CONSTRUCTION OF UNDERHAND PITCHING TEST FOR NATIONAL LEVEL SOFTBALL PLAYERS

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Abstract

The purpose of the study was to construct underhand Pitching tests in softball. The test was conducted on Two hundred male softball players who participated in senior national softball championship held at Eklavya Stadium, Agra (U.P.) from 12th to 19th Jan. 2003, were selected to serve as subjects for this study. The criterion measure was the average of the playing ability scores of the softball players assigned independently by three softball experts. The specific skill tests were developed through objective methods. Data for this was collected by administering tests initially on following skills with its two different variations for Pitching skill i.e., Under hand Pitching and Underhand Pitching for Accuracy. Reliability of data (N=20) was established for each selected specific skill and was found to be significant for Underhand pitching (0.858), Underhand pitching accuracy (0.824). For assessing the scientific authenticity of the selected specific skill tests, validity of the specific skill tests were established by using Pearson's product moment correlation, i.e. the test scores with the softball playing ability scores assigned independently by three softball experts. Inter class correlation coefficients by analysis of variance method was employed to compute the reliability and objectivity of the tests. Validity of the selected specific skill tests were also found to be significant for, Underhand pitching (0.831), Underhand pitching accuracy (0.698).Thus one specific skill test out of the two with higher validity values from each skill variation selected for Underhand pitching. Further the differential validity was found when the scores of District, State and National level softball players were compared for each specific skill test separately for Underhand pitching (F=98.31), were significant at 0.05 level. Thus Least Significance Difference (L.S.D) test for Post-Hoc comparison resulted in Mean difference values greater than the critical difference values among District, State and National level players on each selected test.

Keywords: Performance, Softball, Throwing and Speed.

Introduction

Skillful movements are made possible by highly advance control and regulation process of motor coordination. To understand skill and to derive guidelines for its improvement, skill tests are needed. In the game of softball at advanced level of play, players must possess the ability to think quickly, charge the ball, throw on the run, bunt and place hit and pitch with accuracy. Although new skills are introduced at this level, continuous emphasis should be placed on developing specific skills. Quickness, accuracy and excellence in every aspect of the game should be a meaningful theme for all practices. Furthermore the skill tests are designed to promote players "concentration and preparedness through performance of skills in game like situations." The science of testing sports skills is not very old. The virtue of skill testing is a subject of ongoing debate. As usual with the new branch of development, there have been frequent revisions of the tests constructed for evaluating sports skills. Thus researcher felt the need to develop the underhand Pitching test for national Level softball Players.

Procedure and Methods

Two Hundred Male softball players who participated in Senior national Softball championship held at Eklavya Stadium,Agra (U.P) from 12th to 19th January ,2003 were selected as subjects for this study. Official Softballs manufactured by Bhaseen Sports Private Limited approved by Softball Association of India were used throughout this study. The Criterion measure was the average of the playing ability scores of softball players assigned independently by three softball experts. The coaches and experts were consulted at the personal level to conduct the tests on softball players, and a rapport was established with them for the testing programme. The researcher approached each player after giving proper and timely information before the tests were conducted. Before administering the tests the subject were briefed about the purpose of the study and details of all the tests were explained to them. They were also given sufficient number of trials to enable them to become familiar with the tests. To ensure uniform testing conditions, the subjects were tested in the morning and evening sessions.The two tests for underhand pitching tests were administered as mentioned below.

Underhand Pitching

To measure the ability of pitching and accuracy. The test may be conducted on senior national male softball players. The target was rectangular in shape representing the strike zone as shown in Figure 2a. The bottom of the target was 8 inches from the floor. The target was distinguished by different areas, outer area (40x10) inches, centre area (20x20) inches, top area (20x10) inches and bottom area (20x10) inches. The area was marked by 1 inch wide line. A 24 inch long pitching plate or a line was kept 46 feet from the target. The subject

took practice pitches, then pitched ten underhand trials to the target. The subject kept one foot on the pitching plate and took a step forward while delivering the ball. Only legal pitches were scored. Balls hitting the centre area (20x20) inches box or boundary line counted 5 points, balls hitting the outer area (40x10) inches counted 3 points and pitches hitting the top and bottom area (20x10) inches counted 1 point. The score was the sum of the points scored on 10 pitches. A maximum score of 50 points was possible on this test. The best of three trials was the score of the subject. Practice trials were given to the players prior to the test.The subject was permitted to change the ball if he considered that it couldn't be gripped properly due to change in its shape.Balls hitting the lines scored the higher point value for the area covered by that line.

Underhand Pitching for Accuracy

To measure the accuracy with which a softball can be pitched. The test may be conducted on senior national male softball players. A indoor hall or outdoor space adjacent to a smooth wall, target, softballs, measuring tape etc. A rectangular red colour target 20-inch wide and 40-inch high was marked on the wall 10 inches above the floor as shown in Figure-2b. A pitching line 24 inches long and 6 inches wide was marked 46ft from the target and parallel to it. The player was asked to perform 20 underhand pitches. One foot was kept on the pitching line with a step forward while delivering the pitch. Pitched balls hitting in the center area or its boundary line (20x20) inches counted 5 points; the outer area i.e. top and bottom area of rectangle (10x10) inches counted 1 point. A maximum score of 100 points was possible in this test. The best of three trials was the score of the subject. Practice pitches were given to the players prior to the test.The subject was permitted to change the ball if he considered that it cannot be gripped properly due to change in its shape. Balls hitting the lines scored the higher point value for the area covered by that line.

Discussion of Findings

The data with regard to each of the independent variable i.e underhand Pitching and Underhand Pitching for Accuracy were computed to establish validity for each specific skills of softball. Differential validity was found when the scores of District, State and National level softball players were compared for each specific skill tests separately. Further Wherry-Do-Little Method of multiple correlation and regression equations were used to determine the best combination of tests for establishing this softball test-battery. Reliability, objectivity and validity of softball test-battery scores were computed. The norms were prepared for each selected specific skill of softball for two hundred subjects. Findings : For validity estimate and for establishing differential validity means and standard deviations of all the selected specific skill tests and the criterion were computed and the data pertaining to this has been presented in Table-1.

TABLE-1

MEANS AND STANDARD DEVIATIONS OF SELECTED PITCHING SKILL TESTS AND THE CRITERION

Tests	Means	SD
Underhand Pitching	28.0	5.55
Underhand Pitching for Accuracy	54.1	14.74

Pearson's product moment correlation was used for correlating the test scores with the playing ability scores for establishing the validity of specific skill tests. The data pertaining to this has been presented in Table-2.

TABLE - 2

RELATIONSHIP OF TESTS TO THE CRITERION

Variables Correlated	Correlation Coefficient (r)
Underhand Pitching	0.831
Underhand Pitching for Accuracy	0.698

* Significant at 0.05 level

It is evident from Table-2 that there is a significant relationship between independent variables and the criterion out of the two tests one with higher validity values amongst Pitching skill test variations selected was , underhand pitching. To compare the performance in specific skill tests among softball players of District, State and National level (N=20), the means and standard deviations were computed and the data pertaining to this has been presented in Fig-1.

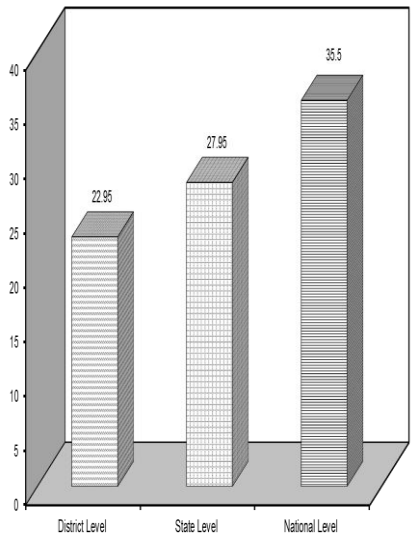

Fig. no. 1: MEANS AND STANDARD DEVIATIONS OF DISTRICT, STATE AND NATIONAL LEVEL SOFTBALL PLAYERS ON SELECTED SPECIFIC SKILL TESTS

Further comparison of the performance in various tests in softball was made among District, State and National level softball players (N=20), so as to find out if the tests differentiate among District, State and National level softball players. The data pertaining to comparison among District, State and National level softball players has been presented in Table-4

TABLE - 3
ANALYSIS OF VARIANCE AMONG DISTRICT STATE AND NATIONAL LEVEL SOFTBALL PLAYERS ON UNDERHAND PITCHING

Source of Variance	Sum of Squares	df	Mean Squares	F ratio	tab F
Between Groups	1596.7	2	798.35	98.31*	3.16
Within Groups	462.9	57	8.12		
Total	2059.6	59			

* Significant at 0.05 level of significance

It is evident from Table-19 that District, State and National level softball players on underhand pitching test differ significantly, as the calculated F-value of 98.31 is much more than tabulated F.05 (57,2) = 3.16. As the F-ratio was found to be significant, Least Significant Difference (L.S.D.). Test of Post-Hoc comparisons was applied to study the significance of difference between District, State and National level players in underhand Pitching. Data pertaining to this has been presented in Table-4.

TABLE - 4
SIGNIFICANCE OF DIFFERENCE BETWEEN THE ORDERED PAIRED MEANS ON UNDERHAND PITCHING AMONG DISTRICT STATE AND NATIONAL LEVEL SOFTBALL PLAYERS

Mean Scores			Paired Means	Critical Difference
District	State	National		
22.95	27.95	-	5.0*	
22.95	-	35.5	12.55*	1.8*
-	27.95	35.5	7.55*	

* Significant at 0.05 level of significance

It is evident from Table-20 that there were significant differences among District, State and National level softball players in underhand pitching test in softball as the means differences of 5.0, 12.55 and 7.55 are respectively higher than the critical difference of 1.8* and is significant at 0.05 level. Hence, there is significant difference among District, State and National level softball players on underhand pitching. Further the reliability and objectivity of the test was established, inter class correlation values for underhand pitching test was 0.890 at 0.05 level of significance was considered reliable. Test-retest method was used to establish the objectivity of underhand pitching skill tests in softball. All the subjects were given three trials by three different testers and inter class correlation coefficient by analysis of variance method was employed to compute the objectivity of all the test items. Analysis of data for objectivity estimates of specific skills of softball has been presented in Table -5

TABLE-5
ANALYSIS OF VARIANCE FOR OBJECTIVITY ESTIMATES OF UNDERHAND PITCHING (N=200)

Source of Variance	Sum of Squares	df	Mean Squares	F ratio	tab F
Subjects	16164.79	199	81.230		
Trials	34.63	2	17.31	1.353*	3.02
Interaction	5090.03	398	12.78		
Total	21289.46	599			

* Significant at 0.05 level of significance

Softball is a competitive game. Players compete against each other whenever they go on to the field to play a game. If winning is of primary importance in competition than the performance the player gives in the game is the determining factor in winning. Further researcher prepared Percentile ranks for indicating the relative position of an individual in a group and also indicates the percentage of the group that scored below a given score.

Conclusions

Within the limitations of the present study the following conclusions were drawn:

- The specific Underhand Pitching skill tests showed significant relationship with softball playing ability.
- The newly developed specific Underhand pitching skill tests meet the criterion of scientific authenticity i.e. the tests were reliable, objective and valid.
- The underhand pitching tests were deemed to be meaningful in representing the specific skills of softball players.

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