small-scale trial phase a large-scale trial was conducted on SLB students in Semarang City, amounting to 37 people. Test results show an average sprint of 11.25 seconds with an SD of 3.50. Push dynamometer obtained an average of 14.71 kg with an SD of 6.77. Pull dynamometer averaged 17.37 kg with an SD of 8.20. Lying 60 seconds seated an average of 18.33 times / min with SD 9.65. Upright jumps an average of 33.5 cm with SD 14.99 and 1000 runs an average of 10.80 minutes with SD 4.61.

The results of sprints for tunedugu SLB students aged 13-15 years 11.25 seconds when compared with the average running average of 10.80 seconds show that the average sprinting of normal children is faster than deaf children. This is reasonable because deaf students rarely use physical activity to improve their physical fitness, so many deaf children who have less ideal body weight therefore the pace of running becomes slow. One of the factors supporting a person's speed is anatomical factors including size, height and weight (Aji Pradana, 2014: 2).

In the aspect of endurance of the deaf and arm muscles of the deaf child has an advantage when compared with the average strength of a normal child's arm muscle which is 12.87 while the shoulder muscle is 13.40. This is very interesting to discuss because According to (Mardiaty Busono, 1988: 20) that the development of motor children with hearing impairment develops well, moreover the gross motor development of children with hearing impairment physically develop smoothly. Children with hearing impairment characteristics and personality show more neurotic emotions and introverted personality (Suparno, 2001: 14-16). According to Mardiaty Busono (1988: 49) The deafness of the feet and hands of the deaf child is very fast and agile this is seen when the deaf child communicates with gestures with his friends. According to Linawati (2012: 47) states that deaf children are not left behind in the field of skills related to hand dexterity. Sleman, (2006: 1) states that, gross motor skills can mean the movement of large muscles in

the body. In exceptional children the formation of gross motor motion is sometimes better than the formation of fine motor motion. Children with hearing impairment characteristics and personality show more neurotic emotions and introverted personality (Suparno, 2001: 14-16). According to Mardiaty Busono (1988: 49) The deafness of the feet and hands of the deaf child is very fast and agile this is seen when the deaf child communicates with gestures with his friends. According to Linawati (2012: 47) states that deaf children are not left behind in the field of skills related to hand dexterity. Sleman, (2006: 1) states that, gross motor skills can mean the movement of large muscles in the body. In exceptional children the formation of gross motor motion is sometimes better than the formation of fine motor motion.

From some of the expert opinions above it was concluded that the deaf and arm muscle strength of children with hearing impairment is better than normal children because in general the motor development of children with hearing impairment runs normally and smoothly and even gross motor development is better than normal children. Coupled with the emotional, neurotic and introvert nature that is dominant in children with hearing impairment so that children with hearing impairment often behave rudely and tend to be impulsive when responding to a case in their daily life, so that the muscular strength of the deaf child's arm and shoulder will automatically form and be more dominant than other physical elements.

The result of lying down 60 seconds deaf children 18.33 smaller than normal children with an average value of 25.87. So it can be concluded that the average strength and endurance of the normal abdominal muscles of a child is greater than that of a child with a hearing age. One factor that causes deaf children with weak stomach muscle strength is the motion biomechanics factor which is certainly not as good as normal people. Biomechanics of hearing impaired children's movements are hampered because there is a mistake in lifting the weight of the body when doing sit-ups. Meriawati (2015: 2) explained that of two people who have the same muscle tension, their ability to lift is different. Other causes of deaf children's abdominal muscle strength are lower than normal children in general are the lack of exercise and the introduction of increased abdominal muscle ability in schools in SLB, because many teachers are basically not physical teachers. So that the ability of the deaf child's abdominal

muscles does not develop optimally. Muscle strength is the carrying capacity of movements in carrying out activities so regular training is needed (Ahmad Nasrulloh, 2012).

The average yield of upright deaf students was 33.5 lower compared to normal children at the age of 37.67. Seeing the results above the difference is not too significant and is still within reasonable limits of the explosive power of deaf children compared to normal children. Explosive power is the main center of movement for the body as a whole (Made D. Budhiarta, 2010: 18). Explosive power is strongly influenced by the elements of speed and strength (Ismoko, 2013: 2). Looking at the opinions of some of the sources above and the data that has been obtained both the speed and strength of students with visual disabilities clearly both have a significant correlation to the results of one's explosive power.

The result of the average run of 1000 meters of hearing impaired children is 10.80 lower when compared with the average of normal children which is 7.97. Seeing the results above it is clear that the difference in endurance of deaf students and normal children is very striking. Children with hearing impairment are very lazy in doing their main physical activities related to movement activities. Deaf children tend to prefer sitting rather than physical activity. A high VO₂ Max value indicates the body's good ability to provide oxygen during physical activities so that the body's ability to move is greater (Candrawati, 2016: 70). The pattern of life greatly affects one's fitness in this case is endurance (Budi Rachmanto, 2014: 307). From some of the opinions above it becomes clearer if the wrong lifestyle and non-optimal motion activities greatly affect one's endurance.

CONCLUSION

Broadly speaking the physical fitness of a deaf child is almost the same as a normal child, although the physical fitness of a normal child is slightly better than a deaf child, but there are several aspects of a deaf child whose fitness is better, one example is the strength of the arm and shoulder muscles. The TKJIT-03 parameter is very good to be used in the measurement and evaluation of physical fitness for deaf students in SLB. Where in the instrument consists of 1) 50m sprint running, 2) push and pull dynamometer, 3) lying 60 seconds, 4) upright jumping and 5) 1000m running.

Table 1. Expert Judgment

Rated Aspect	Test Parameter	Scale				Number of Respondens
		1	2	3	4	
Speed	Sprint 50 meter			33,33%	66,67%	100%
Strenght and endurance of the arm muschles and shoulders muschles	Push and pull dynamometer			100%		100%
Strenght and endurance abdominal muscles	Sit up			66,67%	33,33%	100%
Leg Power	Vertical Jump			33,33%	66,67%	100%
Endurance (kardiovaskular)	Run 1000 m		33,33%	33,33%	33,33%	100%

(Source : Research)

Table 2. Result Test and Measurment TKJI Deaf- Male Students Aged 13-15 Years

Name	Komponen					
	Sprint 50 m (second)	Push Dynomemeter (kg)	Pull Dynomemeter (kg)	Sit up (Second)	Vertical Jump (cm)	Run 1000 m (minute)
Ade Jiwo Prakoso	8,43	8	8	44	74	14,23
Galeh Prakasiwi	10,83	8	35	25	50	8,02
Dimas Kurniawan	10	6	12	22	28	10,18
Ilham Thoriq M.	10,61	7	29	17	32	20,57
Dicky Afarel	9,97	7	12	10	28	8,4
Thariq Fajar F.H.	9,1	23	30	5	42	8,17
Raihan Aditya P.	9,5	26	28	26	35	8,32
Ahmad	9,18	10	10	34	30	8,21
Mustaqim	9,67	22	12	10	38	8,21
Wahyu	11,99	11	14	16	35	8,21
Faisal	9,16	14	15	25	35	6,48
Aditya	8,97	18	17	21	52	8,21
Mukhti	11,42	14	15	27	65	8,21
Iqbal	8,57	26	23	29	33	6,39
Khoirul	9,08	27	19	18	37	8,21
Guntur	9,23	18	19	12	18	10,17
Diva	9,64	15	9	16	25	10,4
Dicky	16,07	16	19	9	7	18,53
Idho	11,72	15	21	19	20	8,07
Ivan Setiadi	9,4	19	28	20	28	18,19
Septian Riyadi	10,37	19	21	15	22	8,5
Fadhil	15,5	10	8	8	30	8,57
Dhio	20,5	8	5	12	20	14,52
Kukuh	21	6	8	12	20	22,23
Average	11,25	14,71	17,37	18,33	33,5	10,80
Standard Deviation	3,50	6,77	8,20	9,65	14,99	4,61

(Source : Research)

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