Analytical study of motor fitness of rural and urban high school students of Meerut district

Dr. Hoshiyar Singh

Abstract
The aim of the study was to identify the motor fitness of rural and urban students. 40 male students, 20 rural and 20 urban from various schools of Meerut district, Uttar Pradesh, India were selected as subjects for the study. Execution criteria were the presence of chronic medical condition such as asthma, heart disease or any other condition that would put the subject at risk when performing the Motor Fitness components. The data was collected by use of measurements of height & weight as well as by application of tests like, running, jumping, stepping, situps etc. The data was analyzed with the help of statistical procedure in which arithmetic mean, standard deviation and t - test were employed.

The mean age of rural students was 16.01 years, height was 164.40 cm. and the weight was 52.48 kg. On other hand the mean (+S.D.) age of the urban students was 16.32 years, height 164.50cm and weight 54.67kg. Significant difference in the agility (t=3.11, p<.05) was found between rural and urban students, urban students was found to be greater agility as compared to rural students while comparing speed ability (t= 3.26, p<.05) significant difference was found between rural & urban students. Urban students incur significantly less speed ability as compare to rural students. Meanwhile, significant difference was found in endurance ability (t=5.96, p<.05) between rural and urban students. Rural students were found to have got more cardio vascular efficiency as compare to urban students. While comparing explosive strength between rural and urban students, significance difference was found (t=6.53, p<0.5). Rural students were strongest as compared to their counterpart. Whilst no significant difference in the muscular strength was found between two groups students.

Keywords: motor fitness, rural, urban, muscular strength

Introduction
Physical fitness is used in the context of two meanings: General fitness (a state of health and wellbeing) and specific fitness (the ability to perform specific sports or occupational skills). Fitness can be further subdivided into five categories: Cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition. The criteria for physical fitness has also expanded to include the capacity to meet physical demands in an emergency situation.

Physical fitness refers to maximum functional capacity of all system of the body. We are exercising whenever we move and keeping our body tuned and in a good running order. The body of human is framed in such a way that it can jump, climb, bend, stretch and do more tedious work. The human body becomes more stronger as it exerts more and muscles involvement matters a lot in shaping it. Exercise helps in improving our health and builds up our energy and stamina.

Physical fitness is a state of health and well- being and, more especially, the ability to carry out daily task with vigor and alertness, and to meet unforeseen emergencies without undue fatigue. Fitness can also be defined as any form of physical movement that utilizes multiple muscle groups in the body.

Fitness is the condition of being physically fit and healthy and involves attributes that include, but are not limited to mental acuity, cardiorespiratory endurance, muscular strength, muscular endurance, body composition, and flexibility. While there is a standard definition for fitness, each individual can have their own personal understanding of what fitness means. To some individuals, being fit means the ability to complete a marathon or lift a lot of weight. To another, it could mean walking around the block without becoming short of breath. Your definition of fitness will be influenced by your interests, physical abilities, and goals. No matter what the definition, it is important for every individual to keep their personal
definition of fitness within a healthy framework. This means you should have realistic expectations and maintain balance and moderation in all aspects of life. Set small, attainable goals and avoid giving too much power to the numerical measurements of fitness. This can help your journey to fitness seem much less daunting and much more enjoyable. Physical fitness is generally achieved through proper nutrition, sufficient rest and moderate-vigorous physical exercise. Physical fitness is one of the most important keys to a healthy body. It is the reason, a state of general well-being marked by physical health and mental stability. A person who is fit is capable of living life to its fullest extent. People who are physically fit are less prone to medical conditions and are more able to function at the peak of intellectual capacity.

Motor Fitness is a term that describes an athlete’s ability to perform effectively during sports or other physical activity. An athlete’s motor fitness is a combination of five different components, each of which is essential for high levels of performance. Improving fitness involves a training regimen in all five.

There are many different manifestations of fitness. Some examples include strength, stamina, speed, and flexibility. Certain types of fitness, such as an athlete’s cardiac fitness level, are more important than others. An athlete needs to be aware of the various types of fitness to develop an effective training program that focuses on weak or important areas. Motor fitness, or motor physical fitness, refers to how an athlete can perform at his or her sport, and involves a mixture of agility, coordination, balance, power, and reaction time. Improving this form of fitness is an indirect result of training in any of these attributes. All five components of fitness are essential for competing at high levels, which is why the concept is seen as an essential part of any athlete’s training regime.

Agility refers to the body’s ability to perform quick movements in different directions. It is sometimes described as how fast an athlete is able to change direction while competing on the field or on the court. Improving agility often involves sprinting between cones that are placed at a variety of angles.

Coordination is more difficult to describe than agility because it cannot be observed directly. An athlete with a high level of coordination is able to combine all forms of fitness — not just those that are part of motor fitness — in an effective and controlled way. The more coordinated an athlete is, the more efficient he or she will be during competitive activities.

Power refers to the athlete’s ability to contract his or her muscles forcefully in an explosive movement. Most people have an intuitive sense of what power is, and why it’s important for sports. Powerful athletes are not merely strong; they are able to use that strength quickly and efficiently.

Balance and reaction time are two other important parts of motor fitness. Balance is an athlete’s ability to control his or her body’s movements, while reaction time is how quickly the athlete can respond to a changing situation. Improving all five components of motor fitness is important for any athlete who wants to achieve his or her best.

Reaction time measures how swiftly you interpret and then react to expected and unexpected events happening around you. An example of reaction time to an expected event is the interim between hearing the starter's pistol and beginning to run. Your reaction time to unexpected events, such as a bicycle crash just ahead of you in a race, relies on how quickly you can make sense of the event and come to a decision about how to react to it.

Cardiorespiratory Endurance

In the most general terms, a fit person is able to perform tasks with more sustainable energy and for longer periods than an unfit person. But, fitness is more than just the ability to work longer; in fact, it includes a number of components, one of which is cardiorespiratory endurance. This is a measure of the circulatory and respiratory systems' ability to deliver oxygen and nutrients to and eliminate waste products from cells. Your cells need oxygen and nutrients in order to fuel your muscles during periods of physical activity. When your cells work they produce wastes that need to be transported away. How efficiently your body does these tasks is a measure of your cardiorespiratory endurance.

You can build your cardiorespiratory endurance through aerobic exercise, which is a type of exercise that uses oxygen to meet energy demands. The word aerobic means using oxygen, so aerobic exercise is literally exercise that uses oxygen. This is the type of exercise that we might consider with activities performed over time at low to moderate intensity, such as taking a comfortable jog around the neighborhood, riding your bicycle or rowing a boat. Aerobic exercise is important because it strengthens your heart and lungs by making them work harder. Did you ever hear that really fit athletes have very low resting heart rates? That's because a high level of fitness leads to a strong heart, which is able to pump a lot of blood with fewer heartbeats.

Motor Fitness is recognized as an important component of sports and it may be important for the performance of functional activities and quality of life. Low Motor Fitness may result in high physical strain during the performance of activities (Bruinings et al., 2007) [3]. As a consequence, activity levels may decrease due to fatigue and discomfort, exacerbating low Motor Fitness. Keeping in view the fact that Motor Fitness has important role in sports performance (Sallis et al., 1992) a large number of studies on Motor Fitness have been reported from different countries of the world.

Materials and Methods

Subjects: Twenty rural and twenty urban students from various schools of Meerut district, Uttar Pradesh were selected as subjects for the study. Who were regularly participating two years in the inter school sports competitions were selected as subject for present study. Exclusion criteria were the presence of chronic medical conditions such as asthma, heart disease or any other condition that would put the subjects at risk when performing the test the subjects were free of smoking, alcohol and caffeine consumption, antioxidant supplementation and drugs. The age, height, agility, endurance, speed, muscular strength, explosive strength of all subjects were measured in school playground. The data analyzed with the help of statistical procedure in which mean, standard deviation, t-test were used to compare the data.
Selection of Variable and their Criterion Measures: Explosive strength was measured by the standing broad jump, speed was measured by 50 meter dash, endurance was measured by using Harvard step test, agility was measured by shuttle run and muscular strength was measured by sit ups all test were conduct according to the AAPHER youth fitness test.

Results
The statistical of the results of Motor Fitness components between rural & urban students are shown in Table 1 to 5. The mean (+ S.D.) of the age of the rural students was 16.01 (+ 3.11) years, height 164.40 (+5.22) cm. weight 52.48 (+ 3.91) kg. On other hand, the mean (+ S.D.) age of the urban students was 16.32 (+ 3.72) years, height 164.50 (+ 8.29) cm. and weight 54.67 (+ 3.76) kg.

Table 1: Shows statistical comparison of Muscular Strength between rural & urban high school students.

<table>
<thead>
<tr>
<th>Students</th>
<th>No.</th>
<th>Means</th>
<th>S.D.</th>
<th>S. Ed.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>20</td>
<td>24.85</td>
<td>3.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>20</td>
<td>19.70</td>
<td>2.81</td>
<td>0.98</td>
<td>3.11*</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level. NS = Not Significant

Table 1 compares the muscular strength of rural and urban students. Results indicate that no significant differences in Muscular strength were found when comparison is made between the rural and urban students.

Table 2: Shows statistical comparison of Agility between rural & urban High school students.

<table>
<thead>
<tr>
<th>Students</th>
<th>No.</th>
<th>Means</th>
<th>S.D.</th>
<th>S. Ed.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>20</td>
<td>10.84</td>
<td>0.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>20</td>
<td>11.90</td>
<td>1.27</td>
<td>0.34</td>
<td>3.11*</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level.

With regard to agility of rural and urban collegiate Students, mean values of 10.84 and 11.90 respectively were observed in Table 2. The obtained t=3.11 indicating that the urban students had greater agility than the rural students.

Table 3: Shows Statistical Comparison of Explosive Strength between Rural & Urban High School students.

<table>
<thead>
<tr>
<th>Students</th>
<th>No.</th>
<th>Means</th>
<th>S.D.</th>
<th>S. Ed.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>20</td>
<td>149.88</td>
<td>8.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>20</td>
<td>134.33</td>
<td>6.22</td>
<td>0.34</td>
<td>6.53*</td>
</tr>
</tbody>
</table>

*Significant

Table 3 indicates the existence of statistically significant difference between rural and urban students with respect to Explosive strength. Significant differences was found in explosive strength (t=6.53, p<.05). Rural students was found to have greater explosive strength as compared to urban students.

Table 4: shows statistical comparison of Speed between Rural & Urban High school students.

<table>
<thead>
<tr>
<th>Students</th>
<th>No.</th>
<th>Means</th>
<th>S.D.</th>
<th>S. Ed.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>20</td>
<td>7.75</td>
<td>0.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>20</td>
<td>7.13</td>
<td>0.49</td>
<td>0.19</td>
<td>3.26*</td>
</tr>
</tbody>
</table>

*Significant

Table 5 gives the statistical comparison of speed ability of rural and urban students. Results indicates significant difference was found (t=3.26, p<.05) when comparison is made between two groups. Urban students incur significantly less Speed ability than rural students.

Table 5: Shows statistical comparison of Endurance between Rural & Urban High School Students.

<table>
<thead>
<tr>
<th>Students</th>
<th>No.</th>
<th>Means</th>
<th>S.D.</th>
<th>S. Ed.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>20</td>
<td>88.03</td>
<td>8.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>20</td>
<td>71.39</td>
<td>6.99</td>
<td>0.14</td>
<td>6.96*</td>
</tr>
</tbody>
</table>

*Significant

Table 5 depicts the statistical information of endurance ability between rural and urban students. Significant difference were observed in Endurance (t=5.95, P<.05) between the rural and urban students. Rural students were found to have got greater endurance ability as compared to urban students.

Discussion
This study reveals that significant difference were found in agility (t=3.11, P< 0.5), speed (t=3.26, P<0.5), endurance (t=4.0, P<0.5) and explosive strength (t=5.00, P<0.5) between rural and urban students. Urban students were found to have got strongest than rural students. This results didn’t supported Sandhu (1983) compared rural and urban students of Amritsar district. He was found rural students were stronger than urban students. Tsimeas and Tsigilis (2005) conducted a study on Greek rural students to find out “Does living in urban or rural setting affect aspect of Motor Fitness in children”. A similar type of result was obtained in the work of Mehtap and Nihal (2005) [7]. Who conducted a study on Motor Fitness in rural children compared with urban children in turkey and found that children living in the urban areas were more inactive and obese than rural children. Urban students incur significantly low speed ability as compared to rural children. This may be due to mechanization, automation and computerization have minimized the opportunities for vigorous physical activities to cause physical exertion in urban population. The result is supported Choudhary (1998) [3]. However rural students were found to have got strong Cardio respiratory efficiency as compared them to urban students The relatively grater Cardiorespiratory of rural students were probably due to rural students engaged in vigorous physical activity like Agriculture and Animal husbandry. Rural students demonstrated significantly greater Explosive strength as compared to urban students. This may be due to the rural life style is more active in nature than the life in urban areas, which produced high level physical and psychological functioning in rural areas.

Conclusion
It is found that the rural students were comparatively better than urban students except in Agility ability. Rural students were stronger than urban students in Explosive strength, Speed and Endurance. However urban students are stronger in Agility.

References
1 Kamlesh ML. Psychology in Sports, Khel Sahitya Kendra, New Delhi 2011.
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