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A comparative Study of health Fitness Test Batteries between the King Abdullah II Award in Jordan with Criteria of President Award and FitnessGram in America

دراسة مقارنة للياقة البدنية المرتبطة بالصحة بين نتائج جائزة الملك عبد الله الثاني في الأردن مع جائزة الرئيس ومحكات الفتنس جرام الأمريكية

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Abstract

This paper compared the current test batteries between fitness tests in the United States and Jordan, focusing on the fitness components of students at the age of 16 years. The study sample consisted of 378 students from the 10th grade. 192 of this sample were males and 186 were females. Researchers applied King Abdullah Award tests and compared results with the American criteria (www.presidentschallenge.org) and the criteria mentioned by Baumgartner, Jackson St., Maher & Rowe, 2007, using Percentiles, Kolmogorov –Smirnov normal distribution, Skewness coefficient convolution, means, and standard deviations. Jordanian students showed weakness in all fitness parameters tested in comparison with fitness gram, while the girls (16 years) did not show a significant difference as compared with the mentioned criteria. The authors recommended the use of the percentile degree that has been built in this study by the Ministry of Education in Jordan to establish a criterion for students of all ages in Jordan.

Key Words: fitness, fitnessGram, award of the President.

المستخلص

هدفت الورقة إلى مقارنة اللياقة البدنية المرتبطة بالصحة بين نتائج اختبارات جائزة الملك عبد الله الثاني للياقة البدنية مع نتائج اختبارات اللياقة البدنية للرئيس الأمريكي والفتنس جرام، تكونت عينة الدراسة من 378 طالباً وطالبة من الصف العاشر بعمر (16) سنة. توزعوا ما بين: 192 من الذكور و 186 من الإناث. تم تطبيق اختبارات جائزة الملك عبد الله الثاني للياقة البدنية وتمت مقارنتها بمعايير جائزة الرئيس الأمريكي، ومحكات الفتنس جرام، وتم حساب النسب المئوية، التوزيع الطبيعي كولموغوروف-سميرنوف، معامل الالتواء، والانحرافات المعيارية، أظهر الطلاب الأردنيون ضعفاً في جميع معايير اللياقة التي تم اختبارها مقارنة بنتائج "فتنس جرام" للياقة البدنية، بينما الفتيات (16 عاماً) لم تظهر لديهن فروق معنوية مقارنة بالمعايير الأمريكي، وأوصى الباحثون وزارة التربية والتعليم في الأردن باستخدام الدرجة المئوية التي تم بناؤها في هذه الدراسة ووضع معايير للياقة البدنية للطلاب بجميع الأعمار.

الكلمات المفتاحية: اللياقة البدنية، جائزة الملك عبد الله الثاني للياقة البدنية، الفتنس جرام، جائزة الرئيس.

Introduction

Fitness is an important topic that has been studied since the 1950s, especially after (Kraus & Hirschland, 1954) study which indicated weakness in American children compared with European child, in the mid-1970s and 1980s many studies emerged to find batteries for physical fitness like Taxes Youth Fitness Test,(1973), Manitoba Physical Performance Test,(1977), South Carolina Test,(1978), AAHPERD HRFT,(1980- 1984), Fit Youth Today,(1986), FITNESSGRAM Presidents Challenge,(1994). Winsley, (2006) indicated that fitness is the ability of an individual to carry out daily life, also Deiry (2014),(Morrow, jr., Mood, D., Disch, j &., Kang (2016) indicated that technically, physical fitness involves measures and levels of muscular strength, Deiry (2009) mentioned that the judgment of the individual that he is inappropriate or improper shape must use criteria to compare the results with the individuals in the same age and gender, domestically or internationally. Safrit & Looney, (1992) and Morrow et al, (2016) emphasized that criterion is very important for students to compare themselves with others. Hence this study is to compare the fitness level in Irbid schools with President Award and FITNESSGRAM criteria in America at the age (16) years.

Literature Review

Body fitness has been one of the most prominent issues being studied since the early 50's, and especially after the study conducted by (Kraus & Hirschland, 1954) which pointed out that the fitness level of American children is very weak compared to that of European children. Ever since the USA has been nurturing the fitness level of children in schools. In addition, in the late 70's they were keen on finding statistical standards and restructuring them. In the 1980's a lot of physical batteries have been found such as (Texas Youth Fitness Test: 1973, Manitoba Physical Performance Test: 1977, South Carolina Test: 1978, AAHPERD HRFT: 1980-1984, Fit Youth Today: 1986, FITNESSGRAM Presidents Challenge: 1994).

(Winsley 2000) pointed out that fitness can be defined as the ability of a normal person to do their daily errands efficiently without showing the symptoms of fatigue, and the ability to perform tasks in their free time. (Morrowjr., et al,2011) Defined it as acquiring or restoring the physical abilities connected to good health, and those are essential to perform daily activities and facing expected and unexpected physical challenges.

(AL-deiry, 2009) mentioned that in order to judge someone as fit or unfit proper standards must be used to compare his results with those of others in the same age and gender group both locally and internationally. (Safrit and Looney, 1992), (Morrow et al, 2016) argue that statistical standards used to grade students are beneficial in enhancing programs and distinguishing excellence on a local and national level.

And from the previous studies that are related to the current study is the study (dairy 2009)-which aimed to enhance the fitness level of 17-year-old students in both Jordan, UAE, and Egypt and find differences between them. Other studies (Almomani, 2013; Albre & Harahsheh, 2014; Albataineh &thers 2012) that have been conducted in the Jordanian environment pointed out that fitness levels among students in schools are weak. The study of (Abu Salah, 2010) aimed to identify the fitness level connected to health in high school students in Tulkarem; Palestine, one of its most important results indicated that the current level of fitness has decreased when compared to international levels.

The King Abdullah II Award for physical excellence – which began in 2004 – aims to motivate students to take part in different physical activities and make them adopt more healthy and active lifestyles. This Award is similar to the award of the American president (2005 – 2010).

This study was conducted to find the fitness levels due to the unavailability of them in the schools of Irbid and the ambiguousness in finding the status quo of students at the local or national level. Thus, the researchers were keen to

commence the study on 16-year-old students and compare the results to the American standards.

Research Questions:

1. What are the results of the fitness tests conducted on 16-year-old students for both males and females in IRBID school?
2. What are the percentiles for the results of the fitness tests for 16-year-old male and female students in the schools of IRBID?
3. Are there any statistical differences at ($\alpha \leq 0.05$) for the results of tests of fitness among students at age (16) year in schools of IRBID compared with some fitness tests in American Batteries?

Material & methods

Study Procedure: The descriptive approach has been used because it fits the nature and goals of the current study.

Study Sample: A sample of 378 male and female students from the 10th grade of Irbid schools. The sample has been distributed between 192 male students and 186 female students in the 16-year-old criteria.

Used Tests: The tests used in this study are the same as those used in King Abdullah II Award in Jordanian schools in order to compare it with the Criteria, and the following criteria (Baumgartner, Jackson St., Maher & Rowe, 2007) has been used:

Table 1: Criteria of some fitness tests batteries in America

Tests	**Curl-Ups(in 60 sec)	**Shuttle Run	**Sit & Reach(cm)	*Endurance One Mile(min:sec)	*90 Push-Up(Every 3 sec)
Male Criteria	45	9.4	30	8.30	18
Female Criteria	35	10.9	34	10	7

*FITNESSGRAM **Presidents Challenge

Results

First Question: What are the results of the fitness tests conducted on 16-year-old students for both males and females in the schools of (IRBID)?

Figures (1-10) answer the question as follows:

Kolmogorov-Smirnov normal distribution, level of statistical significance, Skewness, Means, and standard deviations for males Figures (1-5)

FIGURES

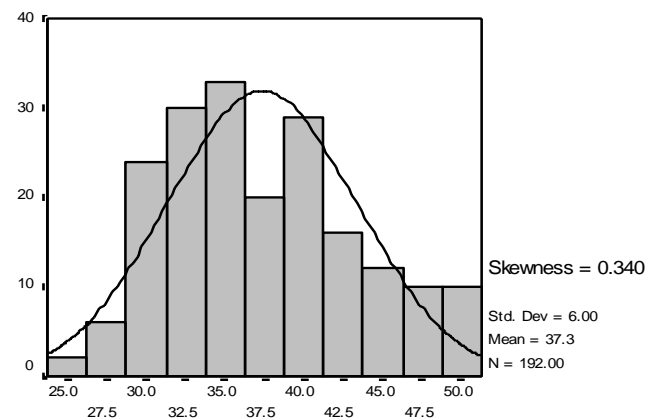


Fig (1) sit ups (Kolmogorov- Smirnov Z = 1.31 , Sig: 0.064)

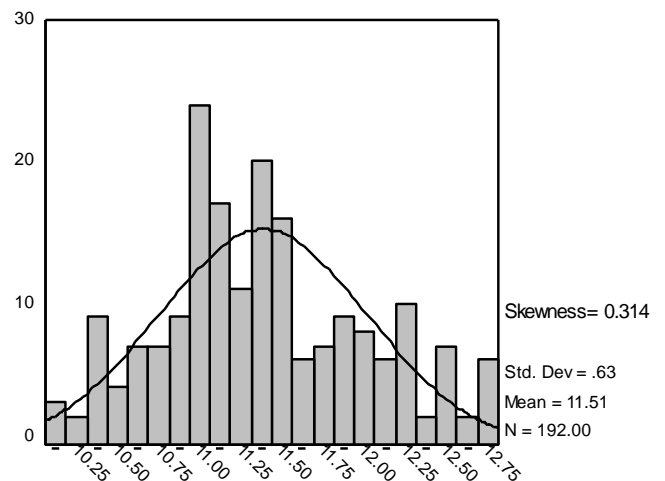


Fig (2) Shuttle Run (Kolmogorov- Smirnov Z= 1.26 Sig: 0.085)

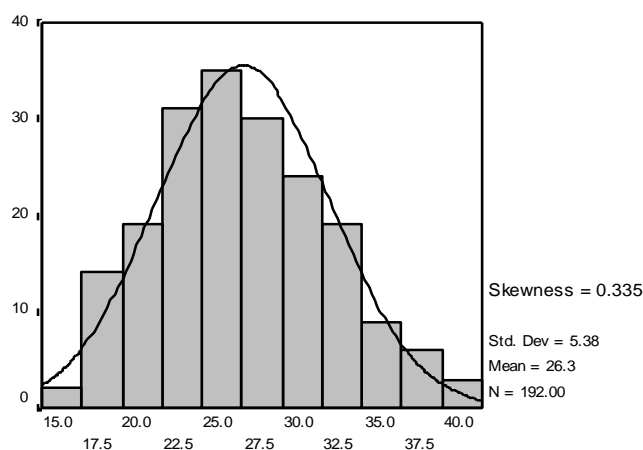


Fig (3) Sit & Reach (Kolmogorov- Smirnov Z= 1.11 Sig: 0.170)

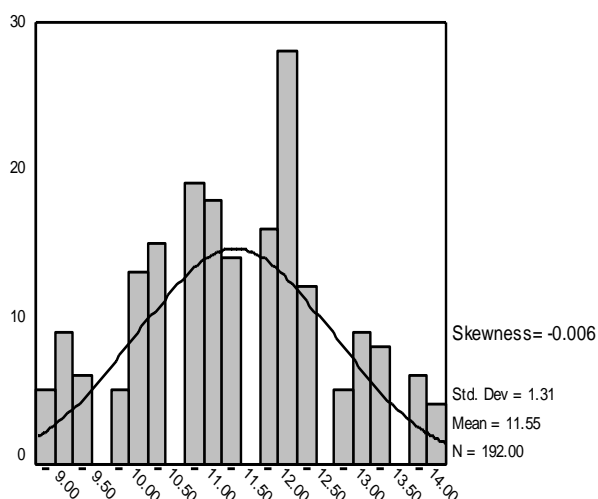


Fig (4) Endurance (Kolmogorov- Smirnov Z= 1.31 Sig: 0.066)

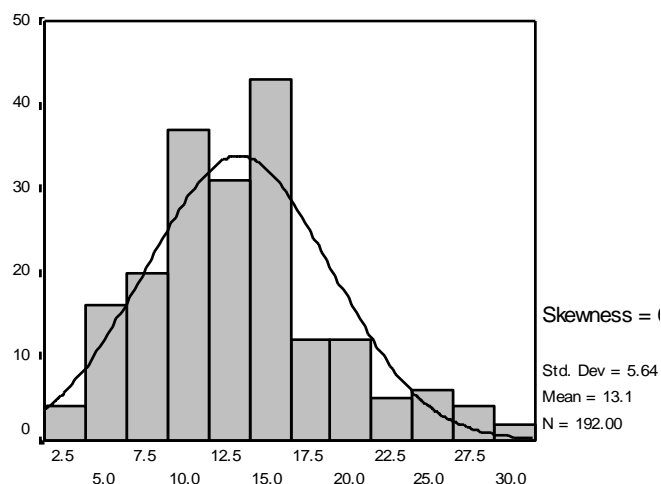


Fig (5) Push ups (Kolmogorov- Smirnov Z= 1.30 Sig: 0.068)

It is obvious from the figures (1-5) for the male results that all of them fit in the Kolmogorov-Smirnov normal distribution with statistical semantics of more than 0.05 and skewness within (+3) which show homogenous results. The figures also showed means and standard deviations for the tests respectively: $(37.3 \pm 5.99, 11.51 \pm 0.628, 26.3 \pm 5.38, 11.55 \pm 1.31, 13.11 \pm 5.64)$

Kolmogorov-Smirnov normal distribution, level of statistical significance, Skewness, Means, and standard deviations for females. From figures (6-10) show the results:

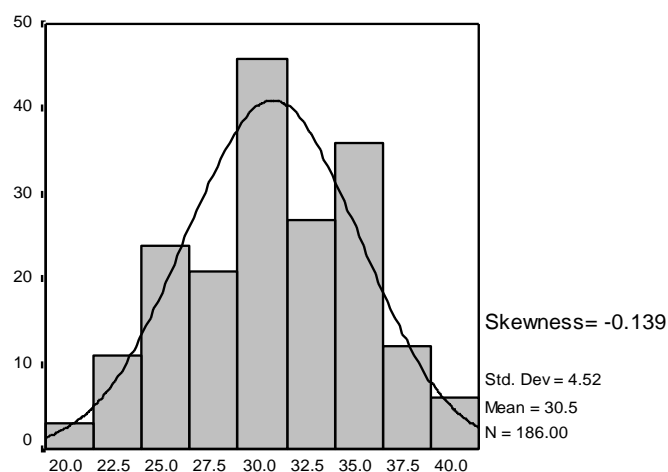


Fig (6) Sit Ups (Kolmogorov - Smirnov Z= 1.04 Sig: 0.229)

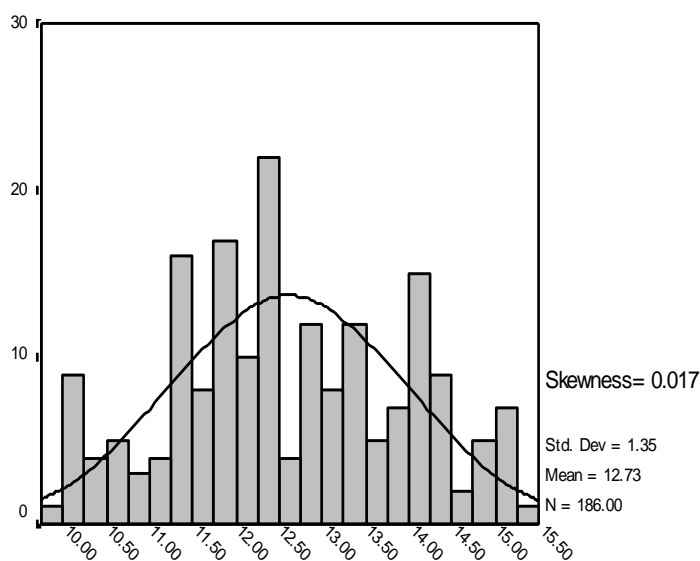


Fig (7) Shuttle Run (Kolmogorov- Smirnov Z= 0.976 Sig: 0.229)

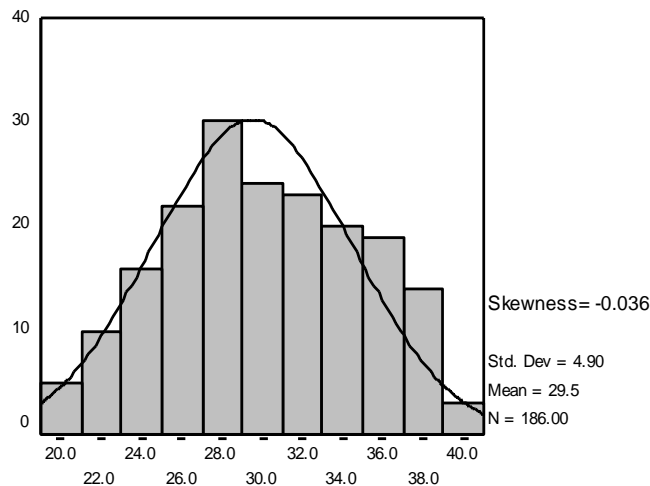


Fig (8) Sit & Reach (Kolmogorov- Smirnov Z= 0.929 Sig: 0.354)

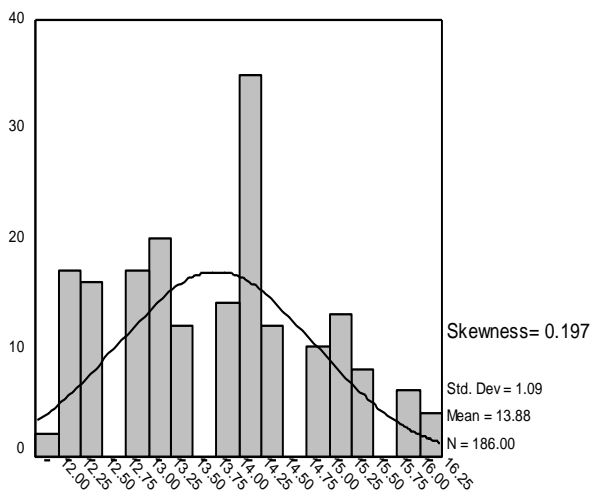


Fig (9) Endurance 1 Mail (Kolmogorov- Smirnov Z= 1.33 Sig: 0.058)

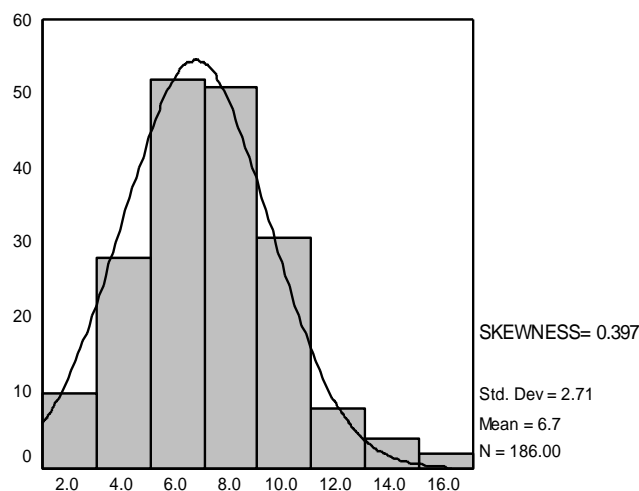


Fig (10) Push Ups (Kolmogorov- Smirnov Z= 1.16 Sig: 0.137)

We can see from figures (6-10) for the female's results that they all fit in the Kolmogorov-Smirnov normal distribution with Statistical semantics greater than 0.05, Skewness coefficient was within ± 3 indicating homogenous results for the samples. The figures also show means and standard deviations for the fitness result respectively: $(3-.53 \pm 4.52, 12.73 \pm 1.35, 29.52 \pm 4.90, 13.88 \pm 1.09, 6.69 \pm 2.71)$

Second question: What are the percentiles for the results of the fitness tests for 16-year-old male and female students in the schools of (IRBID),?. To answer this question we calculated the percentiles (0-10) as presented in Table (2)

Table (2) score percentile fitness tests for students of schools of Irbid Jordan age (16),

	Percentiles	Curl-ups	Shuttle Run	Sit & Reach	Endurance one mile	Push-up
Male	10	30	12.40	19	13.33	6
	20	32	12.11	22	12.45	8
	30	33	11.81	23	12.25	10
	40	35	11.62	25	12.00	11
	50	37	11.44	26	11.47	13
	60	38	11.23	28	11.23	14
	70	41	11.12	29	11.00	15
	80	43	11.00	31	10.41	17
	90	47	12.76	33	9.42	21
	Range	24	2.70	23	5.32	27
Females	10	24	14.52	23	15.31	3
	20	26	14.20	25	15.00	4
	30	28	13.57	27	14.37	5
	40	30	13.02	28	14.15	6
	50	31	12.56	29	14.00	7
	60	32	12.29	31	13.47	8
	70	33	11.95	32	13.23	9
	80	34	11.58	34	13.00	10
	90	36	10.83	36	12.27	12
	Range	20	5.35	20	4.30	15

It is obvious from table (2) that the percentiles for the fitness tests ranged between the minimum value for the corresponding percentile and rank (10) and the highest value of the corresponding class percentile (90).

Third Question: Are there any statistical differences at $(\alpha \leq 0.05)$ for the results of tests of

fitness among students age (16) years in schools in Irbid compared with some fitness tests in American Batteries? To answer this question, we calculated the Mean and Standard deviation and On Sample T-test, in order to be able to compare the criterion grade as a cut-off score, as shown in Table (3):

Table (3) averages and deviations and pieces and test One Sample T-test

	Tests	Means	Std-Deviation	Criteria Degree (Cut Score)	One Sample T. test	Sig
Male N=192	Curl ups	37.34	5.99	45	13.07	0
	Shuttle Run	11.51	0.628	9.4	46.54	0
	Sit and Reach	26.32	5.38	30	9.48	0
	Endurance One Mail	11.55	1.31	8.30	34.39	0
	Push ups	13.11	5.64	18	12.01	0
Females N=186	Curl ups	30.54	4.52	35	13.47	0
	Shuttle Run	12.37	1.35	10.9	18.50	0
	Sit& Reach	29.52	4.90	34	12.46	0
	Endurance one Mail	13.88	1.09	10	48.45	0

	Push-ups	6.69	2.71	7	1.54	0.125
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Table (3) shows that there are statistical differences at ($\alpha \geq 5$) for all the fitness tests between Jordanian students from Irbid and the cutoff points for the American fitness test batteries criteria, except in the female Push up tests where no statistical differences were found between the two parties.

Discussion

It can be concluded from the results that all of them fulfilled the homogeneity conditions and normal distribution. This is due to the accuracy and size of the samples used, as well as controlling the macro factors affecting the test results, it could also be used in diagnosing the fitness level of students. (Crocker and Algina 2009) indicated that a criterion gives us information about sample performance in comparison with another certain criterion or credible sample, (Alhammouri & Alkahlout, 2009) (Odeh 2010) and (Allam, 2011) indicated the importance of the percentiles in feedback and exploring strengths and weaknesses and deciding student level on comparison with his peers.

Overall, the study showed a clear weakness in all the elements of fitness for all students in the 16-year-old criteria at the School of Irbid in Jordan compared with some American fitness batteries, and the results were very similar to the study of (Almomani, 2013; Albare & Harahsheh 2014), and this weakness is mainly due to the lifestyle of the Jordanian student against that of the American student which can be characterized by little movement, reliance on modern transportation and the use of technology for many hours without doing a single physical activity, as well as not having any fitness programs applied actively, and the sufficiency of only a one-hour physical education class per week.

Conclusions

- 1- All the results of the chosen fitness tests fulfilled the homogeneity and normal distribution conditions.

- 2- The average level of all the fitness tests held for 16-year-old male/female students is known.
- 3- Percentiles ranging from (10-19) degrees for all the fitness tests have been constructed.
- 4- The Results showed a clear weakness in all the fitness tests held for 16-year-olds in Irbid Schools against the batteries in the American President's Fitness Award, except for the female push-up test.

Conflicts of interest

The researchers emphasize the importance of using percentiles to evaluate the students at Irbid School. In addition, the Ministry of Education needs to pay attention to and care about these results.

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