Physical Fitness For Futsal Referee Of Football Association In Thailand

Acting Sub L.t.Thaweesub Koeipakvaen
Naresuan University, Thailand
thaweesub@yahoo.co.th

Abstract. The purpose of the research to study physical fitness for futsal Referee of Football Association in Thailand and Compare of the Physical Fitness for first level, second and third futsal Referee of Football Association in Thailand. The population of first level, second and third level futsal Referee of Football Association in Thailand 107 person. The sample were futsal Referee of Football Association in Thailand 97 person. First level futsal Referee 22 person. Second level futsal Referee 11 person. Third level futsal Referee 64 person. The instrument used was futsal physical fitness test of Football Association in Thailand. Endurance Test (1,000 meter), Speed Test (4×10 meter) 2 time, and Agility Test (80 meter) 2 time. The statistic for data analysis were one way Anova, Percentage, Mean, Standard Deviation and F-test. The results were as the follow: (1) the result comparing F-test first level futsal referee with level second and first level futsal referee with third level. the statically significant different at the 0.05 level, and the result comparing Endurance as the follow the Physical Fitness for first level, second and third futsal Referee. the statically significant different at the 0.05 level.

Keyword: Physical Fitness, Futsal Referee, Football Association in Thailand.

1. Introduction
Physical fitness is one of important components of human life with which man can do activities efficiently. Being healthy is what everyone expects in life. Physical fitness comprises two aspects of health-oriented and body movement-or sport-oriented fitness. The latter refers to fitness related to the ability to control body movement and is called motor fitness. Physical fitness test is a way to measure and evaluate the performance of various body systems such as body structure, musculoskeletal system, circulatory system, respiratory system, and nerve and muscle systems. Physical fitness test is very important and necessary to find out the physical fitness condition of an individual. It can also be used to create proper physical fitness programs or the right method of building physical fitness. In addition, the result of physical fitness test can be used to know one’s weakness and thus improve his/her physical fitness.

There are many types of physical fitness test and each of them has different aspects of coverage. Each type will result in certain level of different aspects of physical fitness. It will help test takers to know their weakness and decide which activities and exercises fit their physical condition. Physical fitness test is crucial for futsal referees of the Football Association of Thailand under the Royal Patronage. With the physical fitness test, referees will be able to know their physical fitness level and determine which aspects of physical fitness they need to develop. In addition, the result of physical fitness test is used as a standard required to determine which futsal referee level they will belong to.
Therefore, the researcher realized the importance of promoting physical fitness test of futsal referees of the Football Association of Thailand under the Royal Patronage. The current study was conducted to develop the physical fitness of the futsal referees of the Football Association of Thailand under the Royal Patronage to reach their optimum development.

The current research aimed to: examine the physical fitness of futsal referees of the Football Association of Thailand under the Royal Patronage, and Compare the physical fitness of futsal referees of level 1, Level 2, and Level 3 of the Football Association of Thailand under the Royal Patronage

2. Method

2.1. Population and Sample
The population in this research included a total of 107 futsal referees from Level 1, Level 2, and Level 3, of the Football Association of Thailand under Royal Patronage in 2015. The samples were 97 futsal referees of the Football Association of Thailand under the Patronage. They were classified into three levels of futsal referees distributed as follows. 22 futsal referees of level 1, 11 futsal referees of level 2 and 64 futsal referees of level 3.

2.2. Variables of the Study
The independent variable of the study was level of futsal referees of the Football Association of Thailand under the Royal Patronage. Level 1, Level 2 and Level 3. The dependent variables of the study on futsal referees of the Football Association of Thailand under the Royal Patronage include: Age, Gender

2.3. Scope of the Study
The physical fitness test of futsal referees of the Football Association under the Royal Patronage consists of the following. Endurance test: running 1000 meters Speed test: shuttle runs of 4x10 meters Agility test: running 80 meters Speed test: shuttle runs of 4x10 meters and Agility test: running 80 meters. Referees who cannot pass the physical fitness test item 3.1.1 (running 1000 meters) are not eligible to take the other test items. Referees who cannot pass the physical fitness test items 3.1.2, 3.1.3, 3.1.4, and 3.1.5 in the first trial will be given another chance to take the test items again. Failure in the second chance means failure in the test.

2.4. Research Instrument
The instrument used in this research is the physical fitness test of futsal referees of the Football Association of Thailand under the Royal Patronage. It consists of 5 items as follows:
- Endurance Test of running 1000 meters in not more than 4 minutes and 10 seconds with a break for not more than 15 minutes.
- Speed Test of shuttle runs of 4x10 meters in not more than 11 seconds with a break for not more than 5 minutes.
- Agility test of running 80 meters (a 30-meter forward run, a 10-meter left lateral run, a 10-meter right lateral run, a 10-meter backward run, and a 20-meter forward run) in not more than 20.50 seconds with a break for not more than 5 minutes.
- Speed Test of shuttle runs of 4x10 meters in not more than 11 seconds with a break for not more than 5 minutes.
- Agility test of running 80 meters (a 30-meter forward run, a 10-meter left lateral run, a 10-meter right lateral run, a 10-meter backward run, and a 20-meter forward run) in not more than 20.50 seconds with a break for not more than 5 minutes.

The research instrument used in this study was developed following the steps below. The instrument was consulted to experts to enhance the content validity. It involves 5 experts that include:
• Dr. Panya Hanlumyuong, Director of Physical Education and Recreation Department, former international football referee
• Assoc. Prof. Dr. Panya Sangkawadee, Department of Physical Education and Exercise Science, Faculty of Education, Naresuan University
• Assoc. Prof. Nitiidech Cherdput, official of futsal competition, Football Association of Thailand under the Royal Patronage
• Surasak Thongsuwimon, official of futsal competition, Football Association of Thailand under the Royal Patronage
• Adulyachart Kanthama, official of futsal competition, Football Association of Thailand under the Royal Patronage

Table 1. Test Criteria

| Sequence | Test items | standard | Score |
|----------|------------|----------|-------|
| 1        | Endurance running 1000 meters | Lower - 3.40 minutes | Excellent | 5 |
| 2        | Agility (80 meters) | Lower - 18.00 seconds | Good | 4 |
| 3        | Speed Running 4X10 meters | Lower - 09.50 seconds | Fair | 3 |
| 4        | 3.40-3.49 minutes | 09.50-09.99 seconds | Poor | 2 |
| 5        | 3.50-3.99 minutes | 10.00-10.49 seconds | Very poor | 1 |
| 6        | 4.00-4.10 minutes | 10.50-10.59 seconds | |
| 7        | 4.10 – higher | 11.00 – higher | |

1. The maximum duration of passing the endurance physical fitness test is not more than 4.10 minutes.
2. The maximum duration of passing the agility test is not more than 21.50 seconds.
3. The maximum duration of passing the speed test is not more than 11 seconds.

2.5. Data Collection

The data in this study were collected by the researcher following the steps as follows:
• Studying the method, equipment, facilities, and the place of the test.
• Asking for permission to the head of referees of the Football Association of Thailand under the Royal Patronage.
• Finding research assistants to collect the data, tools and equipment, and discussing and demonstrating how the data collection should be performed.
• Preparing the venue of the test and sheets needed to note down the data.
• Coordinating all parties involved in the data collection before it was performed.
• Explaining and demonstrating the procedures of the test to bring understanding to the parties involved.
• Noting the data of every test taker on the sheets and inputting the data into the computer for data analysis.

2.6. Data Analysis

The data were collected from every item of the physical fitness test and were taken into a statistical analysis that includes:
• Finding the mean and standard deviation values of the physical fitness test of each futsal referee
Comparing the scores of the physical fitness test of the futsal referees with the criteria of the International Football Federation

- Presenting the results of the analysis in tables with some analytical descriptions
- Comparing the results of the physical fitness test of referees of level 3 and those of level 2 using the one-way analysis of variance (ANOVA).

3. Result and Discussion

3.1. Result

Part 1 Overall physical fitness of futsal referees of the Football Association of Thailand under the Royal Patronage of level 1, Level 2, and Level 3

Table 2 The average duration ($\overline{X}$) and standard deviation of the endurance physical fitness test of futsal referees of the Football Association of Thailand under the Royal Patronage of level 1, Level 2, and Level 3

| Level                  | Number of samples | Percentage | $\overline{X}$ | (S.D.) | Level   |
|------------------------|-------------------|------------|----------------|--------|---------|
| Futsal referees of level 1 | 22                | 22.68      | 3.75           | 0.28   | Moderate|
| Futsal referees of level 2 | 11                | 11.34      | 3.60           | 0.15   | Moderate|
| Futsal referees of level 3 | 64                | 65.98      | 3.55           | 0.16   | Moderate|
| Total                  | 97                | 100.00     | 3.60           | 0.21   | Moderate|

Table 3 above shows the average duration and standard deviation of the 97 samples’ performance in the endurance physical fitness test. The average duration of endurance physical fitness of the referees is 3.6 seconds, which is categorized as moderate. Referees of Level 3 had the lowest average duration at 3.55 seconds, which also lies in the moderate level, followed by those of Level 2. The highest duration belonged to referees of Level 1 at 3.6 seconds.

Table 3 The average duration ($\overline{X}$) and standard deviation of the speed physical fitness test of futsal referees of the Football Association of Thailand under the Royal Patronage of level 1, Level 2, and Level 3

| Level                  | Number of Samples | Percentage | $\overline{X}$ | (S.D.) | level   |
|------------------------|-------------------|------------|----------------|--------|---------|
| Futsal referee, level 1 | 22                | 22.68      | 9.60           | 1.42   | High    |
| Futsal referee, level 2 | 11                | 11.34      | 9.85           | 0.23   | High    |
| Futsal referee, level 3 | 64                | 65.98      | 9.84           | 0.37   | High    |
| Total                  | 97                | 100.00     | 9.78           | 0.74   | High    |

The result shows that the overall average duration of all the samples in the first speed test is 9.78 seconds, which is considerably high. Referees of Level 1 showed the lowest average duration in the speed test of physical fitness at 9.60 seconds. On the other hand, referees of Level 3 ranked the second in their average duration at 9.84 seconds, followed by referees of level 2 in the topic position at 9.85 seconds.
Table 4 The average duration ($\bar{X}$) and standard deviation of the first agility physical fitness test of futsal referees of the Football Association of Thailand under the Royal Patronage of level 1, Level 2, and Level 3

| Level                  | Number of Samples | Percentage | $\bar{X}$ | (S.D.) | level     |
|------------------------|-------------------|------------|-----------|--------|-----------|
| Futsal referee, level 1| 22                | 22         | 19.04     | 1.02   | Medium    |
| Futsal referee, level 2| 11                | 10.00      | 19.21     | 0.65   | Medium    |
| Futsal referee, level 3| 64                | 64.0       | 18.99     | 0.84   | High      |
| Total                  | 97                | 100.00     | 19.03     | 0.86   | Medium    |

The result shows that the overall average duration of the whole samples in the first agility test is 19.03 seconds and is considered medium. Referees of Level 3 showed the lowest average duration at 18.99 seconds, followed by those of Level 1 and Level 2 at 19.04 and 19.21 respectively. While the performance of referees of Level 3 is considered high, the other two levels are medium.

Table 5 The average duration ($\bar{X}$) and standard deviation of the second speed physical fitness test of futsal referees of the Football Association of Thailand under the Royal Patronage of level 1, Level 2, and Level 3

| Level                  | Amount | Percentage | $\bar{X}$ | (S.D.) | level     |
|------------------------|--------|------------|-----------|--------|-----------|
| Futsal referee, level 1| 22     | 22.68      | 10.32     | 2.02   | Medium    |
| Futsal referee, level 2| 11     | 11.34      | 9.89      | 0.21   | High      |
| Futsal referee, level 3| 64     | 65.98      | 9.88      | 0.34   | High      |
| Total                  | 97     | 100.00     | 9.98      | 1.00   | High      |

The result shows that the overall average duration of the test takers in the second speed test is high, at 9.98 seconds. Referees of Level 3 generated the lowest average duration at 9.88 while referees of Level 2 generated the second average duration at 9.89. Lastly, referees of Level 1 made the highest average duration at 10.32 seconds. While referees of level 1’s achievement is considered medium, that of the other two levels are high.

Table 6 The average duration ($\bar{X}$) and standard deviation of the second agility physical fitness test of futsal referees of the Football Association of Thailand under the Royal Patronage of level 1, Level 2, and Level 3

| Level                  | Amount | Percentage | $\bar{X}$ | (S.D.) | level     |
|------------------------|--------|------------|-----------|--------|-----------|
| Futsal referees, level 1| 22     | 22.68      | 18.94     | 0.68   | High      |
| Futsal referees, level 2| 11     | 11.34      | 18.88     | 0.50   | High      |
| Futsal referees, level 3| 64     | 65.98      | 18.80     | 1.26   | High      |
| Total                  | 97     | 100.00     | 18.84     | 1.08   | High      |

The result shows that the overall average duration of the samples in the second agility test is high, at 18.84 seconds. Referees of Level 3 made the lowest average duration at 18.0
seconds, followed by referees of level 2 and level 1 at 18.88 and 18.94 respectively. All of these scores are considered high.

3.2. The Comparison between the Physical Fitness of Referees of Level 1, Level 2, and Level 3 of the Football Association of Thailand under the Royal Patronage

Table 7 The Analysis of Variance of the Endurance Physical Fitness of Futsal Referees of Level 1, Level 2, and Level 3 of the Football Association of Thailand under the Royal Patronage

| Test       | Sources of variance | df | SS  | MS  | F     | p-value |
|------------|---------------------|----|-----|-----|-------|---------|
| Durability | Between group       | 2  | 0.69| 0.34| 9.23  | 0.00*   |
|            | In group            | 94 | 3.50| 0.40| -     | -       |
|            | Total               | 96 | 4.18| -   | -     | -       |

The result shows that the endurance physical fitness of futsal referees of level 1, level 2, and level 3 demonstrates a statistically significant difference.

Table 8 Comparative Analysis of the Endurance Physical Fitness Test of Futsal Referees of Level 1, Level 2, and Level 3 of the Football Association of Thailand under the Royal Patronage.

| Level | 1   | 2    | 3    |
|-------|-----|------|------|
| 1     | -   | 0.16*| 0.20*|
| 2     | -   | -    | 0.05 |
| 3     | -   | -    | -    |

The result shows that the physical fitness test of endurance of futsal referees of level 1, level 2, and level 3 results in a statistically significant difference.

Table 9 The Analysis of Variance of the Speed Physical Fitness of Futsal Referees of Level 1, Level 2, and Level 3 of the Football Association of Thailand under the Royal Patronage

| Test | Sources of variance | df | SS  | MS  | F    | p-value |
|------|---------------------|----|-----|-----|------|---------|
| Speed| Between group       | 2  | 0.97| 0.49| 0.89 | 0.42    |
|      | In group            | 94 | 51.46| 2.55| -    | -       |
|      | Total               | 96 | 52.43| -   | -    | -       |

The result shows that the variance of the physical fitness of speed of futsal referees of level 1, level 2, and level 3 is similar.
Table 10 The Analysis of Variance of the Agility Physical Fitness of Futsal Referees of Level 1, Level 2, and Level 3 of the Football Association of Thailand under the Royal Patronage

| Test   | Sources of variance | Df | SS    | MS  | F    | p-value |
|--------|---------------------|----|-------|-----|------|---------|
| Agility| Between group       | 2  | 0.43  | 0.21| 0.29 | 0.75    |
|        | In group            | 94 | 70.08 | 0.75| -    | -       |
|        | Total               | 96 | 70.51 | -   | -    | -       |

The result shows that there is no difference in the agility physical fitness between futsal referees of level 1, level 2, and level 3.

Table 11 The Analysis of Variance of the Second Speed Physical Fitness of Futsal Referees of Level 1, Level 2, and Level 3 of the Football Association of Thailand under the Royal Patronage

| Test   | Sources of variance | Df | SS    | MS  | F    | p-value |
|--------|---------------------|----|-------|-----|------|---------|
| Speed  | Between group       | 2  | 3.22  | 1.61| 0.63 | 0.20    |
|        | In group            | 94 | 92.97 | 0.99| -    | -       |
|        | Total               | 96 | 96.19 | -   | -    | -       |

The result shows that there is no difference in the speed physical fitness of futsal referees of level 1, level 2, and level 3.

Table 12 The Analysis of Variance of the Second Agility Physical Fitness of Futsal Referees of Level 1, Level 2, and Level 3 of the Football Association of Thailand under the Royal Patronage

| Test   | Sources of variance | Df | SS    | MS  | F    | p-value |
|--------|---------------------|----|-------|-----|------|---------|
| Agility| Between group       | 2  | 0.31  | 0.15| 0.13 | 0.88    |
|        | In group            | 94 | 111.46| 1.19| -    | -       |
|        | Total               | 96 | 111.76| -   | -    | -       |

The result shows there is no difference in the physical fitness of agility of futsal referees of level 1, level 2, and level 3.

3.3. Discussion

The overall results of the endurance test of physical fitness of the 97 futsal referees of level 1, level 2, and level 3 of the Football Association of Thailand under the Royal Patronage demonstrate an average duration of 3.60 seconds to complete the test. Futsal referees of level 3 shows the lowest average duration at 3.55 seconds. It may be benefited the factor of age of the referees. Getchell states that physical fitness is the ability to operate with maximum efficiency of heart, blood vessels, and muscles which results in the perfect health and the ability to perform routine tasks enthusiastically [1]. Greenberg, Dintiman and Oakes state that physical fitness is the ability to fulfill the demands of life and support an energy to respond to
unexpected events [2]. It consists of five basic elements: cardiovascular endurance, muscular strength, endurance muscle elasticity and shape. Corbin states that the physical fitness requires well-maintained organs to avoid sickness or disease [3]. It includes good teeth, good eyes, good ear, and ability to work hard with full performance. Futsal referees of level 2 show 3.60 seconds of average duration, followed by those of level 1 at 3.75 seconds. The first speed test of physical fitness of futsal referees of Football Association of Thailand under Royal Patronage shows that the average duration is 9.78 seconds. Futsal referees of level 1 show the lowest average duration at 9.49 seconds. According to Wuest and Butcher (cited in Wiwatchai Worabaworn 2002, P. 102), physical fitness is important for children and adults because it is related to health and physiology of an individual, along with the development of the intelligence. One’s performance depends on the training program, the amount of training, and a frequency of practice. Futsal referees of level 3 and 2 show the average of time at 9.84 and 9.85 respectively. The first agility test of physical fitness of futsal referees of level 1, level 2, and level 3 of the Football Association of Thailand under the Royal Patronage in overall shows that the average duration to complete the test is 19.03 seconds. Futsal referees of level 3 show the lowest average duration at 18.99 seconds. According to Getchell (Getchell, 1976, pp. 8-10 cited in Benjamard Kerdmalai), the physical fitness is the ability to operate with maximum efficiency of heart, blood vessels, and muscles which results in the perfect health and the ability to perform routine tasks enthusiastically. Futsal referees of level 1 and level 2 show average durations at 19.04 and 19.21 respectively. The second speed test of physical fitness test of futsal referees of level 1, level 2, and level 3 of the Football Association of Thailand under the Royal Patronage results an average duration at 9.98 seconds. Futsal referees of level 3 show average duration at 9.88 seconds. According to Worasak Pienshop, speed is the ability to contract any part of muscles in a short time, for example, short range running [4]. This development of speed activity may be used as the activity to improve strength and speed. Futsal referees in level 2 shows average duration at 9.89 seconds, followed by those of level 1 at 10.32 seconds. The second agility test of physical fitness test of futsal referees of level 1, level 2, and level 3 of the Football Association of Thailand under the Royal Patronage results in average duration at 18.84. Futsal referees of level 3 generated the lowest average duration at 18.80 seconds. According to Worasak Pienshop, agility is the ability to change the position or direction effectively [5]. The ability to shrink muscles results in the effective movement, for example, the ability to squat, do shuttle run, or zigzag running quickly. The activity which causes muscles to cooperate or change the direction of the body helps in the development of the agility. Futsal referees of level 2 demonstrated average duration at 18.88 seconds, followed by those of level 1 at 18.94 seconds. The comparative result of the physical fitness between futsal referees of level 1, level 2, and level 3 of the Football Association of Thailand under the Royal Patronage. The variance of the endurance physical fitness of futsal referees of level 1, level 2, and level 3 shows a statistically significant different at 0.05. There is no difference in the first speed test of physical fitness of futsal referees between level 1, level 2, and level 3. There is no difference in the first agility test of physical fitness of futsal referees between level 1, level 2, and level 3. There is no difference in the second speed test of physical fitness of futsal referees between level 1, level 2, and level 3. There is no difference in the second agility test of physical fitness of futsal referees between level 1, level 2, and level 3. The comparison of the results of the endurance physical fitness test shows a statistically significant difference between referees of level 1, level 2, and level 3, at 0.05.
4. Conclusion

The general information of physical fitness of futsal referees of level 1, level 2, and level 3 of the Football Association of Thailand under Royal Patronage

- Futsal referees of level 3 showed the lowest average duration in endurance physical fitness. Referees of level 1 made the highest average duration while those of level 2 is in between them.
- Futsal referees of level 1 showed the lowest average duration in the first speed test of physical fitness. Those of level 3 ranked the second and those of level 2 made the highest average duration.
- The futsal referees of level 3 had the lowest average duration in the first agility test of physical fitness. Those of level 1 ranked the second and those of level 2 made the highest average duration.
- The second agility test of physical fitness resulted in that futsal referees of level 3 had the lower average duration, followed by those of level 2 and level 1.

The result of the endurance physical fitness test of futsal referees of level 1, level 2, and level 3 shows a statistically significant difference.

- The results of the first speed physical fitness test of futsal referees of level 1, level 2, and level 3 are similar.
- There is no difference in the first agility physical fitness test between futsal referees of level 1, level 2, and level 3.
- There is no difference in the second speed physical fitness test between futsal referees of level 1, level 2, and level 3.
- There is no difference in the second agility physical fitness test between futsal referees of level 1, level 2, and level 3.
- The comparative analysis of the results of the durability physical fitness test shows a statistically significant difference between futsal referees of level 1, level 2, and level 3, at 0.05.

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