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Comparison of Physical Fitness Between Rural and Urban Physical Therapy Students Studying in Lahore, Pakistan

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ABSTRACT

Objective: The main Purpose of this study was determine and compare the level of physical fitness among physical therapy students of rural and urban areas. The basic purpose is to find a difference in measured physical fitness of these students in Lahore (Punjab, Pakistan). **Duration:** The study was completed in six months. **Setting:** The students of physical therapy from public and private sector institutions of Lahore were taken including Azra Naheed Medical College and Children school of Allied health sciences**.** **Methodology:** It was a cross sectional study. The sample size was 156. Participants were divided into two groups'. **Sampling:** Simple convenient sampling technique was used. Only undergraduate students having age limit 21-28, both male and females were included and the students with any trauma, surgical history or musculoskeletal diseases were excluded. Physical fitness was assessed by common clinical tests: Harvard step test, Push- up test, Squat test, flexibility test, Touch toe test. The Body Mass Index was evaluated in order to determine their body composition. All the data was evaluated in SPSS version 21. **Results:** The results of the study indicated that while performing push up test for physical fitness, in urban population only 1(1.2%) were good in physical fitness while in Rural Population 6(8.1%) were good. While performing Touch- Toe Test, in rural population 46(62.2%) were flexible and in Urban population 55(67.1%) were flexible. In squat test, in rural population 23(31.1%) and in urban population 50(61.0%) were considered poor in terms of physical fitness. in rural population 14(18.9%) and in urban population 22(26.8%) were considered to have poor strength. **Conclusion:** The results of the study showed that the rural physical therapy students were physically fit as compared to urban physical therapy students. Moreover, obesity is more common in urban students as the Body Mass Index was high in urban physical therapy students.

Keywords: Physical fitness, Students, Urban population, Rural Population

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INTRODUCTION

Physical education, suggest different bodily characters such as physical strength physical development physical health and physical appearance. It refers to the balance of body to mind. The aim of Physical education is to improve the mass of students and giving them as much health struggle and stamina as possible.[1] The concept of physical fitness very old as human kind. It is considered as important component of life of an individual through the history of mankind. In past people were dependent upon their individual strength, vigor and vitality for physical survival.[2] In last three to four decades, the prevalence of overweight has been increased and physical fitness has been decreased in adults across all genders, ages and racial/ethnic groups. Effects of decrease physical fitness on both the individual and society are serious and multi-dimensional and also negative. A lot of factors are linked with adopting and keeping physically active lifestyle, like socioeconomic status, environmental factors, health status and cultural influences. Further, it is known that urban life is more inactive lifestyle as compared to rural life.[3] Physical fitness can be considered as an important measure of most, if not all, the functions of body (i.e. Skeleton muscular, hematoma-circulatory, cardio respiratory, endocrine–metabolic and psycho neurological) that take part in the activity of daily living as well as physical activity or physical exercise. Some of the reviews have discussed the relation between physical activity in young ages and its effects i.e. short/long-term consequences on health.[4] Health and well-being are greatly affected by Urbanization and increasing income.[5, 6]

The study by West and Gardener concluded that graduate physiotherapist was having risk for low back pain for life time 35%, 12-month risk 22%.[7] Physiotherapists develop low back pain during the earlier five years of employment.[8,9] One of the study in Australia concluded that pain in general population was in age of 15-24 was 16 % and 18% was in age group of 25-35 , which was lower as compared to the young physiotherapists.[10,11] The study conducted by Leah Jane Nyland results showed that the physiotherapist exposure to treat patients was significantly related with one month and one-week low back prevalence. The study concluded that physiotherapist enter in work force with low back pain and there is potential for low back pain during their training.[10] Then another study linked the low back pain due to their professional work and clinical training. These factors are physical as well as personal. The personal factors (non-modifiable were age, gender and anthropometry while

modifiable were motor control, physical fitness level and muscular strength.[12] One of the study by Leong also resulted in which there was the worth of living area key component for of fitness in children of that area.[13] Variations regarding physical fitness level of the children in variety of socio-economic groups, rural and urban areas resulted that in developed and developing countries have difference in physical fitness level. But there are also Contradictory researches are also available and published on assessment of fitness in children of urban and rural areas.[14] A research that shows that participation in different physical activities during childhood may help in the development of motor abilities as well as lay the basis for good health, cardiovascular health especially. In literature it has been recommended that the distribution of children's physical fitness on the basis of geographic boundaries, such as rural-urban districts needs to be studied in different climate, cultural and economic status.[15] In some studies, there were no such differences in physical fitness between urban and rural children that can be considerable.[16] But some studies showed that the urban children have more physical fitness than children from rural areas also other studies with opposing results are available.[17] Therefore, it is clear that due to change in the mechanism of life style, the activity of young generation has been decreased as compared to the past. Therefore, the present study is to compare many factors related to the Physical fitness and health among boy students of rural and urban areas. There is no single study available on fitness measurement within students of any age as well as any category of students. Previous studies are very less in number measuring fitness level of students but a few available but have not compared between the rural and urban students'. The present study makes an attempt to measure fitness level of physiotherapy students as their job demands physical exercise and fitness. The study was used to differentiate between measured levels of physical
Fitness among rural and urban physiotherapy students. In this study we investigated that how urbanization affect the individual activity level and strength

METHODOLOGY

Study Design: It was a cross sectional study.

Setting of Study: This study was carried out in Azra Naheed medical college and children school of Allied Health sciences on 156 students. The students of physical therapy from public and private sector institutions of Lahore were taken.

Duration: The study was from October 2015 to March 2016. Simple convenient sampling technique was used.

Methods: Only undergraduate students having age limit 21-28, both male and females were included and the students with any trauma, surgical history or musculoskeletal diseases were excluded. Physical fitness was assessed by common clinical tests. Harvard step test is the measurement of aerobic fitness. The subjects were asked to step up and down on the bench at a rate 30 step/min until exhaustion (max time is 5 min). The subject defined as exhausted when cannot maintain the steps for 15 seconds. The subject sits down, when test is complete or subject is exhausted. Then time is counted and heart beats were measured in time of 1-1.5min, then 2 – 2.5min, 3 – 3.5 min (each for 30 seconds). Push- up test is one of the easy methods to check strength of upper limbs. Wall Squat test is used for muscular strength of the lower limbs. This test was not conducted in any musculoskeletal injured subjects. The subjects were asked for warm up and then assuming the position like sitting with hip and knee flexion to 90 degree with their back resting on wall. Subjects were instructed to lift off the right foot is time is noted with help of stop watch. After that scoring was done by calculating the time of both feet, subjects were categorized in excellent to poor categories. Touch toe test is simple test used to check the flexibility of lower extremities. Flexibility is actually the elasticity of the muscles. The subjects were asked to touch their toes without bending their knees while standing on a small table. The subjects were categorized as flexible if they were able to touch their toes. The Body Mass Index was evaluated in order to determine their body composition. The study was completed in 6 months. All the data was evaluated in SPSS version 21. All the participants of study were informed about the nature of study before collection of data. Data was collected and then provided data by the respondents kept confidential and encoded so that privacy should be maintained. The ethical approval was taken from ethical committee before data collection.

RESULTS

The results of BMI showed that in Urban Population 8(9.8%) were underweight, 37(45.1%) were normal and 37(45.1%) were overweight While in Rural population 45(54.9%) were underweight, 15(37.8%) were normal and only 14(7.3%) were over-weight. (Table 1) Push-up test indicated that in urban population only 1(1.2%) were good in physical fitness, 4(2.9%) were above average in physical fitness, 4(4.9%) were average in physical fitness, 25(30.5%) were below average in physical fitness, 21(25.6%) were poor in physical fitness and 27(32.9%) were very poor in physical fitness while in Rural Population 6(8.1%) were good, 18(24.3%) were above average, 15(20.3%) were average, 18(24.3%) were below average, 9(12.2%) were poor and only 8(10.8%) were very poor in physical fitness pushup test. (Table 2) in rural population 46(62.2%) were flexible and 28(37.8%) were non- flexible when toe-touch test was performed while in Urban population 55(67.1%) were flexible and 27(32.9%) were non-flexible. (Table 3) The results indicated that in rural population 1(1.4%) were unable to perform wall squat test, 4(5.4%) were above average, 21(28.4%) were average, 25(33.8%) were below average and 23(31.1%) were poor, While in Urban population 6(6.1%) were unable to perform the test, 4(4.9%) were above average, 12(14.6%) were average, 10(12.2%) were below average and 50(61.0%) were poor. (Table 4) The results of fitness index showed that in rural population 64(86.48%) were poor, 7(9.5%) were average and 3(4.1%) were good while in Urban population 78(93.12%) were poor, 3(3.7%) were average and 1(1.2%) were good (Table 5)

Table 1: Descriptive statistics for comparison of BMI among rural and urban population

Urban Population, N=82			Rural Population, N=74	
BMI	Frequency	Percent	Frequency	Percent
16-18.5	8	9.8	45	54.9
18.5-25	37	45.1	15	37.8
25-30	37	45.1	14	7.3

This indicates that in Urban Population 8(9.8%) were underweight, 37(45.1%) were normal and 37(45.1%) were overweight While in Rural population 45(54.9%) were underweight, 15(37.8%) were normal and only 14(7.3%) were over-weight.

Table 2: Descriptive statistics for comparison of physical fitness among rural and urban population (Push Up Test)

Push up (Urban population), N=82			Push up (Rural Population) N=74	
	Frequency	Percent	Frequency	Percent
Good	1	1.2	6	8.1
above average	4	4.9	18	24.3
average	4	4.9	15	20.3
below average	25	30.5	18	24.3
poor	21	25.6	9	12.2
very poor	27	32.9	8	10.8

This indicates that in urban population only 1(1.2%) were good in physical fitness, 4(2.9%) were above average in physical fitness, 4(4.9%) were average in physical fitness, 25(30.5%) were below average in physical fitness, 21(25.6%) were poor in physical fitness and 27(32.9%) were very poor in physical fitness while in Rural Population 6(8.1%) were good, 18(24.3%) were above average, 15(20.3%) were average, 18(24.3%) were below average, 9(12.2%) were poor and only 8(10.8%) were very poor in physical fitness pushup test.

Table 3: Descriptive statistics for comparison of physical fitness among rural and urban population (touch-toe test)

(Rural population), N=74			Test (Urban Population), N=82	
	Frequency	Percent	Frequency	Percent
Flexible	46	62.2	55	67.1
Non-flexible	28	37.8	27	32.9

This indicates that in rural population 46(62.2%) were flexible and 28(37.8%) were non-flexible when toe-touch test was performed while in Urban population 55(67.1%) were flexible and 27(32.9%) were non-flexible.

Table 4: Descriptive statistics for comparison of physical fitness among rural and urban population (wall squat test)

(Rural population), N=74			(Urban population), N=82	
	Frequency	Percent	Frequency	Percent
unable to perform	1	1.4	6	6.1
above average	4	5.4	4	4.9
average	21	28.4	12	14.6
below average	25	33.8	10	12.2
Poor	23	31.1	50	61.0

This indicates that in rural population 1(1.4%) were unable to perform wall squat test, 4(5.4%) were above average, 21(28.4%) were average, 25(33.8%) were below average and 23(31.1%) were poor, While in Urban population 6(6.1%) were unable to perform the test, 4(4.9%) were above average, 12(14.6%) were average, 10(12.2%) were below average and 50(61.0%) were poor.

Table 5: Descriptive statistics for comparison of physical fitness among rural and urban population (Harvard Step-Test, fitness index)

Index (Rural population), N=74			Index (Urban population), N=82	
	Frequency	Percent	Frequency	Percent
Poor	64	86.48	78	95.12
Average	7	9.5	3	3.7
Good	3	4.1	1	1.2

The results of fitness index showed that in rural population 64(86.48%) were poor, 7(9.5%) were average and 3(4.1%) were good while in Urban population 78(93.12%) were poor, 3(3.7%) were average and 1(1.2%) were good.

DISCUSSION

Mandeep in his study showed that that the rural children have significant and better speed, endurance as compared to the urban children. But in this study only flexibility was quite similar in both groups. A very less number of students were in normal or average category As a result, it was evident that place of residence had great impact on the physical fitness components among the children.[18] The work by Asghar Namjool also shows that rural students were good in Body mass index [BMI], the power of hand muscular paws, subcutaneous fat, and the level of physical readiness were good compared to that of the urban students.[19] In the present study there was quite difference that is remarkable and prominent.A study by Cevdet Tinazci on the effects of environmental factors effecting physical fitness of rural and urban children. It was concluded that body mass index and skinfold thicknesses were high in the urban children ($P < .05$). Cardiopulmonary and motor fitness were quite different between these groups. Further, flexibility and muscle endurance were quite higher in the rural children. Lower physical activity level

had indicated a significant low flexibility, muscle endurance, and strength of urban children.[20] In present study BMI of 33 students in sample of 78 urban were in underweight category and 5 in Overweight. Similarly 10 rural were in underweight and 14 in overweight category. That was quite different from this study by Eric R. Castillo and he compared urban and rural physical fitness in children of Kenya, there were variations in endurance and body composition were marked between urban and rural groups, strength and flexibility are not always correlated with overall activity levels.[21] Similar to this study the present study results were different in rural and urban students as well .Only flexibility of both groups was quite near to each other but there was variation in fitness index as measured by Harvard Step Test. One aspect of this study is important that wall squat was even difficult for students to perform that was quite alarming regarding their physical fitness. It was also found that the urban children watched TV more than the rural children. The results showed that body mass index and skin folds thickness were higher in the urban children ($P< 0.05$). In contrast, flexibility and muscle endurance were significantly higher in the rural children. The children living in the urban areas were more inactive and obese, which resulted in a decrease in their flexibility and muscle endurance fitness. The study by Pallab Ghosh discovered the factors that affect physical fitness of rural and urban children related to environment. BMI was higher in the urban children ($p<0.05$). While speed, abdominal strength, endurance and leg strength were significantly higher in children of rural residency.[22] But present study results concluded that fitness was lacking in both of the groups, except some of the rural students. It was evident from this discussion that rural students of Physiotherapy studying in Lahore were quite better in their Fitness as compared to the urban students. Perhaps it may be due to sedentary life styles.

CONCLUSION

It was concluded that rural physical therapy students in Lahore were physically fit as compared to urban physical therapy students. Moreover, obesity is more common in urban students as the Body Mass Index was high in urban physical therapy students.

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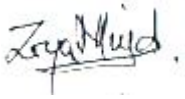
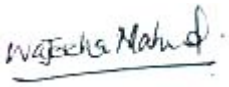
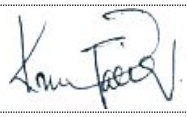
Dr. Zoya Mujahid Demonstrator The University of Lahore, Lahore	Results and Data Analysis	
Dr. Wajeeha Mahmood Senior Lecture Superior University, Lahore	Manuscript writing, Statistical analysis, Critical revision	
Dr. Komal Tariq Physiotherapist Rubina Memorial Hospital, Faisalabad	Literature Review and assembly of data	
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