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Factorial structure for specific physical fitness variables of wrestlers

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Abstract

Games and sports are the part and parcel of our cultural heritage and have been given an important place in the human society right from the primitive days. In ancient times, the Greeks were the founders of the Ancient Olympic Games. These games were started with the first Olympiad in 776 B.C. The Greeks may be credited with the initiative for developing the competitive spirit in man on a mass scale. This competitive spirit was not only evident in the field of sports but also in the fields of art, literature and science. The current article discusses the factorial structure for specific physical fitness variables of wrestlers.

Keywords: Athlete, wrestler, sports

1. Introduction

The very word "Athlete" which is very commonly used in sports these days has its origin in the Greek language. The Greeks gave a prominent place to wrestling in their competitions. There was no weight category and most of the wrestlers belonged to heavy weight, there was no ring, but the spectators for competitions formed an arena. There were no rounds, the wrestlers had to continue their bout until or unless an opponent acknowledged defeat by raising hands or till he was fully exhausted. Today, games and sports have acquired an even greater importance in contemporary society.

The Union Government of India and the state governments have established separate departments under the charge of Cabinet Ministers. Now a lot of encouragement and incentives are offered to the outstanding sportsmen and women on the basis of their performance in various International Competitions.

Researchers have developed many new methods based on scientific techniques for enhancing performance in the various disciplines. In comparison to many body contact sports, wrestling requires a higher standard of physical fitness. In the modern world, every sport depends upon physical fitness but the wrestlers need not only a higher physical fitness level to perform well in the wrestling bout but also need to maintain a consistent performance in all the rounds.

Physical fitness is an integral part of total fitness, as it is gradually becoming more recognized as a vital element to good living. People think too often that the term "fitness" is used for health related fitness or medical fitness. The AAHPER clearly reveals that one should view physical fitness only as a part of total fitness. The term physical fitness is often misused, normally people opt to regard it as a freedom from disease and sickness. Passing some medical examination does not merely mean only physical fitness but it simply means medical fitness. This is a negative view while the term physical fitness has a positive sense. A physically fit person is not only free from any ailment but also possesses motor fitness and better functional capacity of the various systems of the body particularly cardiovascular system and respiratory system.

Sports and exercise psychology has been defined as the scientific study of people and their behaviors in sports and exercise context and the practical application of that knowledge. Where there is behavior, there is psychology.

Physical education and sports make an art-science combine dealing with movement, motion, activity, play, recreation and the like.

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In essence, they are activity based endeavors; in function, they are enhancers of health and fitness; in objective, they are developmental to the core; in nature, they are joyful, recreating and relaxing, and in purpose, they are and ought to be out and out educational.

Psychology in physical education or exercise has its focus on general processes and procedures of learning, motivation, play, growth and development etc. In sports its concerns become more or less specific. Besides, skill-acquisition, greater emphasis is on psychological training, coping strategies, interventions, mental skills and the like. Both in activity and psychological dimensions, the sport-perspective is much more specific than physical education scenario. The psychological problems of performing athletes are more subtle, serious and complex than of those who engage in physical activity for fun, fitness, health, recreation and play. That, perhaps, is the reason why activity behavior has been subjected to more vigorous research in sports context than play or exercise context over the last four decades.

1.1 Review of related literature

HC Kozhen (2010) ^[1] defined “fitness is used to provide us with a unified and total concept, conveying the idea of wholeness for a particular person within his particular experiences of time and place. In everyday speech, we recognize the “specificness” of fitness in such phrases as ‘fit for job’, ‘fit to teach’, ‘fit to fight’ and ‘fit to compete’. These are the concrete perceptions of the individual adequacy to meet the social demands with which he is faced. Such perceptions help us to understand the idea of fitness in participation in physical activities”. One can say that the physical fitness is the basic need of sportsmen and women that also contributes to specific fitness in a particular sport.

Dr. Bud Getchall (2013) ^[2] a well-known physical fitness expert defines physical fitness as “the capability of heart, blood vessels, lungs and muscles to function at optimal efficiency”. According to him the basic components of physical fitness include: - 1) Muscular strength - the ability of a muscle to contract maximally against a resistance. 2) Muscular Endurance - the ability of a muscle to contract repeatedly over a long period of time. 3) Flexibility - the ability to move a muscle or joint through a full range of motion. 4) Cardio respiratory Endurance - the ability of the cardiovascular and respiratory systems to transport oxygen and function efficiently during exercise over a long period of time. Strength is essential in modern wrestling and wrestling falls in the category of sports defined as “strength-dependent” by Wrigley (2010) ^[7].

Wrestling events performed in a tournament setting and thus require multiple matches within a single day and on successive

days. Therefore, wrestling tournaments present various physiological stresses (Horswill, 2012) ^[3]. Because a wrestling match requires strength of the upper and lower body musculature for various wrestling techniques, evaluation of these variables may be important to determine athletic performance capacity.

A serious scanning of the researches conducted in the area of management of sports/physical education reveals that very few studies have been conducted to study the organizational health and adjustment of physical education teachers. This inspired the investigator to take up a study on this field.

1.2 Research methodology

The Inter co-relation amongst 21 physical fitness test variables was computed and the principal axis method of rotation was applied. The combined unrotated and rotated factor loadings have been given in Table. Through the application of factor analysis eight rotated factors emerged out of 21 variables. Rotations of the factors are necessary in order to reduce number of variables to meaningful ones. The unrotated factor matrix was subjected to rotation.

1.3 Analysis

Only those variables which have loading higher or equal to ± 0.30 considered significant (Fleishman, 1964). On the basis of factor loadings only eight factors have been emerged as significant which have been related to specific physical fitness for the wrestlers, the factors have been shown in Tables.

In Table-3, Factor-1 includes seven variables, the first three are representative of strength and have a high loading of the strength of arms and legs in the form of Push Ups 0.86, Chin Ups 0.67 and Sit Ups 0.62. The loading of other two factors such as Punching Speed 10 Sec is 0.76 and Punching Speed 30 Sec is 0.68, both these factors are related to the speed of arms of the wrestlers.

The last two variables at Sr. No.6 and 7 are related to agility factor such as 6x10 Meters Shuttle Run have the loading of 0.73 and the Burpee Test 0.52 loading. All the seven variables are related to the growth of wrestlers and can be called as the growth factor. In Table-4, Factor-11 is the representative of Agility and Flexibility. Among the variables Side Step Test had 0.87 loading and Burpee Test had 0.43 loading, both the rotated factors are representing agility whereas Bridge Test that had the loading of 0.63 is representing the flexibility. Results of this factor show that the wrestlers should have higher rate of agility as they have to shift their body from one direction to another direction quickly in the wrestling ring that is necessary for the better performance. So this factor can be called as agility factor.

Table 1: Unrotated Factors Loading

S.No	Test Variables	Factors							
		I	II	III	IV	V	VI	VII	VIII
1.	Push Ups	.71	.31	-.28	.17	.20	.23	.09	-.01
2.	Chin Ups	.63	.41	-.07	-.16	.13	.27	.24	.25
3.	Standing Broad Jump	.18	.39	.31	-.18	-.51	.26	-.13	-.03
4.	Sargent Jump	-.23	.79	-.22	.03	-.30	.13	-.05	.14
5.	Medicine Ball Throw (LH)	-.05	-.26	.79	-.02	.09	.27	-.14	-.11
6.	Medicine Ball Throw (RH)	-.04	-.40	.60	.29	.29	.28	-.10	-.14
7.	Sit Ups	.69	.02	.05	.07	.16	.23	-.32	.02
8.	60 Meters Run	-.60	.21	-.11	-.18	.56	.07	-.13	-.11
9.	30 Meters Run	.21	.07	-.35	.45	.63	.21	.00	-.02
10.	Punching Speed (10 Sec)	.77	.11	.14	.22	-.11	-.00	.11	-.35
11.	Punching Speed (30 Sec)	.73	-.05	-.30	.08	-.08	-.10	.00	-.28
12.	1500 Meters Run	-.11	-.06	-.49	.65	.11	.38	.02	.01
13.	6-Minutes Run/Walk	.56	-.25	.06	-.58	.18	-.19	.09	.03
14.	5 x 2 Minutes Run	.75	-.26	.09	-.36	-.03	-.24	-.08	.14
15.	Bridge Test	.33	-.67	-.08	.03	-.07	.20	-.08	.04
16.	Forward Bend & Reach Test	.19	.25	.53	.18	.22	-.02	-.03	.53
17.	Fleishman's Dynamic Flexibility Test	.08	.22	-.11	-.56	-.18	.46	-.19	-.25
18.	Side Step Test	-.29	.46	.37	.06	.16	-.31	.26	-.36
19.	Envelope Run	-.15	-.47	-.06	-.09	-.19	.33	.65	.08
20.	6 x 10 Meters Shuttle Run	-.71	-.14	.21	-.30	-.25	.23	.13	.01
21.	Burpee Test	.44	.30	.46	.00	.25	.10	.38	-.09

Table 2: Rotated Factor Loadings

S.No	Test Variables	Factors							
		I	II	III	IV	V	VI	VII	VIII
1.	Push Ups	.86	-.09	-.16	.06	.06	.06	-.00	.11
2.	Chin Ups	.67	-.02	-.21	-.17	.12	.28	.19	.40
3.	Standing Broad Jump	.06	.09	.04	-.05	-.32	.73	-.05	.12
4.	Sargent Jump	-.07	.35	-.35	.37	-.05	.55	-.15	.31
5.	Medicine Ball Throw (LH)	-.16	.03	.85	-.13	-.07	.14	.01	.14
6.	Medicine Ball Throw (RH)	-.02	-.04	.87	.10	-.02	-.17	.02	.07
7.	Sit Ups	.62	-.32	.21	-.12	-.02	.13	-.26	.14
8.	60 Meters Run	-.30	.27	.04	.20	.75	-.04	-.16	-.02
9.	30 Meters Run	-.00	-.01	-.10	-.07	.89	-.01	.06	-.06
10.	Punching Speed (10 Sec)	.76	.11	.15	-.14	-.42	.07	-.02	-.13
11.	Punching Speed (30 Sec)	.68	-.16	-.16	-.19	-.24	-.06	-.07	-.32
12.	1500 Meters Run	.22	-.28	-.06	.79	.08	-.24	.10	-.09
13.	6-Minutes Run / Walk	.27	-.16	-.00	-.83	.11	-.04	.09	-.01
14.	5 x 2 Minutes Run	.36	-.31	-.01	-.76	-.20	-.02	-.07	.05
15.	Bridge Test	.13	-.63	.25	-.14	-.15	-.16	.18	-.19
16.	Forward Bend & Reach Test	.11	.10	.22	-.06	-.10	-.05	-.14	.80
17.	Fleishman's Dynamic Flexibility Test	.08	-.11	-.03	-.13	.29	.75	.02	-.25
18.	Side Step Test	-.08	.87	.10	.03	.02	-.04	-.07	.00
19.	Envelope Run	-.16	-.17	.04	.01	-.04	-.07	.87	-.10
20.	6x10 Meters Shuttle Run	-.73	.08	.15	.08	.11	.28	.35	-.06
21.	Burpee Test	.52	.43	.29	-.20	-.01	.08	.20	.31

Table 3: Factor-1

S.No.	Name	Rotated Factor Loading	Unrotated Factor Loading
1.	Push Ups	0.86	0.71
2.	Chin Ups	0.67	0.63
3.	Sit Ups	0.62	0.69
4.	Punching Speed (10 Sec.)	0.76	0.77
5.	Punching Speed (30 Sec.)	0.68	0.73
6.	6x10 Meters Shuttle Run	-0.73	-0.71
7.	Burpee Test	0.52	0.44

Table 4

S.No.	Name	Rotated Factor Loading	Unrotated Factor Loading
1.	Side Step Test	0.87	0.46
2.	Burpee Test	0.43	0.30
3.	Bridge Test	-0.63	-0.67

2. References

1. Andie Me, Kozhen, Katch. Exercise Physiology London Hery Kimpton Publishers, 2010.
2. Getchall BC. Physical Fitness level of Canadian and South African School Boys. Dissertation Abstracts International. 2013; 36:5912.
3. Horswill HM. Physical Fitness Programs, London, Lea and Felign Co., 4th Edition, 2012.
4. Barrow McGee. A practical approach to measurement in physical education, Philadelphia: Lea and Febiger, 2009.
5. Canadian amateur wrestling association. Level III coaching manual, Ottawa, Ontario, K1G3N3, Tyrell Press Ltd., Publication, 2013.
6. Clair Jennett W. An introduction of Tests of Agility, Completed Research in Health, Physical Education and Recreation. 2010; 2:44.
7. Wrigley AL. A first course in factor analysis, New York: academic press, 2010.