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Physical fitness assesment among different level of football players: An exploratory study

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Abstract

A study using a sample of 80 healthy, football (n = 80) players participated in the assessment of physical fitness in order to find out the difference between Inter-College and Inter-University Participation. Agility was calculated by measuring 20 Yard Agility Run Test and recorded to the nearest 1/100th second. Balance was calculated by Stork Balance Stand Test and recorded to the nearest 1/100th second. Speed was calculated by measuring 30 Yard Dash Test and recorded to the nearest 1/100th second. Explosive Strength was calculated by measuring Vertical Jump Test and recorded to the nearest centimetres. However, Flexibility was calculated by measuring Sit and Reach Test and recorded to the nearest centimetres. Convenience sampling (also known as availability sampling) is a specific type of non-probability sampling method that relies on data collection from population members who are conveniently available to participate in study were utilized for the purpose of this study. Statistical analysis was performed using SPSS for Windows, version 20.0. Data were for analyzing differences of means. A p value ≤ 0.05 was taken statistically significant. Agility: It is concluded that the means of Inter-College and Inter-University are significantly different at $p < 0.05$. Balance: It is concluded that the means of Inter-College and Inter-University are not significantly different at $p > 0.05$. Speed: It is concluded that the means of Inter-College and Inter-University are significantly different at $p < 0.05$. Explosive Strength: It is concluded that the means of Inter-College and Inter-University are significantly different at $p < 0.05$. Flexibility: It is concluded that the means of Inter-College and Inter-University are significantly different at $p < 0.05$.

Keywords: Football, agility, balance, speed, explosive strength, flexibility

Introduction

Although other classifications of abilities no doubt are involved in skilled motor performance, the motor-abilities category is the one most usually associated with motor behaviors. Different approaches in the attempt to formulate basic abilities have demonstrated alternative ways of thinking about them, resulting in lively debates among scholars. The consequence for the practitioner has been one of confusion. Thus:-

- Ability could be looked as a behavioural variable with parameters defined by the particular methods used in its measurement.
- Ability could have reflect individual differences in training conditions and experiences as well as the state of the organism as induced by the experimenter.
- Ability could be viewed as a hypothetical construct, in which case a skill is defined as a behavioural variable.
- Ability could be an artificial (observed) or constructed statistical variable, whereby a primary ability is derived from the hypothetical elements that are combined from the ability.

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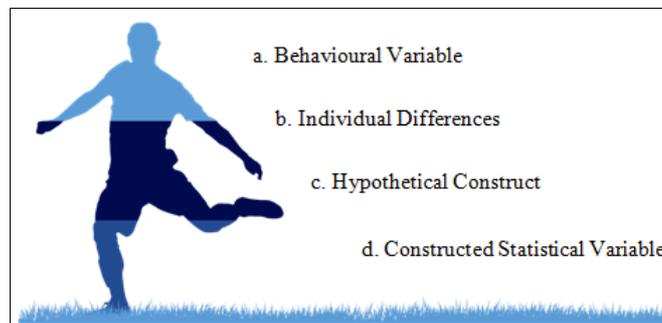


Fig 1: (a) An ability could be looked as a behavioural variable (b) An ability could have reflect individual differences (c) An ability could be viewed as a hypothetical construct (d) An ability could be an artificial (observed).

Football is a game that requires skill and speed. Speed is the ability to perform a movement within a short period of time [1]. Football is one of the most popular games in the world in general. Football being most competitive sport, a player who is Physically fit does not only enjoy more but he is also capable of using all the skills attained and mastered by him throughout, right from beginning to end of the game. The twin combination of both skill and physical fitness is indispensable for a player without either of which he will not be able to achieve much, specifically in order to play any ball game competently [2]. The identification and selection of future elite football players in childhood or adolescence has become a necessity [3].

High level football performance is the result of a multiple factors such as physical, motor abilities, constitutional mental abilities, high physiological work out put, technical and tactical efficiency etc. [4, 5].

Success of team sports require psychological and physical well being in addition to precise motor skills, tactical qualities, playing style, seasonal period, individual and team motivation [6]. Of the determinants affecting sports performance, physical fitness may be the most important [7]. Physical fitness is defined as the capacity to perform daily activity with vitality and sharpness, without undue fatigue while being able to appreciate recreation time interests and to meet the unpredicted emergencies [8].

Materials and Methods

Sample population and study design

A study using a sample of 80 healthy, football (n = 80) players participated in the assessment of physical fitness. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study. The subjects were purposively divided into two groups with reference to their level of performance:

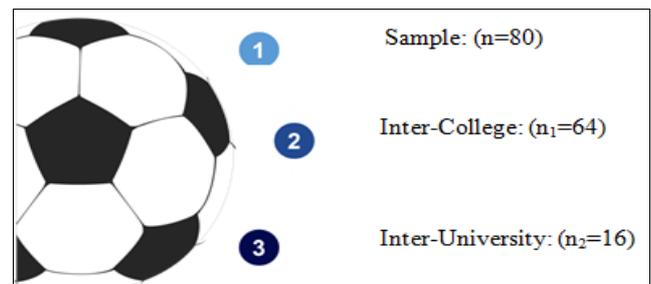


Fig 2.

Data collection

Agility was calculated by measuring 20 Yard Agility Run Test and recorded to the nearest 1/100th second. Balance was calculated by Stork Balance Stand Test and recorded to the nearest 1/100th second. Speed was calculated by measuring 30 Yard Dash Test and recorded to the nearest 1/100th second. Explosive Strength was calculated by measuring Vertical Jump Test and recorded to the nearest centimeters. However, Flexibility was calculated by measuring Sit and Reach Test and recorded to the nearest centimeters.

Sampling

Convenience sampling (also known as availability sampling) is a specific type of non-probability sampling method that relies on data collection from population members who are conveniently available to participate in study were utilized for the purpose of this study.

Statistical analysis

Statistical analysis was performed using SPSS for Windows, version 20.0. Data were for analyzing differences of means. A p value ≤ 0.05 was taken statistically significant.

Results

Table 1: Descriptive Statistics of selected Physical Fitness variables

Variable	Group	N	Mean	Std. Deviation	Std. Error Mean
Agility					
Agility	Inter-College	64	7.0839	.39524	.04941
	Inter-University	16	5.8538	.27597	.06899
Balance					
Balance	Inter-College	64	21.0555	2.63103	.32888
	Inter-University	16	21.8006	2.28692	.57173
Speed					
Speed	Inter-College	64	9.6480	.57702	.07213
	Inter-University	16	8.3237	.26969	.06742
Explosive Strength					
Explosive Strength	Inter-College	64	27.4375	5.63683	.70460
	Inter-University	16	37.9375	2.99931	.74983
Flexibility					

Flexibility	Inter-College	64	2.3281	.99291	.12411
	Inter-University	16	4.7500	1.06458	.26615

The calculated t exceeds the critical value (11.727 > 1.994), so the means are significantly different. Hence it is concluded that the means of Inter-College and Inter-University are significantly different at $p < 0.05$. The absolute value of the calculated t is smaller than critical value (1.038 > 1.994), so the means are not significantly different. Hence it is concluded that the means of Inter-College and Inter-University are not significantly different at $p > 0.05$. The calculated t exceeds the critical value (8.907 > 1.994), so the means are significantly different. Hence it is concluded

that the means of Inter-College and Inter-University are significantly different at $p < 0.05$. The absolute value of the calculated t exceeds the critical value (7.177 > 1.994), so the means are significantly different. Hence it is concluded that the means of Inter-College and Inter-University are significantly different at $p < 0.05$. The absolute value of the calculated t exceeds the critical value (8.603 > 1.994), so the means are significantly different. Hence it is concluded that the means of Inter-College and Inter-University are significantly different at $p < 0.05$.

Table 2: Independent Samples Test of "Agility".

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig	t	df	Sig. (2-tailed)	Mean Diff.	SE Diff.	95% C. I	
								Lower	Upper
Eq. Variances Assumed	.370	.545	11.727	78	.000	1.230	.104	1.021	1.438
Eq. Variances Not Assumed			14.497	32.306	.000	1.230	.084	1.057	1.402

Table 3: Independent Samples Test of "Balance".

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig	t	df	Sig. (2-tailed)	Mean Diff.	SE Diff.	95% C. I	
								Lower	Upper
Eq. Variances Assumed	1.757	.189	1.038	78	.302	.745	.717	2.174	.684
Eq. Variances Not Assumed			1.130	25.894	.269	.745	.659	2.101	.610

Table 4: Independent Samples Test of "Speed".

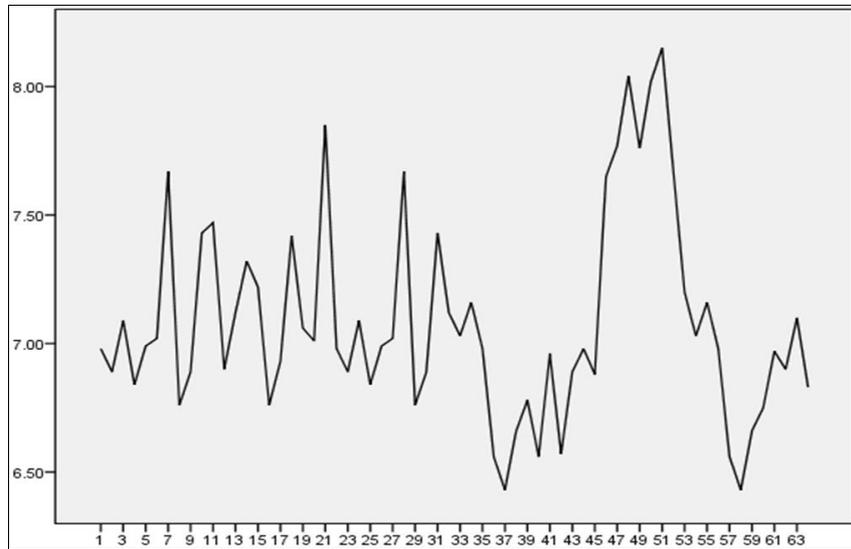
	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig	t	df	Sig. (2-tailed)	Mean Diff.	SE Diff.	95% C. I	
								Lower	Upper
Eq. Variances Assumed	4.424	.039	8.907	78	.000	1.324	.148	1.028	1.620
Eq. Variances Not Assumed			13.412	52.582	.000	1.324	.098	1.126	1.522

Table 6: Independent Samples Test of "Explosive Strength".

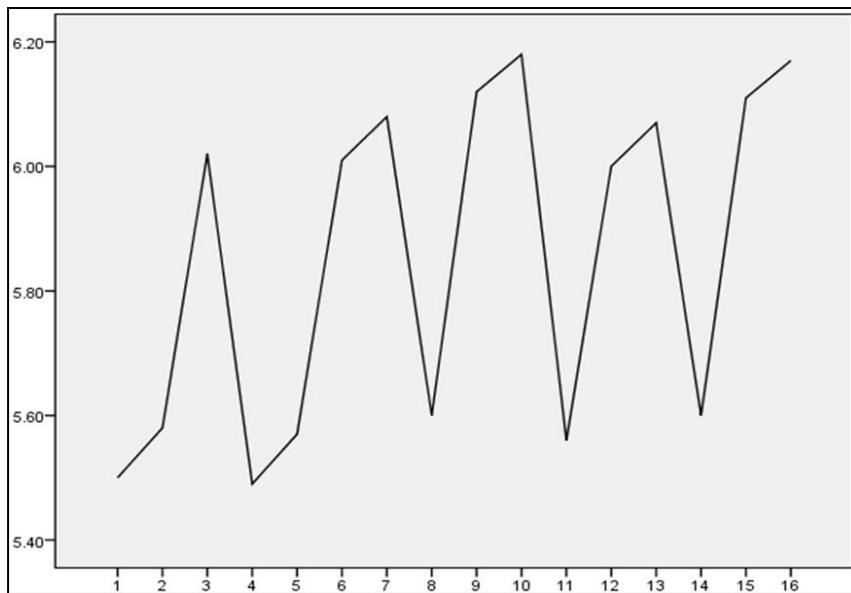
	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig	t	df	Sig. (2-tailed)	Mean Diff.	SE Diff.	95% C. I	
								Lower	Upper
Eq. Variances Assumed	2.498	.118	7.177	78	.000	10.500	1.462	13.412	7.587
Eq. Variances Not Assumed			10.205	44.858	.000	10.500	1.028	12.572	8.427

Table 6: Independent Samples Test of "Flexibility".

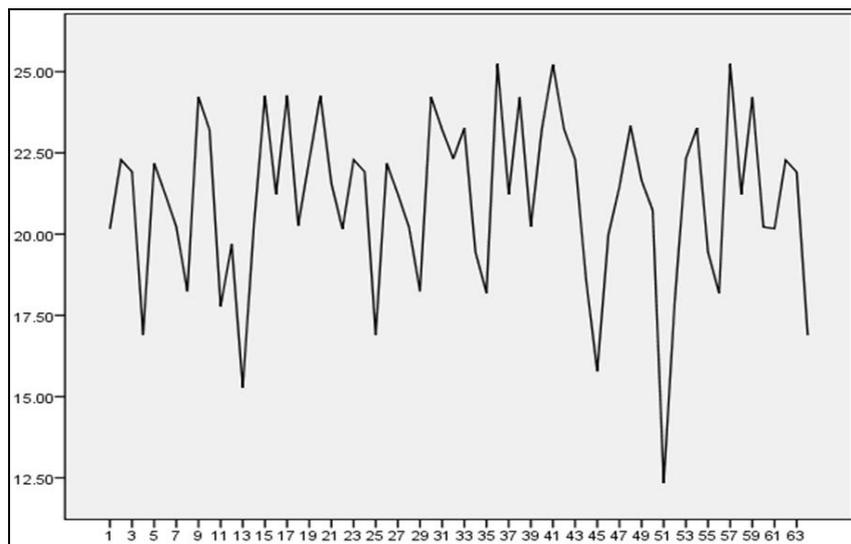
	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig	t	df	Sig. (2-tailed)	Mean Diff.	SE Diff.	95% C. I	
								Lower	Upper
Eq. Variances Assumed	.025	.875	8.603	78	.000	2.421	.281	2.982	1.861
Eq. Variances Not Assumed			21.986	.000	2.421	.293	3.030	1.812	21.986



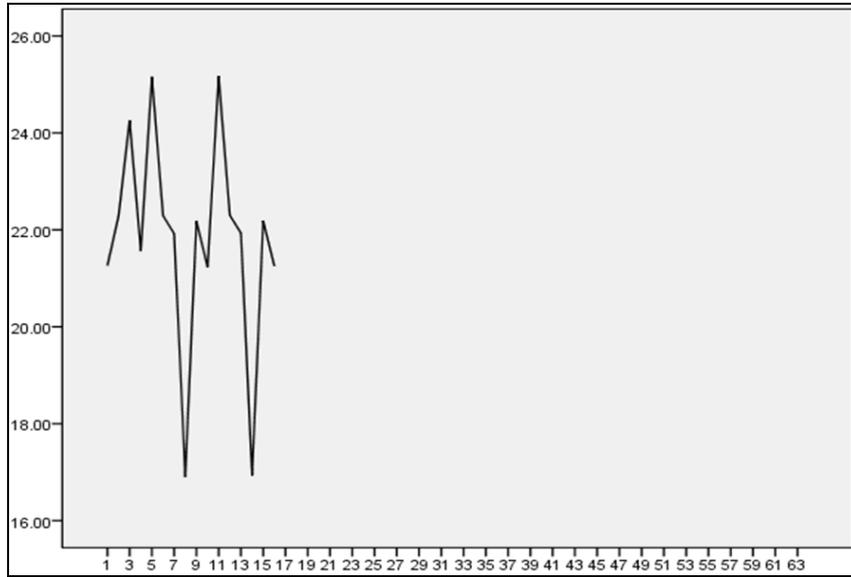
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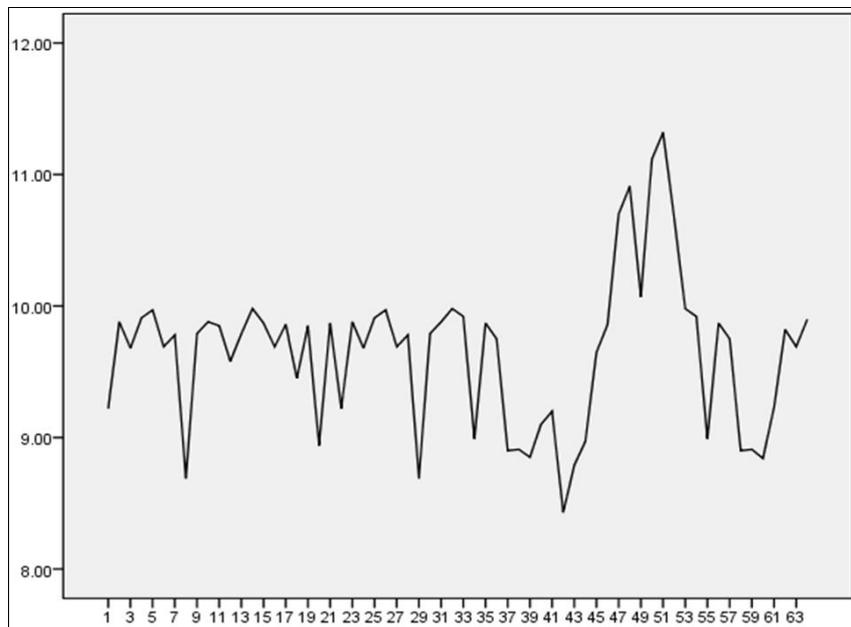
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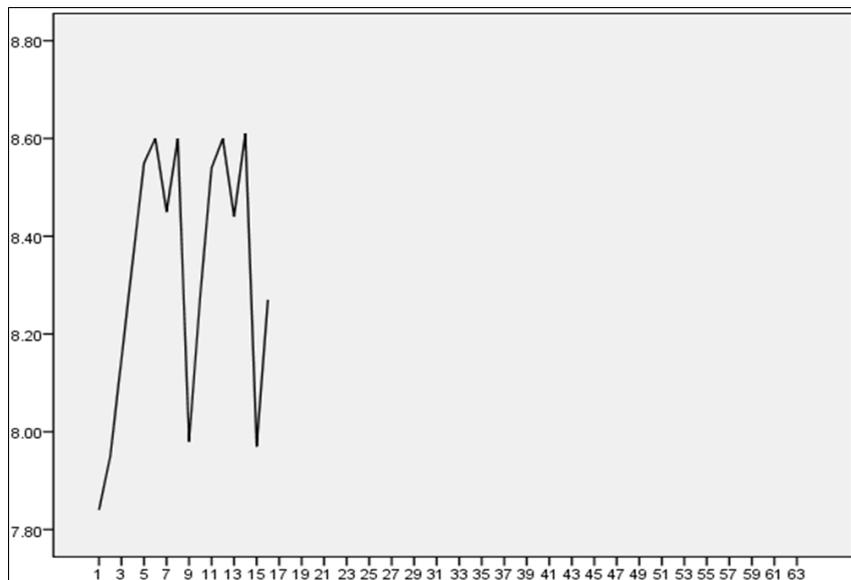
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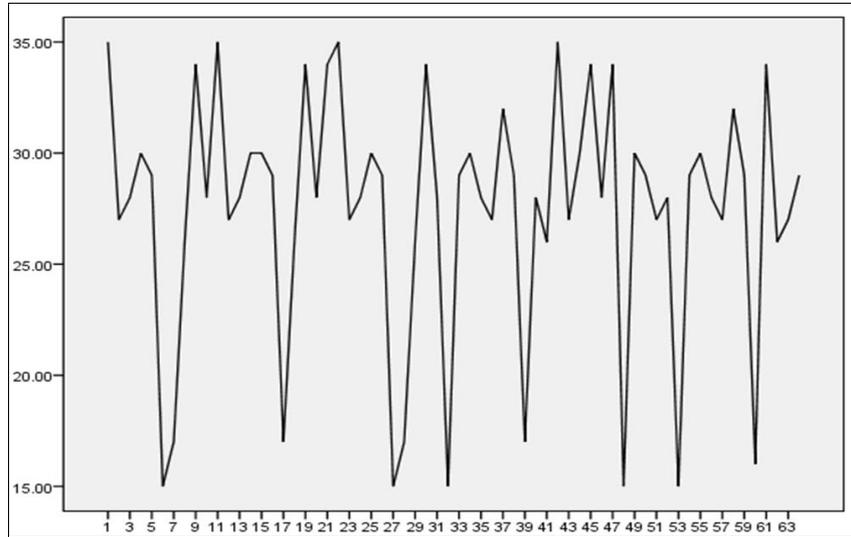
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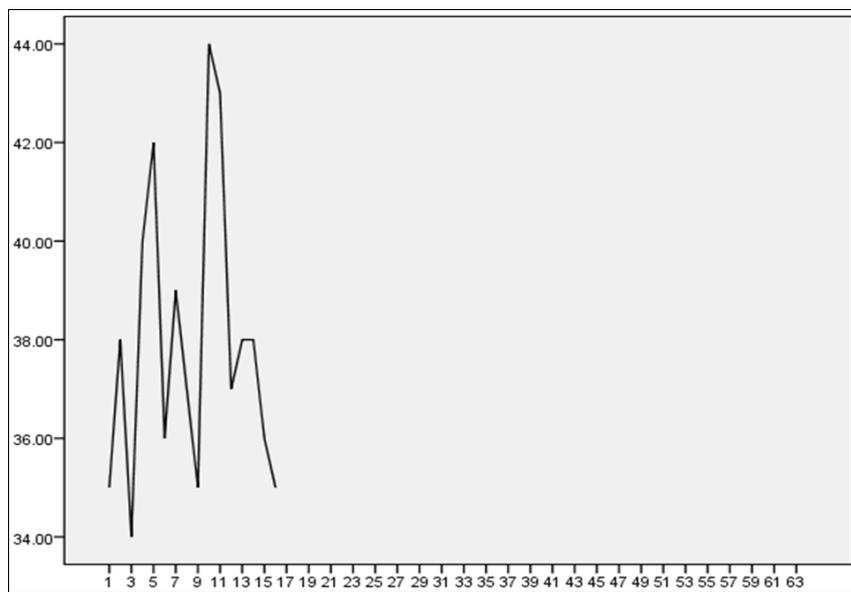
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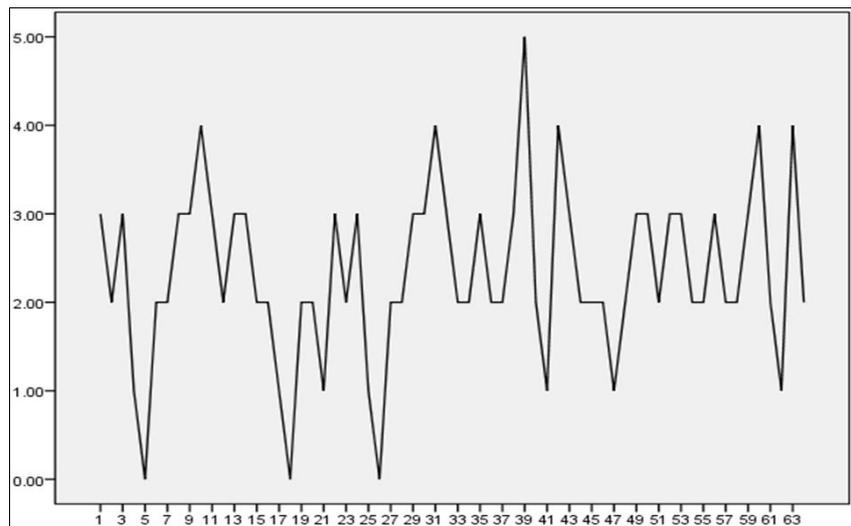
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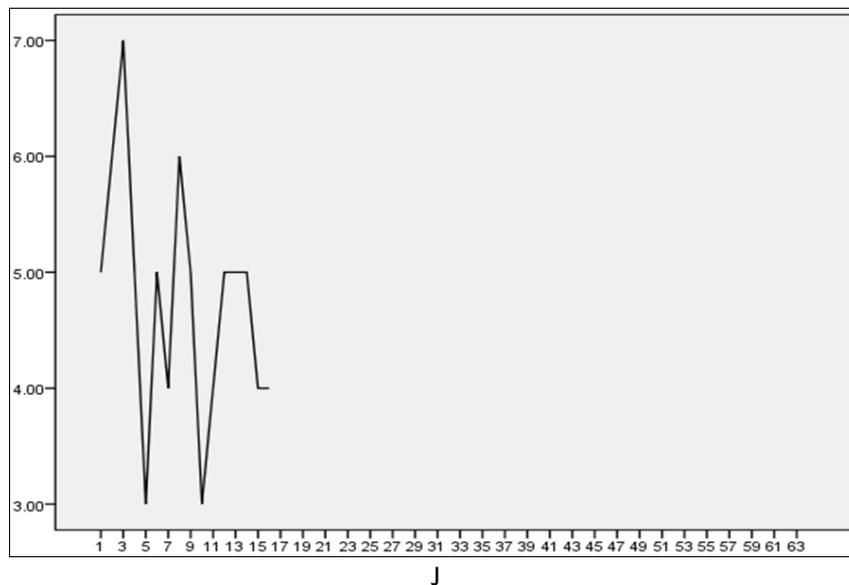


Fig 2: Time Series Sequence chart of selected Physical Fitness variables (a) Agility; Inter-College, (b) Agility; Inter-University, (c) Balance; Inter-College, (d) Balance; Inter-University, (e) Speed; Inter-College, (f) Speed; Inter-University, (g) Explosive Strength; Inter-College, (h) Explosive Strength; Inter-University, (i) Flexibility; Inter-College and (j) Flexibility; Inter-University.

Conclusions

- **Agility:-** It is concluded that the means of Inter-College and Inter-University are significantly different at $p < 0.05$.
- **Balance:-** It is concluded that the means of Inter-College and Inter-University are not significantly different at $p > 0.05$.
- **Speed:-** It is concluded that the means of Inter-College and Inter-University are significantly different at $p < 0.05$.
- **Explosive Strength:-** It is concluded that the means of Inter-College and Inter-University are significantly different at $p < 0.05$.
- **Flexibility:-** It is concluded that the means of Inter-College and Inter-University are significantly different at $p < 0.05$.

Conflict of interest

The authors declare that there is no conflict of interests.

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