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Two Dimensional Test-Retest Video Graphical Reliability and Validity Coefficient Correlation of Selected Agility Tests of Female Students of Physical Education and Sports Himachal Pradesh University Shimla

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Abstract – Research scholar has selected the topic with the purpose to find out test – retest reliability and validity coefficient correlation of selected agility tests variables video graphically recorded and analyzed test – retest method of female students of physical education and sports Himachal Pradesh University of Shimla. With the following objectives to find out the "Two Dimensional Test – Retest Video graphical Reliability and Validity Coefficient Correlation of Selected Agility Tests of Female Students of Physical Education and Sports Himachal Pradesh University Shimla". The study was delimited to 70 female students of physical education and sports Himachal Pradesh University, Shimla. Two different tests were used to measure agility, Forty yards shuttle run test and Sixty yards shuttle run test. The data were collected using 2 – D video recording system. The data were analyzed using test – retest method. Video analysis software (Kinovea 0.8.15) was used to analyzing video graphical data. The age of the subjects were ranging from 18 ≥ 25 years.

Keywords: 2 – D Video graphic, Reliability and Validity, Coefficient of Correlation, Agility, Sixty Yards Shuttle Run Test, Forty Yards Shuttle Run Test, Kinovea (0.8.15) Software.

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1. INTRODUCTION

The American College of Sports Medicine in 1990 proposed that "fitness is the ability to perform moderate to vigorous levels of physical activity without undue fatigue and the capability of maintaining such ability throughout life. (David C. Nieman. 1986). The ability to change body position and direction quickly and efficiently is known as agility. Agility is important in sports such as basketball soccer and racquetball in which the participant must change direction rapidly and at the same time maintain proper body control. Agility as define refers to the ability to change your entire body position in space rapidly with accuracy and speed. Sports coach Brian Mac offers a slightly different perspective defining agility as the ability to perform a successive series of powerful explosive movements quickly in opposing directions. Agility is typically measured by performing a timed shuttle run. (Thomas D. Fahey et.al 2007) Reliability is the second technical standard that the teacher can use when selecting tests. A test is said to be reliable if it is dependable: if similar results occur when the test is repeated by the same group under like conditions. Reliability is related to the test performance itself. The tester is the same, the students are the same, and the test is the same. Assume that the test is administered and then readministered. If the students' scores fall in the same positions, the test is reliable. The student who performed best the first time is still best, the poorest performer is still poorest, and all in between is approximately in the same order. Validity is the most important of the technical standards because it tests the honesty of a test. The teacher wants to have confidence that a test selected to use as a measure of the tennis serve for example is indeed just that and not a test of shoulder girdle strength or of general motor ability. If a test is presented as a measure of the volleyball volley then to be valid it must measure volleying ability and. ideally it must measure it to such a degree that other influencing factors such as height and weight are incidental to the final results. (Harold M. Barrow et.al, 1979).

The 60 Yard Shuttle run is part of the fitness testing battery for the NFL Combine. Participants run to 5 yards, 10 yards, 15 yards, there and back, for a total

of 60 yards. It is a test of anaerobic speed endurance. (*Wood, R. (2008).topendsport network. Retrieved 11 24, 2020, from www.topendsports.com:https://www.topendsports.com/testing/tests/shuttle-60yard.htm*

The reliability and validity of video graphic (biomechanical) is very high because reliability and validity are authentic the average value sixty yards shuttle run test is .941 and measuring high speed is a challenge

Hence the purpose of the study was to record the performance of selected agility test item by adopting video graphic (biomechanical) measurement system to test the reliability and validity of the selected test item.

2. MATERIALS AND METHOD

2.1 Participants

Keeping in view the purpose of the study, 70 female students of physical education and sports Himachal Pradesh University, Shimla were randomly selected. The age of the subjects ranged from 18 ≥ 25 years. The randomly selected female subjects were sportsperson (i.e. at least state level participation).

2.2 Instrumentation

2 – D Camera was used for Video recording.

Figure 1) 2 – D video recording system.

2.3 Selection of the Variables

The selected tests item and variables has been documented in table 1

Table 1

Selected test items and variables

S.No	Tests Item	Selected Variables	Abbreviations
1.	Sixty Yards Shuttle Run Test	Time taken to cover first five yards	(TT1st5Y)
		Time taken to cover five yards come back	(TT5YCB)
		Time taken to cover first ten yards	(TT1st10Y)
		Time taken to cover ten yards come back	(TT10YCM)
		Time taken to cover first fifteen yards	(TT1st15Y)
		Time taken to cover fifteen yards come back	(TT15YCM)
		Performance 60 yards (Total time taken)	(P60-TT)
2.	Forty Yards Shuttle Run	Time taken to cover first 10 yards	(TT1st10Y)
		Time taken to cover 10 yards come back	(TT10YCB)
		Time taken to cover second 10 yards	(TT2nd10Y)
		Time taken to cover 10 yards come back	(TT10YCB)
		Performance 40 yards (Total time taken)	(PTT40Y)

2.4 Data Acquisition

After the subjects properly warmed up and explain about Sixty yards shuttle run test and Forty yards shuttle run test educated about its significance. The Sixty yards shuttle run test was done in front of the subjects. Subjects performed the test and their performance was recorded by 2D video recording camera.

Figure 2) Sixty Yards Shuttle Run Test Layout

2.5 Data Processing

The raw data acquired from the subjects were quantified with the help of Kinovea Software 0.8.15.

Figure 3 illustration of data processing

3. STATISTICAL ANALYSIS

Following statistical techniques were applied for analysis

1. Descriptive statistics (Mean and Standard Deviation).
2. Cronbach's Alpha.
3. Product moments correlation for obtaining reliability and validity coefficient.
4. For the purpose of evaluating the reliability coefficient. Kirkendall et. al., (1987) criteria was followed as given in table 2

Table 2

Kirkendall et. al, (1987) Criterion of Reliability

Value or reliability coefficient	Reliability Rating
0.00 to 0.59	Unacceptable
0.60 to 0.79	Average
0.80 to 0.89	High
0.90 to 1.00	Excellent

A commonly accepted rule for describing internal consistency using Cronbach's alpha is as on Table 3

Table 3

Internal Consistency Reliability Ratings

Cronbach's alpha (α)	Internal consistency
$0.9 \leq \alpha$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Table 4

Distributive Statistics of Selected Variables of Sixty Yards Shuttle Run Test

Variables	Minimum	Maximum	Mean	Std. Deviation
TT1st5YT1	1.39	1.86	1.5197	.16821
TT5YCBT1	2.73	3.84	3.28850	.29205
TT1st10YT1	5.13	6.99	6.1163	.45831
TT10YCBT1	7.53	10.13	9.0260	.61162
TT1st 15YT1	10.86	14.50	12.9120	.89424
TT15YCBT1	14.16	18.62	16.5797	1.07369
TT1st5YT2	1.16	1.86	1.5173	.17273
TT5YCBT2	2.73	3.86	3.2897	.29430
TT1st10YT2	5.13	6.99	6.1163	.45831
TT10YCBT2	7.56	10.16	9.0280	.60931
TT1st15YT2	10.86	14.50	12.9120	.89424
TT15YCBT2	14.16	18.62	16.5797	1.07369
TT1st5YT3	1.39	1.86	1.5167	.16672
TT5YCBT3	2.73	3.84	3.2850	.29205
TT1st10YT3	5.13	6.99	6.1183	.45934
TT10YCBT3	7.56	10.13	9.0290	.60876
TT1st15YT3	10.86	14.50	12.9127	.89410
TT15YCBT3	14.16	18.62	16.5797	1.07369
TT60YTT	124.98	166.16	148.3230	10.08160

N = 70; all measurements in seconds
T1 = Trail One
T2 = Trail Two
T3= Trail Three

According to table 4 the selected sixty yards shuttle run test variables namely time taken to cover first five yards **(TT1st5YT1)** trail one the mean value 1.5197 and SD .16821, time taken to cover five yards come back **(TT5YCBT1)** trail one the mean value is 3.28850 and SD .29205, time taken to cover first ten yards **(TT1st10YT1)** trail one the mean value is 6.1163 and SD .45831, time taken to cover ten yards **(TT10YCBT1)** trail one the mean value is 9.0260 and SD .61162, time taken to cover first fifteen yards **(TT1st15YT1)** trail one the mean value is 12.9120 and SD .89424, time taken to cover fifteen yards come back **(TT15YCBT1)** trail one the mean value is 16.5797 and SD 1.07369, namely time taken to cover first five yards **(TT1st5YT2)** trail second the mean value 1.5173 and SD.17273, time taken to cover five yards come back **(TT5YCBT2)** trail second the mean value is 3.2897 and SD .29430, time taken to cover first ten yards **(TT1st10YT2)** trail second the mean value is 6.1163 and SD .45831, time taken to cover ten yards **(TT10YCBT2)** trail two the mean value is 9.0260 and SD .60931, time taken to cover first fifteen yards **(TT1st15YT2)** trail two the mean value is 12.9120 and SD .89424, time taken to cover fifteen yards come back **(TT15YCBT2)** trail two the mean value is 16.5797 and SD 1.07369, time taken to cover first five yards **(TT1st5YT3)** trail three the mean value is 1.5167 and SD .16672, time taken to cover five yards come back **(TT5YCBT3)** trail three the mean value is 3.2850 and SD.29205 time taken to cover first ten yards **(TT1st10YT3)** trail three the mean value is 6.1183 and SD .45934, time taken to cover ten yards **(TT10YCBT3)** trail three the mean value is 9.0290 and SD .60876, time taken to cover first fifteen yards **(TT1st15YT3)** trail three the mean value is 12.9127 and SD .89410, time taken to cover five yards come back **(TT5YCBT3)** trail three the mean value is 16.5797 and SD 1.07369.

Table 5

Reliability Coefficient of Selected Variables of Sixty Yards Shuttle Run Test

S.No.	Variables	Between Trails	Reliability coefficient (r)	Evaluations
1	TT1st5Y	T1 vs T2	.996	Excellent
		T2 vs T3	.993	Excellent
		T1 vs T3	.997	Excellent
		T1 vs TT	.760	High
2	TT5YCB	T1 vs T2	.997	Excellent
		T2 vs T3	.996	Excellent
		T1 vs T3	.998	Excellent
		T1 vs TT	.932	Excellent
3	TT1st10Y	T1 vs T2	.999	Excellent
		T2 vs T3	.998	Excellent
		T1 vs T3	.999	Excellent
		T1 vs TT	.995	Excellent
4	TT10YCB	T1 vs T2	999	Excellent
		T2 vs T3	.999	Excellent
		T1 vs T3	.999	Excellent
		T1 vs TT	.986	Excellent
5	TT1st15Y	T1 vs T2	1.00	Excellent
		T2 vs T3	1.00	Excellent
		T1 vs T3	1.00	Excellent
		T1 vs TT	.993	Excellent
6	TT15YCB	T1 vs T2	1.00	Excellent
		T2 vs T3	.999	Excellent
		T1 vs T3	.999	Excellent
		T1 vs TT	.963	Excellent

N = 70 all measurements in seconds
T1 = Trail One
T2 = Trail Two
T3= Trail Three

According to table 5 The reliability and coefficient correlation of selected sixty yards shuttle run test variables namely **TT1st5Y** between **T1** and **T2** was found **.996** the reliability coefficient of correlation between **T2** and **T3** was found **.993** the reliability coefficient of correlation between **T1** and **T3** was found **.997** the reliability coefficient of correlation between **T1** and **TT** was found **.760** which was highly coefficient of correlated as per given criterion of Kirkendall et.al, (1987) table 2.

The reliability coefficient of selected variable namely **TT5YCB** correlation between **T1** and **T2** was found **.997** the reliability coefficient of correlation between **T2** and **T3** was found **.996** the reliability coefficient of correlation between **T1** and **T3** was found .**998** the reliability coefficient correlation between **T1** and **TT** was found **.932** which was highly coefficient of correlated as per given criterion of Kirkendall et.al, (1987) table 2.

The reliability coefficient of selected variable namely **TT1st10Y** correlation between **T1** and **T2** was found **.999** the reliability coefficient of correlation between **T2** and **T3** was found **.998** the reliability coefficient of correlation between **T1** and **T3** was found **.999** the reliability coefficient of correlation between **T1** and **TT** was found **.995** which was highly coefficient of correlated as per given criterion of Kirkendall et.al, (1987) table 2.

The Reliability coefficient of selected variable namely **TT10YCB** correlation between **T1** and **T2** was found **.999** the reliability coefficient of correlation between **T2** and **T3** was found **.999** the reliability coefficient of correlation between **T1** and **T3** was found **.999** the Reliability coefficient of correlation between **T1** and **TT** was found **.986** which was highly coefficient of correlated as per given criterion of Kirkendall et.al, (1987) table 2.

The reliability coefficient of selected variable namely **TT1st15Y** correlation between **T1** and **T2** was found **1.00** the reliability coefficient of correlation between **T2** and **T3** was found **1.00** the reliability coefficient of correlation between **T1** and **TT** which was highly coefficient of correlated as per given criterion of Kirkendall et.al, (1987) table 2.

The reliability coefficient of selected variable namely **TT15YCB** correlation between **T1** and **T2** was found **1.00** the reliability coefficient of correlation between **T2** and **T3** was found .999 the reliability coefficient of correlation between **T1** and **T3** was found **.999** the reliability coefficient of correlation between **T1** and **TT** was found **.963** which was highly coefficient of correlated as per given criterion of Kirkendall et.al, (1987) table 2.

Table 6

Internal Consistency of Selected Variables of Sixty Yards Shuttle Run Test

S.No.	Variables	Cronbach's Alpha (α)	Performance
1.	TT1st5YT1		
	TT5YCBT1		
	TT1st10YT1		
	TT10YCBT1	.919	Excellent
	TT1st15YT1		
	TT15YCBT1		
2.	TT1st5YT2		
	TT5YCBT2		
	TT1st10YT2		
	TT10YCBT2	.918	Excellent
	TT1st15YT2		
	TT15YCBT2		
3.	TT1st5YT3		
	TT5YCBT3		
	TT1st10YT3		
	TT10YCBT3	.918	Excellent
	TT1st15YT3		
	TT15YCBT3		

N= 38 all measurements in seconds
T1 = Trail One
T2 = Trail Two
T3 = Trail Three

According to table 6 the internal consistency of selected sixty yards shuttle run test variables namely **TT5YT1, TT5YCBT1, TT10YT1, TT10YCBT1, TT15YT1** and **TT15YCBT1** Trail one was found .919 ≤ α which was excellent internal consistency.

The internal consistency of selected sixty yards shuttle run test variables namely **TT5YT2, TT5YCBT2, TT10YT2, TT10YCBT2, TT15YT2** and **TT15YCBT2** Trail two was found .918 ≤ α which was excellent.

The internal consistency of selected sixty yards shuttle run test variables namely **TT5YT3, TT5YCBT3, TT10YT3, TT10YCBT3, TT15YT3 and TT15YCBT3** Trail three was found .918 ≤ α which was excellent. The above table 8 all three trails value of coefficient of correlation are 0.9 ≤ α which is excellent and highly reliability and validity as per given criteria of Cronbach's Alpha table 3.

Table 7

Distributive Statistics of Selected Variables of Forty Yards Shuttle Run Test

Variables	Minimum	Maximum	Mean	Std. Deviation
TT1st10YT1	1.76	3.03	2.5142	.26515
TT10YCBT1	4.26	6.59	5.4858	.50665
TT2nd10YT1	6.99	9.96	8.3926	.67043
TT10YCBT1	9.69	13.36	11.2250	.82150
TT1st10YT2	1.73	3.03	2.5076	.26742
TT10YCBT2	4.23	6.56	5.4761	.50882
TT2nd10YT2	6.97	9.93	8.3958	.67346
TT10YCBT2	9.71	13.36	11.2271	.82401
TT1st10YT3	1.76	3.03	2.5116	.26526
TT10YCBT3	4.26	6.56	5.4821	.50891
TT2nd10YT3	6.96	9.96	8.3905	.67275
TT10YCBT3	9.69	13.36	11.2289	.82243
TTFYTT	68.01	98.04	82.8374	6.61455

N = 70; all measurements in seconds
T1 = Trail One
T2 = Trail Two
T3= Trail Three

According to the table 7 the selected variables of forty yards shuttle run test namely time taken to cover first ten yards **(TT1st10YT1)** trail one mean value is 2.5142 and SD is .26515, time taken to cover ten yards come back **(TT10YCBT1)** trail one the mean value 5.4858 and SD is .50665, time taken to cover second ten yards (**TT2nd10YT1)** trail one the mean value is 8.3926 and SD .67043, time taken to cover ten yards come back **(TT10YCBT1)** trail one mean value 11.2250 and SD is .82150, time taken to cover first ten yards **(TT1st10YT2**) trail second the mean value is 2.5076 and SD .26742 time taken to cover ten yards come back **(TT10YCBT2)** trail second mean value is 5.4761 and SD value .50882 time taken to cover second ten yards (**TT2nd10YT2)** trail second the mean value is 8.3958 and SD .67346 time taken to cover ten yards come back **(TT10YCBT2)** trail second the mean value is 11.2271 and SD .82401 time taken to cover first ten yards **(TT1st10YT3)** trail third the mean value is 2.5116 and SD .26526, time taken to cover ten yards come back **(TT10YCBT3)** trial third the mean value is 5.4821 and SD is .50891, time taken to cover second ten yards (**TT2nd10YT3)** trail third the mean value is 8.3905 and SD .67275, time taken to cover ten yards come back **(TT10YCBT3)** trial third the mean value is 11.2289 and SD is .8224.

Table 8

Reliability Coefficient of Selected Variables of Forty Yards Shuttle Run Test

S.No.	Variables	Between Trails	Reliability coefficient (r)	Evaluations
1	TT1st10Y	T1 vs T2	.999	Excellent
		T2 vs T3	.999	Excellent
		T1 vs T3	.998	Excellent
		T1 vs TT	.905	Excellent
2	TT10YCB	T1 vs T2	.999	Excellent
		T2 vs T3	.998	Excellent
		T1 vs T3	.999	Excellent
		T1 vs TT	.975	Excellent
3	TT2nd10Y	T1 vs T2	1.00	Excellent
		T2 vs T3	.999	Excellent
		T1 vs T3	1.00	Excellent
		T1 vs TT	.989	Excellent
4	TT10YCB	T1 vs T2	1.00	Excellent
		T2 vs T3	.914	Excellent
		T1 vs T3	1.00	Excellent
		T1 vs TT	.997	Excellent

N = 70; all measurements in seconds
T1 = Trail One
T2 = Trail two
T3 = Trail three

According to table 8 the reliability

and Coefficient correlation of selected test item forty yards shuttle run test variables namely time taken to cover first ten yards **(TT1st10Y)** the reliability coefficient of correlation between **T1** and **T2** was found **.999** correlation between **T2** and **T3** was found **.999** reliability coefficient of correlation between **T1** and **T3** was found **.998** reliability coefficient of correlation between **T1** and **TT** was found **.905** which was highly coefficient of correlated as per given criteria of Kirkendall et.al, (1987) table 2.

The reliability and validity coefficient of correlation of selected variables namely time taken to cover ten yards come back **(TT10YCB)** correlation between **T1** and **T2** was found **.999** the reliability coefficient of correlation between **T2 and T3** was found **.998** the reliability coefficient of correlation between **T1** and **T3** was found **.999** the reliability coefficient of correlation between **T1** and **TT** was found **.975** which was highly coefficient of correlated as per given criterion Kirkendall et.al, (1987) table 2.

The reliability and validity coefficient of correlation of selected variables namely time taken to cover second ten yards **(TT2nd10YCB)** correlation between **T1** and **T2** was found **1.00** the reliability coefficient of correlation between **T2** and **T3** was found **.999** the correlation between **T1** and **T3** was found **1.00** the reliability coefficient of correlation between **T1** and **TT** was found **.989** which was highly coefficient of correlated as per given criterion of Kirkendall et.al, (1987) table 2.

The reliability and validity coefficient of correlation of selected variables namely time taken to cover ten yards come back **(TT10YCB)** correlation between **T1** and **T2** was found **1.00** the reliability coefficient of correlation between **T2** and **T3** was found **.914** the reliability coefficient of correlation between **T1** and **T3** was found **1.00** the reliability coefficient of correlation between **T1** and **TT** was found **.997** which was highly coefficient of correlated as per given criteria of Kirkendall et.al, (1987) table 2.

Table 9

Internal Consistency of Selected Variables of Forty Yards Shuttle Run Test

S.No.	Variables	Cronbach's Alpha(α)	Performance
1.	TT1st10YT1		
	TT10YCBT1	.933	Excellent
	TT2nd10YT1		
	TT10YCBT1		
2.	TT1st10YT2		
	TT10YCBT2		
	TT2nd10YT2	.934	Excellent
	TT10YCBT2		
3.	TT1st10YT3		
	TT10YCBT3		
	TT2nd10YT3		
	TT10YCBT3	.934	Excellent

N = 70; all measurements in seconds
T1 = Trail One, T2 = Trail two and T3 = Trail three

According to table 9 the internal consistency of first trail of selected variable namely **TT1st10YT1, TT10YCBT1, TT2nd10YT1**

TT10YCBT1 was found .933 ≤ α which was excellent as per given table 3

According to table 9 the internal consistency of second trail of selected variables of namely **TT1st10YT2, TT10YCBT2, TT2nd10YT2** and

TT10YCBT2 was found .934 ≤ α which was excellent as per given table 3

According to table 9 the internal consistency of third trial of selected variables namely **TT1st10YT3, TT10YCBT3, TT2nd10YT3** and **TT10YCBT3** was found .934 ≤ α which was excellent as per given criteria of table 3.

4. DISCUSSION AND FINDINGS

Major Findings

(1) Present study find that the selected Sixty yards shuttle run test variables namely time taken to cover first five yards **(TT1st5Y)**, time taken to cover five yards come back **(TT5YCB)**, time taken to cover first ten yards **(TT1st10Y)**, time taken to cover ten yards come back **(TT10YCB)**, Time taken to cover first fifteen yards **(TT1st15Y)**, and time taken to cover fifteen yards come back **(TT15YCB)** T1, T2 and T3 was found having highly coefficient of correlation.

(2) The selected variables of sixty yards shuttle run test namely time taken to cover first five yards **(TT1st5Y)**, time taken to cover five yards come back **(TT5YCB)**, Time taken to cover first ten yards **(TT1st10Y)**, time taken to cover ten yards come back **(TT10YCB)**, time taken to cover fifteen yards **(TT15Y)**, time taken to cover fifteen yards come back **(TT15YCB)** Trail one, Trail two and Trail three was found to be having excellent internal consistency for the test item Sixty Yards Shuttle Run Test.

(3) The selected forty yards shuttle run test variable namely time taken to cover first ten yards **(TT1st10Y)**, time taken to cover ten yards come back **(TT10YCB)**, time taken to cover second ten yards **(TT2nd10Y)**, time taken to cover ten yards come back **(TT10YCB)**, Trail one, Trail two and Trail third was found to be having highly coefficient of correlation.

(4) The selected forty yards shuttle run test variable namely time taken to cover first ten yards **(TT1st10Y)**, time taken to cover ten yards come back **(TT10YCB)**, time taken to cover second ten yards **(TT2nd10Y)**, time taken to cover ten yards come back **(TT10YCB)**, Trail one, Trail two and Trail third was found .933 ≤ α, .934 ≤ α and .934 ≤ α which is excellent internal consistency.

5. CONCLUSIONS

Within the limitations of the present study, the following conclusions are drawn on the basis of obtaining results.

- The average reliability and validity coefficient correlation of selected temporal variables of sixty yards shuttle run test trail one, trail two and trail three was found .999 which is excellent and highly reliability and validity coefficient as per given criteria of Kirkendall et.al, (1987) table 2.
- The average internal consistency of selected temporal variables of sixty yards shuttle run test trail one, trail two and trail three was found .918 ≤ α which is excellent and highly reliability and validity coefficient as per given criteria of table 3.
- The average reliability and validity coefficient correlation of selected temporal variables of forty yards shuttle run test trail one, trail two and trail three was found .999 which is excellent and highly reliability and validity coefficient as per given criteria of Kirkendall et.al, (1987) table 2.
- The average internal consistency of selected temporal variables of forty yards shuttle run test trail one, trail two and trail three was found .934 ≤ α which is excellent and highly reliability and validity coefficient as per given criteria of table 3.
- Analyzing by using open source software kinovea (0.8.15) for two dimensional video analysis of agility has highly reliable and valid.

6. RECOMMENDATIONS

- Open source software Kinovea (0.8.15) test is valid to use. You can use smoothly this Kinovea (0.8.15) test to measure any physical activity.
- We can do similar research studies to analyze three dimensional videos analysis.
- Kinovea (0.8.15) test is an efficient and cheap platform for analysis of movement (Motion), but very few components can be measured.
- The increasing demand for physical education in the world and the latest research method for the development of sports are being emphasized daily. Keeping this in mind, the Kinovea (0.8.15) test is not fruitful.

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