

Development of Early Childhood Skills by Guiding Tests in Sports Rhythmic Gymnastics

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Abstract When compared to the previous youths, especially before the pandemic, younger generations have become sedentary globally. However, the truth is physical activity positively contributes to human growth and development by causing both physiological and psychological benefits. In the wake of revitalizing such benefits, this current study aimed to develop a guidebook containing physical activity tests that should be implemented in primary schools for early childhood through rhythmic gymnastic sport. This study was the Research and Development alias R & D with 106 and 37 subjects on a large and small scale respectively. Whilst collecting data, instruments such as questionnaires for expert's judgment, anthropometric and bio-motor tests were employed, and norm tests and skills tests as well. Data were analyzed using qualitative and quantitative approaches based on mean, standard deviation, percentages. After addressing all data, especially going through all R&D steps, it was revealed that the material expert assessment test results obtained a value of over 80%, likewise for the media assessment test. The results of both small- and large-scale testing showed that most experts indeed stated that the development of the current guidebook was in the category of very good to enhance skills accrual in early childhood growth. Therefore, we conclude that the guidebook, VCD, and tests developed are practical,

practicable, and suitable for early childhood.

Keywords Development, Early Childhood, Physical Skills, Guidebook, Rhythmic Gymnastics

1. Introduction

Early ages or prepuberty is a sensitive and vital period of growth representing the body and personal identity development. For some, such body formation and development result from a combination of factors working together to reach, physical, cognitive, and other benefits each individual has in both genders [1]. For others, it is an important staple that exhibits systematic and adequate physical preparation for achieving physical literacy either in sports branch rhythmic gymnastics or in any physical activity that requires movement or locomotion [2]. Particularly for athletes, apart from the aforementioned substances, factors related to them have various qualities that they must possess, namely physical characteristics or body posture, locomotive, mental, emotional without forgetting anthropometric factors [3]. In tandem, training is also another type of quality factor where its accomplishment and achievements can be measured based

on two main dimensions, which are the coaching expertise and the willingness of athletes themselves. Normally, the essence of physical activity/sport is literally not just an achievement but rather a development process from the early age of individuals. Still, it aims to improve subjects' health and creativity by striving to make sports activities fun rather than boring. It is worthy reminding here that further preparation at the top level cannot successfully continue without mastering basic movements and sports skills with a specific technique of the entire body.

The basic concept of early childhood sports development is due to the potential period for early childhood activities to foster achievement to the maximum. According to Zeng et al. [4], endeavoring to examine the effectiveness of physical activity on motor skills and cognitive development in healthy young children (4–6 years) stated that eight (80%) reported significant improvements in motor performance, whereas an exponential significant and positive changes in language learning, academic achievement, attention, and working memory were also reported. Besides, existing evidence supports such benefits by showing that developmentally appropriate programs for young children promote positive experience and stimulation through play as critical developmental windows and establish a foundation for success [5]. For this reason, coaching should be carried out regularly, continuously, planned, programmed, and systematically [6]. Thus, the right coaching for the athlete will result in physical, technical, tactical, and mental strength. However, an appreciative achievement will be properly formed if performed deliberately from the early age of course with continuous training, which increases according to the development stages. The [7] & [8] argue that the goal of maximum achievement is certainly the goal of most athletes. The experience can also control their psychology, showing the training results, especially during matches where concentration of all kinds applies. Coaches have their approaches to achieving goals for the sake of their athletes and their career. Knowing athletes' strengths and weaknesses is also a prerequisite for delineating the appropriate starting point before the training session. As previously mentioned, creativity, strategies, innovation, and other means are among stone corners coaches should employ on the field in the wake of nurturing artistic behaviors in gymnastics performances [9].

In schools, gymnastics, popularly known as *Senam Sehat in the Indonesian language*, is one of the sports integrated into educational programs in every elementary school as a mandatory subject for every student. Such a program is taught from early childhood with the primary purpose to help younger children to develop their physical characters as the foundation of physical well-being for their lifespan. Additionally, gymnastics can be a combination of physical activities and can help maximize children's growth [10]. Children tend to be active at an early age because their curiosity is very large, considering that early childhood is a golden age in developing children's potential,

which must be designed optimally [11], [12]. However, in some schools in Indonesia, especially in Yogyakarta city, or D.I. Yogyakarta, teachers are reluctant in such activity, and the benefits of rhythmic gymnastics are less known or valued, and thereby there are relatively few fans of this gymnastics. This latter assumption was supported by the deliberate interview conducted at the Quality Hotel Yogyakarta on September 20, 2018, with the founder of rhythmic gymnastics in Indonesia. She stated that rhythmic gymnastics D.I. Yogyakarta, especially for early ages children, is unique since it is only intended for women otherwise it is not performed well. The lack of development and socialization in the introduction of rhythmic gymnastics has also been reported. Most sports teachers and students' parents in elementary schools do not understand its benefits even though facilities and infrastructure are adequate in Yogyakarta schools. Notwithstanding facts audited earlier, the discussion executed between the researcher and coaches and also with some of the referees in the form of in-depth interviews showed us that so far, there is no adequate model that can nurture the young generation with rhythmic accuracy in their limbs and whole body. Since the main components needed in the majority are flexibility, power which is not too maximal, limbs coordination and combination movement with the tools used. There is a lack of knowledge held by primary school teachers and parents that age in rhythmic gymnastics starts from an early age which is still easy to form while achieving maximum performance compared to other sports. Others acknowledge only that it's better to do gymnastic or physical activity without understanding its showcase. Then, intervention to bridge this gap is needed through socialization, sensibilization that can help attract enthusiasm for our physical health improvement.

However, the contribution of this study on that shortcoming revealed above, three different tests have been employed and tested their feasibility and effectiveness; is anthropometric tests consisting of height, weight; the bio-motor test includes strength, flexibility, balance, coordination, speed, power whereas the test that will be developed is the sportive rhythmic gymnastics skill test. Overall, the importance of this test developed is believed to support coaches and mostly primary schools' teachers to know the initial tests that need to be done in Sportive Rhythmic Gymnastics and subsequently help children build up their physical talents. The specification of the final product developed is a guidebook containing norms and guidelines and a VCD that helps explain book instruction for users (tutorial video).

2. Research Methods

As its nature is research and Development or R&D research, in this research the R & D has two main objectives, namely product development and its effectiveness state.

The Research and Development approach includes the category research “need to do” research where its results such as productive, effective, and efficient will be used to assist the implementation process so that it can be accounted for [13]. The main idea of such research is to test an existing product, develop a product or find a new product that is more efficient and effective. This research consists of two main objectives, namely product development and testing the validity of the product. It is simply applied in the process for development and validating educational products and also product-oriented research employed in education along with improvement of education quality [14]. According to Borg & Gall 1983, the R & D method is framed under ten steps organized in the following order: 1) research and information collecting. At this step, exploring, reviewing, and studying the related literature, need analysis of the problem and framework preparation are the main activities that define this step. Then, the researcher collected various information to be studied from different people, schools and literature; 2) planning; it includes formulating skills and expertise regarding the problem of the research and designing necessary feasibility of the study; 3) developing preliminary from a product: preparation, construct instruments and trial of the product; 4) preliminary field testing: it is broadly understood as testing a product on a limited scale either through interview, experimentation, or observation to obtain and analyse the data for the next step; 5) first and main product revision: revision of the products based on inputs from experts and data gathered in the previous steps; 6) main field testing; the next trial after experts comments and inputs; 7) operational product revision; the revised product is revised again to improve its accuracy rate and then developed as an operational model design to be validated; 8) Operational field testing; the validating of operational model is constructed to massive parties called in this research larger scale population; 9) Revising the final product; it's just gathering data in the previous step (step eight) and launched as the final educational and informative product; 10) dissemination and implementation is the last step that emphasizes the usability of the product in the education field through seminars, publications or presentation.

2.1. Research Instruments

Product Trial Design

Research trials are based on existing empirical facts; that is a trial of the design and trial of subjects. The random sample technique or sample technique was the type of sample initially used in this study and then continued with the principle of the quota sampling system. This system has certain characteristics, namely determining the desired number of samples. In this trial design, the research was conducted twice using two different sample sizes called a small scale and a large-scale size, and then revised before proceeding to the next stage. Meanwhile, the population

chosen to be the source of the subjects was the early childhood aged 7-9 years covering 3 districts and 1 municipality for a large scale with a total of 106 children while for a small scale 10-15 children were randomly selected from each district. Then the total number of children on a small scale has amounted to 37 children. For a small scale consisting of 2 districts and 1 municipality, the sampling employed was with a random model and where all subjects do not have any basic gymnastics skills.

Technique and instrument for data collection

The instrument that has been used was in the form of questionnaires designed by the researcher and passed through a validation process by experts' judgment to approve or disallow the product through quantitative and qualitative information. The qualitative data was yielded from media assessments/or documentation, while quantitative data was gathered from questionnaires that have been filled out by experts in such domain. After validity and reliability were tested and approved in both subject scales, the product was called effective. Besides, a battery test was also used during data collection. We notice here that, the study carried out in this research is the development of anthropometric measurement tests along with bio-motor measurements.

2.2. Data Analysis and Procedures

Descriptive statistical analysis, including mean, median, mode, and standard deviation (central tendency) on each research variable. Besides, the data were also analyzed using the regression backward method focusing on z-score and the follow-up analysis of t-score as the outputs of SPSS 26th edition. From the results of a large-scale field test and then analyzed to determine the factors that significantly affect skills in talent scouting in Sportive Rhythmic Gymnastics in children aged 7-9 years. The data were analyzed using multiple linear regression analysis, with the backward method, namely linear regression analysis method by eliminating insignificant variables one by one, so that at the final stage obtained independent variables that have a significant effect on skills in talent scouting in sportive rhythmic gymnastics in children aged 7-9 years. After being analyzed by descriptive statistical analysis, the data from the field was then converted into a standard score using the T-Score. The steps are to change into Z-Score first, then enter the T-Score formula.

3. Result

Design Validation

The accuracy of the material developed/test was tested and verified by three experts through the experts' validation stage and two others for media validation, so that this test can really be used in the talent search for

prospective athletes. The extent of the test accuracy was measured based on a Likert scale of 4-points ranging from (1) very bad, (2) not good, (3) good, (4) very good. As far as the items instrument employed, 14 items were constructed and applied on both sides, namely material and media.

For the results of the items instrument used for the material expert judgment, suggestions from the validators are adding indicators to each test that will be developed and adding scores according to their level. The results of the assessment of the final validators are recapped in table 2.

Table 1. Recap and Results of the Items Instrument Used for the Material Expert Judgment and Media

Nr	The statement used/material	Likert scale				Nr	Aspects to rate/media	Likert scale			
		1	2	3	4			1	2	3	4
1	The test that has been used is suitable to be applied to early childhood children.				V	1	Clear text size				V
2	This test could facilitate coaches while selecting and nurturing young athletes in their early childhood growth.				V	2	Attractive display design				V
3	It helps young children to develop motoric movement in their early childhood.				V	3	The balance in color and text used.				V
4	The motoric movements developed could help to measure flexibility in young children.				V	4	Accuracy in the selection of background colors.				V
5	The results from the test developed could help identify each child's ability.				V	5	The color compatibility of the text with the background.				V
6	Helps to determine the flexibility of each child in early childhood.				V	6	Explain clearly the instructions for using the test.				V
7	It helps to know the components needed in sports rhythmic gymnastics.				V	7	Readability or clarity of the text.				V
8	It helps to provide clarity in carrying out the tests carried out.			V		8	Color selection.				V
9	The test developed is easy to understand and perform.				V	9	Image/picture display.			V	
10	The test is carried out based on clear indicators.				V	10	Language use.				V
11	Selection of the right material for mediation.			V		11	Selection of images in accordance with early childhood.				V
12	It is suitable/suitability for early childhood.				V	12	The language used in the media is easy to understand.			V	
13	Accuracy in test selection.				V	13	The media presented is under the material for early childhood.				V
14	The test administrated is specific.				V	14	A video is delivered by the tests carried out.				V

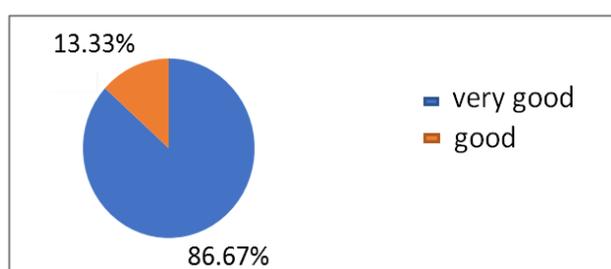
Table 2. Final Material Expert Assessment Results and its Diagram

No	Aspect	Score Obtained	Score Max	(%)	Category
1	Quality material	13	15	86,67%	Very good
2		2	15	13,33%	Good
Total		15	15	100%	

As far as the media validation is concerned, the suggestion from the media validators is that the ratio in the image must be proportional, and the use of sentences is improved. The following are the results of the assessment of the media validator:

Table 3. The Decision of the Media Expert Judgment and its Corresponding Diagram

No	Rated Aspects	Equivalent score	Score Max	(%)	Category
1	Quality media	13	15	86,67%	Very good
2		2	15	13,33%	Good
Total		15	15	100%	



We impart here that all tables above depict the experts' critics and decisions about the developed learning material and media as a guidebook in gymnastics for primary schools' athletes/students. After assessing material experts and media experts, all scores obtained and equivalent categories are presented in the table above. After that, the product was tested in small groups with the minimum criterion for a "very bad" rating. With the scores obtained from material experts and media experts, it can be concluded that the development of the guidebook was ready to be applied. Furthermore, small-scale testing was carried out using 37 children from 4 districts. Consulting and analyzing the results drives us to the next step as a trial with a large-scale of respondents.

The results of the discussion of small-scale results with material experts showed that the results of each test are based on t-score calculations, and the correlation between anthropometry with skills and bio-motor skills with mutual

support has acceptable validity and reliability. The test can be used for large-scale trials. Thus, the results of the small-scale validity results were greater than 0.316 or > 0.316 consisting of anthropometric tests with reliability research constructs distributed as follows; the height of 0.8703, bodyweight of 0.8957, arm length of 0.5655, the hip diameter of 0.8342, leg length of 0.7721, sitting height equal to 0.6903. For the bio-motor test with 20 meters running, the reliability value found was 0.5192, the bridge is 0.5171, sit and reach is 0.4485, the t-test of 0.6090, sit-ups is 0.5694, whereas the vertical jump was 0.6163. As far as the skill test is concerned, it has a straight jump reliability of 0.5452, pivot pass of 0.5229, and balance backward is 0.5918 for reliability 0.9204 > 0.7 so that these results can be continued in large-scale trials. On Sunday, August 25, 2019, the large-scale trial was carried out with children who participated in 106 consisting of 3 districts and one municipality using the same test pattern as the small-scale trial.

A. The effectiveness of the Final Product Developed

After passing through the stages from potential and problems to implementation trials or large-scale research, the percentage value obtained from the first expert validation was 86.67% which is equal to the very good category and 13.33% for the good category. The percentage gain from the second expert validation assessment was 80% for the very good category and 20% for the good category. In tandem, while assessing the same product with experts, the third expert validated the product at 86.67% which belongs to the very good category and the rest 13.33% belongs to the good category. In the same vein, for media experts, the percentage of assessment obtained is 86.67% in the very good category and 13.33% in the good category. Overall, the new product developed was feasible, effective, and beneficial for both teachers and students.

B. The Summary of Anthropometry Test Results Used in the Study (X1)

The results of anthropometric tests in early childhood in talent scouting in rhythmic sports gymnastics for children aged 7-9 years as research respondents are briefly presented in the following table.

Table 4. Anthropometry Test Results (X1)

Variable	Mean	Median	Mode	SD	Description	
X1_a1	Body Height	121,75	121,00	121,0	7,794	--
X1_a2	Body Weight	24,71	23,10	21,0	5,460	--
X1_a	BMI	16,54	16,02	14,51	2,466	--
X1_b	Sitting Height	64,18	64,40	59,0	5,174	--
X1_c	Sleeve Length	121,97	121,00	122,0	8,343	--
X1_d	Leg Length	71,70	71,00	70,0	6,777	--
X1_e	Hip Diameter	63,86	62,40	61,0	5,979	--

Table 5. BMI Test Results vs Sitting Height

Nr	Category/ BMI	Norm score T-Score	Frequency		Category/ Sitting Heigh	Norm score T-Score	Frequency	
			F	%			F	%
1.	Very bad	< 36	4	3,77	Very bad	< 36	6	5,66
2.	Not Good	36 s/d 45	38	35,85	Not good	36 s/d 45	29	27,36
3.	Fairly Good	46 s/d 55	38	36,79	Fairly Good	46 s/d 55	45	42,45
4.	Good	56 s/d 65	14	14,15	Good	56 s/d 65	22	20,75
5.	Very Good	> 65	10	9,43	Very Good	> 65	4	3,77
Sum			106	100.0	Sum		106	100.0

Table 6. Arm Length Distribution vs Leg Length

No.	Category/ Sleeve Lengt	Norm score T-Score	Frequency		Category/ Leg Length	Norm score T-Score	Frequency	
			f	%			F	%
1.	Very bad	< 36	4	4.72	Very bad	< 36	9	8.49
2.	Not good	36s/d 45	40	37.74	Not Good	36 s/d 45	26	24.53
3.	Fairly good	46 s/d 55	27	25.47	Fairly Good	46 s/d 55	43	40.57
4.	Good	56 s/d 65	27	25.47	Good	56 s/d 65	21	19.81
5.	Very good	>65	7	6.60	Very good	> 65	7	6.60
Sum			106	100.0	Sum		106	100.0

Table 7. Distribution of Hip Diameter

No.	Category	Norm score T-Score	Frequency	
			f	%
1.	Very bad	< 36	6	5,66
2.	Not good	36 s/d 45	39	36,79
3.	Fairly good	46 s/d 55	32	30,19
4.	Good	56 s/d 65	22	20,75
5.	Very good	> 65	7	6,60
Total			106	100,00

a) BMI (Body Mass Index) and Sitting Height

The body mass index and sitting height frequency distribution based on the t-score norm is presented in table 5.

Based on the frequency distribution above, it is known that out of 106 children as the research sample on BMI category, 9.43% had a very good BMI, 14.15% were good; 36.79% were quite good; 35.85% were not good, and 3.77% were very bad. Whereas the distribution frequency of sitting height based on the t-score norm was clustered as 3.77% to have very good sitting height test results, 20.75% were good; 42.45% were quite good; 27.36% were not good, and 5.66% were very bad.

b) Sleeve Length versus Leg Length

Based on the frequency distribution (table 6), it is known

that out of 106 children as the research sample; 6.60% had very good arm length test results, 25.47% were good; 25.47% were quite good; 37.74% were not good, and 4.72% were very bad. While the distribution of leg length was presented as follows; 6.60% had very good limb length test results, 19.81% were good; 40.57% were quite good; 24.53% were not good, and 8.49% were very bad.

c) Hip Diameter

Likewise, the frequency distribution (table 7) about hip diameter of children depicts that 6.60 % had very good hip diameter test results, 20.75% were good; 30.19% were quite good; 36.79% were not good; and 5.66% were very bad.

C. The summary of Bio-motor Test Results (X2)

Note that, inverse means that the smaller the number, the

better. On the contrary, the higher the number, the less good. In the next step, when converted into a standard score (T-Score), the score is inverted so that the higher the T-Score, the better the value. The descriptive analysis of each bio-motor test result is presented in the following description.

Based on the frequency distribution (table 9), 1.89% had an outstanding 20-meter run test result; 27.36% were good; 41.51% were quite good; 16.98% were not good, and 12.26% were very bad. In tandem, for T-test results, the frequency distribution was as follows: 2.83% had perfect

T-test results, 31.13% were good; 33.96% were quite good; 20.75% were not good, and 11.32% were very bad.

Data depicted in table 10 shows that out of 106 children as the research sample, 8.49% had outstanding vertical jump test results, 16.04% were good; 35.85% is quite good; 37.74% is not good, and 1.89% were very bad. In the same vein, for bridge experimentation, data distribution was as follows; 2.83% had excellent bridge test results, 31.13% were good; 34.91% were quite good; 17.92% is not good, and 13.21% were very bad.

Table 8. Descriptive Statistics of Bio-motor Test Results (X2) in Early Childhood

Variable	Mean	Median	Mode	SD	Description	
X2_a	Running of 20 m	5,03	4,91	4,83	0,567	Inverse
X2_b	T-test	15,20	15,04	13,20	2,083	Inverse
X2_c	Vertical Jump	180,32	176,00	170	17,647	--
X2_d	Bridge	52,22	46,00	35	25,34	Inverse
X2_e	Sit and Reach	27,62	27,50	26,0	5,270	
X2_f	Sit Up	11,896	12,00	12	3,988	--

Table 9. Running of 20 m versus T-test

No.	Category/ Run of 20 m	Norm score T-Score	Frequency		Category/ T-test	Norm score T-Score	Frequency	
			f	%			F	%
1.	Very bad	< 36	13	12.26	Very bad	< 36	12	12,32
2.	Not good	36 s/d 45	18	16.98	Not Good	36 s/d 45	22	20,75
3.	Fairly good	46 s/d 55	44	41.51	Fairly Good	46 s/d 55	36	33,96
4.	Good	56 s/d 65	29	27.36	Good	56 s/d 65	33	31,13
5.	Very good	> 65	2	1.89	Very good	> 65	3	2,83
Sum			106	100.0	Sum		106	100.0

Table 10. Vertical Jump versus Bridge Test

No.	Category/ vertical jump	Norm score T-score	Frequency		Category/ Bridge	Norm score T-Score	Frequency	
			f	%			F	%
1.	Very bad	< 36	2	1,89	Very bad	< 36	14	13,21
2.	Not good	36 s/d 45	40	37,74	Not Good	36 s/d 45	19	17,92
3.	Fairly good	46 s/d 55	38	35,85	Fairly Good	46 s/d 55	37	34,91
4.	Good	56 s/d 65	17	16,04	Good	56 s/d 65	33	31,13
5.	Very good	> 65	9	8,49	Very good	> 65	3	2,83
Sum			106	100.0	Sum		106	100.0

Table 11. Sit and Reach test versus Sit Up

No.	Category/ Sit & Reach	Norm score <i>T-score</i>	Frequency		Category/ Sit up	Norm score <i>T-Score</i>	Frequency	
			f	%			F	%
1.	Very bad	< 36	8	7,55	Very bad	< 36	15	14,15
2.	Not good	36 s/d 45	29	27,36	Not Good	36 s/d 45	17	16,04
3.	Fairly good	46 s/d 55	39	36,79	Fairly Good	46 s/d 55	44	41,51
4.	Good	56 s/d 65	25	23,58	Good	56 s/d 65	25	23,58
5.	Very good	> 65	5	4,72	Very good	> 65	5	4,72
Sum			106	100.0	Sum		106	100.0

Table 12. Multiple Regression Results First Stage

Independent variables		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
<i>Constant</i>		60,341	9,815		6,148	0,000 ^{*)}
X1_a	MBI	0,262	0,119	0,180	2,190	0,031 ^{*)}
X1_b	Sit heigh	-0,165	0,129	-0,113	-1,284	0,202
X1_c	Arm length	-0,093	0,127	-0,064	-0,736	0,464
X1_d	Leg length	0,063	0,121	0,043	0,515	0,608
X1_e	Hip Diameter	-0,089	0,139	-0,061	-0,637	0,526
X2_a	Running 20 meter	0,266	0,126	0,183	2,119	0,037 ^{*)}
X2_b	<i>T-test</i>	0,447	0,106	0,308	4,211	0,000 ^{*)}
X2_c	<i>Vertical Jump</i>	0,321	0,132	0,221	2,422	0,017 ^{*)}
X2_d	<i>Bridge</i>	0,358	0,143	0,246	2,504	0,014 ^{*)}
X2_e	<i>Sit and Reach</i>	0,301	0,130	0,207	2,316	0,023 ^{*)}
X2_f	<i>Sit Up</i>	0,124	0,119	0,085	1,042	0,300
R		=		0,744		
R ²		=		0,554		
<i>Std. Error of the Estimate</i>		=		10,250		
F _{calculated}		=		10,604		
Sig. (p-Value)		=		0,000		

Based on the frequency distribution (table 11), 4.72% had perfect sit and reach test results, 23.58% were good; 36.79% quite good; 27.36% is not good, and 7.55% is not very bad sit and reach test results likewise for sit-up test results.

Based on the results of the regression analysis (table 12), as presented in the table above, the correlation coefficient (R) is = 0.744; R² = 0.554; F-regression = 10,604 with p<0,05. It was concluded that there was a strong significant

effect of the above-mentioned variables on the internal skills of children aged 7-9 years (Y). Judging from the beta coefficient, T-calculated, and the significance of each independent variable, several independent variables do not have a significant effect (p<0.05) on skills. Therefore, it is necessary to proceed to the next stage, where one by one the least significant independent variables are removed from the model so that the final result is the independent variables that have a significant effect.

Table 13. Regression analysis: Final step

Independent variable		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
Constant		60,223	8,741		6.890	0,000 ^{*)}
X1_a	IMT	0,240	0,115	0,165	2.090	0,039 ^{*)}
X2_a	Running 20 meters	0,258	0,122	0,178	2.111	0,037 ^{*)}
X2_b	T-test	0,433	0,104	0,298	4.178	0,000 ^{*)}
X2_c	Vertical Jump	0,266	0,126	0,183	2.108	0,038 ^{*)}
X2_d	Bridge	0,326	0,132	0,224	2.476	0,015 ^{*)}
X2_e	Sit and Reach	0,273	0,119	0,188	2.299	0,024 ^{*)}
R		=		0,730		
R ²		=		0,533		
Std. Error of the Estimate		=		10,221		
F _{-calculated}		=		18,806		
Sig. (p-Value)		=		0,000 ^{*)}		

The results of the regression analysis (table 13) showed a correlation coefficient (R) of = 0.730; $R^2 = 0.533$; F-regression = 18.808 with $p < 0.05$. It was concluded that there was a positive and significant effect of IBM (X1_a), 20-meter run (X1_a), T-test (X2_a), Vertical Jump (X2_b), Bridge (X2_c), and Sit and Reach (X2_d) on skills for children aged 7-9 years (Y).

Guiding Model for Early Childhood in sportive rhythmic gymnastics

Based on the results yielded, the model for guiding early childhood and talented children in gymnastics can be determined through anthropometric tests (BMI) and bio-motor tests encompassing 20 meters run, T-test, Vertical Jump, Bridge, and Sit and Reach. The six tests mentioned above, with a score from 1 to 5, so that the lowest score is 6 and the highest score is 30. Categorization of these children based on their gymnastic skills can be done by adding up the scores or by averaging the scores from the six tests. The following table presents the categorization state and the total score (scale 6 to 30).

Table 14. Category of students' skills in rhythmic gymnastics sport with the Anthropometry and bio-motor Tests

No	Gifted norm		Category
	Scale: 1 s/d 5	Scale: 6 s/d 30	
1.	4,21 – 5,00	26 – 30	Very skilled
2.	3,41 – 4,20	21 – 25	Skilled
3.	2,61 – 3,40	16 – 20	Satisfactory
4.	1,81 – 2,60	11 – 15	Less satisfactory
5.	1,00 – 1,80	6 – 10	Not satisfactory

4. Discussion

This study aimed to develop and determine the effectiveness and usability of the guidebook in the wake of preparing young children to grow up with basic skills in physical activity, named the rhythmic gymnastics sport. However, in any circumstances, a new product developed before being applied should be feasible, effective for early ages children. Some rhythmic gymnastics elements contain the element of muscle, dance, and physical exercise [15]. Girls and younger generations must be involved actively and willingly in sports and develop some skills that foster lifelong athletic participation since sociologic, psychologic and physiological benefits are associated with exercise [16], [17]. To be a good athlete, regular pieces of training that start at the age of 6-7 years are recommended. One of the reasons is that the age group ranging from 7 to 11 years old, especially girls, is considered a sensitive period for elasticity/flexibility development. Another reason is probably the intention to begin employing deliberative practice around the age of 10, somewhat before the optimal age for enhancing power and strength [3]. Then investigating and intervening in deliberate practice by helping children develop their skills, especially during childhood and early adolescence, becomes a crucial component for achieving the peak performance before adulthood [18], [19]. However, assisting children in developing such skills can be performed with various means. One of them is creating a guidebook that helps and instruct teachers during rhythmic and gymnastic sports in schools.

Having the features of R&D research, this study on hand had endeavoured to develop a guidebook containing different physical tests with pertinence contribution for skills growing in children. However, before being

implemented, effectiveness, validity, and reliability were the main facets that helped us value the product. Corroborating evidence was provided by expert material and media developed. After addressing all data and analysing all collected information, for the first, second, and third material expert assessment, all experts scored this product at over 80% (86.67%, 80%, 86.67%, respectively), which is equivalent to an outstanding category. This latter decision made by experts shows that the document proposed was helpful in the experts' perceptions. The same conclusion was made for media judgment scoring was equal to 86.67%. Shortly, this document can have a beneficial feature for schools, students, and parents. As far as the tests developed, such as anthropometric and bio-motor tests, we acknowledge that assessing skills disparity in children is an essential prerequisite that reveals starting point or the weakness or strength of any subject [20]. For example, while assessing motor skills in young children, two main examinations should be involved: examining motor functioning and motor development [4]. As far as developmental screening is concerned, it is frequently employed to identify children who have delays in motor development, with primary care providers often performing screening with preschool-aged children [21]. A fully understanding and comprehensive assessment of motor functioning with children should include an interview with a parent/caregiver. Information pertaining to pre-and perinatal health, developmental milestones, adaptive skills, motor functioning, and family history should be collected. In our study, anthropometry tests consist of IBM/weight, height, arm length, leg length, hip diameter, and sitting height, while bio-motor tests include 20 meters running, sit and reach, bridge, t-test, sit-ups, and vertical jumps. On the other hand, the skill test was taken from the basics of rhythmic gymnastics sport, namely jump, pivot, and balance. Skill test items were taken from the lowest value with the simplest movements in sports rhythmic gymnastics on young children.

The guiding book designed in the form of tests for early childhood in rhythmic sports gymnastics has validity in each test item, namely the anthropometric test with the reliability of height of 0.8703, weight of 0.8957, arm length of 0.5655, the hip diameter of 0.8342, leg length of 0.7721, sitting height 0.6903. In the same vein, the bio-motor test with 20 meters running has a validity score of 0.5192, bridge of 0.5171, sit and reach of 0.4485, t-test of 0.6090, sit-ups of 0.5694, a vertical jump of 0.6163. In contrast, the skill test has a straight jump validity of 0.5452, pivot pass of 0.5229, balance backward of 0.5918 for reliability $0.9204 > 0.7$ using correlation analysis of the moment product and reliability of 0, 9204 with Cronbach's alpha analysis. With such deep analysis and interpretation, this development and presence of these tests will support children to optimally develop their skills in physical activity, especially in a rhythmic gymnastics sport named *Senam Sehat in the Javanese language*.

5. Conclusion

Skills and motor development in physical activity in early childhood are directly tied to the development of cognitive, language, and social skills [20]. The form of this guiding test for the sake of early childhood was executed in the form of an anthropometric test, bio-motor test and has been packaged in the form of a guidebook that is useful as a guideline for implementing and nurturing such skills through rhythmic gymnastics sports in schools, VCD as an instructional video that has been described in the guidebook. It is worth mentioning also that the guidebook developed to support sporting rhythmic gymnastics in young students has a gifted norm with categories of very talented 26-30, talented 21-25, moderately talented 16-20, less capable 11-15, and not gifted 6-10.

In summary, rhythmic and artistic gymnastics seem to be effective in many angles, especially in enhancing different and sport-related physical skills and social adaptations and integration. Such physical activity helps to develop more joint mobility, and artistic gymnastics develops more strength, balance, and endurance. As a suggestion, present results should be implemented by other studies involving more extensive samples and children with different body traits.

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