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A study of burpee jump and sit and reach in relation to the performance of free style wrestlers

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Abstract

Introduction: The performance of players in various sports may be influenced by the anthropometric, physical and the physiological characteristics and may also aid in determining a suitable physique required for a sport.
Methods: The physical variables such Burpee jump and Sit and reach as have been selected to assess the physical condition of the wrestler's. A survey type study has been designed for descriptive analysis of wrestler's physical characteristics Data was collected from 30 male wrestlers of each weight categories i.e. 57 kg, 61 kg, 65 kg, 70 kg and 74 kg.
Results: The results revealed that the f-value of different weight category of variable Burpee jump and Sit and reach The f-value of the ANOVA came out to be 5.24 and 0.54 be, respectively ($P<001$) which was highly significant at 0.01 level of confidence.
Conclusion: The correlation between performance score and physical variables among the players of 57, 61, 65, 70 and 74kg weight categories. The f-value Burpee Jump of the ANOVA came out to be 5.24, which was significant at 0.05 levels. The f-value (Sit and Reach) of the ANOVA came out to be 0.54, ($P<001$) which was not significant at 0.01. No significant relationship was found with performance score.

Keywords: burpee jump, sit, reach, wrestlers

Introduction

Wrestling is culture in India, where wrestlers has to work hard for preparation of the game. Wrestler has to look after his wrestling skills as well as healthy habits, character, discipline, diet, behavior etc. They are the role model for the society. The people of the society encourage them by providing financial and other support and respect because they are the leaders, roll model of the society. They felicitated after their achievement or success in the wrestling championship.

A wrestler upper and lower body are well shaped and having good anaerobic and aerobic cap city (Horswill 1992, Kraemer *et al*. 2001; Sharratt *et al*. 1986) [2, 4]. Much research has been explained that although for achieving high level of performance aerobic power is one of the fundamental requirements of wrestlers (Horswill 1992; Yoon 2002) [2, 1]. Many studies were conducted on wrestlers for investigating their physical and physiological profile at various level of competition that determine their individual differences which contribute to success (Song and Garvie 1980) [5]. Although a very few studies investigated physical and physiological traits which determine success in modern wrestling. In last 20 years many rules has been changed in wrestling and an evolution has come in training. Modern training and new scoring system of wrestling make wrestling more competitive and athletes performance is increased at international level.

Anthropometry is a well-recognized earliest form of body measurements in field of physical education and sports. It may include measurement of height, weight and other body parts including circumferences, diameters and length of body segments. For the successful participation in athletic activities one need specific body type and proportions that help to perform better. By knowing the major characteristics of each body type one can easily classified body into different categories. European wrestlers' anthropometric and physical characteristics were described few decades ago and found similar to weightlifters and throwers.

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They had short legs, wide & powerful shoulders, great muscular strength with massive muscles. A scientist guessed that there was a genotype from which the wrestler-type created by methods for preparing. These perceptions don't seem to apply to the commonplace American novice wrestler of today. Perhaps the persistent advancement of the guidelines administering the game' has selectively affected the sort of physical make-up which describes the better contender at a given period, yet the way that an examination of two arrangements of German information dismantled a few years demonstrated an inclination for the effective expert wrestlers of that nation to transform from a pyknic-strong sort to a solid athletic sort recommends that different components are likewise included.

Methods and Procedure
The performance of players in various sports may be influenced by the anthropometric, physical and the physiological characteristics and may also aid in determining a suitable physique required for a sport. Studies from various parts of the world have assessed the anthropometric and physiological profile of players from different sports, but there is paucity of data on these variables in wrestling players from Haryana therefore an attempt has been made to assess the Physical variable that might be associated to performance in male wrestling players. The physical variables such as speed and explosive strength have been selected to assess the physical condition of the wrestler's. To test theses motor abilities Burpee Jump and Sit and Reach have been selected respectively. A survey type study has been designed for descriptive analysis of wrestlers' physical characteristics.

The subjects of the present study has been purposively selected from the inter college level, University level, Senior State level, National Level and international players. Data was collected from 30 male wrestlers of each weight categories i.e. 57 kg, 61 kg, 65 kg, 70 kg and 74 kg.

Table 1: Descriptive statistics of burpee jump among players of different weight categories of freestyle wrestler

Weight Categories	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval		Minimum	Maximum
					Lower	Upper		
Weight 57	30	17.87	1.78	0.32	17.20	18.53	14	21
Weight 61	30	17.07	1.53	0.28	16.50	17.64	14	20
Weight 65	30	17.67	1.67	0.30	17.04	18.29	14	21
Weight 70	30	16.20	1.58	0.29	15.61	16.79	12	19
Weight 74	30	16.93	1.28	0.23	16.45	17.41	14	19
Total	150	17.15	1.66	0.14	16.88	17.42	12	21

Table 1 shows the descriptive statistics of burpee jump among different weight categories of freestyle wrestler. The table revealed that mean, SD, scores for Weight 57 came out to be 17.87 and 1.78, respectively. The table further revealed that mean score for Weight 61 was 17.07 and SD was 1.53. Burpee jump's mean score for Weight 65 came out to be 17.67 and SD was 1.67. For Weight 70, mean score was 16.20 and SD was 1.58. Mean Score for Weight 74 was 16.93 and SD was 1.28. Finally, the mean score for total sample was 17.15 and SD was 1.66. The graphical representation of the responses has been presented in the Figure 1 below;
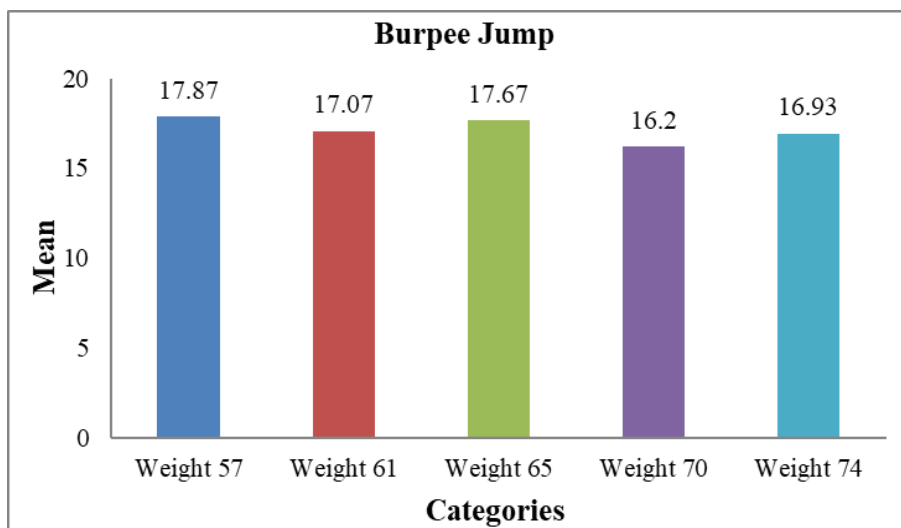

Fig 1: Mean comparison of burpee jump among players of different weight categories of freestyle wrestler

Table 2: Analysis of Variance (ANOVA) of burpee jump value among players of different weight categories of freestyle wrestler

Source of Variance	Sum of Squares	Df	Mean Square	F-value	p-value
Between Groups	52.11	4	13.03		
Within Groups	360.67	145	2.49	5.24	0.01**
Total	412.77	149			

**Significant at 0.01 level

Table 2 revealed the Analysis of Variance (ANOVA) of different weight categories of freestyle wrestler on burpee jump value. The sum of squares of between groups came out to be 52.11 and for within groups sum of squares was 360.67. The f-value of the ANOVA came out to be 5.24, which was significant on 0.01 level of confidence.

Table 3: Descriptive statistics of sit and reach test among players of different weight categories of freestyle wrestler

Weight Categories	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval		Minimum	Maximum
					Lower	Upper		
Weight 57	30	16.40	7.27	1.33	13.69	19.11	0	25
Weight 61	30	18.63	5.80	1.06	16.47	20.80	0	25
Weight 65	30	16.63	7.08	1.29	13.99	19.28	0	25
Weight 70	30	16.73	6.24	1.14	14.40	19.06	0	25
Weight 74	30	17.37	7.10	1.30	14.72	20.02	0	25
Total	150	17.15	6.68	0.55	16.08	18.23	0	25

Table 3 shows the descriptive statistics of sit and reach test among different weight categories of freestyle wrestler. The table revealed that mean, SD, scores for Weight 57 came out to be 16.40 and 7.27, respectively. The table further revealed that mean score for Weight 61 was 18.63 and SD was 5.80. Sit and reach test's mean score for Weight 65 came out to be 16.63 and SD was 7.08. For Weight 70, mean score was 16.73 and SD was 6.24. Mean Score for Weight 74 was 17.37 and SD was 7.10. Finally, the mean score for total sample was 17.15 and SD was 6.68. The graphical representation of the responses has been presented in the Figure 3 below;
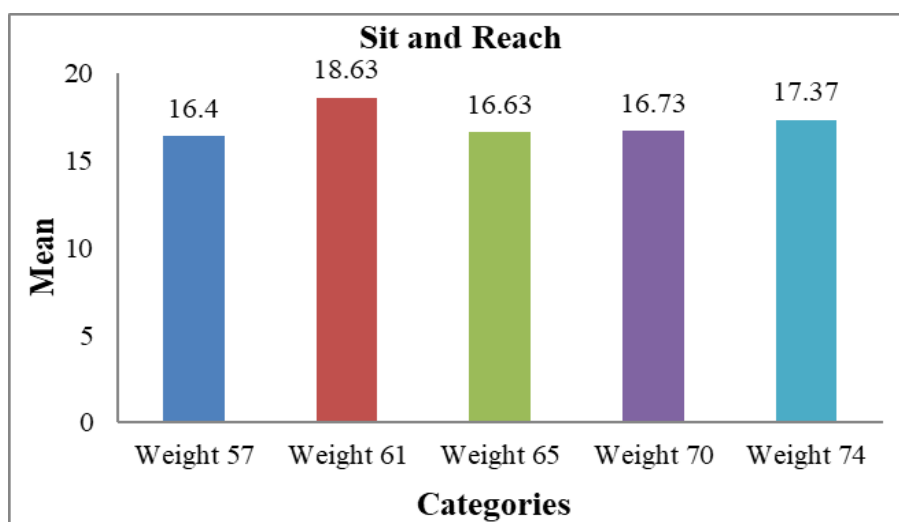
Fig 2: Mean comparison of sit and reach test among players of different weight categories of freestyle wrestler

Table 4: Analysis of Variance (ANOVA) of sit and reach test among players of different weight categories of freestyle wrestler

Source of Variance	Sum of Squares	df	Mean Square	F-value	p-value
Between Groups	97.51	4	24.38	0.54	0.07
Within Groups	6553.97	145	45.20		
Total	6651.47	149			

Table 4 revealed the Analysis of Variance (ANOVA) of different weight categories of freestyle wrestler on sit and reach test. The sum of squares of between groups came out to be 97.51 and for within groups sum of squares was 6553.97. The f-value of the ANOVA came out to be 0.54, which was not significant on 0.05 level of confidence.

Conclusion
The f-value Burpee Jump of the ANOVA came out to be 5.24, which was significant at 0.05 levels. The f-value (Sit and Reach) of the ANOVA came out to be 0.54, ($P<001$) which was not significant at 0.01. The correlation between performance score and physical variables among the players of 57, 61, 65, 70 and 74kg weight categories, no significant relationship was found with performance score. The study done by Chaabene, H (*et al*.) 2017 [3] has been in line with the present study as he also revealed that Physical fitness variables such as maximal dynamic strength, isometric strength, explosive strength, and strength endurance are very closely related to high-level wrestling performance. However, as the identification of physical variables relevant to success is important for the selection of young athletes and the preparation of appropriate training programmes.

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