

Influence of Circannual Rhythm on Selected Motor Fitness Variables among Kashmir Collegiate Students

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Abstract – The study was conducted on the influence of circannual rhythm on selected motor fitness variable among Kashmir collegiate students. The total numbers of the selected subjects for the study were one hundred and twenty (120) from the 4 different altitude levels of Kashmir valley. The subjects were taken through random a sampling design for 4 different seasons of the year. It is also taken into consideration that the age of the selected subjects range from 18-23 years. The chosen motor fitness variables for the study were Explosive power, Muscular endurance and Agility. The data were collected in between the four different seasons of the year from four different altitudes of Kashmir valley. The collected data were analyzed by applying analysis of variance (ANOVA) and Scheffe's post hoc test by SPSS software. The result of the study exposed that the significant difference in both variables between the subjects from different altitudes was found.

Keywords – Circannual Rhythm, Altitude, Motor Fitness Variables Altitudes, Seasons, College Students, ANOVA

INTRODUCTION

The term circannual rhythm is a derivative of the term circadian. Circadian rhythms are endogenously generated biological rhythms with a time length of about one day (from the Latin circa Diem). Correspondingly then, circannual rhythm may be defined as annual. A true circannual rhythm should have a period close to but not exactly one year (under constant conditions). Any biological rhythm relating a biological or psychological process that occurs or fluctuates at intervals of a approximately one year.

Seasonal variation with significant periodicities (circannual, semiannual, circatrimensual, circabimensual) and meteoropism have been observed in an amount of self related characteristics of common man (arousal, mood, physiology and social behavior). In order to replicate these conclusions, two common controls were asked daily to complete a self-rating level concerned with the characteristics mentioned above during one calendar year. (Maes et al., 1992).

Phenology is obedience observes these procedures and relates their annual difference in climate. But Phenology is also studied in other disciplines, each with their own point of view. Evolutionary ecologists study difference in seasonal timing and its fitness

consequences, whereas chronobiologists highlight the periodic nature of life cycle stages and their underlying timing programmes (e.g. circannual rhythms). (Visser. et al., 2010).

Biological rhythms range extensively in periodically from a fraction of a second to several years. However the circadian and circannual rhythms have a leading role and can be demonstrated not only in physiological states but also in pathological processes which fluctuated during the course of a day (Minoss, 1985).

There are profound fluctuations in climate that take place within the annual cycle of seasonal changes. The severity of these changes depends on the latitude of location and existing geography. Living creatures have evolved means of coping with seasonal limits. Endogenous circannual cycles, at least in humans, appear to have been enclosed by mechanisms employed to cope with environmental change. Physical activity levels tend to be lower in winter than in summer, mediating effects on the health-related fitness. In athletes, seasonal changes are dictated by requirements of the annual program of competitive engagements rather than an inborn circannual rhythm (Relly, T and Peiser, B. 2006).

Biological rhythm in man as well as in other organism can be observed and demonstrated at all lands of

organization population group, individuals or their components such as organ system, organ tissues, cells and sub cellular structure (Halberg *et al.*, 1997).

Motor fitness term described as an athlete’s ability to perform effectively during sports and other physical activity. A well-rounded athlete works to develop Motor skills with practice determine the level of ability. ‘A motor skill is associated with muscle activity, changing course whereas sprinting to hit a tennis ball is an example of agility’ it is the ability to change course, controlling the way and position of your body while maintaining the momentum.

Fitness is that state which characterized the degree to which the person is able to function. Fitness is an individual matter. It implies the ability to each person to live most effectively with his potential. Ability to function depends on physical, mental, emotional, and social components of fitness, all of which are related to each other and mutually interdependent (James Buchan 1932).

Fitness means that a person as prepared his body, through the performance of certain programs of exercise, to respond to most of the demands he makes on that body. Being fit does not require pushing and driving of becomes an Olympic –level athlete. Simply stated, fitness is the foundation of healthy living. It is a foundation for sports enjoyment and achievement (Suzy 1988).

METHODS

Materials and Method

The study was consisted of, 120 male college students which are selected randomly from the 4 different District colleges having different altitude levels in Kashmir valley. The age of the selected subjects ranged from 18 to 23 years. For the accomplishment of the study Explosive power, Muscular endurance and Agility were measured from the college students of different altitudes. The tests for the selected variables of the study were Explosive power (vertical jump) measured in inches, Muscular endurance (one minute timed sit-ups) measured in no’s and Agility (shuttle run) measured in seconds to provide the result of motor fitness of the college students. The procedures of the tests were discussed with the subjects in presence of the physical training instructor so that the subjects cooperate properly. The analysis of the data was done by applying analysis of variance (ANOVA) and Scheffe’s post hoc test by SPSS software. The level of significance was fixed at 0.05 in all cases.

Variables and tests

SELECTION OF VARIABLES, TOOLS AND THEIR MEASUREMENTS

S. No.	Variables	Tests/equipments	Unit of measures
1	Explosive power	Vertical jump	Inches
2	Muscular endurance	Timed sit-ups	No's
3	Agility	Shuttle run	Seconds

Statistical technique

Present investigation was statistically analyzed by applying ANOVA, and Scheffe’s post hoc test was also applied for mean difference between the districts. By applying these tests the researcher would find the significant difference on the selected motor fitness variables among Kashmir collegiate students.

RESULTS

Explosive power

The mean, standard deviation and “f” value of Explosive power of college students of four different Altitudes / districts of Kashmir valley, which is shown in the given below table.

Table 1: ANOVA of college students of different Altitudes / Districts on Explosive power

Altitudes / Districts	Mean	S.D	SOV	S.S	df	M.S	f
Baramulla	14.41	1.72	BG	24.48	3	8.160	5.74*
Srinagar	15.28	1.09					
Kulgam	15.23	.79	WG	164.69	116	1.420	
Shopian	15.64	.93					

*significant at 0.05 level of confidence

Table 1, indicates the Explosive power of selected college students of Kashmir valley. The Mean and S.D values of college students of Altitude / district Baramulla were 14.41 and 1.72, for Srinagar 15.28 and 1.09, for Kulgam 15.23 and .79, and for Shopian 15.64 and .93 It is also clear from the above table that the obtained “f” value is greater than the table value (2.69) which is required for significant at 0.05 levels with df 3 and 116. The result of the study indicates that among the four Altitudes / districts significant difference were found on Explosive power of college students. Hence, to find out the paired mean difference Scheffe’s post hoc test was applied and the results were presented in table 2.

Table 2: Scheffe's post hoc test for Mean difference of four different Altitudes / Districts of Kashmir valley college students on Explosive power

Variable	Altitudes / Districts vs Altitudes / Districts	Mean Difference	C.I
Explosive power	Baramulla vs Srinagar	0.87	0.65
	Baramulla vs Kulgam	0.82	
	Baramulla vs Shopian	1.23	
	Srinagar vs Kulgam	.05	
	Srinagar vs Shopian	0.35	
	Kulgam vs Shopian	0.40	

*significant at 0.05 level of confidence

Table 2, indicates that paired mean difference between Baramulla, Srinagar, Kulgam and Shopian college students on Explosive power. The Mean differences between all Altitudes / Districts were found significant at 0.05 level of confidence. Which is clearly presented in above table?

Muscular endurance

The mean, standard deviation and "f" value of Muscular endurance of college students of four different Altitudes / Districts of Kashmir valley, which is shown in the given below table

Table 3: ANOVA of college students of different Altitudes / Districts on Muscular endurance

Altitudes / Districts	Mean	S.D	SOV	S.S	df	M.S	f
Baramulla	23.06	2.65	BG	111.36	3	37.12	4.54*
Srinagar	20.63	3.13					
Kulgam	21.53	1.88	WG	948.60	116	8.17	
Shopian	22.70	3.50					

*significant at 0.05 level of confidence

Table 3, indicates the Muscular endurance of selected college students of Kashmir valley. The Mean and S.D values of college students of Altitude / District Baramulla were 23.06 and 2.65, for Srinagar 20.63 and 3.13, for Kulgam 21.53 and 1.88, and for Shopian 22.70 and 3.50 It is also clear from the above table that the obtained "f" value is greater than the table value (2.69) which is required for significant at 0.05 levels with df 3 and 116. The result of the study indicates that among the four Altitudes / Districts significant difference were found on Muscular endurance of college students. Hence, to find out the paired mean difference Scheffe's post hoc test was applied and the results were presented in table 4.

Table 4: Scheffe's post hoc test for Mean difference of four different Altitudes / Districts of Kashmir valley college students on Muscular endurance

Variable	Altitudes / Districts vs Altitudes / Districts	Mean Difference	C.I
Muscular endurance	Baramulla vs Srinagar	2.43	0.65
	Baramulla vs Kulgam	1.53	
	Baramulla vs Shopian	.36	
	Srinagar vs Kulgam	0.90	
	Srinagar vs Shopian	2.06	
	Kulgam vs Shopian	1.16	

*significant at 0.05 level of confidence

Table 4, indicates that paired mean difference between Baramulla, Srinagar, Kulgam and Shopian districts of college students on Muscular endurance. The Mean differences between all Altitudes / Districts were found significant at 0.05 level of confidence. Which is clearly presented in above table?

Agility

The mean, standard deviation and "f" value of Agility of college students of four different Altitudes / Districts of Kashmir valley, which is shown in the given below table

Table 5: ANOVA of college students of different Altitudes / Districts on Agility

Altitudes / Districts	Mean	S.D	SOV	S.S	df	M.S	f
Baramulla	11.73	1.24	BG	13.52	3	4.50	4.48*
Srinagar	11.19	.85					
Kulgam	11.89	.97	WG	116.63	116	1.00	
Shopian	12.10	.89					

*significant at 0.05 level of confidence

Table 5, indicates the Agility of selected college students of Kashmir valley. The Mean and S.D values of college students of Altitude / District Baramulla were 11.73 and 1.24, for Srinagar 11.19 and .85, for Kulgam 11.89 and .97, and for Shopian 12.10 and .89. It is also clear from the above table that the obtained "f" value is greater than the table value (2.69) which is required for significant at 0.05 levels with df 3 and 116. The result of the study indicates that among the four Altitudes / Districts significant difference were found on Agility of college students. Hence, to find out the paired mean difference Scheffe's post hoc test was applied and the results were presented in table 6.

Table 6: Scheffe's post hoc test for Mean difference of four different Altitudes / Districts of Kashmir valley college students on Agility

Variable	Districts vs Districts	Mean Difference	C.I
Agility	Baramulla vs Srinagar	.53	0.65
	Baramulla vs Kulgam	0.16	
	Baramulla vs Shopian	0.36	
	Srinagar vs Kulgam	0.69	
	Srinagar vs Shopian	0.90	
	Kulgam vs Shopian	0.20	

*significant at 0.05 level of confidence

Table 6, indicates that paired mean difference between Baramulla, Srinagar, Kulgam and Shopian districts of college students on Agility. The Mean differences between all Altitudes / Districts were found significant at 0.05 level of confidence. Which is clearly presented in above table?

DISCUSSION

The present study was done on motor fitness variables of Kashmir collegiate students at four different altitudes and different seasons. In this study the researcher has done the research work on Explosive power, Muscular endurance and Agility on college students. The study shows significant difference at 0.05 level of significance, which is clearly shown in the above table value (2.69), which is less than the calculated "F" value (5.74), (4.54) and (4.48) The researcher has also analyzed the data by the Scheffe's post hoc test to see the mean difference between the 4 Altitudes / Districts of Kashmir valley. The mean difference of the 4 Altitudes / Districts found also significant because the mean difference (M.D) is higher than the confidence interval (C.I).

CONCLUSION

Motor fitness parameters play a considerable role in performing the fitness of college students. According to the current study college students of Altitude / District Shopian shows high Mean and S.D values in Explosive power, as compared to Altitude / District Baramulla, Srinagar and Kulgam. In Muscular endurance the college students of Altitude / District Baramulla shows high Mean and S.D values, as compared to Altitude / District Srinagar Kulgam and Shopian and in agility the college students of Altitude / District Shopian also shows high Mean and S.D values, as compared to Altitude / District Baramulla, Srinagar and Kulgam. It means that the motor fitness level of college students of different altitude levels shows significant difference, because the table value (2.69) is less than calculated "F" value. Similarly, the mean difference is also significant between all districts.

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