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Construction and standardization of pitching test in baseball

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Abstract

The study titled “Construction and Standardization of Pitching Test in Baseball” was conducted on under 18 male baseball players. The main objective of this study was to Construct and standardized an appropriate ‘Pitching skill test’ to select junior baseball Players. The study was limited for under 18 male baseball players of Maharashtra State. 511 subjects were selected for the study from 13th and 14th Junior State baseball Championship. The study was delimited to Pitching skill test which is necessary for the outstanding performance of pitching in the game baseball. Researcher not found any appropriate test battery after going through a range of study reviews, books, and published articles. Then the Researcher selected most important skill of baseball for the study. That is pitching. The test was standardized by determining the objectivity, reliability and validity. Test retest method was used for reliability, correlation between different observers for objectivity and face validity were taken in to consideration for the standardization of the test.

The ‘r’ value of Validity of skill tests found **1**. The Reliability of skill test found **0.700** and the Objectivity of skill test found **1**. These are significant at the 0.01 level. Descriptive analysis was done by testing the Mean, Median and Standard Deviation. The normality of the scores was tested through skewness and kurtosis. The distribution of scores resides in the normal range of probability curve. The performance norms of skill test were graded as poor, fair, average, good, and excellent on the basis of Rank order method.

The findings indicate that the baseball players must be selected on the basis of pitching test so that the team gets better pitchers for pitching. The ‘Tests’ can be successfully administered to discriminate between baseball players for selection. Selection Committee and coaches can use these Tests as “selection criteria” for District, University, State, National and International baseball Teams. This study will give players a guideline and target to prepare themselves for selection. Hence researcher recommends the use of test, norms and grading prepared.

Keywords: construction, standardization, baseball, pitching.

Introduction

The games like Baseball and Softball were not that popular in India and it was at initial stage. Compare to European or U.S.A. players our Indian players don’t have that much overall technique and tactics of both the games. If we want to compete with European or U.S.A. players we have to raise the standard of physical fitness, technique and tactics of our Baseball players. Whenever the researcher observes the game of European or U.S.A. players the main difference he observed that the hitting, fielding and accuracy of those pitchers were very high standard compare to Indian players. By the nature of the game, baseball is very dependent on the physical qualities of power and speed in base running, batting and throwing. Skillful players can score high and help to restrict the score of opponents; obviously it helps to win the match. We will get good results if we select the players having the skills and qualities of base running, batting, catching, throwing and pitching. But the researcher surprisingly noticed that no standardized skill tests are available for Baseball at present. Therefore the proper selection criterion is highly essential to select the quality players from the available sources. Pitching skill is highly important skill in baseball. Matches can win through the good score and to restrict the opponents score; best quality pitching is essential. That is why the researcher decided to work on this topic, Construction & Standerdization of Pitching Test in Baseball. Researcher had gone through the same study conducted on the game korfbal for collegiate players of Pune University [1].

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Objectives of the study

- To design and construct Pitching Test in Baseball
- To standardized the constructed Pitching Test in Baseball
- To prepare norms Pitching Test for junior level Baseball players.

Method

This study needs survey of baseball players to prepare norms that's why researcher used survey method [2] for it.

Population and Sample

The study is delimited to junior (Under 18) state level male baseball players from Maharashtra state. All the male baseball players from 13th and 14th junior Maharashtra state level baseball championship held in Baramati and Sangli respectively in 2013 and 2014 were selected as a sample (N=511).

Equipments

The equipments used for the test were measuring tape, 3 official baseballs, pitching target, official home plate, official pitcher plate, whistle, officially marked ground, scorecards, etc.

Procedure

- Permission from Maharashtra State Baseball Association was granted for data collection for both the years.
- Assistance from trained persons was taken during the data collection.
- The sample was informed about the objectives of the study.
- Demonstration and one trial were given to each subject before final data collection.
- Pitching test was conducted for all the samples one by one and collected the data.

Description of the test

As over hand pitch is used in baseball it is necessary to understand the kinsiological analysis [3] of pitching style before designing the test. Researcher had gone through the books like Training the pitcher? [4] to understand baseball pitching. After that the researcher studied the book regarding test and measurement [5] to understand test construction.

- The subject should stand on the pitcher plate holding the baseball in his hand, wearing the official glove in his proper hand and touching both the foot palms to pitcher plate facing towards the pitching target.
- When the whistle blows the pitcher pitch the ball towards the pitching target following official action of baseball pitching.
- The pitch can be attempted from the pitcher plate.
- The tester should intimate the pitch signal by whistle.
- The test should last till the three pitches get over.
- Each subject will be allowed to get ready in 30 seconds for next pitch.

Scoring:

- The number of successful pitch will be considered for the scoring. Each successful pitch will get marks accordingly where the ball hits the target and unsuccessful pitch get zero. The rating is 1 to 3.

Scoring Pattern

- After the talk with experts and observation of few matches researcher come for the conclusion that the ball passes through the home plate and the area between two batter boxes is called a legal pitch. On the same time it should pass through the zone from knee to shoulder height of the batter who is in batting stance. It is called a legal pitch zone or fair pitch zone. Taking in consideration of the height of an average Indian if the batter is ready for batting in proper stance then the distance from ground to his shoulder is approximately 47 inches. That's why the 0" to 47" height is given to the pitching target.
- The researcher divides the pitching target in to four parts: Ground to 0", the first pitching zone is 0" to 17", the second pitching zone is 17" to 27", the third and last pitching zone is 27" to 37 and last one is 37" to 47". The researcher observes many matches and came to the conclusion that the batter can hit easily the pitch in first pitching zone i. e. from ground to knee height. The pitch in the second pitching zone is not that much easy to hit which goes through the knee height to the waist level. But the pitch which is in third pitching zone i. e. from the waist level to the chest level height and forth zone from chest to shoulder is very difficult for the batter. Many of them don't attempt strike on it. If they attempt the strike on it, it goes to a foul strike or it goes for a catch. After observing it, the researcher decides the pitching zones and rates them from 1 to 3 points from easy to hard i. e. starting from ankle to shoulder.

Data Analysis

For the analysis of collected data SPSS version 20.0 and Microsoft Office Excel 2007 were used as a tool. Descriptive statistics was used for obtaining mean and standard deviation [6]. The percentile method was used to prepare the norms. This test is constructed to measure the pitching ability and accuracy of the pitcher. Pitchers had given 3 chances per pitcher and the score per chance was 3 that mean total marks were 9.

The Descriptive of Pitching Test

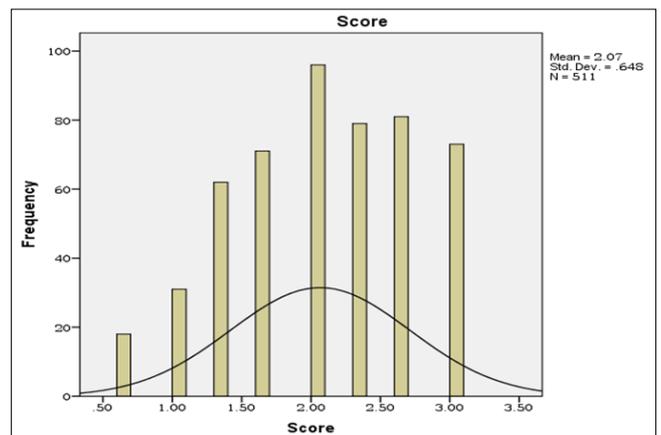


Fig 1: Histogram of Pitching Test

Table 1: The Descriptive Statistics of Pitching Test

N	Valid	Score	Distance
	Missing	511	511
		0	0
	Mean	2.0654	31.5167
	Median	2.0000	32.0000
	Mode	2.00	29.33
	Std. Deviation	.64805	7.92971
	Variance	.420	62.880
	Skewness	-.264	-.454
	Std. Error of Skewness	.108	.108
	Kurtosis	-.825	-.145
	Std. Error of Kurtosis	.216	.216
	Range	2.33	32.34
	Minimum	.67	12.33
	Maximum	3.00	44.67

Result based on scores

From the **table 1** it is clear that the Mean of score for pitching test is 2.0654. We can say that the skewness and kurtosis of scores are normally distributed.

Result based on distance

From the **table 1** it is clear that the Mean of distance for pitching test is 31.5167. We can say that the skewness and kurtosis of distance and time are normally distributed.

Table 2: Percentile Norms of Pitching Test

Statistics	Score	Distance	Grade
N	Valid	511	511
	Missing	0	0
5	1.0000	13.0000	Grade "C"
10	1.3300	21.3300	
15	1.3300	23.6700	
20	1.3300	25.3300	
25	1.6700	26.3300	
30	1.6700	27.0000	
35	1.6700	29.3300	
40	2.0000	29.6020	Grade "B"
45	2.0000	30.2680	
50	2.0000	32.0000	
55	2.3300	33.3300	
60	2.3300	34.0000	
65	2.3300	35.5360	
70	2.6700	36.6700	
75	2.6700	38.3300	Grade "A"
80	2.6700	38.6700	
85	2.6700	40.0000	
90	3.0000	42.0000	
95	3.0000	43.3300	
99	3.0000	44.6700	

From the **table 2** it is clear that the players obtain grade A can achieve the score of 3 points and distance over 42". Those who obtain grade B can achieve the score of 2 points and distance over 29.6020" to 41. 99." Those who obtain grade C can achieve the score of 1 point and distance over 13" to 29.6019.

Result and Discussion

- The statistical analysis clearly showed that the Mean of Pitching test score is 2.0654 whereas the distance of Pitching mean is 31.5167. From the skewness and kurtosis of scores we can say that the scores are normally distributed.
- Result of norms based on scores showed that when the

players having Pitching test score is 1.0000 then the players gets 5 percentile, whereas when players Pitching test score is 2 then the players gets 50 percentile and players record score is 3.0000 then players gets 99 percentile.

- Result of norms based on distance showed that when the players distance of pitching is 13.0000 then the players gets 5 percentile, whereas when players distance of pitching is 32.0000 then the players gets 50 percentile and players distance of pitching is 44.6700 then players gets 99 percentile.

Conclusion

- Pitching test can measure the pitching skill of junior male baseball Players.
- Pitching test is Valid, Reliable and Objective.
- The norms of the test are gradable and can be useful to identify junior male baseball pitcher having a good level of skill performance.

Recommendation

One can study and prepare norms for other skills of baseball like hitting, throwing base running and catching.

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