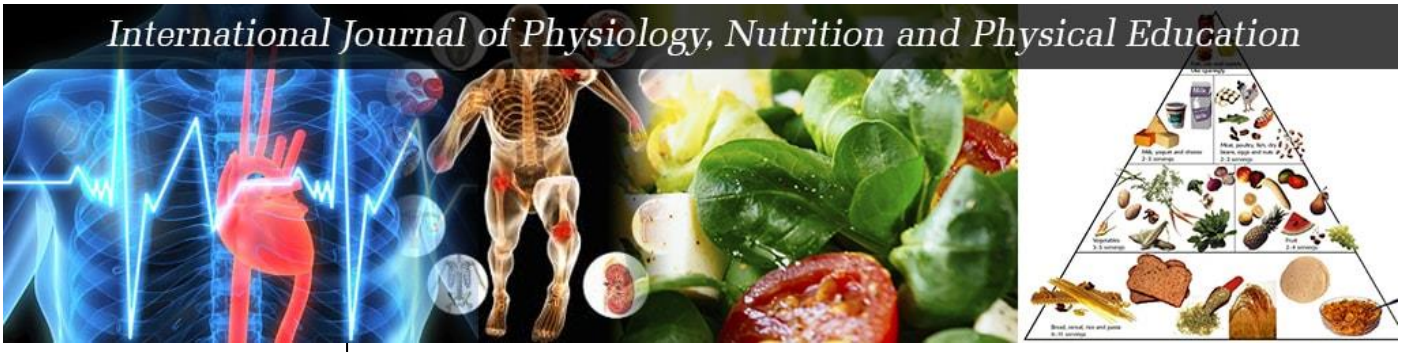

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Physical fitness between Kho-Kho and Kabaddi players in Butwal multiple campus Rupandehi, Nepal

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Abstract
This study was conducted to Bachelor level students of Rupandehi District of Nepal. The main purpose of the study was to measure and compare the physical fitness of Kho-Kho and Kabaddi players who were studying in Bachelor in Education aged between 19 to 22 years who had participated in inter college level tournament. A sample of 30 boy players was selected through simple random lottery technique. A readymade test battery AAHPER physical fitness test was used as a tool for data collection. For the comparison of test scores mean, standard deviation, t-test and p-value were used to analyze the data. After analyzing and interpreting the data it was found that in five test items there was no significant difference and one test item was significantly different on physical fitness between the Kho-Kho and kabaddi players at college level. Such types of study can be conducted including other aspects such as age, cast, and nutrition.

Keywords: Kabaddi, Kho-Kho, physical fitness, players

Introduction
"Physical activity" "exercise" and "physical fitness" are terms that describe different concept. The terms are sometimes used interchangeably. Physical fitness is a set of attributes that are either health or skill related. The degree to which people have these attributes can be measured with specific test (Corbin, Dowell, Lindsay & Talson, 1978) [3]. Physical fitness refers to the ability in a person to live a balanced existence. Physically fitness means having one's lungs, muscles, heart, blood vessels functioning peak efficiency. Peak efficiency means the high level of health condition we need for taking part in daily task and recreation of enthusiasm and pleasure (Jha, 2010) [4]. The American association for Health Physical Education and Recreation [AAHPER] forwarded lots of physical fitness test items in 1957. This test consists of six items; Pull-ups, Sit ups, Shuttle run, Standing long jump, 50 yard dash, and 600-yard run (Mathew, 1978) [9]. The association revised items in 1965 and in 1975. AAHPER is particularly concerned with promoting Physical fitness and health education in American school (Johnson & Nelson, 1978) [5]. 'In development of health and physical education, German and Japan had played significant role in providing physical facilities and manpower for promoting physical education in Nepal. German volunteers service (GVS) was positive in getting scholarship for higher studies in physical education in India and health education in Philippine' (Maharjan, 2002; as cited Maharjan, 2004) [8]. Kho-kho game is a popular and played a most in our country and many believe that in needs more energy, stamina and power to play. Similarly, Kabaddi is also a common game of Nepalese, yet it has not attracted many spectators. Hence the researcher wants to measure and compare the physical fitness of Kho-Kho and Kabaddi players aged 19 to 22 years studying at colleges of Rupandehi district, Nepal. This study helps to know about the physical fitness level of Kho-Kho and Kabaddi players of Rupandehi district. This research helps to provide the guidelines for further research and studies on related subjects and subject matters as secondary data.

Methodology
This study is based on descriptive type of quantitative research design. The population of the

study was the students studying B. Ed. Level at Tribhuvan University, Butwal multiple campus Rupandehi. Sample of 30 respondents were taken from Inter College Kho-Kho and Kabaddi boys players of Butwal Multiple Campus Butwal Rupandehi, Nepal. The 19 to 22 years age group players were selected by random sampling method. For the data collection purpose, AAHPER physical fitness readymade tools were used to collect the primary data. The necessary equipments for collection the data were Metal/wooden bar, Mat, dry turf, stop watch, Jumping pit, Measuring tape, Wooden blocks [2×2×4 inch^3], Lime powder and Open area or football ground] Researcher included test items were pull-ups [strength], Sit-ups [strength], Standing broad jump [power], Shuttle run [agility], 50-yard dash [speed] and 600-Yard run [endurance]. It is analyzed and interpreted by SPSS version 20 statistics to draw out conclusion. The description of test items is given below.

a) Pull ups (Buskirk, 1987) [2].

Purpose: 'To measure the strength of arms and shoulder muscle'.

Reliability: 0.78

Validity: 'Face validity was accepted'.

Description: "A bar was height enough so that the players can hung with their arms and legs fully extended and their feet above the floor. The player raised their body by their arms until the chain crosses the bar and then lowers the body to a full hung as in the starting position. The exercise is repeated as many times as possible and as long as complete action. Counting the number of completely executed pull ups and recorded the score" (Buskirk, 1987) [2].

b) Sit-ups (Buskirk, 1987) [2].

Purpose: 'To measure the strength of abdomen and hips flexor muscle'.

Reliability: 0.81

Validity: Face validity was accepted.

Description: "No sit-ups is counted in which the pupil does not keep the finger clasped behind the neck. bring both elbows forward in starting to sit-ups, without pushing off the floor with an elbow; return to starting position, with elbows flat on the surface, before sitting up again. Only one trial is allowed for 60 second to the performer" (Buskirk, 1987) [2].

c) Standing broad jump: (Buskirk, 1987) [2].

Purpose: 'To measure the explosive power of leg muscle'.

Reliability: 0.76

Validity: Face validity was accepted.

Description: "Measurement of each jump is taking from the take off line to the heel or other part of the body that touches the floor. The jump is accomplished by simultaneously extending the knees and swinging forward the arms. Best of Three trials in feet were recorded in the score" (Buskirk, 1987) [2].

d) Shuttle run: (Buskirk, 1987) [2].

Purpose: 'To measure the agility of the body'.

Reliability: 0.73

Validity: Face validity was accepted.

Description: "Two parallel lines were marked on the floor 30 feet apart. On the signal "Ready" and "Go" the athlete runs to the block, picks one up, runs back to the starting line and places the block behind the line; performer runs again and picks up second block, which he carries back across the starting line. The best records of the two trials were recorded to the nearest tenth of second in the score" (Buskirk, 1987) [2].

e) 50-Yard dash: (Buskirk,1987) [2].

Purpose: 'To measure the speed'.

Reliability: 0.73

Validity: Face validity was accepted.

Description: "The time taken to complete the distance (50 yard) from the start signal till crossing the finish line is recorded to the nearest tenth of a second" (Buskirk,1987) [2].

f) 600-Yard run: (Buskirk, 1987) [2].

Purpose: 'To measure the cardio-respiratory endurance'.

Reliability: 0.73

Validity: Face validity was accepted.

Description: "The athletes were made ready in starting line in a standing position. At the signal "Ready" and "Go" the athlete starts running the 600 yard distance. The time of each one is recorded through the pairs completion of the run and register in score sheet" (Buskirk, 1987) [2].

Results and Discussion

After developing the score sheet the researcher administered the tools to 5/5 kho-kho and kabaddi players for pre-test during the pre-test some errors were found in testing tools. Then for finishing the data collection, score sheet was carefully rechecked, tabulated on master table on different headings. Then SPSS version 20 statistical program was used [mean, standard deviation, t-test, *p*-value] to analyze and interpreted with the help of table and charts. The item wise analysis is presented below.

Pull-ups: By treating the pull-ups score of kho-kho and kabaddi players' researcher found the result as following.

Table 1: Arm strength measurement of kho-kho and kabaddi players

Units	Kho-kho	Kabaddi
Number of players	15	15
Mean	10.67	10.33
Standard Deviation	2.99	3.16
Minimum Score	6.00	6.00
Maximum Score	16.00	16.00

Standard Error Mean	0.77	0.82
Variance	8.95	9.95

The above table shows that the mean score of kho-kho and kabaddi players were 10.67 and 10.33 which shows that kho-kho players arm strength is slightly better than kabaddi players. The reason behind it is the kho-kho players were more involved in doing activities than kabaddi players.

Sit-ups: The data collected by the researcher on knee bent sit-ups of kho-kho and kabaddi players is given on the following table.

Table 2: Abdominal strength of Kho-Kho and Kabaddi players

Units	Kho-kho	Kabaddi
Number of players	15	15
Mean	20.60	23.73
Standard Deviation	5.44	6.08
Minimum Score	10	12
Maximum Score	29	33
Standard Error Mean	1.40	1.57
Variance	29.54	36.92

This table shows that the mean score of Kho-Kho players was 20.60 and means score of Kabaddi players was 23.73 in knee bent sit-ups test. The mean score of KABADDI players was higher than Kho-Kho players.

Standing broad jump: The score of kho-kho and kabaddi players on standing broad jump is presented in the given table.

Table 3: Power of leg of kho-kho and kabaddi players

Units	Kho-kho	Kabaddi
Number of players	15	15
Mean	2.02 meter	2.13 meter
Standard Deviation	0.25	0.22
Minimum Score	1.50 meter	2.50 meter
Maximum Score	1.80 meter	2.45 meter
Standard Error Mean	0.06	0.06
Variance	0.06	0.05

The above table shows that the mean score of standing broad jump of kho-kho and kabaddi players were 2.02 meter and 2.13 meter respectively. The mean score shows each kabaddi players can jump longer distance than kho-kho players. Thus the kabaddi players' leg muscle power was better than kho-kho player.

Shuttle run: The data was collected by administrating test of shuttle run on kho-kho and kabaddi players. The researcher found the results as following.

Table 4: Agility measurement of Kho-Kho and Kabaddi players

Units	Kho-kho	Kabaddi
Number of players	15	15
Mean	11.44 second	11.41 second
Standard Deviation	1.30	1.18
Minimum Score	10.00 second	13.20 second
Maximum Score	10.03 second	13.20 second
Standard Error Mean	0.34	0.31
Variance	1.69	1.39

The above table shows that the mean score of Kho-kho players was 11.44 second and the mean score of kabaddi players was 11.41 second on shuttle run. It indicates that kabaddi players were slightly better agile than kho-kho players. Similarly the standard deviation of kho-kho player was 1.30 and standard deviation of kabaddi player was 1.18 second. A similar study done by Baruwal (2008) [1], found significant difference at 0.05 level.

50-yard dash: By administrating test of 50 yard dash on kho-kho and kabaddi players, the researcher found that the following result.

Table 5: Speed measurement of Kho-Kho and Kabaddi players

Units	Kho-kho	Kabaddi
Number of players	15	15
Mean	7.14 second	6.99 second
Standard Deviation	0.54	0.62
Minimum Score	5.98 second	6.13 second
Maximum Score	7.88 second	7.96 second
Standard Error Mean	0.14	0.16
Variance	0.29	0.38

The above table shows that the mean value of kho-kho players was 7.14 seconds and the mean value of kabaddi players was 6.99 seconds on 50 yard dash. It was found that Kabaddi players could run faster than kho-kho players. Both groups of players were involved in same kind of short distance physical activities and exercises which help to improve speed. As kho-kho and kabaddi players need instant reaction time, the speed of kabaddi players was slightly better than kho-kho players.

600-yard dash: By administrating test of 600-yard dash on Kho-kho players and Kabaddi players, the researcher found the following result.

Table 6: Cardio-respiratory endurance measurement of Kho-kho and Kabaddi players

Units	Kho-kho	Kabaddi
Number of players	15	15
Mean	150.87 second	141.13 second
Standard Deviation	10.97	13.26
Minimum Score	133 second	123 second
Maximum Score	169 second	164 second
Standard Error Mean	2.83	3.42
Variance	120.27	175.84

From the table above, it was found that the average score of kho-kho players was 150.87 seconds and average score of kabaddi players was 141.13 seconds on 600 yard dash which shows that kabaddi players can run faster than kho-kho players. The standard deviation of kho-kho players was 10.97 and standard deviation of kabaddi players was 13.26. The variance of kho-kho and kabaddi players was 120.27 and 175.84 respectively. The minimum score of kho-kho and kabaddi players were 133 seconds and 164 seconds. Similarly maximum score of kho-kho and kabaddi players were 169 seconds and 164 seconds. According mean different of kho-kho and kabaddi players, kabaddi players have better cardio-respiratory endurance than kho-kho players. The reason behind better endurance of kabaddi players was because of longer duration of practice and covering of large area than kho-kho players either it was practice or match.

Comparison of physical fitness test items: The kho-kho and kabaddi players obtain data is tabulated as follows.

Table 7: Comparison of test between kho-kho and Kabaddi players

Purpose of test	No*	t**	df***	*p*-value****	Result
Arm Strength	30	0.30	28	0.77	No significant difference
Abdominal Strength	30	-1.49	28	0.15	No significant difference
Power of Leg	30	-1.20	28	0.24	No significant difference
Agility	30	0.72	28	0.48	No significant difference
Speed	30	2.19	28	0.04	Significant difference
Cardio-respiratory Endurance	30	0.07	28	0.94	No significant difference

Note: *= Number, **= t value in the table, ***= degree of freedom, ****=calculated *p*-value, If *p*-value is more than 0.05 result is accepted [no significant difference] and *p*-value is less than 0.05 result is rejected [significant difference].Significance at 0.05 percent level, tabulated t value at 0.05 percent = 1.96.

T-test was applied by the researcher to see significant difference between the [pull-ups] means of kho-kho players and Kabaddi players. The calculated t-value was 0.30 whereas tabulated t-value was 1.96 at five percent significant level. The calculated t- value is smaller than tabulated t-value at 5 percent significant level. Therefore, it was found that there was "no significant difference" between the means of kho-kho and Kabaddi players. Thus, kho-kho players have better arm strength than kabaddi players. Similarly calculated *p*-value was 0.77, it denoted that there was "no significant difference"[accepted the hypothesis] between kho-kho and kabaddi team of college level players. A similar measurement Sing& Kerketta found that significant difference between Basketball and Volleyball players (Sing & Kerketta, 2016) [10]. Another study found the same result as there was no significant difference between baseball and softball players (Kaur, 2018) [6]. It showed that Nepalese players performed poor result.

Calculated T-value of Sit-ups test was -1.49 and tabulated t-value was 1.96 at 5 percent level of significance. So it was found that "no significant difference between the mean of kho-kho players and kabaddi players. By seeing the difference between the mean score and the difference at 5 percent level of significance the researcher concluded that kabaddi players showed better performance in sit-ups [abdominal strength] than kho-kho players. Similarly p-value [0.05 < 0.15] also showed that no significant difference between two groups [accepted the hypothesis]. A same study Sing & Kerketta found that "significant difference" between two groups (Sing & Kerketta, 2016) [10]. It focused on practice and environmental effect in the individual performance.

The test item of standing broad jump calculated T-value as -1.20 and tabulated t-value was 1.96 at 5 percent level of significance. Thus, it was found that there was "no significant difference" between two groups. The above table showed that means score of kabaddi players was higher than kho-kho players. Thus, Kabaddi players' leg muscle power was better than kho-kho players. Similarly p-value [0.05< 0.24] indicates no significant difference [accepted the hypothesis].'Same measurement was found theoretical and practical approach helps to improve the RAC and CODS in U15 players (Krolo, *et al*., 2020)' [7].

The researcher applied T-test to see the significant difference between the means [agility] of kho-kho and kabaddi players. The calculated T value of shuttle run was 0.72 and tabulated t-value was 1.96 at 5 percent level of significance. So the study concluded that there was "no significant difference" between the mean [agility] of two groups which means kabaddi players was slightly better than kho-kho players. Like as p-value [0.05< 0.48] showed that no significant difference [accepted the hypothesis].'Similar result found by Krolo *et al*. (krolo, *et al*., 2020)' [7].

Comparative figure of 50-yard dash, calculated t-value as 2.19 and tabulated t-value as 1.96 at 5 percent significant level. It was found that "significant difference" between kho-kho and kabaddi players. Similarly, p-value [0.05 > 0.04] found that significant difference [rejected the hypothesis] among the kho-kho and kabaddi groups. 'A same measurement found that "significant difference" between two groups (Sing & Kerketta, 2016)' [10]. This study showed that Nepalese players have comparatively good performance than others, it depends upon their practice.

The analysis of 600-yard dash is based on the application of the SPSS 20 version, the calculated t-value was 0.07 and tabulated t- value was 1.96 at 5 percent level of significant. It was found that "no significant difference" between two groups [cardio-respiratory endurance]. Similarly *p*-value [0.05 < 0.94] indicated that similar meaning of t-test [accepted the hypothesis] between kho-kho players and kabaddi players of college level. 'A study found that middle distance runner were superior than the football player almost all physical fitness components (Umes & Kumar, 2017)' [11]. It indicates different result seen in the same test items. There is individual difference effect in the performance.

For measuring physical fitness, the readymade test, AAHPER youth physical fitness test was used. It included six items namely pull-ups, sit-ups, standing broad jump, shuttle run, 50-yard dash and 600-yard dash. Among six test items first three were conducted first day and other three items were conducted the second day.

Conclusion

The researcher adapted the AAHPER youth physical fitness test which includes six items pull-ups, sit-ups, standing broad jump, shuttle run, 50-yard dash and 600-yard dash were used to measure the physical fitness of kho-kho and kabaddi players. These test items measure the strength of arms and abdominal muscles, power of leg, agility, speed and cardio-respiratory endurance. The researcher found significant difference between the means of kho-kho players and kabaddi players. In five test items, the mean score of kabaddi players was found better than kho-kho players and only one test items means of kho-kho players was found better than kabaddi players. While comparing each test items separately, "no significant difference" was found in Pull-ups, Sit-ups, Standing broad jump, Shuttle run and 600-yard dash at 5 percent significant level of T-test and *p*-value [0.05<*p*]. Significant difference was found between the mean of kho-kho players and kabaddi players in 50-yard dash while applying t-test and *p*-value [0.05<*p*] at 5 percent level of significant level. The above stated results prove that no significant different found between kho-kho players and kabaddi players in item wise analysis. If special coaching and training program are provided to kho-kho players and kabaddi players, their performance can be improved in a better way.

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