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Development of norms of physical ability tests for students aged 13-18 years

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ABSTRACT

Evaluation of physical abilities in sports is one of the necessary components in determining and improving sports achievement in all sports. Physical ability includes two components, namely the physical fitness component and the motor fitness component. Physical fitness consists of muscle strength (strength), flexibility (flexibility), muscle endurance (endurance), and cardiovascular-respiratory endurance. The components of fitness include speed, coordination, agility, power, strength and balance. The purpose of this research is to produce a norm test that fits the physical characteristics of students aged 13-18 years. The specific objective of this research is to obtain an effective physical ability test instrument that is suitable for the characteristics of students ages of 13-18 and to produce students' physical ability test norms. The test development in this study was designed to have a high level of accuracy, be cheap, and be easy to implement by anyone. Based on the results of the FGD (Focus Group Discussion), trainer opinions, and expert recommendations, the researchers developed the existing test norms that can predict the type of test that is appropriate for athletes aged 13-18. The physical test developed consists of 10 test item components, including endurance, strength, agility, speed, flexibility, coordination, balance, accuracy, and reaction speed (reaction). In addition to involving lecturers as research members, data collection was also carried out directly by the instructors who assisted in collecting the research data. The data on the results of this physical ability test include male and female athletes who took part in the selection, as well as athletes from the second and third generation. It should be noted that the training program contains rules stating that if within a specific time, for example, when athletes participate in tryouts and try-ins at regional, national, and international levels and they do not excel, then these athletes will be degraded, as well as when the age has exceeded the stipulation. These athletes will be replaced by those who meet the age and achievement requirements for participation in the National Student Sports Week (POPNAS), as approved by the Ministry of Youth and Sports.

Keywords: development of test norm, physical ability, PPLP athletes

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INTRODUCTION

Evaluation of physical abilities in sports is one of the necessary components in determining performance and increasing sports achievement in all sports (Hu & Yan, 2021; Manoel et al., 2020). Physical ability includes two components, namely the physical fitness component and the motor fitness component (Beck & Machlev, 2019; Wang et al., 2020). Physical fitness consists of muscle strength (strength), flexibility (flexibility), muscle endurance (endurance), and cardiovascular endurance. The fitness components include speed, coordination, agility, power, strength, and balance (Fu et al., 2021; Uyun et al., 2021). Increasing physical abilities such as

flexibility, movement speed, strength, and power are needed in training athletes in sports (Umunnakwe et al., 2021). The guidelines in each test and measurement book, the criterion norms in determining whether a person's physical abilities are generally using standards referenced from abroad, meanwhile, the abilities of domestic athletes differ in size when compared to foreign athletes based on anthropometry, nutritional intake, climate, pattern live their daily habits (Sardella et al., 2021). The measurement criteria norms used will not match the characteristics, body types of Indonesian people, so it is necessary to develop test norms, in accordance with the conditions of Indonesian society in general and especially areas that use test and measurement standards (Zhang et al., 2020). These factors need to be corrected through practice; this is important to support performance when an athlete is on the field. To increase the performance ability of athletes, there are determinants of a person's performance which include motor development, physiological conditioning, specific skill development, correct applications of laws and principles, psychological preparations. This means that there are several essential factors for improving performance to achieve optimal sporting achievements, however, when the program has been structured and when it is not supported by a continuous pattern of coaching and developing existing instruments, the achievement expectations will automatically fall behind other countries. The guidelines for determining physical ability so far still use national elite athlete standards and foreign standards, this is not in accordance with regional characteristics, anthropometry, nutritional intake of students in East Nusa Tenggara. The norms used for national athletes originate from data management from the SEA Games multi-event Pelatnas athletes, Asen Games and Olympic Games, these norms are recommended for use in regional athletes. These test and measurement standard norms need to be made in accordance with regional characteristics, with various phenomena that occur in this area. Preparation of physical ability norms, right-left grip strength, back muscle strength, arms, agility, speed, flexibility, and endurance, has not yet measured the overall physical ability of pencak silat, preparation basketball norms include agility, endurance, leg power (vertical jump), arm power (push ups), and flexibility (sit and reach), measurement of muscle endurance with core strength and stability tests. Nugroho et al. (2019) compiled physical ability norms with 8 test items, including leg strength (wall sit test), agility (sidestep). This study includes 13 broader test items to measure the physical ability of athletes aged 13-18 from several sports. Therefore, the development of test instruments is necessary. Evaluations carried out by trainers are dominant in the scope of aspects of physical condition while the instruments used are only in accordance with experience and needs or are sometimes ignored. This is understandable due to several reasons including: (1) insufficient time to carry out tests and measurements; (2) trainers do not have standard forms of tests; (3) the test instrument does not match the athlete's characteristics; (4) the test instrument is monotonous; and (5) the form of the test does not resemble the actual form of the game, or (6) the limited facilities and infrastructure for administering the test and others. This has become one of the factors in the achievement of athletes from various sports which have not experienced significant development. It is important to know the physical condition of the sport that is owned through instrument development, so the existence of a measuring instrument is necessary. Training planning must be based on a comprehensive analysis of psychological and physiological parameters, which are given in depth to improve athlete performance including biological and chronological age, training age, training history, health status, stress, and speed of recovery (Bompa & Gregogy, 1999). PPLP athlete training every year is held periodically every three (3) months to hold tests and measurements to follow developments to what extent the effect of giving training from physical and technical trainers, while determining the classification of achievement of training results requires a standard to become a benchmark. So far, the guides that have become references, among others, based on the book Latest Sports Development, and several other guidebooks from foreign literature, in the opinion of the researchers, are not satisfied using this reference, so it is necessary to develop test norms and measure abilities. athletes aged 13-18 years.

METHOD

Research conducted by researchers is research and development (research and development/R&D). The development carried out is in the form of developing test instruments.

The purpose of this method (research and development/R&D) is to produce a Norm/test instrument and test the usefulness and effectiveness of the developed norm/instrument. This research was conducted in two stages. The first stage was planned as the approach and problem identification phase at the research location. This stage was carried out with the aim of developing Norms for Physical Ability Tests for Student Athletes Aged 13-18. Then the second stage, Phase two, was data collection which was carried out based on the steps and techniques of Research and development data collection. The development model in this study is descriptive by describing several steps to be able to create a product. Research conducted by researchers is research and development (research and development/R&D). Research and Development is a research method used to produce certain products and test the effectiveness of these products. This type of research is research and development. In this research and development using the method of developing norms/test instruments, student athletes aged 13-18 years to determine the physical abilities of student athletes aged 13-18 years.

Development or Research and Development (R&D) is a process of developing educational tools that is carried out through a series of research using various methods in a cycle that passes through various stages. The definition of development according to Creswell & Creswell (2018), R&D is a process of developing educational tools that is carried out through a series of research using various methods in a cycle that passes through various stages. Research and Development (R&D) is a research method used to produce certain products and test the effectiveness of these products. Based on the definitions above, it can be explained that development research is research that is used to produce certain products, and to perfect a product in accordance with the references and criteria of the product being made to produce a new product through various stages and validation or testing.

Research Objectives Research and Development (R&D) aims to produce a product, it is necessary to carry out a need assessment. The main objective of R&D is not out of scope: a. Formulation of new educational theories or concepts, b. Improving existing educational theories or concepts, c. Testing or verifying the application of various educational theories or concepts in practice in the field, d. Formulating the history of education, e. Test the effectiveness of an educational concept or tool, and f. Finding various weaknesses in various educational theories, concepts or practices, and looking for various ways to improve them. Based on the above objectives, it can be concluded that the purpose of development research is to produce a product through a process of testing or verifying to produce a product that is valid, practical and effective.

FINDING AND DISCUSSION

Finding

The results of the men's physical test at the NTT provincial education and training center for students aged 13-18 years (PPLP) consist of a 20-meter run test, a shuttle run test, sit and reach test (sit and reach), long jump test without prefix (Standing Broad Jump), Push Up Test, Sit Up Test, Right Leg Power Hop Test (10 Hops), Left Leg Power Hop Test (10 Hops), 300 meter running test, Test (Multistage Fitness Test/Bleep Test), Basketball throwing test, Standing Split test, 50 meter running test, 100 meter running test, 400 meter running test. Of all the test results, to analyze the physical test as follows.

20-meter run test

Analysis of the 20 meter run by PPLP Male Athletes with a total sample of 25 (see Table 1). In a running race, it takes the fastest time to reach the finish line, so that in making the smallest time standard norm the highest value is measured (see Table 2).

Table 1. Analysis of the 20-meter run for male athletes aged 13-18

3,1440 + 1,5 (0,19247) = 3,1440 + 0,288705	3,43
3,1440 + 0,5 (0,19247) = 3,1440 + 069247	3,84
3,1440 - 0,5 (0,19247) = 3,1440 - 069247	2,45
3,1440 - 1,5 (0,19247) = 3,1440 - 0,288705	2,85

Table 2. Norms for 20-meter running for athletes aged 13-18 for boys.

No.	Sort Score (Seconds)	Category	Value
1.	< 2",85	Very well	5
2.	3",04 – 2",85	Well	4
3.	3",24 – 3",05	Moderate/Enough	3
4.	3",43 – 3",25	Not enough	2
5.	> 3",43	Less Once	1

Test's shuttle run (8 x 5 meter)

Analysis of running back and forth (shuttle run) with a total sample of 25 PPLP boys' athletes age 13-18 years (see Table 3). The results of this analysis get a score that will be used as a Standard Norm for tests and measurements, especially the back-and-forth running test (see Table 4).

Table 3. Analysis of running back and forth (shuttle run)

14.1076 + 1,5 (0,94929)	15,53
14.1076 + 0,5 (0,94929)	14,58
14.1076 – 0,5 (0,94929)	13,63
14.1076 + 1,5 (0,94929)	12,68

Table 4. Male athlete shuttle run test norms age 13-18 years

No.	Sort Score (Seconds)	Category	Value
1.	< 12",68	Very well	5
2.	13",63 – 12",68	Well	4
3.	14",58 – 13",62	Moderate/Enough	3
4.	15",53 – 14",57	Not enough	2
5.	> 15",53	Less Once	1

Test sit and reach.

Table 5. Analysis of sit and reach tests for male athletes using sit and reach benches

20,6923 + 1,5 (6,61374) = 30,61291	30,61
20,6923 + 0,5 (6,61374) = 23,99917	23,99
20,6923 – 0,5 (6,61374) = 17,38543	17,38
20,6923 – 1,5 (6,61374) = 10,77169	10,77

Table 6. Table of sit and reach test norms for athletes

No.	Sort Score (Seconds)	Category	Value
1.	> 30,61	Very well	5
2.	23,99 – 30,61	Well	4
3.	17,38 – 23,98	Moderate/Enough	3
4.	10,77 – 17,37	Not enough	2
5.	< 10,77	Less Once	1

Analysis of sit and reach test for male PPLP athletes aged 13-18 years (see Table 5). The results of the sit and reach test data analysis from 26 samples became the basis for making standard test and measurement norms for male athletes aged 13-18 PPLP (see Table 6).

Tes standing long jump

Test result and measurement of the long jump without a prefix (Standing Broad jump) of 30 males PPLP athletes aged 13-18 years (see Table 7). The results of the calculations from the

analysis of the long jump measurement without the prefix above show a score that can be used as the basis for developing standard norms for PPLP Athletes aged 13-18 (see Table 8).

Table 7. Test results and measurements of Standing Broad jump

2,3427 + 1.5 (0,18943)	2,63
2,3427 + 0.5 (0,18943)	2,44
2,3427 – 0,5 (0,18943)	2,25
2,3427 – 1,5 (0,18943)	2,06

Table 8. Standing broad jump test norms for male athletes

No.	Sort Score (Seconds)	Category	Value
1.	> 2,63	Very well	5
2.	2,44 – 2,63	Well	4
3.	2,25 – 2,43	Moderate/Enough	3
4.	2,06 – 2,24	Not enough	2
5.	< 2,06	Less Once	1

Test push up (60-second)

Calculating of the results and measurement of push-ups for 1 minute with 25 males athletes aged 13-18 PPLP (see Table 9). Analysis of the test and measurement data for 1 minute for the 25 athletes aged 13-18 PPLP East Nusa Tenggara Province mentioned above, the standard measurement norms arranged into 5 categories (see Table 10).

Table 9. Calculating of test results and measurement of push-ups for 1 minute

57,9600 + 1,5 (11,63142)	= 75,41 (75)
57,9600 + 0,5 (11,63142)	= 63,77 (64)
57,9600 – 0,5 (11,63142)	= 52,14 (52)
57,9600 – 1,5 (11,63142)	= 40,51 (40)

Table 10. Push-up tests norms for male athletes

No.	Sort Score (Seconds)	Category	Value
1.	>75	Very well	5
2.	64 – 75	Well	4
3.	52 – 63	Moderate/Enough	3
4.	40 – 51	Not enough	2
5.	< 40	Less Once	1

Sit-up test and measurement (2-minutes)

Results of sit-up measurements for 2 minutes for 32 athletes aged 13-18 PPLP NTT Province, data calculations can be done using SPSS version 24 program (see Table 11). This calculation can be used as data to obtain standard norms for tests and measurements of sit up athletes aged 13-18 PPLP (see Table 12).

Table 11. Results of sit-up measurements for 2 minutes

68,9375 + 1,5 (15.55415)	= 92,27 (92)
68,9375 + 0,5 (15.55415)	= 76,74 (77)
68,9375 – 0,5 (15.55415)	= 61,16 (61)
68,9375 – 1,5 (15.55415)	= 45,61 (46)

Table 12. 2-minute sit-up test norms for male athletes

No.	Sort Score (Seconds)	Category	Value
1.	> 93	Very well	5
2.	77 – 93	Well	4
3.	61 – 76	Moderate/Enough	3
4.	46 – 60	Not enough	2
5.	< 46	Less Once	1

Power hop test 10-times right leg

Results of power hop for 10-times right leg measurement with 20 athletes and processed using SPSS version 24 program (see Table 13). Analysis of data management, mentioned above, the standard norms for power hop 10 times the right leg of athletes aged 13-18 PPLP NTT Province (see Table 14)

Table 13. Results of Power hop 10 times right leg

23,9075 + 1,5 (2,76762)	28,06
23,9075 + 0,5 (2,76762)	25,29
23,9075 – 0,5 (2,76762)	22,52
23,9075 – 1,5 (2,76762)	19,76

Table 14. Power hop test norm 10 times right leg

No.	Sort Score (Seconds)	Category	Value
1.	>28,06	Very well	5
2.	25,29 – 28,06	Well	4
3.	22,52 – 25,28	Moderate/Enough	3
4.	19,76 – 22,51	Not enough	2
5.	< 19,76	Less Once	1

Left leg power hop

Tests and measurements of left leg power hop for 20 boys' athletes aged 13-18 og PPLP NTT Province. The results of measuring the left leg power hop athletes aged 13-18 PPLP were analyzed as follows at Table 15. The results of this calculation using 20 samples of PPLP male athletes aged 13-18 made a standard power hop norm of 10 times the left foot which can be used as the basis for evaluating athletes for tests that are carried out regularly or recruitment tests for PPLP athletes aged 13-18 in the future. This can be seen in Table 16.

Table 15. Tests and measurements of left leg power hop

23,6345 + 1,5 (2,91934)	28,01
23,6345 + 0,5 (2,91934)	25,09
23,6345 – 0,5 (2,91934)	22,17
23,6345 – 15 (2,91934)	19,25

Table 16. Power hop test norms 10 times left leg

No.	Sort Score (Seconds)	Category	Value
1.	> 28,01	Very well	5
2.	25,09 – 28,01	Well	4
3.	22,17 – 25,08	Moderate/Enough	3
4.	19,25 – 22,16	Not enough	2
5.	< 19,25	Less Once	1

PPLP Men's 300 meter running measurement test

Data on measurement results from 29 PPLP Male Athletes aged 13-18 were analyzed using the SPSS version 24 program and obtained at Table 17. The results of this analysis are made up of Standard Norms for tests and measurements of the 300-meter run for athletes aged 13-18 PPLP East Nusa Tenggara Province, however from these results it is necessary to make a calculation inversely, because in running measurements, the shorter the time taken the better the performance. For this reason, standard norms are prepared at Table 18.

Table 17. PPLP men's 300 meter running measurement test

51,3007 + 1,5 (5,03276)	58,85
51,3007 + 0,5 (5,03276)	53,82
51,3007 – 0,5 (5,03276)	48,78
51,3007 – 1,5 (5,03276)	43,75

Table 18. Norms for tests and measurements for 300-meter running

No.	Sort Score (Seconds)	Category	Value
1.	< 43",75	Very well	5
2.	48",79 – 43",78	Well	4
3.	53",63 – 48",80	Moderate/Enough	3
4.	58",87 – 53",84	Not enough	2
5.	> 58",87	Less Once	1

Multistage fitness test/bleep test PPLP male athletes aged 13-18

Results of physical test measurements using the multistage fitness test/bleep test method for athletes aged 13-18 PPLP boys (Table 19).

Table 19. Results of physical test measurements using the multistage fitness test/bleep test

47,6875 + 1,5 (6,23501)	57,78
47,6875 + 0,5 (6,23501)	50,8
47,6875 – 0,5 (6,23501)	44,57
47,6875 – 1,5 (6,23501)	38,33

Table 20. Multistage fitness test/bleep test norms for male

No.	Sort Score (Seconds)	Category	Value
1.	> 57,78	Very well	5
2.	50,80 – 57,78	Well	4
3.	44,57 – 50,79	Moderate/Enough	3
4.	38,33 – 44,56	Not enough	2
5.	< 38,33	Less Once	1

Analysis of the results of calculations involving 32 samples of PPLP male athletes aged 13-18 made standard norms of the multistage fitness test/bleep test which can later be used as a reference for assessment. The standard norms for the multistage fitness test/bleep test can be seen in Table 20.

Test standing split for athletes

The results of the analysis and calculation of the Standing Split test for the athlete aged 13-18 male PPLP for the 20 people at Table 21 have a score that can be used as a basis for developing standard norms as shown in Table 22.

Table 21. Analysis of the results of the standing split test

12,8750 + 1,5 (6,99224)	23,36
12,8750 + 0,5 (6,99224)	16,37
12,8750 – 0,5 (6,99224)	9,38
12,8750 – 1,5 (6,99224)	2,39

Table 22. Standing Split test norms

No.	Sort Score (Seconds)	Category	Value
1.	< 2,39	Very well	5
2.	2,39 – 9,38	Well	4
3.	9,39 – 16,37	Moderate/Enough	3
4.	16,38 – 23,36	Not enough	2
5.	> 23,36	Less Once	1

PPLP men's 50-meter running test

The results of the analysis of the 50-meter run test for PPLP male athletes aged 13-18 with a total sample of 13 people can be seen at Table 23. In every track and field race, it takes the shortest possible time to reach the finish line. So, in making the standard norms, the smallest time is the highest value measure. The standard norm table for the men's 50-meter run test can be seen in Table 24.

Table 23. The result of the analysis

6,6915 + 1,5 (0,87857)	8,01
6,6915 + 0,5 (0,87857)	7,13
6,6915 – 0,5 (0,87857)	6,25
6,6915 – 1,5 (0,87857)	5,37

Table 24. Norms for 50-meter running test

No.	Sort Score (Seconds)	Category	Value
1.	< 5",37	Very well	5
2.	5",37 – 6",25	Well	4
3.	6",26 – 7",13	Moderate/Enough	3
4.	7",14 – 8",01	Not enough	2
5.	> 8",01	Less Once	1

PPLP men's 100-meter running test

Results of the 100 meter run test for PPLP male athletes aged 13-18 with a total sample of 13 people can be seen in Table 25. As with other running events, it is the smallest time recorded that measures the highest score in the PPLP men's 100 meter running test. The standard norm table for the PPLP men's 100 meter run test can be seen in Table 26.

Table 25. Result of the 100-meter run test

13,4115 + 1,5 (0,83597)	14,66
13,4115 + 0,5 (0,83597)	13,83
13,4115 – 0,5 (0,83597)	12,99
13,4115 – 1,5 (0,83597)	12,16

Table 26. PLP men's 100-meter running test norms

No.	Sort Score (Seconds)	Category	Value
1.	< 12",16	Very well	5
2.	12",16 – 12",99	Well	4
3.	13",00 – 13",83	Moderate/Enough	3
4.	13",84 – 14",66	Not enough	2
5.	> 14",66	Less Once	1

PPLP men's 400-meter running test in NTT Province

Results of the 400-meter run test for PPLP male athletes aged 13-18 with a total sample of 10 people can be seen in Table 29. In the running competition, the smallest time recorded is the highest score, so that in the PPLP men's 400 meter running test. The standard norm table for the PPLP Men's 400 meter Running test can be seen in Table 30.

Table 29. Results of the 400-meter run test

57,229 + 1,5 (4,30154)	63,68
57,229 + 0,5 (4,30154)	59,38
57,229 - 0,5 (4,30154)	55,08
57,229 - 1,5 (4,30154)	50,78

Table 30. Norms for the 400 meter run test

No.	Sort Score (Seconds)	Category	Value
1.	< 50",78	Very well	5
2.	50",78 – 55",08	Well	4
3.	55",09 – 59",38	Moderate/Enough	3
4.	59",39 – 63",68	Not enough	2
5.	> 63",68	Less Once	1

The results of the female physical test at the NTT province student education and training center (PPLP) consist of: 20 meter run test, 50 meter run test, 100 meter run test, 300 meter run test, 400 meter run test, shuttle run test), Right Leg Power Hop Test (10 Hops), Left Leg Power Hop Test (10 Hops), Test (Multistage Fitness Test/Bleep Test), Push Up Test, Sit Up Test, Throwing Basketball Test, Standing Split Test, Test Long Jump without a prefix (Standing Broad Jump), Sit and Reach test (sit and reach), Of all the test results, to analyze the physical test as follows.

20-meter running test

Analysis of the 20-meter run Athletes aged 13-18 PPLP female with a total sample of 31 people can be seen in Table 31. In a running race, it takes the fastest time to reach the finish line, so that in making the smallest time standard norm the highest value is measured (see Table 32).

Table 31. Analysis of the 20-meter run

3,5471 + 1,5 (0,33784)	4,05
3,5471 + 0,5 (0,33784)	3,72
3,5471 - 0,5 (0,33784)	3,38
3,5471 - 1,5 (0,33784)	3,04

Table 32. Norms for 20-meter running

Sort Score (Seconds)	Category	Value
< 3",04	Very well	5
3",04 – 3",38	Well	4
3",39 – 3",72	Moderate/Enough	3
3",73 – 4",05	Not enough	2
> 4",05	Less Once	1

PPLP women's 50-meter running test

Results of the analysis of the 50-meter run test for PPLP female athletes aged 13-18 can be seen in Table 33. And, in every track and field race, it takes the shortest possible time to reach the finish line. So, in making the standard norms, the smallest time is the highest value measure. The standard norms table for the Women's 50-meter Run test can be seen in Table 34.

Table 33. Results of the analysis of the 50-meter run test

7,2493 + 1,5 (0,80418)	8,45
7,2493 + 0,5 (0,80418)	7,65
7,2493 - 0,5 (0,80418)	6,85
7,2493 - 1,5 (0,80418)	6,04

Table 34. Norms for the 50-meter running test for female athletes

No.	Sort Score (Seconds)	Category	Value
1.	< 6",04	Very well	5
2.	6",04 – 6",85	Well	4
3.	6",86 – 7",65	Moderate/Enough	3
4.	7",66 – 8",45	Not enough	2
5.	> 8",45	Less Once	1

PPLP women's 100-meter running test

Results of the 100-meter run test for PPLP female athletes aged 13-18 as follows at Table 35. As with other running race numbers, the smallest recorded time is the measure of the highest score in the PPLP Women's 100 meter running test. Table 4.18 of the PPLP Women's 100 meter running test standard norms can be seen in the following Table 36.

Table 35. Results of the 100 meter run test

7,2493 + 1,5 (0,80418)	8,45
7,2493 + 0,5 (0,80418)	7,65
7,2493 - 0,5 (0,80418)	6,85
7,2493 - 1,5 (0,80418)	6,04

Table 36. PPLP women's 100-meter running test norms

No.	Sort Score (Seconds)	Category	Value
1.	< 6",04	Very well	5
2.	6",04 – 6",84	Well	4
3.	6",85 – 7",64	Moderate/Enough	3
4.	7",65 – 8",45	Not enough	2
5.	> 8",45	Less Once	1

PPLP women's 300-meter running measurement test

Data on measurement results from 31 PPLP female athletes aged 13-18 were presented at Table 37. The results of this analysis were made Standard Norms for tests and measurements of the 300-meter run for athletes aged 13-18 PPLP East Nusa Tenggara province, however from these results it is necessary to make a calculation inversely, because in running measurements, the shorter the time taken the better the performance. For this reason, standard norms are prepared in Table 38.

Table 37. Data on measurement result

59,4832 + 1,5 (4,73571)	66,59
59,4832 + 0,5 (4,73571)	61,85
59,4832 - 0,5 (4,73571)	57,11
59,4832 - 1,5 (4,73571)	52,38

Table 38. Test norms and measurement for 300-meter running

No.	Sort Score (Seconds)	Category	Value
1.	< 52",38	Very well	5
2.	52",38 – 57",11	Well	4
3.	57",12 – 61",85	Moderate/Enough	3
4.	61",86 – 66",59	Not enough	2
5.	> 66",59	Less Once	1

PPLP women's 400-meter running measurement test

Results of 400 meter running measurements from 12 PPLP female athletes aged 13-18 can be seen at Table 39. The Standard Norm of the 400-meter run test for PPLP female athletes of East Nusa Tenggara Province, because in measurement on running numbers the shorter the time taken, the better the performance. For this reason, standard norms are prepared in Table 40.

Table 39. Result of 400-meter running measurement

69,5692 + 1,5 (6,89818)	79,92
69,5692 + 0,5 (6,89818)	73,02
69,5692 - 0,5 (6,89818)	66,12
69,5692 - 1,5 (6,89818)	59,22

Table 40. 400-meter running test norms

No.	Sort Score (Seconds)	Category	Value
1.	< 59",22	Very well	5
2.	59",22 – 66",12	Well	4
3.	66",13 – 73",02	Moderate/Enough	3
4.	73",03 – 79",92	Not enough	2
5.	> 79",92	Less Once	1

***Test run back and forth (Shuttle run*)**

Analysis of running back and forth (Shuttle Run) conducted on 31 female PPLP athlete samples can be seen at Table 41. And the results of the analysis of the shuttle run test get a score that will be used as the Standard Norm, which can be seen in Table 42.

Table 41. Analysis of running back and forth (Shuttle run)

14.6671 + 1,5 (1,96694)	17,62
14.6671 + 0,5 (1,96694)	15,65
14.6671 - 0,5 (1,96694)	13,68
14.6671 - 1,5 (1,96694)	11,72

Table 42. The norms of shuttle run test for female

No.	Sort Score (Seconds)	Category	Value
1.	< 11",72	Very well	5
2.	11",72 – 13",68	Well	4
3.	13",69 – 15",65	Moderate/Enough	3
4.	15",66 – 17",62	Not enough	2
5.	> 17",62	Less Once	1

Power hop test 10 times right leg

Table 43 showed the results of measurement and analysis of the power hop 10 times the right leg with 22 PPLP female athletes and processed using the SPSS version 24 program. Analysis of the data management mentioned above, then the standard norms for power hop 10 times the right leg of the female athlete PPLP are compiled as seen in Table 44.

Table 43. The results of measurement and analysis of the power hop

17,8345 + 1,5 (3,37587)	22,9
17,8345 + 0,5 (3,37587)	19,52
17,8345 - 0,5 (3,37587)	16,15
17,8345 - 1,5 (3,37587)	12,77

Table 44. Power hop test norm

No.	Sort Score (Seconds)	Category	Value
1.	> 22,90	Very well	5
2.	19,52 – 22,90	Well	4
3.	16,15 – 19,51	Moderate/Enough	3
4.	12,77 – 16,14	Not enough	2
5.	< 12,77	Less Once	1

Test and measurement of left leg power hop

Table 45 are the results of the left leg power hop measurements of athletes aged 13-18 PPLP female were analyzed. The results of the analysis using 22 samples of PPLP female athletes aged 13-18 can be made a standard power hop norm of 10 times the left foot, which can then be used as a reference for periodic tests or PPLP female athlete recruitment tests in the future. Norms can be seen in Table 46.

Table 45. The result of the left leg power hop

17,0941 + 1,5 (3,07933)	21,71
17,0941 + 0,5 (3,07933)	18,63
17,0941 - 0,5 (3,07933)	15,55
17,0941 - 1,5 (3,07933)	12,47

Table 46. Power hop test norms 10 times left leg

No.	Sort Score (Seconds)	Category	Value
1.	> 21,71	Very well	5
2.	18,63 – 21,71	Well	4
3.	15,55 – 18,62	Moderate/Enough	3
4.	12,47 – 15,54	Not enough	2
5.	< 12,47	Less Once	1

Multistage fitness test/bleep test athletes aged 13-18 female PPLP

Table 47 were the results of tests and measurements of physical condition using the multistage fitness test/bleep test method for athletes aged 13-18 PPLP female. Analysis of the results of calculations involving 37 samples of PPLP athletes aged 13-18 female standard norms of the multistage fitness test/bleep test was made which could later be used as a reference for assessment. The standard norms for the multistage fitness test/bleep test can be seen in Table 48.

Table 47. The result of tests and measuments of physical condition using the Multistage Fitness Test/Bleep Test method

39,0784 + 1,5 (6,72715)	49,17
39,0784 + 0,5 (6,72715)	42,44
39,0784 - 0,5 (6,72715)	35,71
39,0784 - 1,5 (6,72715)	28,99

Table 48. Norms for multistage fitness test/bleep test for female athletes

No.	Sort Score (Seconds)	Category	Value
1.	> 49,17	Very well	5
2.	42,44 – 49,17	Well	4
3.	35,71 – 42,43	Moderate/Enough	3
4.	28,99 – 35,70	Not enough	2
5.	< 28,99	Less Once	1

Female PPLP athlete push up test

Table 49 were the analysis of the results of the push-up test for 60 seconds on 25 athletes aged 13-18 PPLP female of East Nusa Tenggara province. And the standard norms for testing and measuring push-ups for 60 seconds on 25 athletes aged 13-18 PPLP female are arranged into 5 categories, which can be seen in Table 50.

Table 49. The analysis of the results of the push-up test

33,7632 + 1,5 (9,86239)	= 48,56 (49)
33,7632 + 0,5 (9,86239)	= 38,69 (39)
33,7632 - 0,5 (9,86239)	= 28,83 (29)
33,7632 - 1,5 (9,86239)	= 18,97 (19)

Table 50. Norms for the PPLP athlete PPLP test for female

No.	Sort Score (Seconds)	Category	Value
1.	> 49	Very well	5
2.	39 – 49	Well	4
3.	29 – 38	Moderate/Enough	3
4.	19 – 28	Not enough	2
5.	< 19	Less Once	1

Sit up test and measurement (2-minutes)

Table 51 were the results of sit-up tests and measurements for 2 (two) minutes for 31 athletes aged 13-18 female PPLP East Nusa Tenggara province. This data analysis can be used as a guideline for obtaining standard norms for 2 (two) minute sit up tests and measurements, for female athletes from PPLP, East Nusa Tenggara province. Standard norms can be seen in Table 52.

Table 51. Results of sit-up tests and measurement

60,0968 + 1,5 (18,14085)	= 87,31 **(87)**
60,0968 + 0,5 (18,14085)	= 68,17 **(68)**
60,0968 - 0,5 (18,14085)	= 51,03 **(51)**
60,0968 - 1,5 (18,14085)	= 32,89 **(33)**

Table 52. 2-minute sit-up test norms for athletes

No.	Sort Score (Seconds)	Category	Value
1.	> 87	Very well	5
2.	68 – 87	Well	4
3.	51 – 67	Moderate/Enough	3
4.	33 – 50	Not enough	2
5.	< 33	Less Once	1

Standing split test for PPLP female athletes aged 13-18

Table 55 were the data on results of measurements and standing split tests for PPLP female athletes aged 13-18. The results of the standing split test analysis of 14 PPLP East Nusa Tenggara female athletes above, there are scores that can be used as a reference for the development of standard norms as shown in Table 56.

Table 55. Data on results of measurement and standing split tests

14,3571 + 1,5 (5,55542) = 22,69023	22,69
14,3571 + 0,5 (5,55542) = 17,13481	17,13
14,3571 - 0,5 (5,55542) = 11,57939	11,58
14,3571 - 1,5 (5,55542) = 6,02397	6,02

Table 56. Standing split test norms for female PPLP athletes

No.	Sort Score (Seconds)	Category	Value
1.	< 6,02	Very well	5
2.	6,02 – 11,58	Well	4
3.	11,59 – 17,13	Moderate/Enough	3
4.	17,14 – 22,69	Not enough	2
5.	> 22,69	Less Once	1

Standing broad jump test

Table 57 were data on test results and measurements of the long jump without a prefix (Standing Broad jump) for 38 athletes aged 13-18 PPLP female. The results of the analysis of the test and measurement of the long jump without the prefix above show a score that can be used as a basis for developing standard norms for PPLP Female Athletes Age 13-18. The norms can be seen in Table 58.

Table 57. Data on test results and measurements of the long jump without a prefix (Standing Broad jump)

1,9476 + 1.5 (0,29763)	2,39
1,9476 + 0.5 (0,29763)	2,1
1,9476 - 0.5 (0,29763)	1,8
1,9476 - 1.5 (0,29763)	1,5

Table 58. Standing Broad jump test norms for female athletes

No.	Sort Score (Seconds)	Category	Value
1.	> 2,39	Very well	5
2.	2,10 – 2,39	Well	4
3.	1,80 – 2,09	Moderate/Enough	3
4.	1,50 – 1,79	Not enough	2
5.	< 1,50	Less Once	1

Test sit and reach

Table 59 were the sit and reach test analysis for athletes aged 13-18 PPLP female of East Nusa Tenggara province. Normative data for the sit and reach test from 29 PPLP female athletes in East Nusa Tenggara province can be seen in Table 60.

Table 59. Sit and reach test analysis for athlete

21,7586 + 1,5 (6,91094)	32,12
21,7586 + 0,5 (6,91094)	25,21
21,7586 - 0,5 (6,91094)	18,3
21,7586 - 1,5 (6,91094)	11,39

Table 60. Sit and reach test norms for athlete

No.	Sort Score (Seconds)	Category	Value
1.	> 32,12	Very well	5
2.	25,21 – 32,12	Well	4
3.	18,30 – 25,20	Moderate/Enough	3
4.	11,39 – 18,29	Not enough	2
5.	< 11,39	Less Once	1

Discussion

Individualized Norms are often used in the field of psychometry, which is a branch of psychology that performs psychological measurements to explore the ins and outs of measurement and analysis of the differences that exist between individuals or individual differences, so that the function of psychometry in psychology can be said to study differences between individuals and groups (Bergman & Almkvist, 2015). Initially, the history of psychometry in psychology was carried out to measure intelligence, but in line with the times, now the benefits of psychometry in psychology are used in the field of social sciences, including education and psychology in the scope of measuring knowledge, abilities, attitudes, and personality (Miyahara, 2020). One of the results of psychometric activity is a psychological test, also known as a psychological test and biomtor test (Kassim et al., 2018). Physical condition is a person's capacity to do physical work with graded abilities. Physical condition can be measured quantitatively and qualitatively (Kolimechkov et al., 2019). Developing or improving the physical condition means developing and improving the athlete's physical abilities. Physical ability includes two components, namely the physical fitness component and the motor fitness component (Pereiro et al., 2021). Physical fitness consists of muscle strength, muscle endurance,

cardiovascular endurance, and flexibility. While the components of motion or motor freshness consist of speed, coordination, agility, muscle explosive power, and balance. Components of motion fitness or can be trained. Motor skills at the beginning of the exercise are generally the same, these components become more specific with practice. There have been many tests that can test its components. Physical fitness consists of muscle strength, muscle endurance, cardiovascular endurance, and flexibility (Kusuma et al., 2019; Panjiantariksa et al., 2020). Meanwhile, the components of motion or motor freshness consist of speed, coordination, agility, muscle explosive power, and balance (Kardiyanto & Wijanarko, 2021). Components of motion fitness or can be trained. Motor skills at the beginning of the exercise are generally the same, these components become more specific with practice. Physical fitness consists of muscle strength, muscle endurance, cardiovascular endurance, and flexibility (Putra & Lumintuarso, 2020). While the components of motion or motor freshness consist of speed, coordination, agility, muscle explosive power, and balance. Components of motion fitness or can be trained. Motor skills at the beginning of the exercise are generally the same, these components become more specific with practice. There are already many tests that can test the components. In line with this research, the test norms for the physical condition of athletes in sports in NTT will have a major impact on improving athlete performance. Then it was confirmed again by the results of the study (Neil-Sztramko et al., 2014), that the athlete's physical condition test norms became a barometer for a country to find out the weaknesses and strengths of an individual.

The results of testing the research hypothesis were compared with the value of r table. Value of r table N = 50 5% significance level of 0.279. Based on these results it is known that the results of the validity test on all instruments show the value of r count > r table. This result can be interpreted that all test instruments arranged according to the physical test norms are declared valid. After the results of small-scale testing obtained results stating that all physical test norms were valid and reliable, the next step was data collection on a large scale. Large-scale tests were carried out on PPLP and PPLD athletes in every Sports Branch in the NTT Province.

Retrieval of large-scale test data is carried out using physical test instruments that have been declared valid and reliable. The results of data collection in large-scale tests are used as a basis for making norms and standards for assessing physical test norms. The preparation of norms and standards of assessment is based on Norm Reference Standards which are based on calculated mean values and standard deviations. The formula for calculating the norms and standards used is in accordance with Equation number 1, 2, 3, & 4.

Very good: $X \geq M + 1.5\ SD$ ……. 1
Good: $M \leq X < M + 1.5\ SD$ ……. 2
Enough: $M - 1.5\ SD \leq X < M$ ……... 3
Less: $M - 1.5\ SD \geq X$ …… 4

The results of large-scale test data as well as the calculation of norms and standards for assessing physical tests.

CONCLUSION

The As the aim of the research is to obtain an effective physical ability test instrument that is in accordance with the characteristics of NTT athletes and to produce NTT athlete physical ability test norms, a development research was carried out with ten (10) steps, consisting of: (1) review of physical skills test criteria, (2) perform an analysis of the information collected, (3) conduct a literature review, (4) choose the type of test, (5) develop procedures for carrying out the test, (6) peer review or expert validation, (7) preparation of the initial product, (8) small-scale validity and reliability tests, (9) scale testing great for making norms and standards of assessment, (10) making the final product. The research product is in the form of a book accompanied by instructions for using tests, measurements, and evaluations. The results of the material experts' assessment of the development of the NTT athlete's physical ability test norms concluded that the test was very well structured and effective. Test development products are suitable for use to measure and evaluate physical abilities for male and female PPLP athletes in NTT.

Suggestions for Utilization based on development research, namely that the physical ability tests that have been developed can be used by coaches and selection of sports for PPLP athletes in NTT Province so that abilities can be known.

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