

Development of Kabaddi Skill Test Battery for High School Boys

Basanagouda Laxmeshwar^a, K. K Amarnath^b

^aResearch Scholar, University College of Physical Education, Bangalore University, Bangalore, Karnataka, India

^bAssociate Professor, University College of Physical Education, Bangalore University, Bangalore, Karnataka, India

Abstract

Purpose of the study is to construct the norms table of Kabaddi skill test battery of boys of age group between 14- to 16- year school boys. Karnatak state's 292 schools, 4008 boys participated as the samples for this study. Already validated skill test battery which includes ankle hold, toe touch, thigh hold, hopping hand touch and waist hold test were administered during the data collection. Standard procedures and equipments were used to collect the data. To establish the norms table mean, standard deviation, skewness, and kurtosis were calculated to provide the information of data was normally distributed. Further to establish norms data was converted in to standard scores of t-score and percentile score. Results are discussed detail in paper.

KEYWORDS: Skill-Test, Test Battery and Norms.

Introduction

A first significant initiative of Marshal Sports, took our truly indigenous sport of Kabaddi to levels of new professionalism, which will benefit all stakeholders involved in the ecosystem of the game, Kabaddi, most of all, the players themselves, who will become the new role models for the youth of India. This bold step highlighted the new, modern, international and competitive face of Kabaddi throughout the length and breadth of the country, and beyond. Pro-Kabaddi, eight-city league was introduced in 2014. The games are played on a home & away league basis (double league) with each team playing each other twice in July and August.

Sports skills testing became more sophisticated in the 1930s with the advent of tests developed by scientific procedures. Many quality tests have been developed in the last forty years. Although there are many skill tests batteries available, it is unfortunate that, a popular game like Kabaddi doesn't have its own standardized skill test battery for talent identification, performance assessment, evaluation, developing game plans etc. The Kabaddi test batteries that are developed involved only physical fitness tests and not skills of Kabaddi per-se. Hence, it is necessary in present time to have a standardized "skill test battery" for Kabaddi game and therefore, an initiative in standardizing the skill tests battery for Kabaddi is mandated.

Purpose of the Study

The purpose of the study, therefore, was to develop norms for the age group of fourteen to sixteen years for a Kabaddi Skills-test Battery.

Methodology

The study was designed to develop norms for Kabaddi skill test Battery for 14- to 16- year High School boys of Karnatak State. The first phase involved development of skill tests, the second – determining test battery and the third standardizing the test battery, this paper is related only to third phase of the study.

A. Subject Selection

For the third phase of the study, a total of 292 schools of Karnataka state were randomly selected, list of which is furnished in Annexure-C. There were a total of 162 rural and 130 urban schools. A minimum sample of twelve and a maximum of twenty subjects, excluding disabled, in the age group of 14- to 16- years, were randomly selected from each school. A total of 4008 subjects were selected.

B. Test administration

The investigator personally visited all 292 schools and administered tests to 4008 subjects. Three trials were permitted for each of the tests administered.

C. Statistical treatment and development of norm

Upon verifying the normality of raw scores, standard scores i.e., t-scores and percentile norms were developed. Finally, the performance of 28 subjects that were selected in the first phase of the study on theselected tests in the second phase assigned the standard scores namely, T-scores and percentile scores.

D. Establishing validity of skill-test battery

Consolidated scores were then correlated with the expert rating of the same subjects to establish the validity of the test battery of skill-tests as a whole.

Results

Reliability, objectivity and validity of each of the skill-tests developed in the first phase was established. The second stage involved data reduction. A statistical technique called ‘Principal Component Analysis’ also known as factor analysis, which generated five factors. The third phase involved large set of data on selected test items determined in the second phase. Based on this data, standard scores such as ‘T-scores’ and ‘Percentile Scores’ were computed. Finally, the test battery that was developed was validated against the expert rating.

Kabaddi skill test battery consisting five test items considering the administrative feasibility and educational application is recommended for high school boys of 14 -to -16 years to assess their Kabaddi game performance were as follows.

1. Ankle hold
2. Toe touch
3. Thigh hold
4. Hopping hand touch
5. Waist hold

To test the hypothesis that “The data collected to develop scoring table are normally distributed” standard error, skewness and Kurtosis were calculated, and were

found to support the hypothesis. By using mean and standard deviations of the selected tests percentile scores and t-scores were calculated to construct the norms table.

Kabaddi skills test battery so, constructed was administered to a fairly large representative sample (N=4008) of high school boys belonging to 291 schools from all thirty Districts of Karnataka state. Sample size of the group along with mean, standard deviation and standard error of the mean of the raw scores are presented in table- 1.

Table – 1. Mean, standard deviation, standard error of mean, Skewness, standard error of Skewness, Kurtosis, and standard error of Kurtosis of Kabaddi skills tests (N= 4008)

Sl. No	Skill Test Item	Mean* ± Sd*	SEM	Skewness* ± SE*	Kurtosis* ± KE*
1.	Ankle hold	3.08 ± 0.83	0.013	0.41 ± 0.39	-0.12 ± 0.07
2.	Toe Touch	2.92 ± 0.71	0.011	0.29 ± 0.39	-0.41 ± 0.07
3.	Thigh hold	2.86 ± 0.76	0.012	0.08 ± 0.39	-0.64 ± 0.07
4.	Hopping hand touch	5.37 ± 0.64	0.010	0.14 ± 0.39	-0.49 ± 0.07
5.	Waist hold	3.24 ± 0.81	0.013	0.02 ± 0.39	-0.63 ± 0.07

***Mean, Standard deviations, Skewness, standard error of Skewness, Kurtosis, and standard error of Kurtosis are rounded off to two decimals.**

If the value of skewness is between -0.5 and 0.5, the distribution is approximately symmetric. Since the range of values of skewness of the sample for all five test is 0.02 and 0.41 the distribution is symmetrical. The kurtosis values range from -0.12 for Ankle hold to -0.64 for Thigh hold. As the values are close to zero the curves are considered close to meso-kurtosis. As the skewness and kurtosis values suggest the data collected for all five tests are normally distributed.

Based on these normally distributed data, norms are developed to assess the Kabaddi game performance of target population. The raw scores were converted into standard scores (T-scores, rounded off to the nearest whole number) and are presented in table - 2.

In the T-scale score of the mean value is 50, while the mean plus 3*Sd gets score of 80 and mean minus 3*Sd gets the score of 20. Therefore the range of score on the T-scale is 20 to 80. The T-scale was constructed by using the following formula.

Score	20	30	40	50	60	70	80
Formula	X-3*Sd	X-2*Sd	X-Sd	X	X+Sd	X+2*Sd	X+3*Sd

Finally percentile scores were also developed for each of the test item to provide an alternate scoring method if the teachers so desired.

The computer generated the percentile scores.

Table - 2. T-Score for Kabaddi skill tests

T-Score	Ankle hold*	Toe Touch*	Thigh hold*	Hopping hand touch*	Waist hold*	T-Score
20	5.58 & above	5.05 & above	5.30 & above	7.30 & above	5.68 & above	20
25	5.15	4.69	4.89	6.98	5.27	25
30	4.72	4.34	4.49	6.66	4.86	30
35	4.31	3.98	4.12	6.33	4.45	35
40	3.91	3.63	3.76	6.01	4.05	40
45	3.50	3.27	3.31	5.69	3.64	45
50	3.08	2.92	2.86	5.37	3.24	50
55	2.66	2.57	2.45	4.82	2.83	55
60	2.25	2.22	2.05	4.72	2.43	60
65	1.84	1.86	1.64	4.4	2.02	65
70	1.43	1.51	1.24	4.08	1.62	70
75	1.01	1.15	0.83	3.75	1.21	75
80	0.60 & below	0.80 & below	0.43 & below	3.43 & below	0.81 & below	80

Note: * All tests are scored in time (Seconds)

The percentile scores are furnished in table- 3.

Table- 3. Percentile scores for Kabaddi Skill Test Battery.

Percentile Score	Ankle hold	Toe Touch	Thigh hold	Hopping hand touch	Waist hold	Percentile Score
	Sec.	Sec.	Sec.	Sec.	Sec.	
05	6.0800 & above	5.2200 & above	4.6000 & above	7.0000 & above	5.0800 & above	05
10	4.6000	4.1400	4.1600	6.5055	4.6400	10
15	4.2810	3.8400	3.9100	6.2800	4.3700	15
20	4.0400	3.6800	3.7200	6.1065	4.1200	20
25	3.7800	3.5800	3.5500	5.9100	3.9400	25
30	3.6000	3.4600	3.4000	5.7900	3.7900	30
35	3.4600	3.3300	3.2800	5.6800	3.6700	35
40	3.3000	3.1800	3.1600	5.5900	3.5700	40
45	3.2040	3.0700	3.0400	5.5100	3.4700	45
50	3.0800	2.9700	2.9400	5.4400	3.3600	50
55	2.9800	2.8700	2.8500	5.3600	3.2600	55
60	2.8700	2.7700	2.7500	5.2800	3.1505	60
65	2.7700	2.6600	2.6600	5.2000	3.0400	65
70	2.6800	2.5800	2.5500	5.1200	2.9100	70
75	2.6100	2.4970	2.4300	4.9900	2.8000	75

80	2.5100	2.4100	2.3200	4.9000	2.6700	80
85	2.4300	2.3000	2.1800	4.7980	2.5100	85
90	2.3035	2.1700	2.0200	4.6635	2.3200	90
95	2.1200	2.0200	1.8300	4.5190	2.0990	95
100	1.6800	1.8000	1.6200	4.3200	1.8900	100
	& below					

To test the hypothesis that the battery of Kabaddi skill-tests developed, significantly predict Kabaddi playing ability, raw scores gathered in the first phase of selected five skill tests namely “Ankle hold, Toe Touch, Thigh hold, Hopping hand touch & Waist hold” were converted in to standard scores like T- score & percentile score, using T-score norms & percentile score norms which was established in the second phase. After converting their raw scores in to standard scores all five skill’s scores were added to find a composite score of skill test battery. The composite T-score & percentile score of each player was correlated with expert’s rating to find out the authenticity of the newly constructed skill test battery.

Table- 4: Correlation coefficients of T- Scores and Percentile Scores with Expert Rating of Selected Kabaddi Skill Tests Battery

Sl. No		T-Scores	Percentile Scores
1	Expert rating Scores	0.906**	0.910**
2	Significance	0.000	0.000

**Correlation is significant at $\alpha= 0.01$ level (2-tailed).

Significant validity coefficients supported the fourth hypothesis of the study stated above.

Discussion

The investigator administered the selected test items to 4008 boys around 30 districts. The schools in each district were selected randomly. A minimum of six and a maximum of twelve schools were selected in each district. The 4008 data of each test were subjected to normality test, which resulted in skewness that ranged from 0.02 to 0.41 and kurtosis ranged from -0.12 to -0.64 indicating all five data set were normally distributed. This supported the third hypothesis that stated, ‘the data collected to develop scoring table are normally distributed’. Further, percentile scores and T-scores were computed to develop standardized scoring table. The last hypothesis that stated, ‘the battery of Kabaddi skill tests developed, significantly predict Kabaddi playing ability’. To test the last hypothesis, the skill-test scores of 28 boys tested earlier in the first phase were assigned the ‘T-score’ and ‘Percentile Scores’ that were developed in the last phase of the study. Composite T-scores and Percentile score of each subject was obtained and correlated with the expert rating. The coefficients of correlation were significant that indicated validated the test battery as a whole and supported the last hypothesis.

Conclusions

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

1. Skill test constructed stood the criteria of scientific authenticity, administrative feasibility and educational application and will measure the Kabaddi playing ability of School Boys.
2. Specific skill test was developed for School boy's age group of 14- to 16- year, to measure Kabaddi playing ability.
3. Five skill tests extracted earlier represents Hand movement efficiency, Leg movement efficiency, Arm and leg coordination, Eye-foot coordination and Shoulder and arm strength efficiency based on the high factor loading of related variables.
4. The five different Kabaddi skill tests namely Ankle hold, Toe Touch, Thigh hold, Hopping Hand Touch and Waist hold.

Recommendations

In the light of conclusions drawn, the following recommendations are made:

1. The constructed skill test battery may be used by the Kabaddi coaches, trainers and physical education teachers for evaluating the Kabaddi playing ability of players.
2. While constructing the specific Kabaddi playing ability test, the components which are critically related to Kabaddi performance are Ankle hold, Toe Touch, Thigh hold, Hopping Hand Touch and Waist hold. This can be used as criteria for talent identification, player selection for School or State Kabaddi team.
3. The skill test constructed will serve as a valid tool for the physical education teachers and coaches, who can make use of the test to evaluate student performance and also instruction.
4. Rating of five components of skill tests will be possible and accordingly the training programmes could be rescheduled.
5. Similar type of studies can be done for High School girls, sub-junior and junior Kabaddi players.
6. Normative studies can be done on the constructed skill tests for Kabaddi players throughout India.
7. Similar study may be carried out to develop standardized norms for children and youth in other states.

References

- American Association of Health, Physical Education and Recreation, "Youth Fitness Test Manual." Washington D.C.: AAHPER, 1962.
- Clark H.H., Clark DH. Application of Measurement of Physical Education. (New Jersey: Prentice Hall Inc.), 1987.
- D.S.E.R.T.(2011-12). "Physical Education Teachers Hand Book and Evaluation". D.E.S.R.T. Bangalore- 560085.
- E.Prasad Rao.(2002). "The Complete Handbook On Kabaddi," Jagadamba Publications Tupakula Street.

- Rao,C.V.(1983).“Kabaddi, Native Indian Sport”. NIS Publications, Patiala.
- Suma Joseph.(June 2013).“Construction of a Test Battery to assess the Basketball playing abilities of Women players”.Mahatma Gandhi University.
- S K. Manjunatha, Dr. S.M. Prakash (2018) constructed norms for skill test for Kabaddi players, Ph.d Thesis Kuvempu University, Shivamonga St; Karantaka.
- Seshagiri Rao, K.V. and Y. Kishore. (2014). Construction of Reaction Ability Test for Kabaddi. The International Journal of Humanities and Social Studies, Vol. 2 Issue 6, pp. 195-198.
- Yuvraj Singh Dasondhi and Ajay Karkare. (2016). Construction of Physical Fitness Test Norms for Under 19 Cricketers in Central Zone.Indian Journal of Applied Research, January, Vol. 6, No. 1. pp. 645-648.