

Developing Tests and Physical Fitness Norms for Female Students in Iran

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Abstract

The purpose of this study is to develop tests and physical fitness norms of female students of Islamic Azad University of Rasht. Statistical population of the study includes all female students at Islamic Azad University of Rasht who attended in General Physical fitness courses of the university in the academic year of 2013-14. Out of 210 persons, 50% (105 persons) in the range of 18 to 47 years were selected as sample. After coordination with the trainers, for data collecting, the trainers cooperated with the researcher through four physical fitness tests, including crunch, flexibility, Sargent jump and 540 meters. Descriptive statistical methods such as Kolmogorov- Smirnov, Pearson and Spearman correlation coefficients tests were used for reporting the raw data and for statistical analysis at a significant level $P \leq 0.05$. The results showed that there is no significant relationship between age, weight, height of students with each of the physical fitness factors. Overall, the findings of the research developed tests, and appropriate physical fitness norms for the female students of Islamic Azad University of Rasht supported the hypothesis that each of these physical fitness tests and the age, weight and height of students are independent and to assess the physical fitness of the students, all the tests can be used.

Keywords: physical fitness norms, crunch, flexibility, Sargent jump and 540 m tests

Introduction

Movement is of characteristics of human life and motivated and rooted in his nature and cause of his health and vitality. Humans needs movement and activity during his historical life has been always with achieving experiences and finding new ways to meet it (Sabzmeidani, 2009). Today, society's views toward physical education and physical fitness have made fundamental and significant changes and movement experiences and different skills which formed through various exercises and games from the period before school and then completed, have been confirmed by the majority of households. For now, it has been proven for societies that better adapted with environment need to balance of physical fitness in individual. And if some individuals have not been in appropriate conditions physically, they are usually pessimistic and isolated and have not good mental balance. Considering above, the physical education coordinated the growth and development of different aspects of the human being that amongst, physical fitness has one of the most significant role and have proposed as one of convenient and practical ways to cope with physical and mental problems. Committee of the Association of Health, Physical Education and Recreation Healthy America believes that teaching physical education curriculum as a source of motivation is one of the top programs in science education planners. In fact, physical education and sports as a valuable environment agent can provide valuable environment and conditions and

requirements of different areas of cognitive, physical, and emotional skills in order to increase his ability to understand the knowledge of cognitive, emotional and psychological objectives. In this regard, certainly educational institutions can have a fundamental role to enhance this valuable agent (Kargarfard,2007).

Methodology

Statistical population

The population of the study includes all female students of non-physical education of Islamic Azad University of Rasht who are graduating in the first semester of the school year 2013-14 and select physical education (1). They were 210 persons and 50% of population (105 persons), with regard to loss of participants, 125 subjects were analyzed statistically to develop the norm. After discarding the incomplete data of 6 persons of the participants, the data of 119 persons were used for preparation of norms.

Data collecting tools in research, besides of library sources, are mainly proposed tests related to the physical fitness programs. In this study, the operating power, muscular endurance, flexibility, agility, and cardiorespiratory endurance were studied and in order to measure the muscle strength, vertical jump test, measuring muscular endurance, crunch tests, measuring flexibility, stretching hands to feet tests and to measure cardiorespiratory endurance, 540 m tests were used.

Bestifred test is a standardized test consisting of five separate tests, and measure physical features. The tests created by propose of Institute of Physical Education, Health and America recreation and globally recognized as a valid test. The test materials, in addition to assessing individual performance in terms of running and agility, strength and endurance, which is all part of the primary goals of physical education, p can be part of a good and proper program (Smith, 2000).

Instrument of the study

- Tape measure was used to measure the height of the participants.
- Scale was used to measure the weight of the participants.
- Stopwatch was used to measure time with an accuracy of hundredths of seconds.
- Location was Azodi gym salon in Rasht for doing fitness tests.

Data analysis and results

To study the type of distribution of data, Kolmogorov-Smirnov test was used. Table 1 indicates that according to the level of significance obtained data on height, weight, crunch, flexibility and Sargent jump tests, a normal distribution of data and in data related to age and 540 m, the data distribution is not normal.

Table 1. Results of Kolmogorov-Smirnov test

540 m(S)	Sargent (cm)	Flexibility (cm)	Crunch (no)	Weight (kg)	Height (cm)	Age (year)	
193/58	28/79	38/87	39/66	60/90	161/39	23/10	Mean
19/45	6/88	8/40	9/62	12/29	6/02	5/76	SD
1/45	1/01	1/09	1/11	1/13	1/12	2/70	Z
0/02*	0/25	0/18	0/16	0/15	0/15	0/00*	Sig

The study of relationships between characteristics of the participants and record tests are given in table 2. The results obtained from the Spearman correlation coefficient show that between the age of the participants with records of crunch, flexibility, Sargent jump and 540 m tests, there is

no significant relationship. This means that by norm table is independent of participants 'age and there is no need to provide age norm.

Table 2. Relationships between characteristics of the participants and record tests

540 m	Sargent	Flexibility	Crunch			
0/00	-0/05	0/10	-0/08	Correlation coefficient	Age	Pearson correlation with Spearman
0/92	0/56	0/27	0/37	Significant level		
0/41	0/04	0/12	-0/15	Correlation coefficient	Weight	
0/01*	0/62	0/17	0/08	Significant level		
0/04	0/41	0/12	0/01	Correlation coefficient	Height	
0/62	0/01*	0/17	0/85	Significant level		

By examining the results of the Pearson correlation coefficient (2) found that there is no significant relationship between the weight of the participants with the records of crunch, flexibility, and jump Sargent Jump tests and test results of the Spearman correlation coefficient also show that there is significant relationship between the weight of participants with test record of 540 ($41/0 = r$) that its coefficient of determination equal to 0.16.

According to information contained in table 2, test results of the Pearson correlation coefficient showed that there is no significant relationship between the height of the participants with record of crunch and flexibility tests and Spearman's correlation coefficient test results also showed that there is no significant relation between heights of the participants with 540 m test. There is only significant relationship between the height of the participants with record of Sargent jump test ($r = 0.41$) that its determination coefficient equal to 0.16.

Table 3. Spearman correlation for research tests

540 m	Sargent jump	Flexibility	Crunch		
-0/20	0/18	-0/02		Correlation coefficient	Crunch
0/0*	0/04*	0/82		Significant level	
0/05	0/13		-0/02	Correlation coefficient	Flexibility
0/53	0/15		0/82	Significant level	
-0/19		0/13	0/18	Correlation coefficient	Sargent jump
0/03*		0/15	0/04*	Significant level	
	-0/14	0/03	-0/15	Correlation coefficient	540 m
	0/02*	0/54	0/01*	Significant level	

The information contained in Table 3 that obtained using Pearson's correlation coefficient and Spearman correlation coefficients tests shows that there is no significant relationship between the test record of crunch with test record of flexibility but there is significant relationship between test record of crunch with test record of Sargent Jump ($r = 0.18$) and test record of 540 m ($r = -$

0.20), that the obtained determination coefficient are respectively (0.30 and 0.40). With this interpretation, we can conclude that crunch test is independent of the flexibility, Sargent jump and 540 m tests and crunch test has low accuracy in prediction of these 3 tests and in order to measure different ability of physical fitness of female students, all of norm table is needed.

By examining the relationship between flexibility tests with Sargent jump test and 540 m, respectively, the results of Pearson and Spearman's correlation coefficient show that there is no significant relationship between flexibility tests with Sargent jump and 540 m tests, and thus the flexibility test is independent of Sargent jump and 540 m tests and in the prediction, these two tests have low accuracy.

Discussion and conclusion

Analysis of the findings showed that there is no significant relationship between the age of the participants with test records of crunch, flexibility, Sargent jump and 540 m, and norm table is independent of the participants' ages and no need to age norm tables to be prepared, in other words, increasing age do not improve the records of the participants, the findings with the results of Mullah Jafari (2008), Daneshmandi et al. (2006), shabestary (1998) and Fadaee Chafy (2006) is consistent. Pooyanfar (1994) also by studying physical fitness factors of male and female students reported that male records improve with increasing age while no changes occurred in female records and no need females to have age norm (pooyanfar1994). All mentioned studies approved the results of the study in conjunction with needless of age norms. However, Kashef (1991) in a study on Iranian male and female students showed that the ability of performing 540 m around volleyball ground for males improved with increasing age and the same matter in females will be improved only up to age of 12 years and from 13 years and more will be decreased and continued until 17 years. As Kashef (1991) reported 540 m test in female need age norm until 13 years and he approves the results of the study regarding to age range of female students of Rasht Islamic Azad University (Kashef,1991). Also, Ghayyumi (2003) in a study on male physical education teachers across the country showed that the obtained results of the participants' records in the various tests of physical fitness tests are different and alter by changes in the age of the participants; it is surely due to the large variation in the age range of participants (Ghayyumi,2003). With this interpretation of our results and with the results of previous and recent studies, it seems that the age range of the participants and the gender of participants can also effect on requirement of age norms. But it seems that in female participants and in age range above 17 years that growth age and maturity are completed, as far as the large age difference between the participants not to be exist, there is no need to provide age norm, as the results of this study also confirm the matter.

The results of the research findings showed that there is no significant relationship between the weight of participants with tests record of crunch, flexibility, and Sargent Jump. The results of the Spearman correlation coefficient showed that there is no significant relationship between the weight of the participants with test record of 540 m test ($r = 0.41$) that the coefficient of determination equal to 0.16. Also, no significant relationship was observed between the height of the participants with records of crunch and flexibility tests and Spearman's correlation coefficient test results also showed that there is no significant relationship between the height participants with test record of 540 m. There is only significant relationship between the height of the participants with test record of Sargent jump ($r = 0.41$) that the coefficient of determination equal to 0.16. Therefore, with regard to the obtained determination coefficient in both cases, results show that the norm table is independent of weight and height of the participants and there is no need to prepare norm based on weight and height of the participants that this findings is content with the results of Daneshmandi et al. (2006). Daneshmandi et al. (2006), by calculating correlation between characteristics of the

participants (age, height and weight) and 6 physical fitness factors reported that from 18 existed relations, there were just 2 significant correlation but due to low range of correlation and having coefficient of determination, almost about 6 percent were realized that records of the related physical fitness were independent of studied certain characteristics of the participants (daneshmandi2006), therefore, there is no necessity to the preparation of norm tables (age, height and weight) to study the physical fitness of female students in Guilan. Also, Mir Kazemi (1998) in his study on male students showed that there is no significant relationship with height and weight of individuals and Ifred tests and only height or modified traction test has a significant relationship (mirkazemi1998). Results of Mulla Jafari's studies (2008) on high school female students of Firouzkoh, showed that there was significant and negative correlation between height and traction test ($r = -0.12$) that these coefficients show low correlation and due to the low coefficients and insignificant coefficients of determination that will be achieved, Mulla Jafari study (2008) also confirmed the needless to height and weight norms (mullajafari2008). Also, Nikbakht (1991) also reported that the rate reduces by increasing weight and by increasing height, agility will plague that a little research in this area confirm his findings (Nikbakht,1991). His findings could be influenced by the participants and sample. Overall, with regard to the results of studies as well as existed theoretical basis, it seems to use the physical fitness of Ifred tests, there is no need to prepare norms based on age, height and weight of the participants.

The results showed that there is no significant relationship between the test record of crunch with test records of flexibility and Sargent jump and there is only significant relationship between test record of crunch with test record of 540 m ($r = 0.20$), that obtained coefficient of determination equal (0.04) and is insignificant. With this interpretation, we can conclude that this crunch test is independent of the Flexibility, Sargent jump and 540 m and crunch test has low accuracy in predicting the three tests and in order to measure different capacity of physical fitness of female students, all materials in norm tables shall be measured. By examining the relationships between flexibility tests with Sargent jump and 540 m tests, respectively, Pearson correlation coefficient and Spearman's test results showed that there is no significant relationship between flexibility tests with Sargent jump and 540 m tests and thus the flexibility test is independent of Sargent jump and 540 m tests and in the prediction of these 2 tests, accuracy is low. So for the measurement of physical fitness capacities of female students, there is a need to measure all materials of norm tables. At the end, the test results of the Spearman correlation coefficient show that between test record of Sargent jump and 540 m, there is poor and significant relationship ($r = 0.19$) that its coefficient of determination is less than (0.04) which is negligible. Therefore, conclusions can be made so that the Sargent jump test is independent of 540 m test and these two tests in predicting each other have low accuracy the low accuracy. Overall, the results show that all the tests were independent of each other and in predicting each other has low accuracy and can be concluded that in order to measure of different capacities of physical fitness of female students of Rasht Islamic Azad University, measuring all of the norm tables is needed. In this way, Daneshmandi et al. (2006) also reported that among 15 dual relationships between 6 physical fitness factors, there is significant correlation in 9 cases, but in these 9 cases, the maximum correlation coefficients is 0.331 that its coefficient is less than 11%, so these 6 factors in predicting each other have low accuracy and altogether can be said for evaluating the physical fitness of the female students, these 6 factors are necessary. As it can be observed, obtained results in research of Daneshmandi et al. (2006) with the results of recent studies in relation with independent used tests in the research are consistent. While unlike recent research results, Ziaee (2003) reported that there is negative and significant correlation between records of 540 m and tract as well as crunch and flexibility (ziaee2003). Also, there is a positive and significant correlation between record of tract and crunch and flexibility records. Finally, his results showed

that there is a positive and significant correlation between crunch record and flexibility record. Flishman also in his research showed that there is a significant correlation between vertical jump records and flexibility as well as between 4*9 m or tract and jumping softball. Danaee (1998) in his study on high school students aged 15 years, observed significant and relatively strong relationship between stretching and horizontal and vertical jump ($r = -0.57$), 9×4 m and 45 m ($r = 0.60$) and between 45 m and the long jump test ($r = -0.58$) is relatively strong and significant correlation was observed (Danaee, 1998). It seems that with regard to the nature of used tests in the study including crunch, flexibility, Sargent jump and 540 m, there is no relation or at least strong and logical relations and none of used tests in the study is not independent from each other and need measurement and use all of these tests.

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