



## DEVELOPMENT OF AN EDUCATIONAL BOOK ON PHYSICAL FITNESS COMPONENTS FOR ELEMENTARY SCHOOL STUDENTS

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### *Abstract*

*This research is motivated by the low understanding of students towards the components of physical fitness and the lack of interesting learning media in supporting the learning process of PJOK in State Elementary School 001 Meral Barat. This type of research is a development research (research and development) using the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation). The population in this study were 23 people consisting of PJOK teachers and elementary school students. The sample selection used purposive sampling involving 22 people. Data analysis techniques by looking at the N-Gain value. The validation results from the material validator obtained a score of 88% with a very feasible description. The results of the effectiveness test on a small scale with an N-Gain value obtained a value of 0.75 with a High level criterion and the results of the effectiveness test on a large scale with an N-Gain value obtained a value of 0.72 with a High level criterion.*

**Keywords:** Educational Books, Physical Fitness Components, Elementary School Students

### **Abstrak**

Penelitian ini dilatarbelakangi oleh rendahnya pemahaman siswa terhadap komponen-komponen kebugaran jasmani serta kurangnya media pembelajaran yang menarik dalam mendukung proses belajar PJOK di Sekolah Dasar Negeri 001 Meral Barat. Jenis penelitian ini merupakan penelitian pengembangan (*research and development*) dengan menggunakan model pengembangan ADDIE (*Analysis, Design, Development, Implementation, Evaluation*). Populasi dalam penelitian ini 23 orang yang terdiri dari guru PJOK dan siswa SD. Pemilihan sampel menggunakan *purposive sampling* yang melibatkan sebanyak 22 orang. teknik analisis data dengan melihat nilai *N-Gain*. Hasil validasi dari validator materi mendapatkan skor 88% dengan keterangan sangat layak. Hasil uji efektifitas pada skala kecil dengan nilai N-Gain mendapatkan nilai 0,75 dengan kriteria tingkat Tinggi dan Hasil uji efektifitas pada skala besar dengan nilai N-Gain mendapatkan nilai 0,72 dengan kriteria tingkat Tinggi.

**Kata Kunci:** Buku Edukasi, Komponen-Komponen Kebugaran Jasmani, Siswa Sekolah



## I. INTRODUCTION

Students can improve their physical fitness through physical activity and sports. These activities are included in the basic components of physical fitness and serve as strategies to enhance one's physical abilities. The scope of sports, as defined by Law No. 11, Article 1 of 2022 concerning sports, is divided into three categories: competitive sports, community sports, and educational sports. Physical education, also known as physical education, is defined as all activities that involve the mind, body, and soul in an integrated and systematic manner to encourage, foster, and develop physical, spiritual, social, and cultural potential. Within sports, physical education is implemented continuously and regularly to instill character values, develop skills, knowledge, and attitudes, and foster a healthy and active lifestyle.

According to Sumbodo in Kuran et al. (2023:23), physical education is an educational process through physical activities aimed at improving physical fitness, developing motor skills, sportsmanship, emotional intelligence, knowledge, and behaviors for a healthy and active lifestyle. Furthermore, physical education also provides students with an understanding of the importance of maintaining physical health, introducing them to various types of sports, and understanding the basic principles of physical fitness that can be applied in everyday life. According to Surahman et al. (2020:117), physical education is a learning process that involves physical activity to achieve physical fitness, skills, intellectual development, and build social sensitivity/competence. According to Junaedi & Hari (2015:837), its function is related to improving bodily function, developing skills and knowledge, improving coordination of body movements, adapting to others in daily life, and developing positive responses. From this explanation, it can be stated that the function of physical education is a process of activities or practices for physical fitness, both in activities and in improving body movement skills.

According to Damayanti & Rachmawati (2019:109), elementary school-age children (SD) are children aged 6 to 12 years. This age is marked by the start of elementary school, which is a new milestone in their lives that will later change their attitudes and behavior. In the educational process, teachers strive to develop students' potential to become responsible individuals with creativity, innovation, and spiritual, physical, intellectual, and emotional values. In physical education learning, each level of education has specific differences. One

of them, physical education learning at the elementary school level applies physical fitness material as a basis for improving students' physical abilities and understanding. Early childhood has a very high learning ability due to excessive curiosity, which occurs especially in early childhood according to Erick Burhaein in Sepriadi (2020:1). Physical fitness is a key indicator in realizing health in children and can be used to predict a child's health status in every physical activity without excessive fatigue. According to Sari (2020:134), physical fitness is an individual's ability to carry out daily tasks without experiencing significant fatigue and still have energy reserves to enjoy their leisure time and urgent needs. Physical fitness describes a person's physical condition during activities so that the body is able to increase oxygen consumption optimally, which will automatically affect physical fitness. The physical activities carried out include several applications of physical fitness components to be carried out on children in the subject of physical education, sports and health, namely strength, speed, agility, endurance, balance, explosive power, flexibility and coordination of their movement activities.

Education is the imparting of knowledge and skills through learning, enabling an individual or group of people to act as expected by the educator. According to Fitriani (in Aisyah & Alisman, 2024:105), educational books are educational in nature and encompass affective, cognitive, and psychomotor aspects. These three aspects guide students to assess and assess the effectiveness of the learning they have implemented. In addition to providing knowledge and understanding of new concepts, these books can also motivate readers to engage in these new concepts and apply them to their daily lives. These educational books can foster an interest in reading, introducing and enhancing students' knowledge of the components of physical fitness, including physical education, sports, and health, through the use of educational books as supporting learning media.

Based on these observations, the researcher is very interested in conducting a study entitled "Developing an Educational Book on the Components of Physical Fitness for Elementary School Students."

## II. RESEARCH METHODS

In this study, the researcher used the Research and Development (R&D) method. Research and development is a research based on the objectives of creating a product and testing it (Nata & Kurniawan, 2024:114). Therefore, the research and development conducted

by the researcher is to develop a product in the form of an educational book as a source of knowledge about the components of physical fitness. Product validation will be carried out by material and media experts. It will then be piloted on students at State Elementary School 001 Meral Barat. This will determine the feasibility of the educational book on the components of physical fitness being developed in this study.

The instrument used to collect data in this study was a questionnaire. The data analysis technique to determine the effectiveness before and after using the educational book on the components of physical fitness for elementary school students was an N-gain test.

### III. RESEARCH RESULTS

The product developed in this research is an educational book on the components of physical fitness for elementary school students, aimed at improving students' understanding of the material on the components of physical fitness. Assessment of the developed book focused on feasibility, teacher responses, and student feedback. Feasibility was conducted by validators who were material experts and media experts, while practicality was conducted by teachers and fifth-grade students at SD Negeri 001 Meral Barat.

The feasibility assessment was conducted by two validators: a material expert and a media expert. Validation included aspects of content feasibility, suitability of the material to student characteristics, and appropriateness of the display and use of media. Based on the validation results, the educational book was declared highly feasible, with an average score of 88% from the material validator and 89% from the media validator. Furthermore, to measure the book's effectiveness, two trials were conducted: a small-scale trial and a large-scale trial, using pretest and posttest methods. The results of the effectiveness test were analyzed using the N-gain formula. In the small-scale trial, an N-gain value of 0.75 was obtained, categorized as high, while in the large-scale trial, an N-gain value of 0.72 was obtained, also categorized as high. The average student score increased significantly from 41.25 to 86.25 in the small-scale trial and from 43.57 to 84.29 in the large-scale trial. This improvement indicates that the effective use of educational books can improve students' understanding of the components of physical fitness.

This research used a Research and Development (R&D) method, with the product being an educational book on physical fitness components for elementary school students. The development model used in this study was the ADDIE model, with the stages of

Analysis, Design, Development, Implementation, and Evaluation. Based on the research and development conducted, the following research results were obtained:

## 1. Analysis

The first step in this development was to conduct initial observations of a sample of fifth-grade students at SD Negeri 001 Meral Barat. The researcher interviewed the school's teachers on November 23, 2024. At the same time, observations were conducted in the fifth-grade classroom during class hours.

From the interviews with teachers at SD Negeri 001 Meral Barat, the researcher concluded that a book on the components of physical fitness is essential due to the limited availability of physical education, sports, and health learning materials related to the components of physical fitness in elementary schools.

Table 4.1 Product Aspects Table

No	Aspek produk	Keterangan
1.	Cover	Cover berukuran A-5 (14,8 cm x 21 cm).
2.	Huruf	Untuk isi font bree serif dan untuk judul font alfa slab one.
3.	Halaman	Halaman isi berjumlah 25 halaman yang terdiri atas halaman cover depan, kata pengantar, daftar isi, daftar pustaka, dan cover belakang.
4.	Isi materi	Halaman 1 tentang kebugaran jasmani. Halaman 2 tentang pengertian kebugaran jasmani. Halaman 3 tentang manfaat kebugaran jasmani. Halaman 8 tentang struktur fisik. Halaman 10 tentang komponen-komponen kebugaran jasmani.
5.	Profil pengembangan	Halaman daftar pustaka 19. Halaman Biodata penulis 20.
6.	Cover belakang	1 halaman penutup halaman belakang.

Source: Researcher's Process

## 2. Design Results

The design and description of this book on the components of physical fitness for elementary school students include the beginning, content, and end. The cover design includes the book title and brief information about it. The cover is A-5 size (14.8 cm x 21 cm), made of Art carton and 80-gram HVS paper. The following is the cover of this educational book on the components of physical fitness for elementary school students:

Figure 1. Cover Design



Source: Researcher's Work

#### Content Design of the Physical Fitness Components Book for Elementary School Students

The purpose of designing the content of this book is to provide students with an understanding and knowledge of the components of physical fitness. This will also help improve elementary school students' understanding and knowledge of this material. The content includes the definition, benefits, physical structure of physical fitness, and the components of physical fitness.

### 3. Development Results

The development stage is the next step in developing a product from a design. The product must undergo a validation test to ensure its suitability for use. The physical fitness components book for elementary school students was then presented to material experts and media experts. This was carried out in two stages: validation and revision of the physical fitness components book for elementary school students, validation by material experts and media experts, and field trials with teachers and students.

The assessment of the material experts for the educational book on physical fitness components for elementary school students was conducted by Dr. Hari Adi Rahmad, S.Pd., M.Pd. Lecturer in Physical Education, Health, and Recreation, Faculty of Teacher Training and Education, Karimun University, as a subject matter expert. The results of the material validation in the educational textbook on physical fitness components are presented in the following table:

Table 4.4 Material Validator Assessment Results

No	Validator	Percentase	Keterangan
1	I	88%	Sangat Layak

Source: Researcher's Process, 2025

Media expert validation, Ms. Cindy Carissa Puteri, S.Psi., the lead designer at The Sister's Planner, a decoration service, assessed the content design of the educational book. The assessment covered two aspects: quality and quantity. The material assessment, including criticism and suggestions for improvement, obtained from the media expert served as input for revising the educational book on physical fitness components for elementary school students.

The developed product was then assessed by a media expert validator to determine its feasibility. The validator was Cindy Carissa Puteri, S.Psi. The results of the media validation for the educational book on physical fitness components are presented in the following table:

Table 4.6 Media Validator Assessment Results

No	Validator	Percentase	Keterangan
1	I	89%	Sangat Layak

Source: Researcher Processing

Based on Table 4.6, the assessment results by the validator material experts obtained an average score of 89%, categorized as very appropriate.

#### 4. Implementation Results

At this stage, the modified product was piloted with physical education teachers and students. The purpose of this pilot was to determine the performance of the developed physical fitness component book for elementary school students.

##### a) Teacher Response

The purpose of this pilot was to determine the reactions of physical education, sports, and health teachers to the developed physical fitness component book for elementary school students. Conducted by Mr. Erga Kurniawan S, S.Pd.Gr., the physical education and health teachers were given a questionnaire containing assessments, suggestions, and comments regarding the developed product for refinement or improvement. One physical education teacher was the subject of this pilot.

Table 4.7 Teacher Response Assessment Results

No	Responden	Percentase	Keterangan
1	I	100%	Sangat Layak

Source: Researcher Processing, 2025

Based on Table 4.7 above, the teacher response assessment obtained a score of 100%, categorized as very appropriate.

b) Effectiveness Test

To determine the effectiveness of the educational textbook on physical fitness components for elementary school students at SD Negeri 001 Meral Barat, a pretest and posttest were used. According to Sanusi et al. (2020), the development of learning media such as textbooks must undergo a validation process by experts and small- and large-scale trials to measure the effectiveness and feasibility of the product. This study used two stages: a small-scale trial and a large-scale trial.

The small-scale trial was conducted to determine the extent to which the educational textbook on physical fitness components for elementary school students developed could be used by fifth-grade students at SD Negeri 001 Meral Barat. This trial was conducted on a small group of students to identify the product's strengths and weaknesses before testing on a larger scale.

a. Trial Subjects and Location

The subjects in this small-scale trial were eight fifth-grade students at SD Negeri 001 Meral Barat, selected based on specific criteria. The study took place at SD Negeri 001 Meral Barat, located on Jalan Pasir Panjang, Meral Barat District, Karimun Regency, Riau Islands Province.

b. Trial Procedure

The small-scale trial procedure included the following stages:

1. Administering a pretest to determine initial learning abilities.
2. Providing an educational book on the components of physical fitness as teaching material.
3. Students reading and understanding the book with guidance.
4. Practicing questions based on the material on the components of physical fitness.
5. Administering a posttest to measure student understanding after using the educational book.

### c. Results and Data Analysis

Table 4.8 Results of the Small-Scale N-gain Score Assessment

No	Siswa	Penilaian		N-gain Score	Kategori
		Pretest	Posttest		
1.	X1	30	90	0,85714286	Tinggi
2.	X2	60	80	0,5	Sedang
3.	X3	20	90	0,875	Tinggi
4.	X4	50	90	0,8	Tinggi
5.	X5	50	80	0,6	Sedang
6.	X6	60	90	0,75	Tinggi
7.	X7	20	80	0,75	Tinggi
8.	X8	40	90	0,83333333	Tinggi
<b>Rata-rata</b>		<b>41,25</b>	<b>86,25</b>	<b>0,75</b>	<b>Tinggi</b>

Source: Researcher's Process, 2025

Table 4.8 shows the results of the N-gain score assessment for the pretest-posttest trial per student, which yielded a high score. Furthermore, the results of the pretest and posttest trials for all students increased. The pretest results showed an average score of 41.25, with an increase in the posttest results to an average score of 86.25. The results of the N-gain score trial for all students showed an average score of 0.75, which is considered high when interpreted.

After conducting the small-scale trial and achieving high results, the research continued with a large-scale trial to determine the effectiveness of the product in a wider range of situations.

#### a. Trial Subjects and Location

The subjects in this large-scale trial were 14 fifth-grade students at SD Negeri 001 Meral Barat, selected based on specific criteria. The subjects were different from those in the small-scale trial. The research was conducted at SD Negeri 001 Meral Barat, located on Jalan Pasir Panjang, Meral Barat District, Karimun Regency, Riau Islands Province.

#### b. Large-Scale Trial Procedures

The large-scale trial procedures were the same as those for the small-scale trial, including:

1. Administering a pretest to determine initial learning abilities.
2. Providing educational books on the components of physical fitness as teaching materials.
3. Students reading and understanding the book's contents with guidance.

4. Practice questions based on the material on the components of physical fitness.
5. Administering a posttest to measure student understanding after using the educational book.

c. Results and Data Analysis

The results of the large-scale trial were analyzed to identify significant differences between the pretest and posttest. Teacher responses to the use of the books in learning were also analyzed. Large-scale Assessment and Data Analysis Results with the following assessment results:

The N-gain score assessment results for each student's pretest-posttest trial were categorized as high and moderate. Furthermore, the results of the pretest and posttest trials showed an overall increase. The pretest results showed an average score of 43.57, increasing to an average score of 84.29 in the posttest. The overall N-gain score results showed an average score of 0.72, categorized as high when interpreted.

**5. Evaluation Results**

The evaluation stage is the final stage of product use for the physical fitness component books for elementary school students. At this stage, after the quality of the physical fitness component books for elementary school students has been assessed by material experts, design experts, teachers, and students, the physical fitness component books can then be reproduced and used by elementary school students. This study aims to determine the feasibility of the media and improve learning, as seen through effectiveness testing. This aligns with the opinion of Nana Sudjana and Ahmad Rivai in Wicaksono et al. (2018:114), who argue that the presence of learning media makes the learning process more engaging for students, thereby fostering learning motivation, which ultimately improves student learning outcomes. According to Setianingrum et al. (2023:423), learning media stimulates students' thinking, increases learning variation, and facilitates student understanding of the subject matter.

**IV. CONCLUSION**

The conclusions of this research on the development of an educational book on the components of physical fitness for elementary school students are as follows: The material validator obtained a score of 88%, categorized as very appropriate. Therefore, the "Educational Book on the Components of Physical Fitness for Elementary School Students"

media is highly suitable for use as a learning medium for fifth-grade students at SD Negeri 001 Meral Barat. The media validator obtained a score of 89%, categorized as very appropriate. Therefore, the "Educational Book on the Components of Physical Fitness for Elementary School Students" media is highly suitable for use as a learning medium for fifth-grade students at SD Negeri 001 Meral Barat.

The results of the teacher response questionnaire also obtained a score of 100%, categorized as very appropriate. In conclusion, the "Educational Book on the Components of Physical Fitness for Elementary School Students" media is highly suitable for improving student understanding at SD Negeri 001 Meral Barat. The results of the effectiveness test of the Educational Book of Physical Fitness Components for Elementary School Students have gone through the pretest and posttest trial stages, in the pretest-posttest calculation stage there was an increase and improvement with a small-scale trial with a score of 0.75. Based on the percentage of the N-gain formula it is in the high category and a large-scale trial with a score of 0.72. Based on the percentage of the N-gain formula it is in the high or effective category to improve students' understanding of the components of physical fitness in grade V at SD Negeri 001 Meral Barat.

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