



## Original Article

## Relationship of Total Endurance on Job Performance in Educational Sectors

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## ABSTRACT

Work performance and for the safety of employee, poor cardiorespiratory endurance and obesity leads poor job performance and market value. **Objective:** To determine the relationship of cardiorespiratory endurance on job performance in educational sectors. **Methods:** A cross-sectional study was performed using non probability sampling technique on a sample size of 90 participants. Sample was taken from University of Lahore Gujrat campus. The duration of the study was from July- September 2019. Cardiac endurance was assessed by 3-minute step test technique. Job performance of participants was analyzed by work performance questionnaire. Data was analyzed by SPSS version 21.0. Chi square and Pearson correlation coefficient was used to analyze the data. **Results:** A sample size of 90 participants were taken. Result showed that job performance of most workers in a job similar to yours associated with pulse status with p value 0.007 which was  $\leq 0.05$  which shows that it is significant. Spearman correlation was  $-0.283$  indicates weak and inverse relationship between both variables. The result of job performance over past year or two associated with pulse status has p value 0.00 which was  $\leq 0.05$  which shows that result is significant. Spearman correlation was  $-0.483$  indicates weak and inverse relationship between both variables. The result of overall performance on the day you work during the past 7 days associated with pulse status has p value 0.001 which was  $\leq 0.05$  which shows that it is significant. Spearman correlation was  $-0.337$  indicates weak and inverse relationship between both variables. **Conclusions:** This research concluded that work performance, absenteeism, mental health and work productivity is significantly affected by cardiorespiratory endurance on faculty in educational sectors. Cardiorespiratory endurance should be increased for overall health because due to decreased cardiorespiratory endurance person will be more predisposed to heart and related other diseases which will eventually leads to more absenteeism and poor job performance.

## INTRODUCTION

Work performance and for the safety of employee, poor cardiorespiratory endurance and obesity leads poor job performance and market value. It is assumed that obese people are less likely to be hired at jobs and they remain unemployed for greater time. Obese and people with low cardiorespiratory endurance eventually earn less [1]. Work related performance requires specific physical demands for the job. Firefighter job require constantly unique fitness training for their optimal levels of power, strength, muscle and cardiorespiratory endurance. Decreased levels of

fitness and cardiorespiratory endurance leads to work related injuries, reduced levels of occupational performance [2]. To improve performance on job, officers are advised to have regular strength and conditioning programs which should include aerobic fitness core strength and muscular power to maintain their fitness and occupational duties [3]. Physiological responses increase due to the physical fitness and aerobic fitness is main reason to fulfill the job demands it is concluded that if physical activity is not done by employees, it increases the absentees and increase the job performance [4]. As

physical activity increases cardiorespiratory endurance increases. Maximum oxygen consumption enhances the physical fitness. Physical activity increases the work ability and maximum oxygen consumption [5]. Daily physical activities have high positive relationship for prevention of cardiopulmonary and metabolic diseases. Physical activity is very crucial factor for mental wellbeing. It reduces the anxiety, depression and improve the physical self-perception [6]. Physical activity and cardiac endurance are directly proportional to each other in adults as well [7].

A study shows positive relationship exists between physical fitness and job performance with job stressor. Exercise is positively related to improved mood and being able to work with more passion [8]. Physically fit person should be hired according to the demand of job performance. Follow-up of any fitness program there is a difference between male and female response. Heavy weight lifting and high intensity interval training can be introduced to female training for boosting up metabolism and increasing muscular power and endurance capacity [9].

At any point any job requires cardiorespiratory fitness for proper performance of their job such as law enforcement officers job demands to do manual work and use of force. Cardiorespiratory endurance and aerobic fitness are basic indicator for their job performance but not only their job performance but overall health status which would prevent them for cardiovascular diseases which cause population to suffer from cardiorespiratory diseases due to poor fitness levels and high physical work demanding jobs [10].

Physical fitness is related to mental and emotional health. Weakness being tired at work and not feeling physically fit are those works that are not engaged in a healthier life style and have poor cardiorespiratory endurance. Physically fit employees with work with more dedication and will be more productive [11], work performance in high physical work demanding jobs. who were given healthy environmental factors reported less absenteeism less exerting extra effort less low mood

and energy when their job involves more physical work. In other study worse environmental factors were exposed to employees to see the results in job performance [12]. These all studies describe cardiorespiratory fitness effect on job performance in different occupations but not in university faculty or in educational setups and our study focus on effect of aerobic fitness among faculty in educational sectors and their work performance. Only work done in educational sectors was on students.

## METHODS

This cross-sectional study was conducted after the ethical approval. Non probability convenient sampling was used and data were collected from educational sector, Gujrat. Total sample of 90 both male and female were included in this study. The sample size was calculated at 95% level of confidence and was adjusted for 10% dropped rate. Inclusion criteria were permanent faculty members whose job duration exceeded from past 6 months in current institution. Exclusion criteria were any known cardiorespiratory pathology. Such as myocardial infarction, coronary artery disease, heart valve diseases, congenital heart diseases, arrhythmias. Any Lower extremity disability which effects balance and coordination. Such as ataxia, otitis media, Guillain-Barre syndrome, multiple sclerosis. After taking informed consent, information about job performance was collected by work performance questionnaire and cardiac endurance was accessed by 3-minute step test. For endurance participant was asked to step up and down for 3 minutes and then pulse was calculated. According to their age pulse was categorized in to excellent good above average, average, below average, poor and very poor. Then it was related to their job performance and relation was produced. Statistical analysis was performed by using SPSS version 21.0.  $p \leq 0.05$  was considered statistically significant.

## RESULTS

Table1 shows the demographic data of participants. It includes age groups, gender, marital status, pulse rate. Average age group of participants is 26-35 with

37 participants having 56.67% Large number of male are included in our study with total number 47 and 52.22%. Single participants with total number 49 have 54.44% are more frequent in our study. 23 number of participants have average pulse status with 25.56%.

Variables	Category	Percentages (Numbers)
Age groups (years)	18-25	30%
	26-35	56.67%
	36-45	12.22%
	45-55	1.111%
Genders	Male	47(52.22%)
	Female	43(47.78%)
Marital status	Single	49(54.44%)
	Married	41(45.56%)
Pulse status	Excellent	1(1.111%)
	Good	16(17.78%)
	Above average	22(24.44%)
	Average	23(25.56%)
	Below average	15(16.67%)
	Poor	8(8.889%)
	Very poor	5(5.556%)

**Table 1:** Demographic data of participants

	Chi	df	P-Value
Usual performance of most workers in a job similar to yours associated with pulse status.	23.682	18	0.166
Job performance over past Year or two associated with pulse status.	32.758	18	0.018
Overall performance on the day you work during the past 7 days associated with pulse status.	36.528	18	0.006

**Table 2:** Association of job performance with pulse status

The value of usual performance of most workers in a job similar to yours associated with pulse status was 0.166 which was  $\geq 0.05$  that mean it is non-significant result. Value of job performance over past year or two with pulse status was 0.018 which was  $\leq 0.05$  it means this value was also significant. Value of overall performance on the day you work during the past 7 days associated with pulse status was 0.006 which was  $\leq 0.05$  so, it means this value was significant. As shown in Table2.

	Spearman cor.	P value
Correlation of usual performance of most workers in a job similar to yours associated with pulse status.	-.283	.007
Correlation of job performance over past year or two associated with pulse status.	-.483	.000
Correlation of overall performance on the day you work during the past 7 days associated with pulse status	-.337	.001

**Table 3:** Correlation of job performance with pulse status

Table 3 represents the result of performance of most workers in a job similar to yours associated with pulse status with p value 0.007 which was  $\leq 0.05$  which shows that it is significant. Spearman correlation of the variable was  $-.283$  shows the negative correlation between this variable and also indicate weak and inverse relationship. The result of job performance over past year or two associated with pulse status has p value 0.00 which was  $\leq 0.05$  which shows that result is significant. Spearman correlation was  $-.483$  which indicates the negative correlation between this variable and also indicate the weak and inverse relationship. The result of overall performance on the day you work during the past 7 days associated with pulse status has p value 0.001 which was  $\leq 0.05$  which shows that it is significant. Spearman correlation was  $-.337$  which shows that there is negative correlation between this variable and weak and inverse relationship.

## DISCUSSIONS

Previous studies show us endurance capacity and their effect on different professions especially physical work demanding jobs such as fire fighter police department and many other jobs that require heavy work. There was no study conducted on faculty in educational sectors, our study worked on this area to access the relationship of cardiorespiratory endurance on work performance.

Firefighter job demands active and physical fit employees, their cardiac endurance should be increased or at least maintained to be physically fit for the job. Study aimed on duty and off duty

performance and made association with cardiorespiratory fitness. This study conducted by Porto, Luiz and et al concluded the results as improved cardiorespiratory endurance will leads to increase in work productivity and performance [13]. Employment rights set a stranded which emphasize the importance of physical fit employees hiring for moderate to strenuous jobs. This study introduced minimally acceptable standards for occupations which require high muscular strength and improved cardiorespiratory endurance. This study conducted by MS Sothmann et al concluded that hiring of employees should be done on standards for their safety and improved work productivity and our study reports that there is no significant association of cardiac endurance on work performance in faculty [14].

In educational sector little work was done. Only work was conducted by *Nurul Amira Mohd Samsudin and their colleagues* on students in which a study was conducted to determine the association between physical active and cardiorespiratory endurance to their academic performance which included only female participants. It was concluded that there is negative association between obesity, physical activity, cardiorespiratory endurance and academic performance [15]. In this study physical activity like exercise, manual work, and leisure time activities cause muscle activity and enhance the cardiorespiratory fitness and enhance well-being and productivity. Gisela Sjøgaard and their colleagues concluded that cardiorespiratory fitness increases during physical activity and increases the work productivity. Leisure time inactivity causes the Employees with the highest job strain and less work productivity [16].

In this study increased sickness decreases the job performances and persenteesimand increases the absentees, that lead to the decreased in cardiorespiratory fitness and work productivity. Christensen, Jeanette Refstrup PhD et al concluded that engaging in physical activity increase cardiorespiratory endurance and work performance [17]. In this study to meet the physiological demands, physical fitness and cardiorespiratory

endurance stimulate the work performance task efficiently. Goris Nazari concluded that cardiorespiratory fitness is essential factor to improve performances and do work task efficiently [18].

In this study physical activity affects the cognitive function of healthy population and due to physical activity, it enhances memory of employees and increases the work and physical performance. Improved cardiorespiratory endurance positively affects the physical performance of employees. Laura Zettel-Watson Meagan Suen concluded that increase in physical activity and endurance enhances the memory and cognitive function of employees and increase in job performance [19]. This study is conducted by Olaf Prieske and et al concluded that there was significant association between cardiorespiratory fitness and work performance sand lower levels of perceived stress but there was little to moderate association was found between physical and mental fitness. Physical fitness only effect mildly on cognitive performance [20].

## CONCLUSIONS

This research concluded that work performance, absenteeism, mental health and work productivity is significantly affected by cardiorespiratory endurance on faculty in educational sectors. Cardiorespiratory endurance should be increased for overall health because due to decreased cardiorespiratory endurance person will be more predisposed to heart and related other diseases which will eventually leads to more absenteeism and poor job performance.

Our result presents that population with average pulse rate fall on average work performance category. Population with improved cardiorespiratory endurance could be taken for more accurate results. Due to shortage of time, we could not make it but longitudinal or experimental research could be done for more accurate results

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