



## Survey of the Status of Physical Fitness of the Middle Aged Southern Railway Employees

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### Abstract

The aim of this study was to make a study of the status of physical fitness of middle aged Southern Railway (SR) employees. For the purpose of this study, the investigator randomly selected 25 employees from Group A, 25 employees from Group B, 100 employees from Group C and 100 employees from Group D, in the age group of 40 to 50 years. The subjects were selected from Chennai, as Southern Railway headquarters is situated in Chennai and employees from all the divisions and categories of employees are available in Chennai. The health related Physical fitness variables such as Flexibility, Muscular strength, Muscular endurance, Cardio vascular endurance and Percent body fat were measured using standard tests prescribed. The results proved that there were significant differences in means of health related Physical fitness variables, Flexibility, Cardiovascular endurance, Muscular strength, and Muscular endurance and there was no significant difference on body composition among different groups of employees of Southern Railway. The paired mean comparisons proved that there were no significant differences between Group A and Group B employees on Flexibility, Cardiovascular endurance and Muscular endurance. The results further proved that group D employees were having more health related physical fitness followed by Group C, then by Group B and Group A. It was concluded that physical activity levels of the employees have significant association with health related physical fitness levels of middle aged SR employees.

**Keywords:** Survey, Physical Fitness, Railway Employees, Middle Age.

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### Introduction

From a socio-medical point of view, addressing issues of health and illness in a population cannot be isolated from the perceptions and experiences of the individuals with regard to their own health and well-being. Therefore, the value of assessing individuals' experiences of their health-related quality of life lies in the fact that it is possible to identify specific health-related problems affecting different dimensions of a person's life. Based on this information, interventions could then be done, per quality of life indicator, in order to improve individuals' quality of life (Moller et al., 2005). Indian Railways is divided into 16 zones, which are further sub-divided into 68 divisions. The Southern Railway, headquartered at Chennai, Tamil Nadu, is one of the 16 zones of Indian Railways. At present Southern Railway covers the states of Tamil Nadu, Kerala, Puducherry and small portions of Andhra Pradesh and Karnataka.

In 2014-15 Indian Railways carried 8,397 billion passengers annually or more than 23 million passengers a day and 1058.81 million tons of freights in the year, and had revenues of Rs.1634.50 billion (US\$25

billion) which consisted of Rs.1069.27 billion (US\$16 billion) from freight and Rs.402.80 billion (US\$6.1billion) from passenger tickets. There are different categories of employees in Southern Railway. They are considered under different departments such as Personnel, Operating, Commercial, Engineering, Mechanical, Electrical, Signal and Telecommunication, Accounts, Security and Safety branch. The employees for Railways are recruited based on four classifications. During the year 2010-11 there were 477 employees under Group A, 458 employees under group B, 78,916 and 14,074 employees under group D, totaling 93,925 employees were employed. The total number of employees was reduced to 92,520 during the year 2011-12 with 430 under Group A, 510 under Group B, 75,644 under Group C and 15,935 under Group D. In order to cater to the needs of railway employees, the Railways has its own Hospitals and health units that is broadly classified into (a) Functions related to Industrial Medicine and (b) Functions related to Medical treatment to Railway beneficiaries. These concerted efforts by railways contribute to the health related Physical fitness of the employees.

Sengupta & Sahoo (2014) found status and physical fitness of tea factory laborers who were continuously exposed to tea dust in their work environment for more than two years were significantly differed from controls. Rachele JN et al. (2014) found

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significant associations between physical activity and wellness. Storer TW et al. (2014) determined levels of fitness and cardiovascular disease (CVD) risk factors and found lack of widespread implementation of wellness/fitness programs in the U.S. fire service, together which resulted in low physical fitness and the presence of CVD risk factors persist and called for action among health and fitness professionals to assist the fire services in implementing programs for firefighters to improve fitness and reduce CVD risk factors. Keith NR et al. (2012) developed a self-reported fitness (SRFit) survey useful intended to estimate fitness in an adult's age  $\geq 40$  yrs across four domains: 1) muscular strength and endurance, 2) cardiovascular fitness, 3) flexibility, and 4) body composition and found use the SRFit survey useful to self-report physical fitness accurately. These reported researches proved that there were associations between the physical activity of the work involved and the physical status of the workers. The employees of SR involve themselves in varied nature of physical activities in discharging their duties and this research aimed to find out is the present status of the physical fitness levels of the middle aged employees of SR and ascertain whether there are any differences among different categories of

the middle aged employees.

### Methodology

For the purpose of this study, the investigator randomly selected 25 employees from Group A, 25 employees from Group B, 100 employees from Group C and 100 employees from Group D in the age group of 40 to 50 years. The subjects were selected from Chennai, as Southern Railway headquarters is housed in Chennai and employees from all the divisions and categories of employees are available in Chennai. The health related physical fitness variables such as flexibility, muscular strength; muscular endurance, cardio vascular endurance and percent body fat were measured using the standard tests prescribed. For status analysis, the obtained scores were analyzed through mean and standard deviation. To test the statistical significance of mean differences if any among different groups of employees, namely Group A, B, C and D on health related physical fitness, ANOVA was employed for each variable separately. If significant F ratio was obtained, the results were further subjected to statistical analysis using Scheffe's Confidence Interval test to find out the paired mean difference. In all cases 0.05 level was fixed for significance.

### Results

**Table 1.** Status Analysis and Statistical Differences on Health Related Physical Fitness of Middle Aged Southern Railway Employees

	Group A	Group B	Group C	Group D	Source of Variance	Sum of Squares	df	Mean Square	F
<b>FLEXIBILITY</b>									
Mean	3.24	3.28	4.71	5.64	Between	195.10	3	65.03	46.20*
$\sigma$	1.20	0.98	1.23	1.19	Within	346.30	246	1.41	
<b>CARDIORESPIRATORY ENDURANCE</b>									
Mean	45.55	46.75	50.05	54.05	Between	2229.03	3	743.01	28.24*
$\sigma$	1.60	3.07	4.37	6.59	Within	6471.77	246	26.31	
<b>MUSCULAR STRENGTH</b>									
Mean	1.76	1.92	2.88	4.41	Between	282.82	3	94.27	83.54*
$\sigma$	1.13	1.29	1.12	0.91	Within	277.60	246	1.13	
<b>MUSCULAR ENDURANCE</b>									
Mean	2.20	2.32	3.26	4.51	Between	187.75	3	62.58	68.86*
$\sigma$	0.82	0.95	1.01	0.93	Within	223.59	246	0.91	
<b>BODY COMPOSITION (PERCENT BODY FAT)</b>									
Mean	26.59	25.84	26.15	25.91	Between	10.06	3	3.35	0.44
$\sigma$	2.46	2.97	2.52	2.98	Within	1866.10	246	7.59	

\* Significant at 0.05 level.

The results on variables that were found significant differences were further subjected to post hoc analysis using Scheffe's confidence interval and the

paired mean comparisons with required confidence levels are presented in Table II.

**Table II.** Multiple Comparisons of Paired Means on Health Related Physical Fitness of Middle Aged Southern Railway Employees

Group A	Group B	Group C	Group D	MD	C I
<b>FLEXIBILITY</b>					
3.24	3.28			0.04	0.24
3.24		4.71		1.47*	0.24
3.24			5.64	2.40*	0.24
	3.28	4.71		1.43*	0.24
	3.28		5.64	2.36*	0.24
		4.71	5.64	0.93*	0.24
<b>CARDIOVASCLAR ENDURANCE</b>					
45.55	46.75			1.20*	1.05
45.55		50.05		4.50*	1.05
45.55			54.05	8.49*	1.05
	46.75	50.05		3.30*	1.05
	46.75		54.05	7.30*	1.05
		50.05	54.05	3.99*	1.05
<b>MUSCULAR STRENGTH</b>					
1.76	1.92			0.16	0.22
1.76		2.88		1.12*	0.22
1.76			4.41	2.65*	0.22
	1.92	2.88		0.96*	0.22
	1.92		4.41	2.49*	0.22
		2.88	4.41	1.53*	0.22
<b>MUSCULAR ENDURANCE</b>					
2.20	2.32			0.12	0.20
2.20		3.26		1.06*	0.20
2.20			4.51	2.31*	0.20
	2.32	3.26		0.94*	0.20
	2.32		4.51	2.19*	0.20
		3.26	4.51	1.25*	0.20

### Discussion

The results presented in Table 1 proved that there were significant differences in the means of health related to physical fitness variables such as flexibility, cardiovascular endurance, muscular strength, muscular endurance as the obtained F values 46.20, 28.24, 83.54, and 68.86 were greater than the required F value of 2.64 to be significant at 0.05 level. Hence it was found that the means significantly differed among the different groups of employees of southern railway. However, there was no significant difference in body composition as the obtained F value 0.44 was lesser than the required F value of 2.64 and it was found there was no significant difference on body composition among the different groups of the employees of southern railway.

The results presented in Table II show that there were significant differences among Group A and Group B employees on flexibility, cardiovascular endurance and muscular endurance. All other comparisons proved that there were significant differences among Group A, Group B, Group C and Group D middle aged employees

of southern railway. The results further proved that group D employees were enjoying more health related physical fitness followed by Group C, then by Group B and Group A. These differences were found to be significant at 0.05 level. Rachele JN et al. (2014) found significant associations between physical activity and wellness. Since Group D employees were involved in more physical activity in discharging their work than Group C, B and A employees, that group of employees were found to be having more health related physical fitness levels on flexibility, cardiovascular endurance, muscular strength and muscular endurance than the others. The findings of this study are in agreement with the findings of Rachele et al. (2014).

### Conclusions

It was concluded that physical activity levels of the employees has a significant association with health related physical fitness levels of middle aged Southern Railway employees.

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