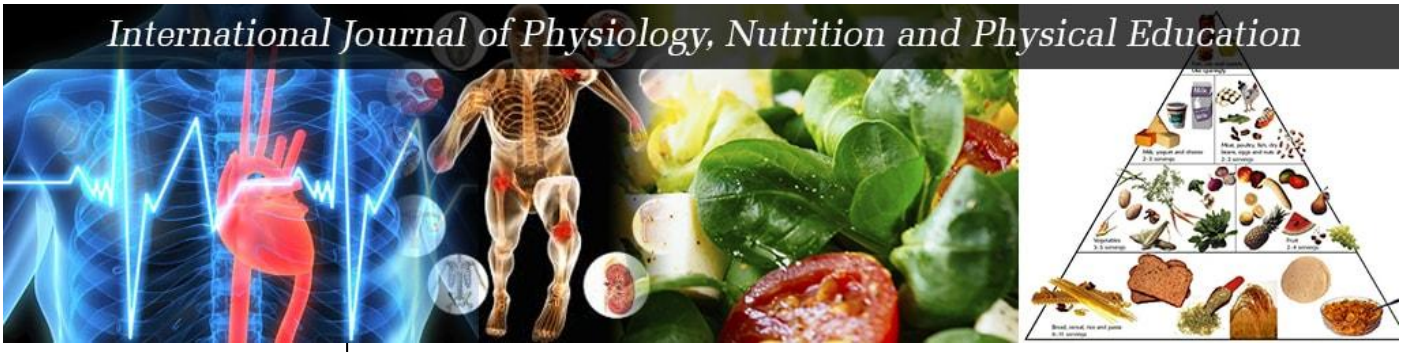

ISSN: 2456-0057
IJPNPE 2017; 2(1): 131-138

www.journalofsports.com
Received: 25-11-2016
Accepted: 26-12-2016

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Physical fitness norm innovation for practical evaluation of trainee teachers

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Abstract
The purpose of this study is to develop physical fitness test reference norms for the Practical Assessment to assess the teacher's trainee health related physical fitness from the Teachers Institute of Training base on age and gender. The main objectives of this study was to identify the differences in physical fitness based on health component such as the cardiovascular endurance, muscle endurance, muscle strength, flexibility and body mass index as well as build a health physical fitness norm reference test for Practical Assessment at the Teachers Institute of Education. Samples are 733teachers trainees which comprises 257 male and 476 female age 18 to 22 years. The measurement of the physical fitness is being acquired base on the Prudential FITNESSGRAM® test batteries that comprises of the PACER, Curl-up, Trunk-Lift, Push-up and Body Mass Index. Comparison of the trainee teachers by gender and age for each component of the fitness test showed significant differences and norms developed by the researchers based on gender and age showed a difference and improves the scores for each level, excellent to poor fitness test components except the test for muscle strength of the female trainees [18 Years (Min = 17:48, SD = 1.73)], [19 Years ((Mean = 5.18, SD = 2.28)], [20 years (mean = 16.81, SD = 2.72)], [21 Year (Min = 31.88, SD = 4.19)] and [22 Year (Min = 17:21, SD = 3.89)], because the raw scores obtained are very low compared to male trainees [18 years (mean = 39.94, SD = 2.55)], [19 years (mean = 38.72, SD = 2.75)], [20 years (mean = 40.80, SD = 5.45], [21 years (mean = 43.38, SD = 4.09)] and [22 Year (Mean = 38.93, SD- 3.89)].

Keywords: physical fitness, prudential FITNESSGRAM®

Introduction
Fitness is an individual state's ability to cope with a complete and total balance lifestyle involving the social, psychological and physiological aspects. On the hand, physical fitness is a person ability to perform daily task with efficiently and actively without feeling tired or lethargic and have enough energy to engage in recreation activities. An individual who is physically fit must be able to face with an emergency situation that may arise (Miller, 2012) [25].

Ahmad Hashim (2004) [2], describes physical fitness is related with a person's ability to perform his daily chores with enthusiasm and ability to avoid and stay away from getting chronic diseases through sedentary life style. Physical fitness is also influenced by aspects of heredity, environment, life style and behavior (Katzmaryk, Malina, Thomas, Sons & Bouchard, 1998; Casperen & Mosterd, 1994 and Berlin, 1990) [19, 7, 6].

Health related fitness comprises five components which are cardiovascular endurance, muscle endurance, muscle strength, flexibility and body composition. Fitness motor based comprises six components which are coordination, balance, agility, power, reaction time and speed (Miller, 2012; Morrow & Jackson, 2005; Ahmad Hashim, 2004; Corbin & Lindsey, 1998 and Fall, 1980) [25, 26, 2, 11, 14].

Therefore, researchers should conduct a study aimed at assessing the level of physical fitness of the trainee teachers at the Teacher Institute of Education (TIE) using test items that really test the fitness components to be tested in order to obtain accurate data and a standard score and reach the desired goal.

Feedback performance of physical fitness trainee teachers will hopefully be able to help identify strengths and weaknesses and can give true picture of the status of achievement of physical fitness training teachers in the institute. In addition, this study is an innovation to form a norm health related physical fitness tests for trainees at the Teacher Institute of Education using a battery of tests that have a high validity and reliability.

The norm which is formed based on the mean and standard deviation are intended as a guide in the process testing, measurement and evaluation of physical fitness in Teachers Institute of Education, public universities, private universities and schools. It also could be used as a preparation for future teachers to conduct physical fitness test when they are placed in school later.

The difficulty to establish a physical fitness test norm which is standard and consistent to measure performance level of physical fitness is a big problem and the reasons why it is a problem in testing the physical fitness level of trainee teachers at this particular time in processing performance of physical fitness for the Practical Evaluation of Physical Education.

The National Physical Fitness Test (UKJK) issued by the Ministry of Youth and Sports and which was revised in 1999 is currently still used by the Teachers Institute of Education, formerly known as Teachers College as a tests battery. UKJK test is often used to measure the fitness of trainees for the Practical Evaluation of Physical Education as contained in the Pro Forma Physical Education syllabus because no studies have been done to replace the UKJK battery with a battery test more consistent and standard.

Item in the UKJK test consisting of 7 test which are the body mass index (body composition), 2.4km runs (Cardiovascular Endurance), sit-ups (muscle endurance), standing broad jump (power), 10- meter shuttle run (agility), push-ups (muscle strength) sit and reach (flexibility), can not reflect the real level of fitness to be tested because the test item UKJK is mixed between the components of health related physical fitness and motor behavior related physical fitness.

Finally, the Physical Fitness Test Teacher Candidate (UKCG), which have been use for the selection of would-be teachers adopted by the IPG in March 2014, also does not reflex the performance of real fitness as the test items mixed between health related physical fitness and motor behavior related physical fitness (quadrant test) bleep test (cardiovascular endurance), varied sit-ups (endurance), turning waist (flexibility) and BMI (body composition). This situation resulted in inconsistent data and data obtained are not consistent and standard. Ahmad Hashim (2004) [2], the success of an evaluation depends on the quality of the data obtained and any assessments made on the basis of the test results are not consistent and void is inaccurate and dubious.

Ahmad Hashim (2004) [2], assert that to gain a consistent and standards results, test items used must test the component to be tested. The process of teaching and learning will be more meaningful and effective if the assessment procedures have the reliability and validity of the student. Norms reference which are more than five years also cannot describe the actual findings can be regarded as outdated and needs to be rebuilt (AAHPERD, 1976; Baumgartner & Jackson, 1999) [1, 4].

Based on to the above statement, the researcher has its own justification against the test battery of UKJK and UKCG which are impractical and irrelevant for Practical Evaluation and did not meet the objective in describing the actual performance of health related physical fitness of the trainee teachers. Indirectly, the findings are invalid and cannot achieve real fitness assessment.

Therefore, this problem prompted the researchers to conduct an in-depth study on the appropriate tests battery to be applied in the institute to measure the performance of physical fitness trainee teacher for improvements in terms of testing, measurement and evaluation as an innovation in creating new norms for health related physical fitness among trainees in the institute. According to Ahmad Hashim (2004) [2], to date there is no standard test that can be used continuously at IPG, IPTA, IPTS so as in any school to measure the components of health related physical fitness and basic motor skills.

Research Objectives

1. Identify differences in performance of each component of health related physical fitness for practical assessment of trainee teachers based on gender and age
2. Establish cardiovascular endurance test scores norms for trainee teacher's practical assessment based on gender and age.
3. Establish endurance test scores norms for trainee teacher's practical assessment based on gender and age.
4. Establish muscle strength test scores norms for trainee teacher's practical assessment based on gender and age.
5. Establish flexibility test scores norms for trainee teacher's practical assessment based on gender and age.
6. Establish a body composition test scores norm for trainee teacher's practical assessment based on gender and age.

Research Questions

1. Is there a performance difference for each component of practical assessment health physical fitness for trainee teachers based on gender and age?
2. To what extent the cardiovascular fitness test scores achievement of trainee teachers practical assessment based on gender and age?
3. To what extent the muscular endurance test scores achievement of trainee teacher's practical assessment based on gender and age?
4. To what extent the muscle strength test score achievement of trainee teachers for practical assessment based on gender and age?
5. To what extent the flexibility test score achievement of trainee teachers for practical assessment based on gender and age?
6. To what extent the performance of the body composition test scores to teacher trainees Practical Assessment based on gender and age?

Research design

This research is true experimental ex - post facto which is the simplest but have high internal validity (Chua Yan Piaw, 2006 and Thomas & Nelson, 1996) [8, 17]. The samples were divided into groups such as sex and age as a discrete variable which differ from each other (Cicciarella, 1997) [9].

Sample Survey

The study was conducted on a total of 733 trainee teachers of IPG Campus Sultan Abdul Halim consisting of 257 male trainees and 476 female trainees aged between 18 and 22 years old. The sample selection was made randomly by involving the entire population as the sample. Data sampling technique used is the probability sampling. Probability sampling technique is a sampling technique that is similar for each element of the population to be elected as members of the sample (Thomas Nelson, 2012, Chua Yan Piaw, 2006 and Cicciarella, 1997) [8, 29, 9].

Table 1: Number of Samples According to the Program, Age and Sex

No	Programme	Age	Numbers		Total
			L	P	
1	PISMP January 2011	22 years	89	167	256
2	PISMP January 2012	21 years	98	105	203
3	PISMP January 2013	20 years	31	119	150
4	PISMP January 2014	19 years	21	60	81
5	PPISMP June 2013	18 years	18	25	43
	Total		257	476	733

Research Instrument

The lever of physical fitness is measured based on the physical fitness test introduced by Prudential FITNESSGRAM (Cooper Institute for Aerobics Research, 1992) and the measurement procedures updated by Baumgartner and Jackson (1999) [4]. The researcher has chosen 5 types of tests in which each test has the high reliability value (r) which are namely:

i. PACER test - Multistage Shuttle Run (r = 0.93)
ii. Push up test (r = 0.99)
iii. Curl - Up test (r = 0.86)
iv. Test Trunk Lift (r = 0.98)
v. Body mass index (r = 0.98

Findings

Table 2: Descriptive Statistics Mean Score and Standard Deviation Analysis of Students aged 18 to 22 Years Old

Age	Vo2max	Curl up	Push up	Flexibility	BMI
18 Years					
Male (n=18)	M=43.38 SD=4.09	M=43.27 SD=4.19	M=39.94 SD=2.55	M=48.38 SD=5.31	M=24.12 SD=1.70
Female (n=25)	M=31.88 SD=4.19	M=29.96 SD=5.33	M=17.48 SD=1.73	M=47.32 SD=5.15	M=23.18 SD=1.45
19 Years					
Male (n=21)	M=44.07 SD=3.17	M=49.23 SD=3.23	M=38.71 SD=2.75	M=47.76 SD=2.79	M=23.55 SD=0.98
Female (n=60)	M=31.15 SD=3.89	M=28.55 SD=5.02	M=18.05 SD=2.28	M=47.86 SD=3.65	M=23.87 SD=4.51
20 Years					
Male (n=31)	M=42.59 SD=4.76	M=44.03 SD=5.68	M=40.80 SD=5.45	M=47.41 SD=5.19	M=23.99 SD=2.16
Female (n=119)	M=30.55 SD=3.24	M=27.38 SD=5.08	M=16.81 SD=2.72	M=44.15 SD=3.34	M=23.40 SD=3.62
21 Years					
Male (n=98)	M=43.11 SD=4.42	M=45.73 SD=8.56	M=43.38 SD=4.09	M=43.38 SD=4.09	M=23.79 SD=2.02
Female (n=105)	M=30.14 SD=3.28	M=26.65 SD=6.62	M=31.88 SD=4.19	M=31.88 SD=4.19	M=24.28 SD=5.68
22 Years					
Male (n=89)	M=42.74 SD=4.77	M=46.33 SD=9.20	M=38.93 SD=7.50	M=47.13 SD=4.67	M= 23.89 SD=2.20
Female (n=167)	M=31.76 SD=4.28	M=30.14 SD=6.79	M=17.21 SD=3.89	M=47.10 SD=4.73	M=23.54 SD=3.78

Table 3: Norm Raw Score *$V0_2$ Max* Test on IPG Male Trainee by Age

Age Group					
Level/Age	**18 years**	**19 years**	**20 years**	**21 years**	**22 years**
Excellence	69.39 above	48.83 above	49.74 above	49.75 above	49.90 above
Very Good	45.43 – 49.40	45.66 – 48.82	44.98 – 49.73	45.31 – 49.74	45.13 – 49.89
Good	41.34 – 45.42	42.49 – 45.65	40.21 – 44.97	40.99 – 45.30	40.36 – 45.12
Average	37.25 – 41.33	39.32 – 42.48	35.45 – 40.20	36.48 – 40.98	35.59 – 40.35
Poor	37.24 below	39.31 below	35.44 below	36.47 below	35.58 below

Table 3.1: Numbers and Percentage of *$V0_2$ Max Test on* IPG Male Trainee by Age

Age Group										
Age	**18 years**		**19 years**		**20 years**		**21 years**		**22 years**	
Level	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Excellence	0	0	0	0	0	0	0	0	0	0
Very old	5	27.77	8	38.09	11	35.48	33	33.67	32	35.95
Good	11	61.11	3	9.67	13	41.93	41	41.83	36	40.44
Average	0	0	8	38.09	3	9.67	16	16.32	12	13.48
Poor	2	11.11	2	6.45	4	12.90	8	8.16	9	10.11
Total	18	100	21	100	31	100	98	100	89	100

Table 4: Norm Raw Score *V0₂ Max* Test on IPG Female Trainee by Age

Age Group					
Level / Age	**18 years**	**19 years**	**20 years**	**21 years**	**22 years**
Excellence	38.17 above	36.99 above	35.42 above	36.59 above	37.12 above
Very Good	33.98 – 38.16	33.10 – 36.98	32.18 -35.41	29.97 – 36.55	33.91 – 37.11
Good	29.79 – 33.97	29.21 – 33.09	28.93 – 32.17	23.34 – 29.96	29.62 – 33.90
Average	25.60 – 29.78	25.32 – 29.20	25.69 – 28.92	16.72 – 23.33	26.41 – 29.61
Poor	25.59 below	25.31 below	25.68 below	16.71 below	26.40 below

Table 4.1: Numbers and Percentage of *V0₂ Max Test on* IPG Female Trainee by Age

Age Group										
Age	**18 years**		**19 years**		**20 years**		**21 years**		**22 years**	
Level	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Excellence	2	8	5	8.33	7	5.88	2	1.90	18	10.77
Very Good	6	24.00	13	21.66	21	17.64	44	41.90	31	18.56
Good	8	32.00	24	40.00	52	43.69	28	26.66	102	61.07
Average	9	36.00	16	26.66	36	30.25	24	22.85	31	18.56
Poor	0	0	2	3.33	3	2.52	7	6.66	22	13.17
Total	25	100	60	100	119	100	105	100	167	100

Table 5: Norm Raw Score Curl Up Test on IPG Male Trainee by Age

Age Group					
Level /Age	**18 years**	**19 years**	**20 years**	**21 years**	**22 years**
Excellence	49.56 above	54.08 above	50.08 above	58.58 above	60.14 above
Very Good	45.37 – 49.55	50.85 – 54.07	46.88 – 50.07	50.02 – 58.57	50.94 – 60.13
Good	41.18 – 45.36	47.62 – 50.84	41.19 – 46.87	41.45 – 50.01	41.73 – 50.93
Average	36.99 – 41.17	44.39 – 47.61	37.99 – 41.18	32.89 – 41.44	32.53 – 41.72
Poor	36.98 below	44.38 below	37.98 below	32.88 below	32.52 below

Table 5.1: Numbers and Percentage of Curl up Test on IPG Male Trainee by Age

Age Group										
Age	**18 years**		**19 years**		**20 years**		**21 years**		**22 years**	
Level	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Excellence	0	0	1	4.76	2	6.45	4	4.08	2	2.24
Very Good	5	27.77	5	23.80	9	29.03	25	25.51	29	32.58
Good	11	61.11	10	47.61	14	45.16	44	44.89	30	33.70
Average	0	0	3	14.28	1	3.22	14	14.28	13	14.60
Poor	2	11.11	2	9.52	5	16.12	11	11.22	12	13.48
Total	18	100	21	100	31	100	98	100	89	100

Table 6: Norm Raw Score Curl Up Test on IPG Female Trainee by Age

Age Group					
Level / Age	**18 years**	**19 years**	**20 years**	**21 years**	**22 years**
Excellence	37.96 above	36.09 above	35.01 above	36.59 above	40.33 above
Very Good	32.63 – 37.95	31.07 – 36.08	29.93 – 35.00	29.97 – 36.58	33.52 – 40.32
Good	27.30 – 32.62	26.04 – 31.06	24.88 – 29.92	23.34 – 29.96	26.75 – 33.51
Average	21.97 – 27.29	21.02 – 26.03	19.76 – 24.87	16.72 – 23.33	19.96 – 26.74
Poor	21.96 below	21.01 below	19.75 below	16.71 below	19.95 below

Table 6.1: Numbers and Percentage of Curl up Test on IPG Female Trainee by Age

Age Group										
Age	**18 years**		**19 years**		**20 years**		**21 years**		**22 years**	
Level	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Excellence	0	0	2	3.33	4	3.36	2	1.90	7	4.19
Very Good	7	28.00	14	23.33	52	43.69	44	41.90	24	14.37
Good	15	60.00	28	46.66	37	31.09	28	26.66	105	62.87
Average	0	0	8	13.33	14	11.76	24	22.85	11	6.58
Poor	3	12.00	8	13.33	12	10.08	7	6.66	20	11.97
Total	25	100	60	100	119	100	105	100	167	100

Table 7: Norm Raw Score Push Up Test on IPG Male Trainee by Age

Age Group					
Level / Age	**18 years**	**19 years**	**20 years**	**21 years**	**22 years**
Excellence	43.77 above	42.84 above	48.98 above	49.67 above	50.19 above
Very Good	41.22 – 43.76	40.09 – 42.83	43.53 – 48.97	43.27 – 49.68	42.69 – 50.18
Good	38.67 – 41.21	37.34 – 40.08	38.08 – 43.52	36.84 – 43.26	35.18 – 42.68
Average	36.12 – 38.66	34.59 – 37.33	32.68 – 38.07	30.42 – 36.83	27.68 – 35.17
Poor	36.11 below	34.58 below	32.68 below	30.41 below	27.67 below

Table 7.1: Numbers and Percentage of Push Up Test on IPG Male Trainee by Age

Age Group										
Age	**18 years**		**19 years**		**20 years**		**21 years**		**22 years**	
Level	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Excellence	1	5.55	3	14.28	1	9.67	3	3.06	2	2.24
Very Good	5	27.77	2	9.52	6	19.35	30	30.61	36	40.44
Good	8	44.44	9	42.85	17	54.83	38	38.77	23	25.84
Average	2	11.11	7	33.33	5	16.12	20	20.40	21	23.59
Poor	2	11.11	0	0	2	6.45	7	7.14	7	7.86
Total	18	100	21	100	31	100	98	100	89	100

Table 8: Norm Raw Score Push Up Test on IPG Female Trainee by Age

Age Group					
Level / Age	**18 years**	**19 years**	**20 years**	**21 years**	**22 years**
Excellence	20.08 above	21.48 above	20.90 above	21.74 above	23.05 above
Very Good	18.35 – 20.07	19.20 – 21.47	18.18 – 20.89	18.09 – 21.73	19.16 – 23.04
Good	16.62 – 18.34	16.91 – 19.19	15.45 – 18.17	14.44 – 18.08	15.27 – 19.15
Average	14.89 – 16.61	14.63 – 16.90	12.73 – 15.44	10.79 – 14.43	11.38 – 15.26
Poor	14.88 below	14.62 below	12.72 below	10.78 below	11.37 below

Table 8.1: Numbers and Percentage of Push Up Test on IPG Female Trainee by Age

Age Group										
Age	**18 years**		**19 years**		**20 years**		**21 years**		**22 years**	
Level	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Excellence	0	0	1	1.66	5	4.20	2	1.90	2	1.19
Very Good	5	20.00	17	28.33	16	13.44	25	23.80	20	11.97
Good	15	60.00	28	46.66	68	57.14	49	46.66	109	65.26
Average	2	8.00	11	18.33	19	15.96	11	10.47	23	13.77
Poor	3	12.00	3	5.00	11	9.24	18	17.14	13	7.78
Total	25	100	60	100	119	100	105	100	167	100

Age group					
Level / Age	18 years	19 years	20 years	21 years	22 years
Excellence	56.35 above	51.93 above	55.20 above	53.21 above	54.05 above
Very Good	51.04 – 56.34	49.16 – 51.94	50.01 – 55.19	49.00 – 53.20	49.47 – 54.03
Good	45.73 – 51.03	46.37 – 49.15	44.82 – 50.00	44.79 – 48.99	44.80 – 49.46
Average	40.42 – 45.72	43.58 – 46.36	39.13 – 44.81	40.58 – 44.78	40.13 – 44.79
Poor	40.41 below	43.57 below	39.12 below	40.57 below	40.12 below

Table 9: Numbers and Percentage of Trunk Lift Test on IPG Male Trainee by Age

Age Group										
Age	**18 years**		**19 years**		**20 years**		**21 years**		**22 years**	
Level	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Excellence	0	0	3	14.28	1	3.22	2	2.04	2	2.24
Very Good	4	22.22	2	9.52	9	2.90	39	39.79	24	26.96
Good	11	61.11	8	38.09	14	45.16	33	33.67	43	48.31
Average	1	5.55	6	28.57	4	12.90	14	14.28	8	8.98
Poor	2	11.11	2	9.52	3	9.67	10	10.20	12	13.48
Total	18	100	21	100	31	100	98	100	89	100

Table 10: Norm Raw Score Trunk Lift Test on IPG Female Trainee by Age

Age Group					
Level / Age	**18 years**	**19 years**	**20 years**	**21 years**	**22 years**
Excellence	55.05 above	53.34 above	49.17 above	52.89 above	54.20 above
Very Good	49.90 – 55.04	49.69 – 53.33	45.83 – 49.16	47.99 – 52.88	49.47 – 54.19
Good	44.75 – 49.89	46.04 – 49.68	42.48 – 45.82	43.08 – 47.98	44.74 – 49.46
Average	39.60 – 44.74	42.39 – 46.03	39.14 – 42.47	38.18 – 43.09	40.01 – 44.73
Poor	39.59 below	42.38 below	39.13 below	38.17 below	40.00 below

Table 10.1: Numbers and Percentage of Trunk Lift Test on IPG Female Trainee by Age

Age Group										
Age	**18 years**		**19 years**		**20 years**		**21 years**		**22 years**	
Level	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Excellence	0	0	2	3.33	0	0	2	1.90	4	2.39
Very Good	10	40.00	16	26.66	43	36.13	25	23.80	46	27.54
Good	10	40.00	23	38.33	54	45.37	49	44.95	77	46.10
Average	1	4.00	15	25.00	6	5.04	11	10.47	17	10.17
Poor	4	16.00	4	6.66	16	13.44	18	17.14	23	13.77
Total	25	100	60	100	119	100	105	100	167	100

Table 11: Nora Raw Score BMI Test on Male and Female Trainee

	Level	
Under Weight		18.4 and below
Normal		18.5 – 24.9
Over weight		25.0 – 29.9
Class I Obese		30.0 – 34.9
Class II Obese		35.0 – 39.9
Class III Obese		40.0 and above

Table 11.1: Number and Percentage BMI Test on Male Trainee

Level	**Kg/m³**	**N**	**%**
Under Weight	18.4 and below	0	0
Normal	18.5 – 24.9	220	85.60
Over weight	25.0 – 29.9	31	12.06
Class I Obese	30.0 – 34.9	6	2.33
Class II Obese	35.0 – 39.9	0	0
Class III Obese	40.0 and above		
Total		257	100

Table 11.2: Number and Percentage BMI Test on Male Trainee

Tahap	**Kg/m³**	**N**	**%**
Under Weight	18.4 and below	10	2.10
Normal	18.5 – 24.9	403	84.66
Over weight	25.0 – 29.9	50	10.50
Class I Obese	30.0 – 34.9	4	0.84
Class II Obese	35.0 – 39.9	0	0
Class III Obese	40.0 and above	9	1.89
Total		476	100

Discussion

The norm reference performance of IPG trainee teacher's physical fitness has been analyzed using descriptive statistical analysis based on mean and standard deviation to answer the research questions developed by the researchers. The norms established based on raw scores obtained from 733 trainees consisting of 257 male trainees and 476 female trainees undergoing teacher training in various programs of study at IPG Campus Sultan Abdul Halim. All trainees were selected between 18 and 22 years old.

The finding shows that the Prudential FITNESSGRAM® test battery is suitable used as testing instrument to measure health- related physical fitness level of trainee teachers at the institute. The test battery consisting of PACER test item, push-ups, curl -ups, trunk lifts and body mass index (BMI) is perfectly suitable to be used as a tool to measure the fitness component -based cardiovascular endurance, muscular endurance, muscular strength, flexibility and body composition because it has a high validity and reliability.

Overall, the study shows there are differences in performance of each component of health physical fitness based on age and gender trainees in the institute. The findings also able to answer each research question.

The cardiovascular endurance

The establishment of norms for cardiovascular endurance component -based test using PACER test for male and female subjects showed an increase in the level of excellence achievement scores for the age of 18 years compared to other age groups. This may be due to female subjects aged factors which still feel embarrassed to do the test in earnest or serious and do not have a high awareness of the importance of physical fitness. This difference occurs because age affects the strength of muscular subjects. This finding is supported by in which, as a result of their study showed that the effect of age have an impact on the performance of physical fitness

Muscle Endurance

Construction norms for muscle endurance test using curl up test showed scores obtained by male and female subjects are uneven. Scores for male trainee teacher ages 22 years show an increased in the level of excellence compared with female trainee teachers at the age of 18, showed an increased in the level of excellence. According to Mc Kenzie, Sallis, paroles and Zive (2002) [24], females have different physical fitness performance with male in health related fitness components.

Muscle strength

Norms designed to test muscle strength components using push up test among male trainees teachers showed an increased at all age group level, but showed a decreased in the score on an excellent level for the age of 19 years but the female trainee teachers also showed a decrease in the score on an excellent level for the age of 20 years but still showed at all age group level.

Flexibility

Construction norms to test the flexibility by using the trunk lift test showed scores obtained by male and female trainee teachers are uneven. Scores for trainee teachers, male and female age 18 years showed an increased in the level of excellence. However, male trainee teachers showed a decrease in the score on an excellent level for the age of 19 years compared with female trainee teachers at the age of 20 years.

Body composition

Construction norms of body composition using a body mass index's (BMI) test excellence levels of all ages of male and female trainee teachers have been set by the norms of WHO (2004). Norms for body mass index has six levels of achievement which are underweight (18.4 or below), normal (18.5 - 24.9), heavier (25.0 - 29.9), class I obesity (30.0 - 34.9), class II obesity (35.0 - 39.9) and class III obesity (40 and above). The norms are applicable for all ages. The findings showed that male and female trainee teachers have an equal body mass index. However, the numbers of female teachers who achieve grade III obesity are more than male trainees.

Proposal

Based on the findings, the researchers suggested that the IPG and KPM should give priority to the research of test, measurement and evaluation. The IPGM and MOE should promote research in this field so as to generate more innovation and new discoveries, especially those involving curriculum. Besides increasing the knowledge and professionalism of teachers towards producing potential qualified teachers, especially in the field of physical education and Sports Science.

In addition, trainee teachers will also be exposed to the testing, measurement and evaluation instruments as to equip them to school later. The trainee will be ready to practice and teach a lesson (Knowledge Base of Teaching) to produce effective and quality teaching and learning. This knowledge is useful in order to produce thinking athletes which then are able to successfully drive the sports industry someday.

Conclusion

Researchers have succeeded in producing a more standard reference norms, consistent, appropriate and accurate based on raw scores based on the tests conducted on the trainee teachers themselves. The resulting norm is compatible with the current time because of the existing reference norm is outdated and should be reviewed and updated. According to Baumgartner, Jackson, Mahar and Rowe (2003) [5], norms which are more than five years of age have begun to be absolute and needs to be reviewed and updated with new standard norms and more consistent.

Researchers also found that this test battery and the reference norms are suitable for the Practical Assessment and Physical Fitness Trainee Candidate Test (UKCG) entry to the IPG and to replace the existing test battery. Norms produced by the researcher have gone through the procedures of testing, measurement and evaluation which are consistent and standard. The testing instruments have had the validity and reliability and without any doubt. According to Ahmad Hashim (2004) [2], the success of an evaluation depends on the quality of the data obtained and any assessments made on the basis of the test results which are not consistent and void is inaccurate and dubious.

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