

PHYSICAL FITNESS SURVEY OF BANYUMAS KARESIDENAN BASKETBALL REFEREES

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Abstract. *The results of preliminary data observations of referees who have never conducted a physical fitness test (TKJI) at PERBASI Banyumas since 2015 until now. Based on the results of observations, it is important to conduct physical fitness research with the title "Physical Fitness Survey of Banyumas Karesidenan Basketball Referees". The aim is to find out how much the level of physical fitness of basketball referees from licenses C, B2, B1 and A in Perbasi Karesidenan Banyumas. The method is a survey. The sample taken was a total of 25 referees, consisting of 22 male referees and 3 female referees. The measurement technique of the test form is the TKJI version of the physical fitness test. The data collected was analyzed using quantitative descriptive statistical techniques. Based on the results of the percentage count there are 1 referee or 4% have physical fitness in the good category, then there are 2 referees or 8% have physical fitness in the moderate category, then there are 6 referees or 24% have physical fitness in the less category and there are 16 referees or 64% have physical fitness in the very less category. Based on the results of the data research above, it can be concluded that the level of physical fitness of the basketball referees of PERBASI Banyumas Karesidenan as a whole is dominant in the Less category.*

Keywords: *Physical Fitness, TKJI, Basketball Referee*

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1. INTRODUCTION

Basketball referees in PERBASI Karesidenan Banyumas since 2015 until now regarding their human resources have experienced an increase every year. Starting from several referees who did not have a license to having a license as a result of attending the basketball referee training, until the active license became inactive. The capacity of basketball referees in Banyumas Karesidenan, both male and female, has the maximum desire to process and learn together in PERBASI, which initially departed mostly from their respective communities so that they became one in PERBASI Banyumas Karesidenan.

There is a reason why basketball referees who join PERBASI Karesidenan Banyumas, namely from each year, experience a progress or improvement from the intention and togetherness to want to learn together. And no less important is this regarding routine physical and theoretical training (rules of the game) of each individual basketball referee of Banyumas Karesidenan, because a referee must oversee the match from start to finish the match properly [1]. The types of physical exercise that have been planned to be carried out regularly are jogging together (1 week 2-3 times), workout or fitness with a special mentor regarding muscle strength training to improve the gesture of a referee, and carry out a special physical test standard from FIBA once a month. For theoretical training methods that have been planned for future programs, namely by discussing the latest rules thoroughly, each week there are 1-5 articles along with case examples or interpretation and direct application in the field. From this, it can be concluded that the referee commission and the basketball referee team with a national license, compiling programs or plans for basketball referees, especially in PERBASI Karesidenan Banyumas, will produce a regeneration of basketball referees.

On Thursday, October 20, 2022 at 16.00 - finished, observations were made taking initial data in the form of a bleep test with approximately 35 participants to determine the level of physical fitness of Banyumas Karesidenan referees in the current pandemic situation. As well as taking data through interviews with the referee commission of the Banyumas Karesidenan PERBASI regarding the track record or performance of individual referees from the last 2 years given the trust to lead matches in the Banyumas Karesidenan.

In Banyumas Karesidenan, basketball is a popular sport, this is evidenced by the frequent basketball events starting from the level of secondary education units to universities. Along with the development of the basketball game in Indonesia, the referees themselves are required to improve their individual qualities in terms of knowledge (knowledges), physical (physical) and skills (skill) because this is a reference for the referee when leading a match. Because in general in the sport of basketball, referees do a lot of various physical exercises and referees will encounter several cases where they are required to run in the matches they lead, so that physical fitness is an important aspect of decision making while leading the match. In 2015, in Central Java, precisely in the Banyumas Prefecture, maintaining and improving the quality of referees is a top priority to remain optimal in leading every match, in this case the desire of each assignment in an event is based on the quality of each individual referee in terms of physical fitness and knowledge.

Based on the results of previous research researched by Rosyadi (2017) entitled "The Relationship Between Physical Fitness Level and Basketball Referee Self-Confidence", it can be concluded that the results of theoretical studies and the results of data processing have concluded that the fitness level of Perbasi basketball referees in West Java is in a good category with a percentage of 89% because indeed the human resources of the referee's capacity have many advantages in performance quality. Meanwhile, the confidence profile of the West Java Perbasi basketball referee is categorized as good with a percentage of 79% as well as these two components of the fitness level and confidence profile must indeed have a harmony in order to minimize errors in leading the match.

In addition, a referee, should be strong in the face of shouts or taunts from various spectators, therefore a referee, must have basic abilities such as speed and accuracy of reaction when making decisions and mental toughness balanced with physical fitness. There are several ways to improve the quality of referee performance to remain consistent in making decisions, including physical exercise (endurance), FIBA rules (understanding basketball rules), and court mechanics (the position where the referee is located). This physical exercise is used to help improve the physical fitness and concentration of the referee to always be consistent in making decisions that run during the 4x10 minute game time according to the rules. The rules based on FIBA are the basic capital of a referee to be able to lead a basketball match, because these rules from FIBA are about the guidelines and rules of the basketball game as a whole. This requires the referee to have a fairly good performance, fast, precise in understanding the rules to make a decision in various situations that occur. Especially when the situation requires fast mobility such as for example, the rules in 8 seconds and the attack strategy when the team makes a fast break. [1] therefore a basketball referee needs good physical fitness in every basketball match that will be led. This is good, because the quality of the referee really determines a match so as not to harm one of the teams that are competing. In the development

of dynamic basketball game rules, if you do not understand a rule and good physical fitness, it will result in bad feedback for a referee or so-called drop mentality, especially in this case it is a novice referee.

Physical fitness can be translated into other terms such as: physical fitness, physical ability and physical endurance. The literal meaning of Physical Fitness is that it can be called physical fitness or physical harmony, but Fit can also mean healthy, so Fitness can be said to mean health or can be interpreted in another opinion as physical fitness or suitability. Physical fitness is one of the factors that can determine the success of a referee in leading matches. Because this physical fitness is very much a necessity as a basic capital for referees who produce confidence in decision making. So that in leading the match the referee can minimize an error due to his physical fitness. The performance displayed is not only influenced by the physical fitness component but also requires the referee to master the rules. Decisions that will be made by the referee when in the field will be easier because it will not be disturbed by fatigue and fatigue. Perbasi is currently with new regulations about every before the national assignment is carried out, there will be a physical fitness test, one of which is FIBA using the bleep test with a minimum passing requirement of 86 balances, so PERBASI requires basketball referees to maintain physical fitness in every national event that will be led.

In basketball referees racing from the three active license levels of the Banyumas Karesidenan Perbasi basketball referee, namely in terms of the level of physical fitness on duty there are differences. Starting from license C or region as a whole the referee can make decisions in any form of incident. Then for the B2 or provincial license level, they have begun to understand the sorting of decisions in the incident. For license level B1 or national refers to the interpretation of the rules. And for license level A or national towards the professional league refers to all complex on-field problems, interpretation, conflict management, game management and so on. Looking from the other side, namely from the physical fitness of a community can be seen from the number of physical activities they do. Physical activity is important for the health of basketball referees to carry out daily activities. Physical activity is divided into three levels, namely low, middle and high activity. Good physical activity is activity that is carried out regularly and continuously in order to achieve maximum physical fitness. Physical fitness is a benchmark for knowing one's health. However, among referees today, physical fitness is far from perfect, because there are many factors that affect them in moving, especially basketball referees are required to be active in moving.

The physical fitness instrument according to the norm reference used in this study using the TKJII version of the physical fitness test consists of 5 test items, including:

60 Meter Run

This test aims to measure a referee's speed. Through the sprint test with a 60-meter track, the referee can find out the level of running speed with the benchmark time that has been achieved.

Tess Hanging Body Lift for male participants, Tess Elbow Bending for female participants

This body hanging test is specifically for male participants to measure the strength and endurance of the arm and shoulder muscles because men are more directed at pulling movements. This hanging elbow bend test specifically for women has the same target, namely to measure the strength and endurance of the arm and shoulder muscles, but the implementation of the test is different, the hanging body test is counted how many repetitions within 60 seconds. While the hanging elbow bend test is done by hanging the body calculated by how long it can maintain that position.

Sit Up Tess

This test aims to measure the strength and endurance of the abdominal muscles. The implementation of the tess is counted the number of repetitions within 60 seconds.

Vertical Jump Tess

This test aims to measure explosive power. In this test, three repetitions are carried out, the measurement is obtained from the height of the jump minus the height of the achievement in centimeters.

Tess Runs 1200 Meters

This test aims to measure cardiovascular, blood circulation and respiratory endurance. Tess for running 1200 meters is calculated how fast it reaches the maximum time with units of minutes and seconds. From the above opinion it can be concluded that the instruments and forms of physical fitness training are interrelated by showing a big role to change the physical fitness of a referee. These changes are accompanied by suitable and regular training so that the referee is expected to have a healthy and fit body.

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Table 1. Explanation of the variables studied

| Concept | Variables | Indicator | Instrument |
|-------------------------------|---|---|--|
| Physical fitness level | Speed | Measurements are obtained by measuring the speed of running a distance of 60 meters in seconds. | 60 meter running test |
| | Arm muscle strength and endurance | Measurement is obtained from the number of body lifting movements for 60 seconds. (male) Measurement is obtained from how long the referee can maintain his position in seconds (female). | Hanging body test for 60 seconds (men) Hanging elbow bend for 60 seconds (women) (pull up) |
| | Abdominal muscle strength and endurance | Measurement is obtained from the number of seated lying movements for 60 seconds. | Baringg sit test for 60 seconds (sit ups) |
| | Explosive power | Measurement is obtained from the height of the jump minus the height of the achievement in centimeters. | Upright jump test (vertical jump) |
| | Cardiopulmonary endurance | Measurement is obtained by the time achieved by the runner to cover a distance of 1200 meters in units of minutes. | 1200 meters running test |

Based on the above background, to get better results in maintaining physical fitness, the researcher wants to know the comparison of the level of physical fitness of basketball referees in Banyumas Karesidenan from license levels C, B2, B1, and A in maintaining physical condition while leading the match, so the researcher is interested in conducting a study entitled " Physical Fitness Survey of Banyumas Karesidenan Basketball Referees ".

2. RESEARCH METHODS

The design in this study uses a quantitative approach descriptive research type and in its research researchers use a survey design. Descriptive research is a research design that aims to describe or explain systematically, factually and objectively accurate about an object of observation that occurs at the present time. Descriptive research usually only involves single variables, and also does not reveal the relationship between variables. So descriptive research is not intended to test hypotheses. Therefore, a research hypothesis is not needed in descriptive research (Budiwanto, 2017:80). The design in this study uses a quantitative approach descriptive research type and in its research researchers use a survey design. Descriptive research is a research design that aims to describe or explain systematically, factually and objectively accurate about an object of observation that occurs at the present time. Descriptive research usually only involves single variables, and also does not reveal the relationship between variables. So descriptive research is not intended to test hypotheses. Therefore, a research hypothesis is not needed in descriptive research.

Time and Place of Research

This research was conducted at the Gor Rajawali Arena basketball court which is located on the street. Hos. Notosuwiryo, Kruwet, Bay, South Purwokerto District, the research time was before the event which started on October 20, 2022.

Research Subject

The subjects of this study were 22 male referees and 3 female referees, the total sample was 25 referees of Perbasi Karesidenan Banyumas.

Research Instruments

The technique of data collection in this study uses skill tests. The indicator will be used as a starting point for compiling instrument items in the form of a physical fitness test of 10 components that must be carried out by respondents. Because the reference of this test refers to the Indonesian physical fitness test (TKJI) the instrument items are in the form of 5 physical fitness test items. In this study, the TKJI for the age range of 16-19 years and beyond was used, which has a validity value of 0.950 and a reliability value of 0.960 (Ministry of National Education, 2010).

Data Analysis Techniques

Data analysis that will be used in this research is descriptive quantitative with statistical calculation analysis method using descriptive percentage analysis. Furthermore, determining the category of assessment criteria used a statistical formula, based on the mean value and standard deviation that has been described by Sudijono (2010: 175). Research based on objectives with consideration of the type of data including intervals, then the data analysis technique used in this research is descriptive statistical data analysis technique, quantitative, in the form of average count (mean), mode, standard deviation (SD), variance, and coefficient of variance (KV).

Table 2. Indonesian Physical Fitness Test Norms (age range 16-19 years)

| No | Total Value | Classification of Physical Fitness |
|----|-------------|------------------------------------|
| 1 | 22-25 | Very good |
| 2 | 18-21 | Good |
| 3 | 14-17 | Moderate |
| 4 | 10-13 | Less |
| 5 | 5-9 | Very poor |

3. RESULTS AND DISCUSSION

Results

This discussion is about the exposure of test results according to the TKJI category norms, the percentage of the TKJI test results of the basketball referee Perbasi Karesidenan Banyumas.

Table 3. Exposure of Test Result Data According to TKJI Category Norms of Basketball Referee Perbasi Karesidenan Banyumas

| No | Value Range | Frequency Male | Frequency Female | Total Frequency | Category |
|--------------|-------------|----------------|------------------|-----------------|----------------|
| 1 | 5-9 | 14 | 2 | 16 | Less than Once |
| 2 | 10-13 | 5 | 1 | 6 | Less |
| 3 | 14-17 | 2 | 0 | 2 | Moderate |
| 4 | 18-21 | 1 | 0 | 1 | Good |
| 5 | 22-25 | 0 | 0 | 0 | Excellent |
| Total | | 22 | 3 | 25 | |

From the data exposure above, it can be concluded that the test results for 1 licensed A referee have a score range of 18-21 which is included in the physical fitness category (good), then as many as 2 licensed B1 male referees have a score range of 14-17 which is included in the physical fitness category (moderate), then as many as 6 licensed C and B2 referees have a score range of 10-13 which is included in the physical fitness category (less), and as many as 16 licensed C and B2 referees have a score range of 5-9 which is included in the physical fitness category (very less). More details of this data will be presented in the bar chart below:

Table 4. Exposure of Test Results Data According to the TKJI Norms of Referees of Each Banyumas Karesidenan PERBASI License.

| No | Value Range | C License Frequency | B2 License Frequency | B1 License Frequency | License Frequency A | Total Frequency | Category |
|--------------|-------------|---------------------|----------------------|----------------------|---------------------|-----------------|-------------------|
| 1 | 5-9 | 10 | 6 | 0 | 0 | 16 | Less than |
| 2 | 10-13 | 3 | 3 | 0 | 0 | 6 | Once |
| 3 | 14-17 | 0 | 0 | 2 | 0 | 2 | Less |
| 4 | 18-21 | 0 | 0 | 0 | 1 | 1 | Medium |
| 5 | 22-25 | 0 | 0 | 0 | 0 | 0 | Good Excellent |
| Total | | 13 | 9 | 2 | 1 | 25 | |

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From the data exposure above it can be concluded that the test results for referees as many as 1 licensed referee A has a score range of 18-21 which is included in the physical fitness category (good), then as many as 2 licensed referees B1 has a score range of 14-17 which is included in the physical fitness category (moderate), then as many as 3 licensed referees B2 and 3 licensed referees C have a score range of 10-13 which is included in the physical fitness category (less), and as many as 10 licensed referees C, 6 licensed referees B2 have a score range of 5-9 which is included in the physical fitness category (very poor).

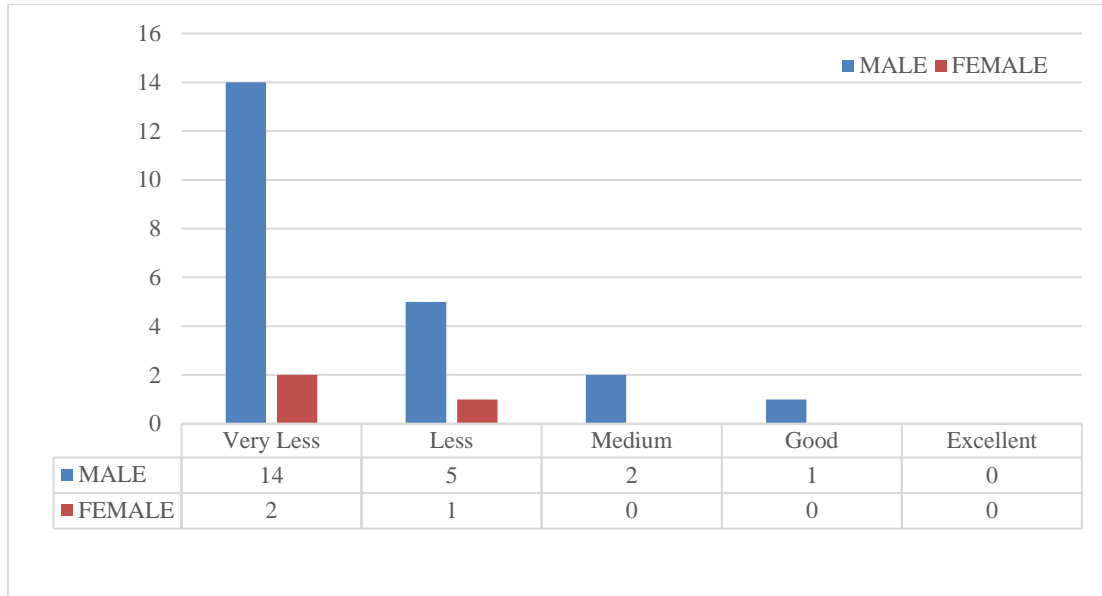


Figure 1. Data Exposure Diagram of Test Results According to the Norms of the TKJI Category of Male and Female Referees of Perbasi Karesidenan Banyumas.

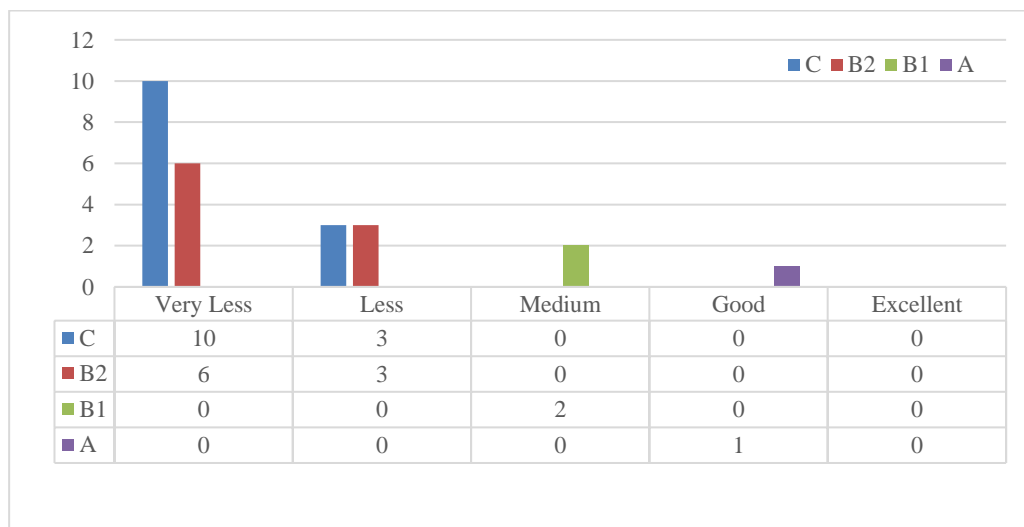


Figure 2. Data Exposure Diagram of Test Results According to the TKJI Category Norms of Referees of Each Banyumas Karesidenan PERBASI License

The data above is then entered into a percentage so that the data can be seen and analyzed properly, making it easier for readers or the general public, the following is a table of the percentage of the referee's TKJI test results:

Table 5. Percentage of Test Results According to the Norm Category TKJI Referee Perbasi Karesidenan Banyumas

| No | Category | Total | % |
|----|-----------|-----------------------------|-------|
| 1 | Very Less | 16 (License C = 10, B2 = 6) | 64,00 |
| 2 | Less | 6 (License C = 3, B2 = 3) | % |
| 3 | Medium | 2 (License B1 = 2) | 24,00 |
| 4 | Good | 1 (License A = 1) | % |

| | | | |
|--------------|-----------|----|-------|
| 5 | Excellent | 0 | 8,00% |
| | | | 4,00% |
| | | | 0 |
| Total | | 25 | 100% |

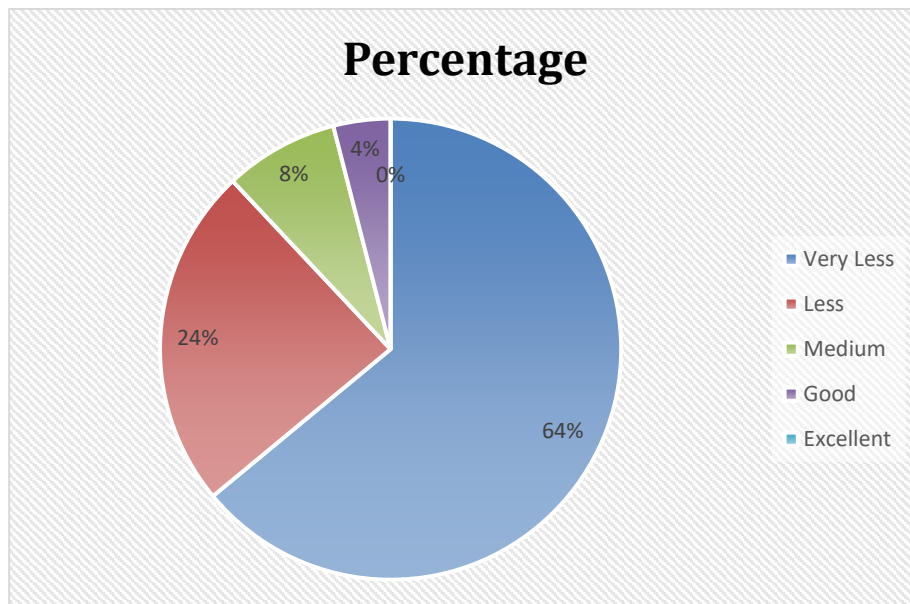


Figure 3. Circle Diagram of the Percentage of TKJI Test Results of Basketball Referee Perbasi Karesidenan Banyumas

The table and figure above explain and conclude that of the 25 basketball referee samples, licensed A there was 1 referee or 4% had physical fitness in the good category, then licensed B1 referees there were 2 referees or 8% had physical fitness in the moderate category, then licensed C and B2 referees there were 6 referees or 24% had physical fitness in the deficient category and licensed C and B2 referees there were 16 referees or 64% had physical fitness in the very deficient category. While in the excellent category no referee can achieve it or 0%.

Discussion

Based on the results of research on the level of physical fitness of basketball referees PERBASI Karesidenan Banyumas in the form of a survey, has a research sample of 25 referees consisting of 22 male referees and 3 female referees including licensed C there are 13 referees, B2 there are 9 referees, B1 there are 2 referees and A there is 1 referee. Then the type of test used is a version of the Indonesian Physical Fitness Test (TKJI), in the form of a test consisting of: (a) 60 meter running test, (b) 60 second body lift test for men and hanging elbow bend for women, (c) sitting down test, (d) upright jump test, (e) 1200 meter running test. It can be seen that the basketball referee Perbasi Karesidenan Banyumas got the highest score of 18 and the lowest score of 6, the overall test results from each referee totaled 268 and the mean (average count) was 8.17. The number of referees whose scores are above average is 17 referees or 68%, while the number of referees whose scores are below average is 8 referees or 32%.

Based on the results of previous research researched by Rosyadi (2017) entitled "The Relationship Between Physical Fitness Level and Basketball Referee Self-Confidence", it can be concluded that the results of theoretical studies and data processing results have concluded that, the fitness level of the West Java PERBASI basketball referee is in the good category with a percentage of 89%. While the self-confidence profile of the West Java PERBASI basketball referee is categorized as good with a percentage of 79%.

The physical fitness level of PERBASI Karesidenan Banyumas referees for male referees is predominantly classified as very poor, while female referees are classified as poor. The overall physical fitness level of PERBASI Karesidenan Banyumas referees from license levels C, B2, B1 and A for both men and women is in the very poor category. This is due to the lack of basketball referees in the Banyumas Karesidenan not maintaining their physical condition, resulting in a decrease in performance. Physical condition is one of the main factors that influence the referee in leading a match consistently.

Basketball referees in Indonesia this time who already have a license from the world basketball body (FIBA) have increased in number, and this is certainly an advancement in national basketball. Licenses for referees in Indonesia include A and B1 at the national level, B2 at the provincial level, and C at the regional

level, besides that there are also FIBA referees who are currently under the age of 30 will get a reward or become a priority for the selection of prospective FIBA referees, but the number is still minimal, which can still be counted on the fingers. Indeed, to qualify to become a FIBA (Federation International Basketball Association) referee must meet certain requirements, including that the referee must go through a level-up program, besides that it is also required to be able to master English communicatively, this English is the main requirement for communicating with players, coaches and fellow referees who meet in other countries.

For Central Java, especially at this time in the year 2022, will start a new program regarding improving physical fitness conditions for basketball referees through physical exercise such as "Workout in Home". This training program where implemented because it sees the current situation and conditions are less supportive so that the function of this training program will be carried out is useful for maintaining physical condition and physical fitness is maintained and consistent. Because the factor of physical fitness is very sad and prioritized when leading a match or when following an increase in the referee license level and this is much ignored, especially for Central Java basketball referees to remain stable to maintain quality above average.

Regarding the initial test of physical fitness level, it runs 10 physical fitness test items including strength, muscle endurance, cardiovascular endurance, speed, agility, power, flexibility, balance, accuracy, and coordination. All components needed for a basketball referee are indeed very necessary, but this study refers to the Indonesian physical fitness test in order to facilitate the collection of data which initially requires 10 test items, but based on the Indonesian physical fitness test (TKJI) into 5 tests including 60 meter run, body lift hanging test for men and bent elbow hanging test for women, lying test sitting for 60 seconds, upright jumping test and 1200 meter run.

The basketball referees of PERBASI Karesidenan Banyumas have the capacity of referees from various regions of origin who are permanently domiciled in Karesidenan Banyumas at a low physical level. This can be seen from the TKJI test conducted on the referees. According to existing experience, the low physical fitness of basketball referees can be caused by several factors, namely, the first is regarding limited time in gathering and routine training so that performance becomes less stable because the function of routine training habits such as physical exercise, sharpening knowledge, practice of application in the field will become a benchmark indirectly and differences will appear from referees who are active or not. Based on previous research researched by Sandi (2016) entitled "The Effect of Physical Exercise on Pulse Frequency", it can be concluded that this effect is an acute effect of physical exercise on pulse frequency. The chronic effect of exercise on pulse frequency is that the resting pulse rate decreases when doing aerobic physical exercise regularly and continuously.

This physical condition and physical fitness factor should be good in the activities of a sports match. However, this condition does not receive special attention from sports psychology experts on how to maintain a physical condition to stay fit. The burden of a referee in a match whose intensity is getting higher and higher, the more cases that will be faced because of a less stable physical condition. If the period of time for physical condition improvement is not carried out with a good schedule, then a referee will experience a decrease in performance in terms of physical and application in the match. Therefore, to support the process of maintaining good referee performance, one of them needs good physical fitness as well, so that the referee has confidence in leading a match. Based on previous research from Saputra (2014) which is entitled "Survey of the VO2 Max Ability Level of the West Kalimantan PERBASI Pengprov Referee" can be concluded, data on the ability of the West Kalimantan PERBASI VO2 max referee, with the average VO2 max ability showing results in the good category. With the physical abilities of the West Kalimantan Pengprov PERBASI basketball referee, 3 referees were obtained with a presentation of 12.5%, and the category was sufficient as many as 17 referees with a percentage of 70.83% and the category was less as many as 4 referees with a percentage of 16.67% ".

In terms of the eligibility of a basketball referee has its own standards, namely regarding the assignment of events or competitions that have been running regional, provincial and national level referees there are graduation standards before serving. This has been agreed by the Central Management (PP) PERBASI in Indonesia the referee must be able to pass a physical test in the form of a bleep test with the reference that the male referee passes 86 turns and the female referee passes 66 turns. In terms of knowledge (knowledge) there is a theoretical test (rules) working on 20-25 questions and the minimum passing standard is the lowest score above 80.

From the explanation above, basically good physical fitness must be possessed by a basketball referee. Physical fitness can be improved by maintaining physical condition, regular training is often carried out and application in the field according to predetermined rules. Therefore, physical fitness in referees must be improved so that referees can maintain optimal performance and are expected to achieve maximum targets.

In particular, from the explanation above, the level of physical fitness of the basketball referee PERBASI Karesidenan Banyumas gets a very poor category because the TKJI value norm uses an age range of 16-19 years even though many PERBASI Karesidenan Banyumas basketball referees are over 19 years old to under 30 years old. From this, it makes the PERBASI Karesidenan Banyumas referee indirectly have motivation to always maintain physical condition not far from the physical condition that young people have.

4. CONCLUSIONS

Based on the results of data analysis in research on the profile of the level of physical fitness of basketball referees PERBASI Banyumas, it can be concluded that of the 25 samples of basketball referees licensed C, B2, B1, and A above, it can be concluded that the level of physical fitness of PERBASI Banyumas referees is dominant in the Lack category, because many ignore this, on the other hand regarding physical fitness will have a big impact on a basketball referee. If this is not taken good care of by a basketball referee, the quality of physical fitness will remain like this and there is no improvement.

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