

Construction of Specific Physical Fitness Test for Cricket Players

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Abstract – The purpose of the study is to construct specific physical fitness test for cricket players. The study was delimited to 500 randomly selected state level male cricket players from central zone. Following items constitute specific physical fitness test battery for male cricket players from central zone are Pull-Ups for Arm Strength, Bent Knee Sit-ups for Abdominal Strength, Standing Broad Jump Test for Leg Strength, 30 Meter Dash for Speed, Cooper 12 min Run Walk Test for Endurance / Aerobic Capacity, Phosphate Recovery Test for Anaerobic Capacity, Bridge-Up Test for Flexibility, Dodging Run Test for Agility, Six Second Dash Test for Reaction Time, Bass Stick Test for Balance and Coordination.

Key Words:- Specific Physical Fitness, Cricket, Strength, Aerobic Capacity, Anaerobic Capacity, Speed, Endurance, Flexibility, Agility, Reaction Time, Balance and Coordination.

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INTRODUCTION

The general fitness is the pre-requisite for all the sports, which include Strength, Speed, Aerobic Capacity, Anaerobic Capacity, Endurance, Agility, Reaction Time, Flexibility, Balance and Coordination whereas specific fitness varies from sport to sport. In certain sports the strength component of fitness is a dominating factor whereas in other sports endurance, speed and agility may be required for achieving better results. However the physical Fitness is a very important aspect of cricket performance with physically prepared cricketers proven to perform better, more consistently and with fewer injuries. The physical attributes of strength, speed and endurance enables a cricketer to bat with power over long periods of time, bowl faster and with greater accuracy, and to field athletically. Every cricketer has a different role, position, action or technique and fitness training should recognize these differences and be programmed accordingly. A well-structured training program for a cricketer must consider the individuals training history, injury history, training age, positional requirements, technical execution and training objectives. The physical fitness may be classified as general physical fitness and specific physical fitness. The Study was delimited to 500 randomly selected state level male cricket players from central zone, who was participate in minimum state level tournament of central zone. The study was also being delimited to the construction of specific physical fitness test for male cricket players from central zone. The study was also being delimited to the only male cricket

player's. Variations in performance due to climatic conditions, ground conditions, player's physical factors and psychological factors that might affect the study was considered as the limitation of this study. The purpose of the study is to construct specific physical fitness test for male cricket players from central zone.

PROCEDURE

500 (Five hundred) male cricket players from central zone were randomly selected for this study. The age group of the subject ranged between 15 to 19 years. The data on selected test items was collected from male cricket players from central zone. Before the testing programmed was organized, the research scholar assembled the entire cricket players together to brief them on the nature, the modalities and the objectives of the present investigation and demonstrating the various test so they could have a clear mental picture of the various test they were going to take part.

SPECIFIC PHYSICAL FITNESS TEST ITEMS

The various Specific Physical Fitness Test items was selected i.e. Strength, Speed, Endurance/Aerobic Capacity, Anaerobic Capacity, Flexibility, Agility, Reaction Time, Balance and Coordination, for this study.

TABLE - 01

LIST OF SELECTED TEST ITEM

S. NO.	FITNESS COMPONENT	TEST
1	Strength	1. Vertical Jump (Leg Strength) 2. Standing Broad Jump (Leg Strength) 3. Bent Knee Sit-ups (Abdominal Strength) 4. Four Levels Abdominal Strength Test (AST) 5. Push-ups (Shoulder Strength) 6. Pull-ups (Arm Strength)
2	Speed	1. 30 Meter Run 2. 50 Meter Run
3	Aerobic Capacity	1. Cooper 12 Min. Run / Walk Test 2. 600 Yard Run
4	Anaerobic Capacity	1. Phosphate Recovery Test 2. Harvard Step Test
5	Flexibility	1. Modified Sit and Reach Test 2. Bridge up Test
6	Agility	1. Dodging Run Test 2. Boomerang Test
7	Reaction Time	1. Nelson Hand Reaction Time Test 2. Six Second Dash
8	Balance and Coordination	1. Lateral Jump 2. Bass Stick Test

The help of qualified coaches and experts of physical education took taken by the research scholar for administering the test on the subjects. The research scholar takes special care to explain the test and the testing procedures to the helpers and to the subjects. The subject was directed to come in proper playing kit during the performance of the test. Research scholar motivated the subjects to perform each test items enthusiastically with the spirit of competition and to know their standard of physical fitness. Factor analysis technique was used a tool to select test items out of 20 test items best suited to measure specific physical fitness of male state level cricket players at from central zone which was serve as a comprehensive specific physical fitness test. The Correlation Matrix of the inter-correlation between the 20 test items was obtained by applying Person's Product Movement method. The factor analysis technique was applied by using the principal component analysis (unrotated factor loading and varimax rotation). Final Solution so obtain was used to identify different factors. These factors were given an appropriate name depending upon the characteristics of the variables contained in it. Finally, a test battery was prepared by picking up variables having the highest loading from each other.

TABLE - 02

DESCRIPTIVE ANALYSIS OF 9 FITNESS TEST ITEMS

S.NO.	TEST VARIABLES	UNIT	MEAN	SD
1	VERTICAL JUMP	METERS	43.58	3.10
2	STANDING BROAD JUMP	METERS	2.08	0.19
3	BENT KNEE SIT-UPS	NUMBERS	46.40	6.28
4	FOUR LEVELS ABDOMINAL STRENGTH TEST	NUMBERS	37	3.01
5	BALL THROW FOR DISTANCE	METERS	75.26	7.96
6	PULL-UPS	NUMBERS	19.08	4.28
7	30 METER RUN	SECONDS	5.18	0.32
8	50 METER RUN	SECONDS	8.10	0.55
9	12MIN RUN/WALK TEST	METERS	2630.0	175.06
10	600 YARD RUN TEST	SECONDS	104.76	9.11
11	MODIFIED SIT AND REACH TEST	CENTI-METER	71.27	9.26
12	BRIDGE UP TEST	CENTI-METER	54.70	11.37
13	DODGING RUN TEST	SECONDS	14.26	2.96
14	BOOMERANG TEST	SECONDS	16.08	1.45
15	NELSON HAND REACTION TIME TEST	SECONDS	13.05	1.27
16	SIX SECOND DASH	METERS	0.28	0.04
17	LATERAL JUMP	NUMBERS	33.20	2.87
18	BASS STICK TEST	NUMBERS	25.03	2.5
19	HARVARD STEP TEST	HARVARD INDEX	98.70	4.03
20	PHOSPHATE RECOVERY TEST	NUMBERS	107.33	6.48

TABLE -03

ROTATED FACTOR LOADINGS

(Varimax Solution)

S.N.	TEST VARIABLES	FACTORS								
		I	II	III	IV	V	VI	VII	VIII	IX
1	VERTICAL JUMP	.77	.80	.11	.09	.23	.18	.13	.54	.27
2	STANDING BROAD JUMP	.80	.94	.36	.52	.37	.38	.53	.37	.34
3	FORE LEVEL ABDOMINAL TEST	.30	.86	.27	.34	.39	.64	.71	.62	.67
4	BENT KNEE SIT-UP	.60	.06	.40	.37	.39	.52	.63	.67	.72
5	BALL THROW FOR DISTANCE	.48	.62	.81	.36	.48	.49	.62	.79	.68
6	30 METER RUN	.66	.72	.38	.94	.49	.18	.27	.36	.43
7	50 METER RUN	.39	.42	.54	.57	.78	.27	.44	.48	.37
8	DODGING RUN TEST	.60	.71	.13	.18	.27	.33	.22	.94	.14
9	BOOMRANG TEST	.51	.37	.38	.42	.17	.23	.79	.27	.52
10	LATERAL JUMP	.19	.17	.26	.23	.27	.11	.22	.13	.80
11	NELSON HAND REACTION TIME TEST	.41	.63	.24	.57	.22	.47	.13	.52	.62
12	BRIDGE-UP TEST	.54	.33	.41	.42	.57	.63	.89	.67	.44
13	COOPER 12 MIN. RUN WALK TEST	.48	.49	.63	.68	.87	.31	.53	.21	.62
14	MODIFIED SIT & REACH TEST	.27	.39	.54	.35	.41	.68	.56	.26	.41
15	PHOSPHATE RECOVERY TEST	.13	.27	.52	.63	.34	.79	.28	.37	.57
16	600 YARD RUN TEST	.21	.34	.43	.80	.13	.27	.39	.41	.52
17	BASS STICK TEST	.27	.19	.19	.44	.41	.13	.37	.28	.41
18	PULL-UP TEST	.56	.74	.94	.38	.45	.54	.64	.67	.48
19	SIX SECOND TEST	.13	.40	.63	.52	.23	.27	.37	.36	.91
20	HARVARD STEP TEST	.37	.41	.37	.47	.53	.71	.60	.81	.57

TABLE-04

FINAL TEST BATTERY OF SPECIFIC PHYSICAL FITNESS FOR STATE LEVEL MALE CRICKET PLAYERS OF CENTRAL ZONE

S.N.	FACTOR MEASURED	TEST ITEM	FACTOR LOADING
1	Strength (Arm)	Pull-ups	0.94
2	Strength (Leg)	Standing Broad Jump	0.94
3	Strength (Abdominal)	Bent Knee Sit-ups	0.80
4	Speed	30 Meter Dash	0.94
5	Aerobic Capacity	Cooper 12 Min. Run / Walk Test	0.87
6	Anaerobic Fitness	Phosphate Recovery Test	0.79
7	Flexibility	Bridge-Up Test	0.89
8	Agility	Dodging Run	0.94
9	Reaction Time	Six Second Dash Test	0.91
10	Balance & Coordination	Bass Stick Test	0.81

CONCLUSION

The factor analysis technique yielded ten specific physical fitness items as the factors. A test battery of 10 items developed by the scholar who has the ability to predict the specific physical fitness of male cricket players from central zone. 10 test items namely Pull ups (Arm-Strength), Standing Broad Jump (Explosive Strength of Legs), Bent knee Sit ups (Abdominal Strength), 30 mts Run (Speed), Cooper 12 min Run Walk Test (Endurance), Modified Sit and Reach Test (Flexibility), Dodging Run Test (Agility), Six Second Dash Test (Reaction Time Ability), Bass Stick Test (Balance & Coordination), Phosphate Recovery Test (Anaerobic Capacity) indicated a highly significant relationship with the performance of cricket players.

REFERENCE

Corbin Charles B. et. al. (2000). Concept of Physical Fitness, nited States: The McGraw- Hill Publishers.

Melvin H. Williams (1999). "Nutrition for Health Fitness and Sports", United States: The McGraw- Hill Publishers.

- Kansal D.K. (1996). "Test and Measurement in Sports and Physical Education" D.V.S. Publication: New Delhi.
- K. Uppal (1992). Physical Fitness-How to Develop, Delhi: Friends Publication.
- H. Hagg and R Singer (1979). "Development of a Test to Measure Motor Fitness", Proceedings of the xxii World Congress of Physical Education and Evaluation.
- Gulfam Ahamad, S.K. Naqvi and M.M. Sufyan Beg (2012). "A study of talent identification in models in sports and parameters for talent identification in cricket", International Conference on Physical Education and Sports Sciences, November 16-18, 2012.
- Orchard J, Newman D, Stretch R, Frost W, Mansing A, Leipus A. (2005). Methods for injury surveillance in international cricket. J Sports Sci.; 8(1): pp. 1-14.
- Stretch RA, Venter DJL (2005). Cricket injuries – a longitudinal study of the nature of injuries to South African cricketers. S Afr J Sports Med; 17 3): pp. 4-9.
- Von Hagen K, Roach R, Summers B (2000). The sliding stop: a technique of fielding in cricket with a potential for serious knee injury. Br J Sports Med; 34: pp. 379-81.
- Wallis R, Elliott B, Koh M (2002). The effect of a fast bowling harness in cricket: an intervention study. J Sports Sci.; 20(6): pp. 495-506.

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