CHAPTER IV

RESULTS AND DISCUSSION

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RESULTS AND DISCUSSION

4.1. OVERVIEW

The purpose of the study was to construct skill tests for service placement skills and underarm pass skills in Volleyball and then to compile norms for the above skills to assess the talents of the college men Volleyball players between 18 and 25 years of Tamilnadu State.

To achieve the purpose of this study, one hundred and twenty Inter collegiate men Volleyball players were chosen as subjects at random. By conducting the most appropriate constructed test and criterion tests, the data were collected from the subjects on consecutive days under identical conditions. These data were statistically analyzed by using suitable statistical process for establishing the validity, reliability and the objectivity. To establish the validity and objectivity of the most appropriate newly constructed tests for service placement skills and underarm pass skills, the Pearson's Product Moment Correlation statistical technique was employed. To establish the reliability of the newly constructed tests for service placement skills and under arm pass skills, two way Intra-class correlation statistical technique was employed. The obtained coefficient 'r' was subjected to the test of significance at 0.01 levels.

The data collected from five hundred subjects were statistically analyzed. The mean, standard deviation, and Hull scale were computed. The

raw scores collected were converted into Hull scale and thus norms were constructed for the newly constructed skill tests.

4.2. TEST OF SIGNIFICANCE

This is the crucial portion of the thesis in arriving at the conclusion of examining the statistical hypotheses either by accepting the null hypotheses or rejecting the same in accordance with the results and in relation to the level of significance fixed by the investigator.

4.3. LEVEL OF SIGNIFICANCE

The probability level below which the hypotheses are rejected is termed as level of significance. The Pearson's Product Moment Correlation and two way, Intra-class correlation were compared at 0.01 level of significance which was considered adequate for the purpose of this study.

4.4. SCORING OF DATA

The scores collected from the subjects under the study are the point values for the criterion and constructed tests. The point value of the zone in which each service targeted constituted the scores for the service placement skill and points were added from 12 service attempts. The scores for the underarm pass (wall volley test) were the number of legal underarm passes volley taken by the subjects in 60 seconds at the target area drawn on the wall. The subjects were given three trials on both tests. i.e constructed and criterion test. The obtained scores were taken for the statistical analysis to establish the validity, reliability, objectivity and for the computation of norms for college men volleyball players in the age group of 18 to 25 years in Tamilnadu state.

4.5. COMPUTATION OF TWO WAY INTRA-CLASS CORRELATION FOR RELIABILITY

To establish the reliability of the newly constructed tests for service placement skills and underarm pass skill test, two way Intra-class correlation method was employed. The results obtained were presented in separate tables for service placement skills and underarm pass skill in the following pages.

4.5.1. RESULTS OF SERVICE PLACEMENT SKILLS TEST

TABLE II
RELIABILITY CO-EFFICIENT OF SERVICE PLACEMENT SKILLS TEST I

Name of the Test	Source	SS	df	MS	r
SERVICE PLACEMENT SKILLS TEST-I	BS	18013.6556	29	621.1605	0.999
	IA	51.9778	58	1.0111	

The obtained r was found to be 0.999 which was higher than the table r value 0.349. Hence it was significant.

TABLE - III
RELIABILITY CO-EFFICIENT OF SERVICE PLACEMENT SKILLS TEST II

Name of the Test	Source	SS	df	MS	R
SERVICE PLACEMENT SKILLS TEST - II	BS	17516.7667	29	604.0264	0.997
	IA	84.8667	58	3.2333	

The obtained r was found to be 0.997 which was higher than the table r value 0.349. Hence it was significant.

4.5.2. RESULTS OF UNDER ARM PASS SKILL TEST

TABLE - IV
RELIABILITY CO-EFFICIENT OF UNDERARM PASS SKILL TEST III

Name of the Test	Source	SS	df	MS	r
UNDERARM PASS SKILL TEST- III	BS	10488.3222	29	361.6663	0.952
	IA	1006.8444	58	19.9111	

The obtained r was found to be 0.952 which was higher than the table r value 0.349. Hence it was significant.

TABLE V
RELIABILITY CO-EFFICIENT OF UNDER ARM PASS SKILL TEST IV

Name of the Test	Source	SS	df	MS	r
UNDER ARM PASS SKILL TEST -IV	BS	14675.6556	29	506.0571	0.991
	IA	266.9111	58	3.8778	

The obtained r was found to be 0.991 which was higher than the table r value 0.349. Hence it was significant.

TABLE - VI
CONSOLIDATED TABLE OF RELIABILITY COEFFICIENT OF CONSTRUCTED TESTS FOR SERVICE PLACEMENT SKILLS AND UNDERARM PASS SKILLS

Coefficients of Reliability			
Service Placement Skill		Underarm Pass Skills	
Constructed Test I	Constructed Test II	Constructed Test III	Constructed Test IV
0.999	0.997	0.952	0.991

Table VI shows the two way Intra-class coefficient correlation values of four constructed skill tests.

Since the coefficients obtained for establishing reliability by using two-way Intra class correlation method subjecting all the three trials of the Test-Retest methods are ranging from 0.952 to 0.999, it is very clear that the tests are reliable.

Since the newly constructed test Service Placement Skill I showed greater significant correlation coefficient value than the test II, the test I was taken for further analysis. Further, test III Underarm Pass Skills IV showed greater significant correlation coefficient value than the test III the test IV was selected for further analysis.

4.6. COMPUTATION OF PEARSON'S PRODUCT MOMENT CORRELATION FOR VALIDITY

To establish the validity of the newly constructed tests, with the criterion tests, Pearson's Product Moment Correlation method was employed. Three trials were taken on consecutive days both on newly constructed test and criterion test. The best among the three trials were calculated. Pearson's product moment correlation method was used employing the raw scores to find out the coefficient correlation of validity of the test. The best score of the constructed test were correlated with the best score of the criterion test. Mean scores were used to find out the validity coefficient of the constructed test and the criterion test. The obtained results of the coefficient of correlation are presented in the following Table.

The obtained validity correlation coefficients were tested for significance by using the method as suggested by Baumgartner (1987) and the level of significance was fixed at 0.01 level.

4.6.1. RESULTS OF SERVICE PLACEMENT SKILL TEST

TABLE - VII
VALIDITY COEFFICIENT OF THE CRITERION TEST AND CONSTRUCTED TEST FOR SERVICE PLACEMENT TEST SKILL

Criterion Test		Constructed Test		r
Mean 1	σ_1	Mean 2	σ_1	
37.325	5.341	38.050	5.337	0.8473

The table VII shows the validity coefficient of the criterion test and constructed test. The obtained coefficient correlation value was 0.8473 which was higher than the table r value of 0.172. Hence it was significant.

4.6.2. RESULTS OF UNDERARM PASS SKILL TEST

TABLE - VIII
VALIDITY COEFFICIENT OF THE CRITERION TEST AND CONSTRUCTED TEST FOR UNDERARM PASS SKILL

Criterion Test		Constructed Test		R
Mean 1	σ_1	Mean 2	σ_1	
31.692	7.387	31.200	7.699	0. 8156

The table VIII shows the validity coefficient of the criterion test and constructed test. The obtained coefficient correlation value was 0.8156 which was higher than the table r value of 0.172. Hence it was significant.

4.7. COMPUTATION OF PEARSON'S PRODUCT MOMENT CORRELATION FOR OBJECTIVITY

The objectivity of the newly constructed test was established by correlating the collected scores by the different raters. The scores were collected by the three different testers on the same number of 30 subjects on different occasions under identical conditions. Three trials were conducted by these three testers. The best of the two (testers) scores were taken as the scores to find out the correlation between the Three testers scores. The scores thus collected were correlated by using Pearson's product moment correlation.

4.7.1. RESULTS OF SERVICE PLACEMENT AND UNDER ARM PASS SKILL TESTS

TABLE - IX
COEFFICIENT CORRELATION OF OBJECTIVITY FOR THE NEWLY CONSTRUCTED TEST

S.No	Variable	Number of Subjects	Coefficient Correlation 'r'	Required 'r' at 0.01 level
1.	SERVICE PLACEMENT	30	0.987	0.349
2.	UNDERARM PASS SKILL TESTS	30	0.968	

The objectivity of the newly constructed tests for Service Placement Test and underarm pass was found out by asking the two of the testers involved in the collection of data to test 30 students of the new tests. The correlation coefficient obtained between the scores of the two tests namely, service placement test and underarm pass test were found to be 0.987 and 0.968 values respectively. Since the obtained coefficient correlation value is greater than the table r value of 0.349, it was significant and pointing out high rater objectivity.

4.8. DISCUSSION ON FINDINGS

The purpose of the study was to construct an Objective skill test which has validity, reliability and objectivity in assessing the service placement skill and underarm pass skill in the game of volleyball and the computation of norms for the above said volleyball skills for the college men volleyball players in the age group of 18 to 25 years in Tamilnadu.

Both the constructed tests for assessing the service placement skill and underarm pass, were validated and statistically analyzed against the skill two criterion tests chosen for this study which were already validated and accepted as reliable and valid tests.

For this purpose, 180 subjects were chosen for the collection of data. The constructed and criterion tests for the data were collected from subjects on consecutive days under identical conditions.

In the criterion test service placement scoring zones are very large. Every player can gain maximum points, whereas newly constructed test is very difficult because the area of higher point zones are reduced. The present trend in the game is to serve close to the side and the end lines to confuse the opponents whether the service is right or not in the game situation. Hence it is more useful than criterion test

In the criterion test in underarm pass, no target area was specified. But in the constructed test the target area was made as specific target to volley the ball. In spite of such difficult conditions the player can improve the ability to perform underarm passes in the game situations. This change in the target made the test more meaningful and effective.

Hence the newly constructed skill tests fulfill the requirements of the present game situation. Further study would be very much useful as it was conducted with the Indian subjects.

While establishing reliability of the newly constructed tests, service placement skill test- I and underarm pass skill test II were selected. Two – way inter – class correlation involving three trials were conducted. The correlation coefficient value was found to be 0.999 and 0991 which was highly significant at 0.01 level of confidence. Thus the reliability was established.

While establishing the validity for the newly constructed tests, Pearson's Product Moment Correlation were found to be 0.8156 and 0.8473 which were found to be significant at 0.01 level of confidence. Thus the validity of the test was established.

Pearson's product moment correlation was found to be 0.987 and 0.968 indicating objectivity of the test at 0.01 level of significance. Hence the objectivity was established .

4.9. COMPUTATION OF NORMS, RESULTS AND DISCUSSION

After establishing the reliability, validity and objectivity, the researcher has constructed norms for the newly constructed skills such as service placement and underarm pass skills in volleyball.

For this purpose, Five hundred Inter collegiate men volleyball players were selected as subjects, at random, and their age was between 18 and 25 years. Further, data were collected for the above said skill tests and Hull scale statistical technique was employed to compile the norms.

TABLE - X

HULL SCALE VALUE FOR SERVICE PLACEMENT

Minimum Score: 20 Maximum Score: 55

Variable	Mean	SD	N	Hull Scale Constant
Service Placement	36.194	5.401	500	0.378

To construct the norms for the service Placement Test in Volleyball Hull scale test was constructed .The Hull scale value of 0.378 was serially added to and subtracted from mean to determine the value from zero to hundred in the scale. When the Hull scale value 0.378 was added to the mean score 36.194, the service placement performance of the constructed test for 51st score was calculated as 37. Similarly for the 49th score Hull scale was deducted from the mean and was calculated as 36. A subject performing 21 service placement score can obtain 25 points in the scale. A subject performing 41 service placement score can obtain 33 points in the scale. Like that a subject performing 50 service placement score can obtain 70 points in the scale.

The norms thus constructed from zero to hundred for service placement for the constructed test - I has been presented in the following table X (A).

TABLE - X (A)
THE HULL SCALE NORMS FOR THE PERFORMANCE OF SERVICE PLACEMENT SKILL TEST IN VOLLEY BALL

Hull Scale	0	1	2	3	4	5	6	7	8	9
00	17	18	18	18	19	19	20	20	20	21
10	21	21	22	22	23	23	23	24	24	24
20	25	25	26	26	26	27	27	28	28	28
30	29	29	29	30	30	31	31	31	32	32
40	32	33	33	34	34	34	35	35	35	36
50	36	37	37	37	38	38	38	39	39	40
60	40	40	41	41	41	42	42	43	43	43
70	44	44	45	45	45	46	46	46	47	47
80	48	48	48	49	49	49	50	50	51	51
90	51	52	52	52	53	53	54	54	54	55
100	55									

On the basis of the above constructed Table the subjects were given qualitative grading as shown in table X (A).

TABLE - X (B)

THE QUALITATIVE GRADING FOR THE PERFORMANCE OF SERVICE PLACEMENT IN VOLLEY BALL

1.	25 and below	(Failing)	5
2.	26 to 35	(Below Average)	43
3.	36 to 50	(Average)	206
4.	51 to 65	(Above Average)	204
5.	66 to 75	(Good)	42
6.	75 and above	(Outstanding)	0

Table X (B) shows the qualitative grading for the performance of service placement skill test for college men volleyball players. From the Table, it was found that out of 500, 5 players were failing, 43 players were below average, 206 players were average, 204 players were above average, 42 players were good and no player was outstanding.

FIGURE - 7

PIE DIAGRAM FOR SERVICE PLACEMENT IN VOLLEYBALL

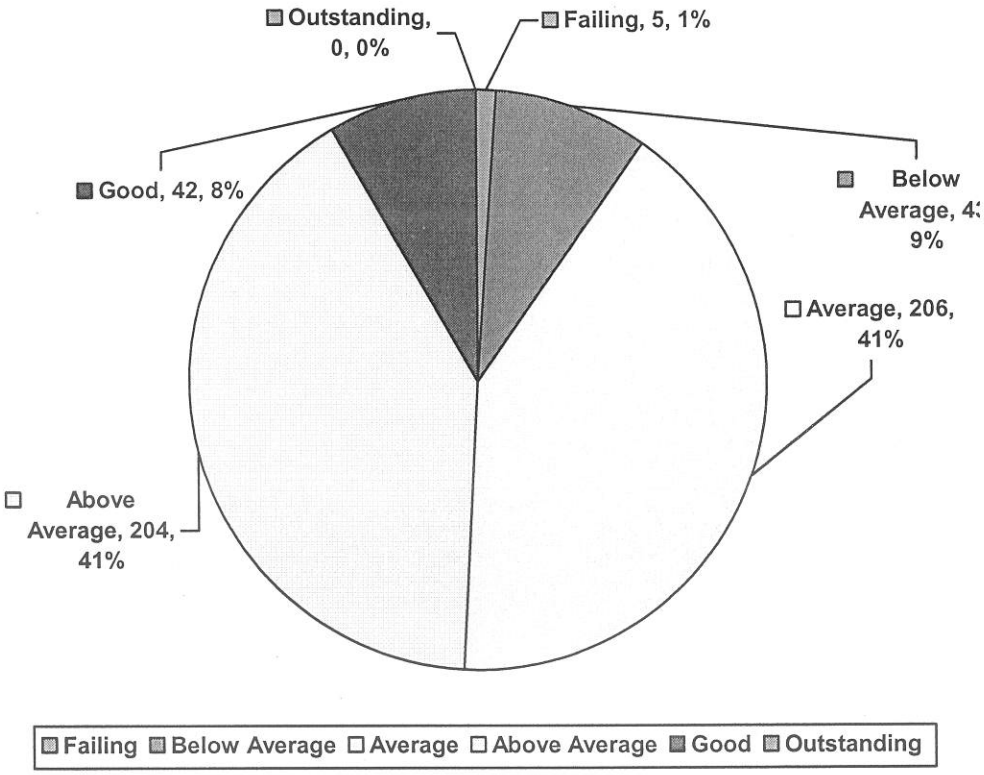

TABLE - X (C)
SCORE TABLE FOR THE PERFORMANCE OF SERVICE PLACEMENT IN VOLLEY BALL

Hull Scale	Value	Hull Scale	Value	Hull Scale	Value	Hull Scale	Value
0	17	26	28	52	37	78	47
1	18	27	28	53	38	79	48
2	18	28	28	54	38	80	48
3	18	29	29	55	38	81	48
4	19	30	29	56	39	82	49
5	19	31	29	57	39	83	49
6	20	32	30	58	40	84	49
7	20	33	30	59	40	85	50
8	20	34	31	60	40	86	50
9	21	35	31	61	41	87	51
10	21	36	31	62	41	88	51
11	21	37	32	63	41	89	51
12	22	38	32	64	42	90	52
13	22	39	32	65	42	91	52
14	23	40	33	66	43	92	52
15	23	41	33	67	43	93	52
16	23	42	34	68	43	94	53
17	24	43	34	69	44	95	53
18	24	44	34	70	44	96	54
19	24	45	35	71	45	97	54
20	25	46	35	72	45	98	54
21	25	47	35	73	45	99	55
22	26	48	36	74	46	100	55
23	26	49	36	75	46		
24	27	50	37	76	46		
25	27	51	37	77	47		

TABLE - XI

HULL SCALE VALUE FOR UNDERARM PASS

Minimum Score:20 Maximum Score :72

Variable	Mean	SD	N	Hull Scale Constant
Passing	32.070	7.615	500	0.533

To construct the norms for the underarm pass performance using the constructed test, the Hull scale value of 0.533 was serially added to and subtracted from mean to determine the value from zero to hundred in the scale. When the Hull scale value 0.533 was added to the mean score 7.615 the under arm pass performance of the constructed test for 51st score was calculated as 33. Similarly for the 49th score Hull scale was deducted from the mean and was calculated as 32. A subject performing 30 under arm pass score can obtain 21points in the scale. A subject performing 40 under arm pass score can obtain 27 points in the scale. Like that a subject performing 50 underarm pass score can obtain 32 points in the scale.

The norms thus constructed from zero to hundred for underarm pass performance for the constructed test - I has been presented in the following table XI (A).

TABLE - XI (A)
THE HULL SCALE NORMS FOR THE PERFORMANCE OF UNDERARM PASS SKILL TEST

Hull Scale	0	1	2	3	4	5	6	7	8	9
00	5	6	6	7	8	8	9	9	10	10
10	11	11	12	12	13	13	14	14	15	16
20	16	17	17	18	18	19	19	20	20	21
30	21	22	22	23	24	24	25	25	26	26
40	27	27	28	28	29	29	30	30	31	32
50	32	33	33	34	34	35	35	36	36	37
60	37	38	38	39	40	40	41	41	42	42
70	43	43	44	44	45	45	46	46	47	48
80	48	49	49	50	50	51	51	52	52	53
90	53	54	54	55	56	56	57	57	58	58
100	59									

On the basis of the above constructed Table the subjects were given qualitative grading as shown in Table XI (B)

TABLE - XI (B)
THE QUALITATIVE GRADING FOR THE PERFORMANCE OF UNDERARM PASS

1.	25 and below	(Failing)	0
2.	26 to 35	(Below Average)	38
3.	36 to 50	(Average)	187
4.	51 to 65	(Above Average)	251
5.	66 to 75	(Good)	24
6.	75 and above	(Outstanding)	0

Table XI (B) shows the qualitative grading for the performance of under arm pass skill test for college men volleyball players. From the Table, it was found that out of 500, 0 players were failing, 38 players were below average, 187 players were average, 251 players were above average, 24 players were good and no player was outstanding.

FIGURE - 8

PIE DIAGRAM FOR UNDERARM PASS IN VOLLEYBALL

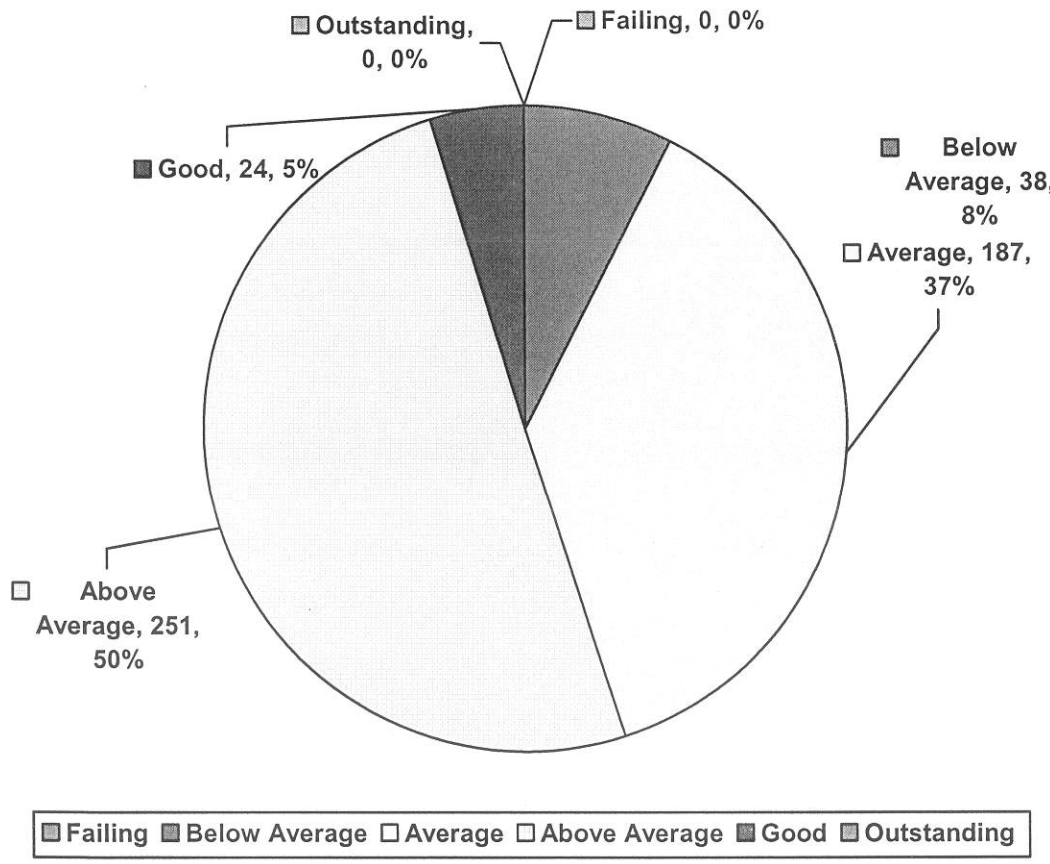

TABLE - XI (C)
SCORE TABLE FOR THE PERFORMANCE OF UNDERARM PASS IN VOLLEYBALL

Hull Scale	Value	Hull Scale	Value	Hull Scale	Value	Hull Scale	Value
0	5	26	19	52	33	78	47
1	6	27	20	53	34	79	48
2	6	28	20	54	34	80	48
3	7	29	21	55	35	81	49
4	8	30	21	56	35	82	49
5	8	31	22	57	36	83	50
6	9	32	22	58	36	84	50
7	9	33	23	59	37	85	51
8	10	34	24	60	37	86	51
9	10	35	24	61	38	87	52
10	11	36	25	62	38	88	52
11	11	37	25	63	39	89	53
12	12	38	26	64	40	90	53
13	12	39	26	65	40	91	54
14	13	40	27	66	41	92	54
15	13	41	27	67	41	93	55
16	14	42	28	68	42	94	56
17	14	43	28	69	42	95	56
18	15	44	29	70	43	96	57
19	16	45	29	71	43	97	57
20	16	46	30	72	44	98	58
21	17	47	30	73	44	99	58
22	17	48	31	74	45	100	59
23	18	49	32	75	45		
24	18	50	32	76	46		
25	19	51	33	77	46		

4.10. DISCUSSION ON HYPOTHESIS

The hypothesis I says that the newly constructed tests for service placement skill and underarm pass skill in volley ball are reliable.

The statistical analysis of the data for the newly constructed tests of the service placement and underarm pass skills revealed that the obtained coefficient correlation value of two tests was found to be significant at 0.01 level hence the fist hypothesis was accepted and the test was reliable .

The hypothesis second says that the newly constructed tests for assessing the service placement and under arm pass skill in volleyball are valid.

The statistical analysis of the data for the newly constructed tests of the service placement and underarm pass skills revealed that the obtained coefficient correlations value of each test was found to be significant at 0.01 level . Hence the second hypothesis was accepted and test was valid

The hypothesis third says that the newly constructed tests for assessing the service placement skill and underarm pass skill in volleyball are objective.

The statistical analysis of the data for the newly constructed tests of the service placement and underarm pass skills revealed that the obtained coefficient correlation value of two tests was found to be significant at 0.01 levels. Hence the third hypothesis was accepted and the tests were objective .