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Survey of The Physical Condition of U-21 Rafting Athletes at Central Java Regional Training Center

Kuat Leksono*, Panji Agung Nugroho, Asyidika Vito Indarto

[1] Universitas Jenderal Soedirman
[2] Universitas Negeri Yogyakarta
[3] Universitas Muhammadiyah Brebes

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*Correspondence: Kuat Leksono
Email: leksono.kuat@unsoed.ac.id

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Abstract: Whitewater rafting requires good physical condition to support paddling. Some components of physical condition include: abdominal muscle strength, arm muscle strength, endurance, power, and togok flexibility. The purpose of this study was to describe the components of the physical condition of whitewater rafting athletes in Cilacap Regency. This study is a quantitative descriptive study with a survey approach. The sample in this study were 12 athletes from the PELADA U-21 Central Java rafting team using a total side. Measurements used the Bleep test (cardiovascular endurance), Pull-up and Sit-up (muscle strength), V-sit and reach (flexibility), and Speed (30 Meter run).. ***(Methods)*** Data analysis used descriptive statistics, namely Norm Reference Assessment (PAN) with the help of MS Excel to determine the test results.*)*. ***(Results)*** The test results obtained physical conditions with the following details. In the bleep test, the average was 39.067 with a median of39,150, mode44.5, and standard deviation7.5852, with a range of values between27.6-49.0. The Pull Up test shows an average10.92, median14.00, mode 0, standard deviation8,028, with a value range of 0 - 21. The Push Up Test obtained an average42.83, median43.50, mode 44, standard deviation7,433, and the value range is 30 - 58. The Sit Up Test obtained an average45.54, median42, mode 42, standard deviation11,062, and the value range is 34 - 54. In the Handgrip dynamometer test, the average obtained39.57, median35.75, mode32, standard deviation11,062, with a value range of 27 - 59. In the v-sit and reach test, the average was 57.82, the median46.50, mode46, standard deviation4,933, with a value range of 36 - 52. Finally, the 30 M Running test produced an average of5.0108, median5.14, mode 4.20, standard deviation 0.48782, and the value range is 4.20 – 5.63.

Keywords: Physical Condition, White Water Rafting

Introduction

Exercise is a planned and structured activity that involves repetitive movements to maintain physical fitness. Article 28C, paragraph 1 of the 1945 Constitution states, "Sports are all systematic activities to encourage, foster, and develop physical, spiritual, and social potential." According to Sari, Wulandari, & Hardiansyah, (2020) "The formation and development of sports must be maximized as early as possible to create a generation of high-achieving young people and to enhance the nation's reputation. Achievements are achieved through planned, tiered, and sustainable programs supported by sports science and technology." Definition of high-achieving sports by Mutohir & Parnomo(2021)is a sport that specifically fosters and develops athletes in a programmed, tiered, and sustainable manner

through competitions. Furthermore, athletes/sportspeople who have the potential to improve their performance will be included in dormitories or special training places (TC) so that they can be further developed to achieve higher achievements and supported by more scientific and technological assistance in sports. One of the upcoming championships is the Provincial Sports Week (PORPROV) which is currently the focus of various sports branches. In the 2026 Central Java Provincial Sports Week (PORPROV) championship, 57 sports branches will be competed. One of them is the sport of rafting.

Whitewater rafting is one of several competitive sports performed on rapids or fast-flowing, downhill water using rubber boats. It also relies on endurance, strength, and skill in paddling and controlling the rubber boat in the water.(FAJI, 2019)One of Magelang Regency's leading sports is whitewater rafting. While interest in whitewater rafting in Magelang Regency has seen a significant increase, its achievements remain suboptimal. In terms of basic technical skills, Magelang Regency's whitewater rafting athletes possess quite good technique. However, without good physical condition, one's performance will be suboptimal. To become a successful athlete, one must not only master technical skills but also maintain good physical condition (Mursalin, 2021)Physical factors can influence an athlete's performance, including rowing. This sport requires athletes to be in good physical condition to complete the competition (Yasin & Asmara, 2018).

Physical condition is an important requirement for improving athletes and is also a basic requirement for competitive sports (Azizah & Widodo, 2019). Physical condition includes physical and psychological condition, as well as an athlete's willingness to fulfill the special requirements of a particular sport (Kusuma, Syafei, & Budi, 2019). Therefore, it must be limited so as not to give rise to different understandings.

Physical fitness is the ability to perform physical activities to achieve a specific goal. Physical fitness is a crucial aspect of all sports. To improve performance, understanding physical fitness is crucial in order to determine the athlete's level of physical fitness. As practitioners, coaches and athletes, it's crucial to understand physical fitness. Previous research by Dzulfikar & Widodo (2021)The "Evaluation of the Physical Condition of Female Dragon Boat Rowers in East Java" article demonstrates the importance of evaluating physical condition as a basis for coaches to provide considerations for athletes in achieving targets. Meanwhile, Syafitri, Muzaffar & Putra (2025) In his research "Survey of the Physical Condition of PODSI Jambi Province Dragon Boat Rowing Athletes" identified that the physical abilities of PODSI Jambi Province rowing athletes were in varying categories from poor to very good for different physical components.

The urgency of this research lies in the lack of recent data on the physical condition of U-21 rafting athletes from PELATDA Central Java Province in 2025 in preparation for the upcoming championship. As stated by Bafirman & Wahyuri,(Bafirman & Wahyuri, 2019), athletes enjoy many benefits from better physical condition, such as their ability to learn new skills more easily, fatigue less easily, as well as increased self-confidence and a lower risk of injury.

The novelty of this research is a comprehensive mapping of the physical condition of PELADA Arung Jeram U-21 athletes in Central Java Province in 2025, using parameters relevant for national-level competitions, namely cardiovascular endurance, muscle strength, flexibility, and speed. The research results are expected to serve as the basis for evaluating and planning a more structured training program to achieve optimal performance in future championships.

The purpose of this study is to determine the physical condition aspects of PELADA Arung Rafting U-21 athletes in Central Java Province including endurance, strength, flexibility and speed in order to prepare the athletes' physical condition more effectively and to be able to evaluate the existing results. This study is expected to contribute to the development of more efficient training programs and improve the performance of PELADA Arung Rafting U-21 athletes in Central Java Province in the future.

Methodology

Method and Design

This research uses a quantitative descriptive research method with a survey. Descriptive research is research conducted with the important goal of objectively describing a condition (Sugiyono, 2018). The quantitative method in this study uses a survey method with tests and measurements of the physical condition of rafting athletes.

Population and Sample

The population that is part of this study is all athletes of PELADA Arung rafting U-21 Central Java, a total of 12 athletes. Total sampling was used in this study, so that the entire population became the research sample. Based on the opinion of (Sugiyono, 2018) And (Arikunto, 2019) The sampling technique used was total sampling. Given that the population size was less than 100, all members of the population were sampled. The sample size for this study was 12 people.

Instrument

According to Syahroni (2022)Research instruments serve as tools for researchers to collect data or information needed to achieve research objectives. By measuring the variables under study, researchers can obtain relevant and accurate data about the research subject. According to Sugiyono (2018)There are several types of quantitative research instruments, namely: tests, interviews, observations, and questionnaires. In carrying out this research, researchers used test instruments in collecting data. The instruments used in this study were: cardiovascular endurance tests (bleep test), shoulder muscle strength tests (pull-ups), arm strength (push-ups), isometric grip strength (handgrip dynamometer) and abdominal muscle strength (sit-ups), back muscle flexibility tests (v-sit and reach), and speed (30-meter run).

Procedure

The research data collection procedure was carried out by conducting a physical condition test with 7 sequential test items, namely: Bleep test, Pull Up, Sit Up, Push Up, Handgrip Dynamometer, V-Sit and Reach and 30 Meter Run. The test results were then

recorded and processed with the help of MS. Excel to categorize the criteria of each test according to predetermined standards, so that the level of the athlete's physical condition can be known whether it is in the very good, good, sufficient, less or very less category.

Data analysis

The data analysis technique used was descriptive statistics with a percentage formula. The value classification used Benchmark Assessment (PAP) with a standardized value reference. The next step was to analyze the data to draw conclusions from the research. The data analysis used in this study employed quantitative descriptive analysis with percentages.(Sugiyono, 2018). The formula used is as follows:

$$P = F/N \times 100\%.$$

Result and Discussion

The results of this study are descriptive research that aims to identify the "physical condition of PELADA Arung Rafting U-21 Central Java athletes". After obtaining research permits, research data collection was carried out on September 9, 2025, at The PIKAS Adventure Resort, which is located in Banjarnegara Regency. The subjects in this study were 12 U-21 Rafting athletes (6 females, 6 males).

Table 1. Descriptive Statistics of Physical Condition

Statistics								
		Pull Up	Push Up	Sit Up	Handgrip	Sit and Rieach	30M Run	Bleep Test
N	Valid	12	12	12	12	12	12	12
	Missing	0	0	0	0	0	0	0
Mean		10.92	42.83	42.50	39.57	45.54	5.0108	39,067
Median		14.00	43.50	42.00	35.75	46.50	5.1400	39,150
Mode		0	44	42	32	46	4.20	44.5
Standard Deviation		8,028	7,433	5,018	11,062	4,933	.48782	7.5852
Minimum		0	30	34	27	36	4.20	27.6
Maximum		21	58	54	59	52	5.63	49.0
Sum		131	514	510	475	547	60.13	468.8

a. Multiple modes exist. The smallest value is shown

Based on statistical analysis, the results of the physical condition test were as follows: In the bleep test, the average was 39.067 with a median of 3.067.39,150, mode44.5, and standard deviation7.5852, with a range of values between27.6-49.0. The Pull Up test shows an average10.92, median14.00, mode 0, standard deviation8,028, with a value range of 0 - 21. The Push Up Test obtained an average42.83, median43.50, mode 44, standard deviation7,433, and the value range is 30 - 58. The Sit Up Test obtained an average45.54, median42, mode 42, standard deviation11,062, and the value range is 34 - 54. In the handgrip test, the average obtained was39.57, median35.75, mode32, standard deviation11,062, with a value range of 27 - 59. In the v-sit and reach test, the average was 57.82, the median46.50, mode46, standard deviation4,933, with a value range of 36 - 52. Finally, the 30 M Running

test produced an average of5.0108, median5.14, mode 4.20, standard deviation 0.48782, and the value range is 4.20 – 5.63.

1. *Bleep test*

Table 2. Bleep test

Score	Interval		Category	Son		Daughter	
	Son	Daughter		F(n)	P(&)	F(n)	P(&)
5	>55.9	>41.9	Very well	0	0	0	0
4	51.0 – 55.9	39.0 – 41.9	Good	0	0	0	0
3	45.2 – 50.9	35.0 – 38.9	Enough	3	50	3	50
2	38.4 – 45.1	31.0 – 34.9	Not enough	3	50	0	0
1	< 38.3	< 30.9	Very less	0	0	3	50
	Amount			6	100	6	100

The results of the bleep test showed that 3 male athletes (50%) were in the sufficient category, while the rest were in the insufficient category, 3 (50%). Meanwhile, the physical condition of the athletes was...*Vo*2Max female athletes are in the sufficient category as many as 3 people (50%), the rest are in the very insufficient category as many as 3 people (50%).

2. Pull Up

Table 3. Pull Up

Score	Interval		Category	Son		Daughter	
	Son	Daughter		F(n)	P(&)	F(n)	P(&)
5	>38	>17	Very well	0	0	0	0
4	29 – 37	13 - 16	Good	0	0	1	16
3	20 - 28	9 – 12	Enough	1	17	1	16
2	15 – 19	5 – 8	Not enough	5	83	0	0
1	< 14	< 4	Very less	0	0	4	68
	Amount			6	100	6	100

The pull-up test results showed that of the male athletes, 1 (17%) fell into the adequate category, while 5 (83%) fell into the inadequate category. Meanwhile, of the female athletes, 1 (16%) fell into the good category, 1 (16%) into the adequate category, and 4 (68%) into the very inadequate category.

3. Push up

Table 4. Push up

Score	Interval		Category	Son		Daughter	
	Son	Daughter		F(n)	P(&)	F(n)	P(&)
5	>38	>17	Very well	4	66.7	5	83
4	29 – 37	13 - 16	Good	2	33.3	1	17
3	20 - 28	9 – 12	Enough	0	0	0	0
2	15 – 19	5 – 8	Not enough	0	0	0	0
1	< 14	< 4	Very less	0	0	0	0
	Amount			6	100	6	100

For the push-up test, 4 male athletes (66.7%) were in the excellent category, and 2 female athletes (33.3%) were in the good category. Meanwhile, 5 female athletes (83%) were in the excellent category.

4. Sit Up

Table 5. Sit up

Score	Interval		Category	Son		Daughter	
	Son	Daughter		F(n)	P(&)	F(n)	P(&)
5	>70	>70	Very well	0	0	0	0
4	54 – 69	54 – 69	Good	1	17	0	0
3	38 - 53	38 - 53	Enough	5	83	1	17
2	22 – 37	22 – 37	Not enough	0	0	5	83
1	< 21	< 21	Very less	0	0	0	0
	Amount			6	100	6	100

For the sit-up test, 1 male athlete (171%) was in the good category, and 5 (83%) were in the adequate category. Meanwhile, 1 female athlete (17%) was in the adequate category, and 5 (83%) were in the poor category.

5. Sit and reach

Table 6. Sit and Reach

Score	Interval		Category	Son		Daughter	
	Son	Daughter		F(n)	P(&)	F(n)	P(&)
5	>70	>48	Very well	0	0	0	0
4	61 – 69	44 – 47	Good	0	0	3	50
3	53 – 60	38 - 43	Enough	0	0	1	17
2	46 – 52	33 – 37	Not enough	6	100	2	33
1	< 45	< 32	Very less	0	0	0	0
	Amount			6	100	6	100

The results of the v-sit and reach tests for male athletes were in the poor category for 6 (100%). Meanwhile, the physical condition of female athletes was in the good category for 3 (50%), in the adequate category for 1 (17), and in the poor category for 2 (33%).

6. Handgrip Dynamometer

Table 7. Handgrip Dynamometer

Score	Interval		Category	Son		Daughter	
	Son	Daughter		F(n)	P(&)	F(n)	P(&)
7	>64	>38	Brilliant	0	0	0	0
6	56 - 64	34 – 38	Very good	2	33	1	17
5	52 – 55	30 - 33	Simple top	0	0	3	50
4	48 – 51	26 - 29	Simple	1	17	2	33
3	44 - 47	23 – 25	Simple bottom	1	17	0	0
2	40 – 43	20 – 22	Not enough	1	17	0	0
1	< 40	< 20	Very less	1	17	0	0
	Amount			6	100	6	100

The results of the Handgrip Dynamometer test for male athletes were in the very good category for 2 people (33%), in the simple category for 1 person (17%), in the lower simple category for 1 person (17%), in the less than category for 1 person (17%), and in the very less than category for 1 person (17%). Meanwhile, the physical condition of female athletes was in the very good category for 1 person (17%), in the upper simple category for 3 people (50%), and in the simple category for 2 people (33%).

7. 30 meter run

Table 8. 30 meter run

Score	Interval		Category	Son		Daughter	
	Son	Daughter		F(n)	P(&)	F(n)	P(&)
5	< 3.99	< 4.71	Very well	0	0	0	0
4	4.64 – 4.00	5.92 – 4.72	Good	3	50	6	100
3	5.31 – 4.65	7.14 – 5.93	Enough	3	50	0	0
2	5.96 – 5.32	8.34 – 7.15	Not enough	0	100	0	0
1	< 5.97	< 8.35	Very less	0	0	0	0
	Amount			6	100	6	100

The results of the 30-meter sprint test for male athletes were in the good category for 3 (50%), and in the fair category for 3 (50%). Meanwhile, the physical condition of female athletes was in the good category for 6 (100%).

Discussion

The results of the study showed that the percentage of physical condition scores among whitewater rafting athletes varied. Some items showed relatively high pass rates, while others had lower pass rates. This indicates specific areas of athletes' physical condition that need improvement.

Endurance is essentially defined as a movement or activity carried out by a person over a long period of time and with consistent repetition.(Syahni, Azandi, & Nur, 2021)In other words, athletes who can train for long periods of time have high stamina. Various sports require endurance. Sports such as soccer, futsal, basketball, swimming, long-distance

running, rowing, and others rely primarily on endurance. All of the sports mentioned demonstrate that an athlete needs the ability and physical strength to perform activities for a long time and achieve their goals (Fahlevi, 2022)One of the benefits athletes with high endurance gain is their ability to control the tempo and strategy of the game, maintain their efforts, and resist mental fatigue during matches. A consistent and planned training program can support an athlete's development and improvement (Hayaton, 2024).

According to (Safa, 2021)Strength is an individual's physical condition, encompassing the muscle's ability to bear weight and resist resistance during activities, particularly rowing, which requires greater strength. Therefore, it is hoped that this strength can be maintained better, as it is driven by muscle and abdominal strength during paddling and pushing. According to Safa(2021)Flexibility is a person's ability to adapt to any activity by extending the body across a wide range of joint movements. Flexibility plays a crucial role, as almost all sports require a wide range of joint movement (Arridho et al, 2017). (2021) Based on these findings, we need to be more active and strive to improve and maintain flexibility so that it can develop further, which will have a positive impact on this rafting sport and provide a wider reach in the future.

The results showed that no athletes achieved their targets on all test items, with only a few athletes achieving nearly all of them. The study found that whitewater rafting requires aerobic endurance and the ability to produce powerful movements in the water (Tudor, 1999). Therefore, optimal and good physical preparation is necessary. Rowing athletes require maximum physical condition to achieve peak performance. This physical condition encompasses various physical elements that support the athlete's rowing ability. Some of the physical conditions required by whitewater rafting athletes include strength, endurance, flexibility, and speed. These elements are measured through seven types of tests that have been previously conducted.

Conclusion

Based on the results of the endurance test (bleep test) that the more dominant high frequency of male athletes in the sufficient and less category, while female athletes in the sufficient and very less category. Based on the results of the shoulder muscle strength test (pull-up) that the majority of the scores of male and female athletes who are more dominant have high frequencies are in the less category. Based on the results of the arm muscle strength test (push-up) that the majority of the scores of male and female athletes are dominant in the very good category. Based on the results of the abdominal muscle strength test (sit-up) that the majority of the scores of male athletes are in the sufficient category and female athletes who are more dominant have high frequencies are in the less category. Based on the results of the flexion test (v-sit and reach) that the majority of the scores of male athletes who are dominant have high frequencies are in the less category and female athletes who are more dominant have high frequencies are in the good category. Based on the results of the Power test (Handgrip dynamometer) that the majority of the scores of male and female athletes who are more dominant have high frequencies are in the upper simple and very good categories. Based on the results of the 30 meter run test that the majority of the

scores of male and female athletes who are more dominant have high frequencies are in the good category.

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