



# Development of Movement Quality Instruments for Physical Fitness Activities Based on Developmental Psychology of Children Aged 13-18 Years

Resty Gustiawati<sup>(✉)</sup>, Terbit Surya, Alwi Sihab, and Muhammad Surur

Faculty of Teacher Training and Education, Singaperbangsa University Karawang, Karawang 41361, Indonesia

resty.gustiawati@fkip.unsika.ac.id.

**Abstract.** The purpose of this study was to develop a quality instrument for physical fitness activities based on the Developmental Psychology of Children Aged 13-18 Years. This study uses the Research and Development method. This study took 24 students as subjects, 9 male students and 15 female students at the Branchbungin 9 Middle School, Bekasi Regency. The expert validation test in this movement quality instrument test involved Lecturers in the Physical Education Learning Evaluation Course, Lecturers in the Sports Test and Measurement Course and Physical Education and Sports Teachers. The reliability test uses the test-retest method with product moment correlation analysis with a value of 0.990 and a significance value of 0.000, which means that the Quality Instrument for Movement for Physical Fitness Activities is declared reliable. Experts and practitioners state that the Development of a Quality Movement Instrument for Physical Fitness Activities Based on Developmental Psychology for Children Aged 13-18 years is in the appropriate and valid category for use in schools. Thus, the Development of a Movement Quality Instrument for Physical Fitness Activities Based on Developmental Psychology for Children Aged 13-18 years is declared suitable for use as a measuring tool for the quality of movement for physical fitness activities in students at school.

**Keywords:** Movement Quality, Physical Fitness, Psychology of Children, Aged 13-18 Years

## 1 Introduction

Sport is a physical activity that increases and improves basic abilities and skills, as well as movement abilities (sports). This activity is one way to maintain physical health, which also refers to dynamic health, or the ability to move to meet all the demands of movement in daily life. Sports are based on games and the basic principles of their operation because they are an extension of games [1]. Physical education is a subject that is closely related to sports. Physical education is an important component of overall education. This is done through student movement activities during the learning process with the aim of improving emotive, cognitive, and psychomotor elements. What is meant by an important component of education is changes in individual behavior,

© The Author(s) 2024

Z. B. Pambuko et al. (eds.), *Proceedings of the 4th Borobudur International Symposium on Humanities and Social Science 2022 (BIS-HSS 2022)*, Advances in Social Science, Education and Humanities Research 778,

[https://doi.org/10.2991/978-2-38476-118-0\\_78](https://doi.org/10.2991/978-2-38476-118-0_78)

achieving educational goals through physical activity, including the use of body muscles, developing affective aspects, and having a relationship with personal growth and development [2]. One of the learning systems related to movement is physical education.

The ability to use learning stages from simple to complex movements, starting from simple movements to complex movements, is a skill needed by physical education teachers [3]. Improving physical fitness is one of the goals of physical education. Physical education is a teaching method through exercise that aims to improve students' motor skills, knowledge, sportsmanship, and intelligence [4]. Physical fitness is the ability to complete daily tasks effectively without becoming too tired so that a person can still enjoy their leisure time [5]. A typical teaching method in physical education is the repetition of the same movement to develop perfect motor skills [6]. Teaching methods intended to improve physical fitness, encourage the development of motor skills, knowledge, active lifestyles, and sportsmanship values [7].

Classification good/bad To promote physical health and fitness, neuromuscular development, mental-emotional development, social development, and intellectual development, physical education is essential in schools [8]. With the aim of promoting balanced growth and mastery, physical education is a tool to promote mastery of motor skills, physical abilities, knowledge, reasoning, and familiarization with a healthy lifestyle. Because it can help children move more creatively and meaningfully while improving their physical health [9].

Based on the results of research conducted at SMPN 1 Bungin Branch on physical fitness material, students do not know the correct movements when performing the Indonesian physical fitness test, they only pay attention to the results of the movements performed without paying attention to the correctness of the movements performed. movement or quality during activities, and there is no instrument to assess the quality of physical fitness activities after asking physical education There are still many students whose physical fitness test results do not match the assessment norms, and they do not receive physical fitness instructions that are in accordance with the theory. There must be solutions to the various physical education problems listed above to prevent further occurrences in the classroom. One possible answer is for teachers to fully understand the purpose of learning and the need to create and vary learning activities for students.

Education is a deliberate and organized effort to create a learning environment and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves and society. Formal and informal learning is possible [10].

The degree of a person's physical fitness can be determined and evaluated by taking measurements. Physical fitness tests are used to assess physical fitness. Tools or instruments must be available to perform the test. The tool used to assess physical fitness is the Indonesian Physical Fitness Test (TKJI) [11]. The Indonesian Physical Fitness Test (TKJI), specifically the 40-meter run, lying down, sitting upright, and 600-meter run tests, became the research tool used [12]. The practice of encouraging student grading based on measurement results that are used as a standard for the accuracy of the value indicators set by educators is known as learning assessment [13]. The description

above, the researcher suggests that research be carried out to create a high-quality physical fitness activity instrument in Indonesia that can be used as a guide for physical education instructors throughout Indonesia to assess physical fitness learning materials.

## 2 Method

This type of research uses research and development techniques. For the time being in item development, this research is being conducted. The end result of this development research is a high-quality model of movement equipment for physical fitness training. The application and development of learning environments is an example of an appropriate research and development technique to use in research. This model technique allows detailed examination of learning media validation and performance testing. Sugiyono [14] argues that, there are ten procedural steps in conducting development research, namely: (1) potential and problems, (2) needs analysis, (3) product design, (4) design validation, (5) design revision, (6) product trial, (7) product revision, (8) usage trial, (9) product revision, (10) mass production (Fig. 1).

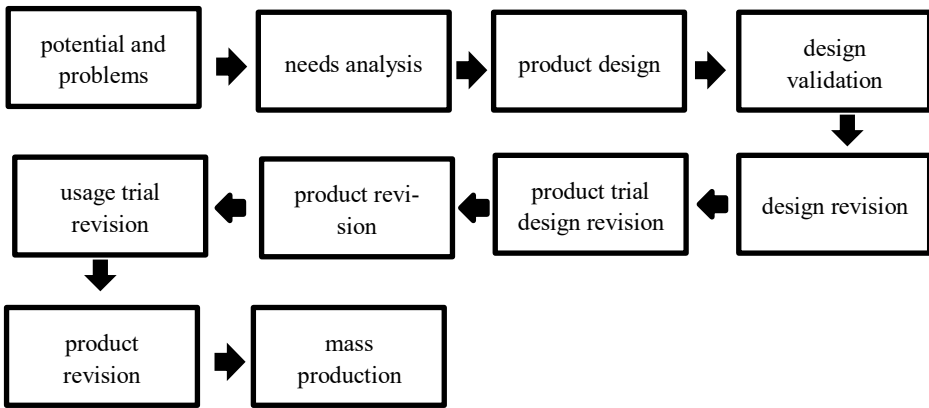


Fig. 1. Development Research Steps [14]

Table 1. Percentage Classification [1]

| No | Percentage  | Classification | Mean               |
|----|-------------|----------------|--------------------|
| 1  | 0 – 20%     | Not good       | Discarded          |
| 2  | 20.1 – 40%  | Not good       | Fixed              |
| 3  | 40.1 – 70%  | Pretty good    | Conditionally used |
| 4  | 70.1 – 90%  | Well           | Used               |
| 5  | 90.1 – 100% | Very good      | Used               |

In the data collection process for research and development, two data collection methods are used, namely quantitative and qualitative. Quantitative data with a rating scale: (1) Score 1 for Inappropriate Evaluation, (2) Score 2 for Reasonable Evaluation, (3) Score 3 for Reasonable Evaluation, and (4) Score 4 for Very Reasonable Evaluation, Needs Analysis, Test 3 Validators, and Experiment The results of qualitative data and

expert evaluation input and suggestions are then obtained from the results of the needs analysis documentation by referring to Table 1 which contains the percentage of the validator's assessment.

### 3 Result and Discussion

In this study, the data obtained in this discussion include: 1) Descriptive statistics, 2) Validity test, and 3) Reliability test.

#### 3.1 Descriptive Statistics

Based on table 2, the results of the measurement of Physical Fitness Movement Quality in the first trial and the second large-scale trial, it can be seen that the first trial has a mean = 17.58, standard deviation value = 4.895, while the second trial has a mean = 18.33, standard deviation value = 5.270.

**Table 2.** Descriptive statistics of motion quality of the first and second trial tests Instrument

| Test instrument                        | N  | Min | Max | Mean  | SD     |
|--|----|-----|-----|-------|--------|
| Quality of Physical Fitness Movement 1 | 24 | 48  | 83  | 55.21 | 9.592  |
| Quality of Physical Fitness Movement 2 | 24 | 48  | 87  | 55.79 | 10.125 |

Information: N = Number of samples; Minimum = The lowest value of the sample members; Maximum = The highest value of the sample members; Mean = Average; Std Deviation = Standard Deviation

#### 3.2 Validity Test

Based on the results of the assessment of the score scale of the Physical Fitness Movement Quality instrument by the expert lecturer of the PE learning evaluation course, the results of the assessment by the material expert one was 96%, the results of the assessment by the expert lecturer of sports tests and measurements were 94%, the results of the PJOK teacher assessment of coach two were 98%, and the results of coach three were 99%. Based on the table of achievement levels and qualifications, the assessment of material experts and corner teachers agree that the Fitness Movement Quality instrument model is in a very good category which means it is feasible to use or valid.

#### 3.3 Reliability Test

Based on Table 3, the Sig. count between the data from the first and second test results of the Fitness Movement Quality instrument has a Sig value of 0.000 with a correlation coefficient of 0.894\*\*. This data shows that the Fitness Movement Quality test is reliable.

The result of this product development is a guidebook for the quality of motion instruments for physical fitness activities in PE learning for several materials such as 1)

middle distance running, 2) lying down, 3) body lifting, 4) jumping upright and 5) middle distance running. In the development of this product produces guidelines for the quality of motion of fitness activities that can later be implemented to support the development process of learning in schools. Based on the results of the assessment of the value scale of the Physical Fitness Motion Quality instrument by the expert lecturer in the PE learning evaluation course, it was found that the results of the assessment by the material expert one was 96%, the results of the assessment by the expert lecturer of sports tests and measurements were 94%, the results of the pjok teacher assessment of coach two were 98%, and the results of coach three were 99%. Based on the table of achievement levels and qualifications, the assessment of material experts and corner teachers agrees that the Fitness Movement Quality instrument model is in a very good category which means it is feasible to use or valid.

**Table 3.** Test Reliability Instrument quality of physical fitness movement

| Quality Motion Fitness instrument | Sig   | Pearson Correlation |
|-----------------------------------|-------|---------------------|
| Trial 1 and Trial 2               | 0.000 | 0.990               |

## 4 Conclusion

Due to the very limited availability of learning resources and physical education learning media, the use of learning resources and learning media is included in the category of less with the existence of motion quality instruments. Learning will be less interesting due to the lack of student enthusiasm for learning due to inadequate learning materials. Because learning media includes everything that has the ability to convey messages and generate ideas, feelings, and willingness of students to support the development of the learning process in students [8]. Teaching and learning facilities are needed to make PE learning more successful.

**Acknowledgments.** Based on the recognition of the research, it only makes a PE learning product on physical fitness material that assesses in detail about the components that are carried out when the test is carried out with the aim of improving the evaluation of learning so far on physical fitness material only increases the results of the movements performed by students. this research is carried out from various stages that produce a product to be suitable for use as a PE learning guide. for the trial of the product was carried out at SMP Negeri 1 Cabangbungin in one of the Bekasi districts.

## References

1. M. T. Aziz and K. Anam, "PENGEMBANGAN INSTRUMEN TES KETERAMPILAN SHOOTING PADA PEMAIN SEPAKBOLA USIA 16-20 TAHUN," *J. Pendidik. Olahraga*, vol. 5, pp. 27–31, 2022.

2. E. Agustina, "Indonesian Journal for Proses Pembelajaran Penjasorkes dalam Situasi Pandemi Covid-19 pada Siswa Kelas XI SMA N 1 Paguyangan," vol. 1, no. 2, pp. 568–573, 2020.
3. A. Taufik and R. Mus'id, "PENGEMBANGAN INSTRUMEN PENILAIAN OLAHRAGA PANAHAN PADA PEMULAUNTUK GURU PENJAS TINGKAT SEKOLAH MENENGAH PERTAMA, KECAMATAN PRAYA, KABUPATEN LOMBOK TENGAH," *J. Ilm. Glob. Educ.*, vol. 1, no. 1, pp. 58–67, 2020.
4. D. E. M. T. Bete, "Efektivitas Penerapan Video Based Learning Di Masa Pandemi Covid-19 Pada Pembelajaran Penjas Di Sekolah Dasar," *Gelang. Olahraga J. Pendidik. Jasm. dan Olahraga*, vol. 5, no. 1, pp. 51–61, 2021, doi: 10.31539/jpjo.v5i1.2911.
5. Paiman, "Olahraga Dan Kebugaran Jasmani (Physical Fitness) Pada Anak Usia Dini," *J. Cakrawala Pendidik.*, vol. 3, no. 3, pp. 270–281, 2022.
6. A. Victoria, P. S. Mustafa, and D. Ardiyanto, "Pembelajaran Pendidikan Jasmani dan Olahraga berbasis Blended Learning di Sekolah Menengah Pertama," *J. Ilm. Wahana Pendidik.*, vol. 7, no. 2, pp. 170–183, 2021, doi: 10.5281/zenodo.4659619.
7. R. Indriati, M. Kom, T. Andriyanto, and M. Cs, "SURVEI PERBANDINGAN TINGKAT KESEGERAN JASMANI SISWA PUTRI SMP SE- KECAMATAN NGANCAR DENGAN HASIL BELAJAR SISWA TAHUN PELAJARAN 2017/2018," *Simki-Tech-sain*, vol. 02, no. 05, 2018.
8. P. Di, S. M. A. Smk, I. K. Yoda, G. Doddy, and T. Ms, "Analisis Implementasi Pembelajaran," vol. 4, no. 2, pp. 1–17, 2017.
9. A. Ningsih, T. Sarwita, P. Studi, and P. Jasmani, "SURVEI PENGUASAAN GERAK DASAR MOTORIK PADA SISWA KELAS V DI SD NEGERI 3 KETOL," vol. 1, no. 1, 2020.
10. putra sudeni suheri Permana, S. Akhmad, and rizal rony M, "Jurnal master penjas & olahraga," *J. Master Penjas Olahraga*, vol. 2, no. April, pp. 127–136, 2021, [Online]. Available: <http://ejournal.upi.edu/index.php/JKO>.
11. T. Jannata, "PERBEDAAN TINGKAT KEBUGARAN JASMANI PESERTA DIDIK KELAS VIII YANG BERSEKOLAH DI KOTA SMP N 1 WONOSOBO DAN DI DESA SMP N 3 KALIKAJAR DI KABUPATEN WONOSOBO TAHUN 2017/2018.," *Medium.Com*, 2016, [Online]. Available: <https://medium.com/@arifwicaksanaa/pengertian-use-case-a7e576e1b6bf>.
12. F. Bahari, Y. N. Hanief, and S. Junaidi, "Analisis Tingkat Kebugaran Jasmani Siswa Kelas Atas Ditinjau Dari Keikutsertaan Dalam Ekstrakurikuler," *Jendela Olahraga*, vol. 05, no. 02, pp. 89–97, 2015.
13. P. S. Mustafa and N. K. Masgumelar, "Kajian Review: Pengembangan Instrumen Penilaian Sikap, Pengetahuan, dan Keterampilan dalam Pendidikan Jasmani dan Olahraga Pinton Setya Mustafa 1, Ndaru Kukuh Masgumelar 2," *J. Ilm. Fak. Kegur. dan ilmu Pendidik.*, vol. 8, no. 1, pp. 31–49, 2022.
14. Sugiyono, *METODE PENELITIAN KUANTITATIF KUALITATIF dan R&D*, 1 s.d. 28. Bandung: Alfabeta, 2019.

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

