ISSN PRINT 2319 1775 Online 2320 7876

Research paper Volume 10, Iss 2 , 2021

Assessment of Vo2 max and Forced Vital Capacity of the Engineering college women students

Dr.R.Rajeswari

Assistant Professor, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Abstract

The combination of aerobic and anaerobic activities in different games will affect the cardio respiratory system. The study was to analysis the VOo2max and forced vital capacity of the players and non players. For this study one hundred and eighty women students were taken. Six groups, each with sixty students from volleyball, basketball, badminton, tabletennis, throwball and non playing group. Computerized PFT kit was used to measure the Vo2 max and Forced Vital capacity of the students. Analysis of Variance (ANOVA) was applied for the six groups to understand whether there was any significant difference. Scheffe's Post Hoc comparison test was used to find out the source of significant difference among the groups. 0.05 level of significance was used to test the statistical derivatives. From the result is was concluded that VO_2 max of all the five study sports groups are significantly higher when compared to the Non player and Forced Vital Capacity of all the five sports groups are significantly higher when compared to the Non player group.

Keywords: Vo2 max, Forced Vital Capacity, Aerobic, Anaerobic and cardiorespiratory.

1. INTRODUCTION

Physical inactivity whish would cause for the decrease in cytokine movements in the tissue cytoplasm environment induces a state of lacunae which cause for the inappropriate or insufficient cross talk between the organs or systems of the body. This cross talk is done by various chemical substances that are produced in the tissues and are transferred to the required sites of the body to function as determined. This cross talk is the hall mark of the perfect maintenance of biochemical environment of the body. For the excellent and even for optimal movement of these cytokines which are responsible for initiation of several biochemical reactions, physical activity is highly essential. Regular physical exercise is very credible way of intervention for prevention of diseases like Hypertension, Diabetes, Atherosclerosis, Arthritis, Certain cancers etc. Therefore the combination of aerobic and anaerobic activities in different games will affect the cardio respiratory system (Narazaki K, Berg K et.al. 2009).
Statement: The study was to conduct the comparative analysis of Vo2 max and Forced vital capacity between the selected sports activities participating studentsand non participating students of engineering college.

2. Hypothesis

There is significant difference between the participants and non participants with respect to Vo2 max.There is significant difference between the participants and non participants in Forced vital capacity.

3. METHODS

A total of hundred and eighty women students belonging to Chaitanya Bharathi Institute of Technology, Sridevi College of Engineering and G. Narayanamma Institute of Technology and Science of Hyderabad city volunteered for this study. The sports activities included are Basketball, Volleyball, Badminton, Throw ball and Table tennis, which are more intensively involved by the technology college women students of Hyderabad. All the students were in the age range of 18 to 22 years and the inclusion criterion was college level participants for players.Computerized PFT kit was used to measure the Vo2 max and Forced Vital capacity of the students. Analysis of Variance (ANOVA) was applied for the six groups to understand whether there was any significant difference for the Vo2 max and Forced Vital capacity. Scheffe's Post Hoc comparison test was used to find out

ISSN PRINT 2319 1775 Online 2320 7876
Research paper **© 2012 IJFANS. All Rights Reserved,** Volume 10, Iss 2 , 2021

the source of significant difference among the groups.0.05 level of significance was used to test the statistical derivatives.

4. RESULTS

Analysis of variance as depicted in table I indicates that the different sports groups of the study differ significantly with respect to their VO_2 max values as the derived F value i.e. 13.064 is higher than the F critical value i.e. 2.26 at the significant p value of 0.00000842. Since, this will not illustrate each group status with respect to the different other groups of the study, further analysis was conducted.

Table I: Analysis of Variance

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	295.8531	5	59.17062	13.06419	8.42E-11	2.266062
Within Groups	788.0847	174	4.529222			
Total	1083.938	179				

Table II: Summary table

Groups	*n*	*Sum*	*Average*	*Variance*
VB	30	1103.4	36.78	3.544414
BB	30	1143.1	38.103	4.535506
BAD	30	1122.4	37.413	5.221885
TT	30	1097.3	36.576	4.28323
TB	30	1086	36.2	4.162759
NP	30	1019.8	33.993	5.42754

Figure I

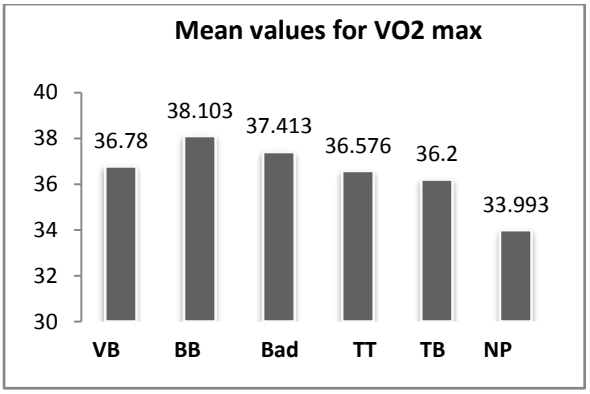


Table III: Scheffe's Post hoc test

(CD=√(a-1)F√2(MSerror)/n = 1.85)

Group /Value	Bad 37.413	VB 36.78	TT 36.57	TB 36.2	NON 33.99
BB 38.103	0.69 N.Sig	1.32 N.Sig	1.53 N.Sig	1.9 Sig	4.12 Sig
Bad37.413		0.63 N.Sig	0.84 N.Sig	1.21 N.Sig	3.42 Sig
VB 36.78			0.21 N.Sig	0.58 N.Sig	2.79 Sig
TT 36.57				0.37 N.Sig	2.58 Sig
TB 36.2					2.21 Sig

Descriptive analysis as conducted in table II indicates that Basket ball activity group showed higher VO_2 max value with 38.1, followed by Badminton activity group (37.41), Volley ball activity group (36.78), Table tennis activity group (36.576), Throw Ball Group (36.2) and Non player group (33.99). The same is also clearly depicted in the Figure I.

Comparing with the obtained CD value of 1.85, the Scheffe's individual comparison indicated that all the sports activity groups of the study showed significantly higher VO_2 max value when compared to the Non player group. Among the combinations of the sports activity groups of the study, the Basket ball activity group showed significantly higher VO_2 max value when compared to the Throw ball activity group alone (1.9, higher when compared to the CD of 1.85) and no other group comparison show any significant difference in post hoc test.

ISSN PRINT 2319 1775 Online 2320 7876
Research paper **© 2012 IJFANS. All Rights Reserved,** Volume 10, Iss 2 , 2021

Analysis of variance as depicted in table IV indicates that the different sports groups of the study differ significantly with respect to their FVC values as the derived F value i.e. 14.104 is higher than the F critical value i.e. 2.26 at the significant p value of 0.00014. Since, this will not illustrate each group status with respect to the different other groups of the study, further analysis was conducted.

Table IV: Analysis of Variance

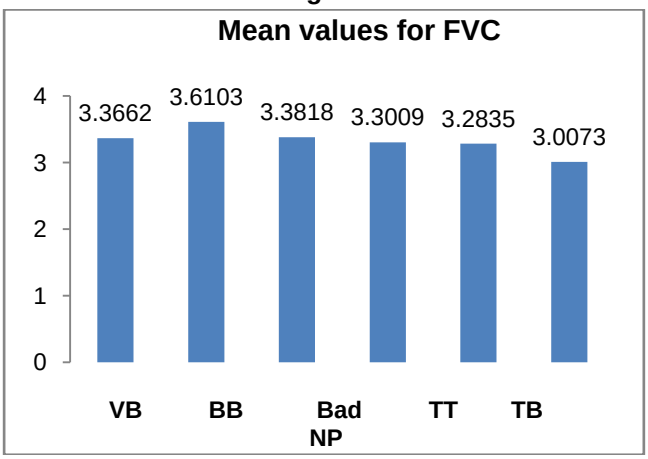
Source of Variation	SS	Df	MS	F	P value	F crit
Between Groups	5.686797	5	1.137359	14.10439	1.4E-11	2.266062
Within Groups	14.03113	174	0.080639			
Total	19.71793	179				

Descriptive analysis as conducted in table V indicates that Basket ball activity group showed higher FVC value with 3.61 followed by Badminton group with 3.38, Volley ball activity group with 3.36, Table tennis activity group with 3.30, Throw Ball Group with 3.28 and Non player group with 3.007. The same is clearly depicted in the Figure II.

Table V: Summary table

Groups	N	Sum	Average	Variance
VB	30	100.986	3.3662	0.07547
BB	30	108.309	3.6103	0.108148
BAD	30	101.455	3.3818	0.086589
TT	30	99.027	3.3009	0.084118
TB	30	98.505	3.2835	0.096238
NP	30	90.219	3.0073	0.033269

Figure II



Comparing with the obtained CD value of 0.24, the Scheffe's individual comparison indicated that all the sports activity groups of the study showed significantly higher FVC value when compared to the Non player group. Among the sports activity groups, both Basket ball and Badminton groups did not differ significantly (0.23) indicating both groups FVC values are similar though there was slight difference in terms of absolute mean values.

Table VI: Scheffe's Post hoc test
(CD=√(a-1)F√2(MSerror)/n = 0.24)

Group/Value	Bad 3.38	VB 3.36	TT 3.30	TB 3.28	NON 3.007
BB 3.61	0.23 N.Sig	0.25 Sig	0.31 Sig	0.33 Sig	0.6 Sig
Bad 3.38		0.02 N.Sig	0.08 N.Sig	0.1 N.Sig	0.373 Sig
VB 3.36			0.06 N.Sig	0.08 N.Sig	0.353 Sig
TT 3.30				0.02 N.Sig	0.293 Sig
TB 3.28					0.273 Sig

But, the Scheffe's post hoc comparison table indicates clearly that the Basket ball group showed significantly higher FVC value when compared to the Volleyball group (0.25), Table tennis group (0.31) and Throw ball group (0.33) and all these three groups did not differ significantly in their FVC

ISSN PRINT 2319 1775 Online 2320 7876
Research paper **© 2012 IJFANS. All Rights Reserved**, Volume 10, Iss 2 , 2021

values indicating that these three activity group's FVC values are similar, though slight variation appears in terms of absolute mean values.

5. DISCUSSION

VO2 max value is considered as one of the highly used variable for Cardio respiratory endurance capacity of individuals. Higher intensity aerobic activities are more favoured for enhancements in VO2 max capacity and this is one reason why the Basket ball sports activity group of the study had highly significant VO2 max value followed by Badminton sports activity group of the study.

Results indicate that the general lung capacity and lung health of all the five sports groups of the study is significantly better than the non playing group of the study. Alsothe Basketball group of the study is better when compared to the Volley ball; Table tennis and Throw ball groups of the study in the general lung health and lung capacity. Regular basket ball activity had caused for the better FVC values, though badminton participation also had caused for some considerable improvement in the FVC values as both the groups of the women students have considerably higher FVC values when compared to the other sports activity groups of the study.

6. CONCLUSIONS

The following conclusions were derived from the analysis of results of the study.

1. VO_2 max of all the five study sports groups are significantly higher when compared to the Non player women group of the women Engineering colleges of the study and VO_2 max of Basketball group of the study was significantly higher when compared to Throw ball group of the study but not with the Table tennis, Volley ball and Badminton groups of the study.
2. Forced Vital Capacityof all the five sports groups are significantly higher when compared to the Non player women group of the women engineering colleges of the study.Also the Basket Ball and Badminton women group of the study is significantly higher when compared to Volley ball group, Table tennis group and Throw ball group of the study in Forced Vital Capacity.

7. RECOMMENDATIONS

The following recommendations are made keeping in view of the results obtained from the present study.

1. Even the college level participation in Basket ball, Badminton, Volley ball, Table tennis and Volley ball sports activities can cause for better lung health of the individuals by causing enhanced Forced Vital Capacity (FVC) and hence college level involvement in such sports events by adolescent and young students especially women students should be encouraged for better lung health.
2. The women students of the colleges be encouraged by incorporating compulsory credits and making the sports activities as one of the compulsory curricular aspects of the regular study.

8. References

1. Richard P, Anne H, Philippe M et.al. Evolution of the ventilator function of professional divers over 10 years. Undersea Hyperb Med. 2013; 40(4): 339-43.
2. Alethéa Guimarães Fariaa, Maria Angela G.O. Ribeiroa, Fernando Augusto Lima Marsonb et.al (2013). *Effect of exercise test on pulmonary function of obese adolescents,* Journal De Pediatria, Received 27 May 2013; accepted 21 August 2013 (article in press).
3. Grisbrook TL, Wallman KE, et.al (2012). *The effect of exercise training on pulmonary function and aerobic capacity in adults with burn.* Burns, 38(4):607-13.
4. D Aquino LC, Rodriques SC, Barros JA et.al. Predicting reduced TLC in patients with low FVC and a normal or elevated FEV1/FVC ratio. J Bras Pneumol. 2010; 36(4): 460-7.
5. Margit Pelkonen, Irma-Leena Notkola, Timo Lakka, et.al (2003). *Delaying Decline in Pulmonary Function with Physical Activity A 25-Year Follow-up,* American journal of Respiratory and clinical care medicine, 168 (4).