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Comparative study of health related physical fitness of B.P.E, B.C.A and B.E students studying in Hanuman Vyayam Prasarak Mandal Amravati

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Abstract

The aim of the study was to compare the health related physical fitness of B.P.E, B.C.A and B.E students studying in Hanuman Vyayam Prasarak Mandal Amravati, Maharashtra. For this purpose (N=60) male subjects with mean age 18 ± 2.23 year were selected which were further divided as per their respectively class. i.e. B.P.E (n=20), B.C.A (n=20), and B.E (n=20). The selected health related physical fitness components were cardio vascular endurance, body composition, flexibility, muscular strength and muscular endurance. Analysis of variance was used to compare the health related physical fitness. The results of the study showed that there were no statistical significance difference were found in fat and lean body mass as the F- value was 2.144 (Sig. 0.127) and 1.84 (Sig.0.168) respectively where $P > 0.05$. Further, it were found that there were statistical significance difference were observed in sit and reach (flexibility), chin up (Muscular strength) 1 mile run (Cardiovascular endurance) and sit up (Muscular endurance) as F- value were 5.612 (Sig. 0.006), 15.66 (Sig. 0.000), 17.00 (Sig. 0.000), and 13.49 (Sig. 0.000), respectively where $P < 0.05$.

Keywords: Body composition, flexibility, muscular strength and muscular endurance

1. Introduction

We are living in the world where multimedia devices are one of the essential part of everyone's life. We cannot imagine our life nowadays without these multimedia devices. These latest multimedia devices are now become the crucial and essential in every educational hub, community, and international business or even in entertainment world. From school to college majority of user of these multimedia devices are youth of coming generation which are using these multimedia devices as mastery for collecting relevant information technology which is one key to their success. As every positive side come with negative side too, these multimedia devices or new technology having harmful impact on physical activity which is gradually increasing in most of sedentary population [1].

The medical reports and survey indicated that obesity and lack of physical activity (PA) involvement are very much associated with medical complications and cognitive decline in youth [2]. To sustain a healthy life style regular participation in PA is very much needed and this is the problem which is investigated through the various researchers from last 30 years in every part of world [3, 4].

Lack of PA participation leads to increase during the aging process which is one of the major reasons of occurring in late adolescence and early adulthood. The current, students of different universities have found to be propensity for being physically inactive [5, 6]. The medical survey has shown that about one to two thirds of university students are not been involve or taking actively participation in sufficient PA to take healthy advantages [7, 8, 9].

Researches prove that regular participation in PA improves physiological and psychological health of an individual [10]. Although, numbers of researches reported that maximum of students of universities are not actively engage in a sufficient hours of PA [11, 12]. In Behrens and Dinger found that most of the students were more active during their weekday in compare to weekend days and even no significant difference were found among sexes in terms of PA involvement [13]. Even, studied conducted by Keating and colleagues [14] showed that university students follow the same pattern of PA levels as there was progression in their years

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of education in college. Most of the students of colleges are not getting PA pattern suggests for them in college campus and therefore not achieving physical benefits like aerobic exercise and resistance training. This is highly needs to measure and analysis students on their physical fitness to get more benefits of health. For better productivity the students should be healthy and have good physical fitness. With this idea, this research frame work is outlet to compare the health related physical fitness of student of different courses.

2. Methodology

To compare the health related physical fitness of students of B.P.E, B.C.A and B.E of Hanuman Vyayam Prasarak Mandal Amravati, Scholar had selected randomly 20 male students from each group which were regular students of college. The mean age of all the selected students was 18+/-2.23 year. The selected health related physical fitness components for assessing the intervention groups were cardio vascular endurance, body composition, flexibility, muscular strength and muscular endurance. Further, for assessment of health related physical fitness. *i.e.* cardio vascular endurance 1 mile

run/walk test (Sec), body composition four sites skin-fold thickness(mm), for flexibility sit and reach(mm), muscular strength pull up test (numbers) and muscular endurance 1 minute sit and reach (numbers) test were respectively used. Before evaluating the selected health related physical fitness components scholar had explained and given proper demonstration to all the students so there should not be any misunderstanding. The data were collected during the free time of college in the Hanuman Vyayam Prasarak Mandal Amravati, athletic track. The scholar had prepared the data collected plans for each intervention group and taken the help of co-students for collecting the data on selected health related physical fitness. The analysis of variance was used as statistical tool used to compare all the selected class on the health related physical fitness.

3. Results

The data collected on selected health related physical fitness were analysis with appropriate statistical tool and presented in table form.

Table 1: Analysis of Variance of Significance Difference among Selected Inventory Group on Selected Health Related Physical Fitness Components

Variables		Sum of Squares	Df	Mean Square	F	Sig.
Fat	Between Groups	19.584	2	9.792	2.144	0.127
	Within Groups	260.309	57	4.567		
	Total	279.893	59			
Lean	Between Groups	70.715	2	35.358	1.840	0.168
	Within Groups	1095.569	57	19.221		
	Total	1166.285	59			
Sit and reach	Between Groups	168.433	2	84.217	5.612	0.006
	Within Groups	855.300	57	15.005		
	Total	1023.733	59			
Chin up	Between Groups	55.900	2	27.950	15.665	0.000
	Within Groups	101.700	57	1.784		
	Total	157.600	59			
1 Mile run	Between Groups	1392852.512	2	696426.256	17.009	0.000
	Within Groups	2333829.362	57	40944.375		
	Total	3726681.874	59			
Sit up	Between Groups	405.833	2	202.917	13.495	0.000
	Within Groups	857.100	57	15.037		
	Total	1262.933	59			

The table-1 depicts that there were no statistical significance difference were found in fat and lean body mass as the F-value was 2.144 (Sig. 0.127) and 1.84 (Sig.0.168) respectively where $P>0.05$.

Further, table shows that there were statistical significance

difference were observed in sit and reach (flexibility), chin up (Muscular strength) 1 mile run (Cardiovascular endurance) and sit up (Muscular endurance) as F- value were 5.612 (Sig. 0.006), 15.66(Sig. 0.000),, 17.00 (Sig. 0.000), and 13.49 (Sig. 0.000), respectively where $P<0.05$.

Table 2: Post Hoc Analysis of Significance Difference among Selected Inventory Group on Selected Health Related Physical Fitness

Dependent Variable	(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.
Fat	BPE	BE	-1.32500	.67578	.055
		BCA	-1.05250	.67578	.125
	BE	BPE	1.32500	.67578	.055
		BCA	.27250	.67578	.688
	BCA	BPE	1.05250	.67578	.125
		BE	-.27250	.67578	.688
Lean body mass	BPE	BE	-2.10300	1.38638	.135
		BCA	-2.46100	1.38638	.081
	BE	BPE	2.10300	1.38638	.135
		BCA	-.35800	1.38638	.797
	BCA	BPE	2.46100	1.38638	.081
		BE	.35800	1.38638	.797
Sit and reach	BPE	BE	3.65000*	1.22496	.004
		BCA	3.45000*	1.22496	.007

	BE	BPE	-3.65000*	1.22496	.004
		BCA	-.20000	1.22496	.871
	BCA	BPE	-3.45000*	1.22496	.007
		BE	.20000	1.22496	.871
Chin up	BPE	BE	2.20000*	.42240	.000
		BCA	1.85000*	.42240	.000
	BE	BPE	-2.20000*	.42240	.000
		BCA	-.35000	.42240	.411
	BCA	BPE	-1.85000*	.42240	.000
		BE	.35000	.42240	.411
1 Mile run	BPE	BE	-325.60750*	63.98779	.000
		BCA	-320.75550*	63.98779	.000
	BE	BPE	325.60750*	63.98779	.000
		BCA	4.85200	63.98779	.940
	BCA	BPE	320.75550*	63.98779	.000
		BE	-4.85200	63.98779	.940
Sit up	BPE	BE	5.75000*	1.22625	.000
		BCA	5.25000*	1.22625	.000
	BE	BPE	-5.75000*	1.22625	.000
		BCA	-.50000	1.22625	.685
	BCA	BPE	-5.25000*	1.22625	.000
		BE	.50000	1.22625	.685

*. The mean difference is significant at the 0.05 level.

Table- 2, the post hoc analysis of all the health related physical fitness variables shows that in fat body percentage there were no statistical significant mean difference were found as all the inventory group were more or less same mean value. Similar results were observed in case of lean body weight as all the inventory groups were more or less same mean value.

In sit and reach test BPE group has shown better performance in comparison to BE and BCA group as there were statistical significant difference were found in the entire selected group. In chin up test again BPE group has shown better performance in comparison to BE and BCA group as there were statistical significant difference were found in the entire selected group. In 1 mile run and walk test, BPE group has shown better performance in comparison to BE and BCA group as there were statistical significant difference were found in the entire selected group. In 1 minute sit up test, BPE group has shown better performance in comparison to BE and BCA group as there were statistical significant difference were found in the entire selected group.

4. Discussion of finding

In collegiate age physical activities is compulsory to achieve a better health and avoid all the health hazards which are major causes behind unhealthy life styles, in study conducted on similar topic revealed that those who are indulged in regular physical activities are found to be less prone towards health discomfort^[7, 11].

The data collected on selected 60 male subjects of different professional courses including physical education, engineering and computer studies revealed that on some of the health related physical fitness components, there were no statistical significance difference were found but in some of the health related physical fitness components there were statistical significance difference were found.

The data collected on lean body mass and fat body percentage of the entire selected group showed that there were no difference was observed in subjects of selected professional courses including physical education, engineering and computer studies. The selected subjects from different professional courses for this study were from age group of 19 to 24 year which is considered as adolescent. Although, physical education courses students were regular involved in physical activities which was mandatory part of their subject

curriculum when it come to compare two of other professional courses, but still there were no difference were observed in lean body mass and fat percentage may be due to their age that is adolescent where metabolic rate is higher to absorb the food intake and make them to fall away from obesity^[15, 16, 17].

The results also revealed that, there were statistical significance difference were found in muscular endurance, muscular strength, cardiovascular endurance and flexibility variables (health related physical fitness variables). The students of physical education had performed well in all the selected health related physical fitness when it compare to students of engineering and computer courses. The study conducted Morteza jourkesh, 2011 & Dart L. & Davis, M. (2008) had proved that regular involvement in physical activities improve the muscles strength and muscle endurance which is one of the major causes to bring the difference among the selected students.

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