Assessment of Physical Performance of Sports Science Students at Buriram Rajabhat University

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Abstract
Being successful sports science students, it is necessary to have good physical development throughout the 4 years undergraduate study program. Therefore, the aim of this study to investigate physical performance of the first year sports science students at Buriram Rajabhat University (BRU), as a basic knowledge for planning and develop exercise program. The seventy-eight sports science students, aged between 17-18 years old, were recruited in this study both male (n=50) and female (n=28). The results of baseline clinical characteristics were determined by body mass index (BMI) and percentage of total body fat. BMI was shown in normal range 73.08 % (18.5-22.9 kg/m²), less than normal as underweight 16.67% (<18.5kg/m²) and obese 10.25% (≥30 kg/m²). Percentage of total body fat was shown normal 41.01% and high to highest range 42.31%. While this result of less than normal was showed 16.67%. Assessment of physical performance were investigated sit and reach test, hand grip test, the sixty second chair stand test, Zig-Zag run test and distance run (1600 m.) test. The results of sit and reach test for trunk flexibility was shown mostly in normal range 47.44% and high to highest 34.61%, while less than normal 17.95%. Hand grip test for hand and arm strength was showed mostly in low (34.62%) to lowest range (14.10%), while in normal range was shown 30.76% and high 14.11% to highest 6.41%. For the test of leg muscle strength and muscle endurance by using 60 seconds chair stand, was showed mostly in high, to very high range 93.59%. Zig-Zag run test for power, speed, quickness, and body control and the results of this test showed 100% of very high range. Distance Run (1600 m) test was done to indicate muscle and cardio-pulmonary capacity. It was showed in high range 38.76% and normal range 34.61%, while the less than normal was shown 20.52% and highest 3.85%.

For the conclusion of this study, we found that the first year of BRU had the problem in BMI 30% both obese and underweight. Additionally, they had arm and hand strength, muscle and cardio-pulmonary capacity, trunk and flexibility less than normal 49%, 21% and 18%, respectively.

Keywords: physical performance, sports science student, Buriram Rajabhat University (BRU)

1. Introduction
Better physical performance could contribute to good learner. It is necessary to investigate basic physical performance of all students as data base for development approaches. It may be using exercise approaches for increase healthy. Physical fitness is a general concept defined in many ways by differing scientists. Here, two major categories are considered: general fitness (a state of health and well-being), and specific fitness (a task-oriented definition based on the ability to perform specific aspects of sports or occupations). Physical fitness is generally achieved through correct nutrition,
exercise, hygiene and rest. Physical fitness has been defined as a set of attributes or characteristics that people have or achieve that relates to the ability to perform physical activity (Magal et al., 2009). Physical exercise is any bodily activity that enhances or maintains physical fitness and overall health and wellness. It is performed for various reasons for instance strengthening muscles and the cardiovascular system, enhancing athletic skills, weight loss or maintenance, as well as for the purpose of enjoyment. Frequent and regular physical exercise boosts the immune system, and helps prevent the “diseases of affluence” such as heart disease, cardiovascular disease, type 2 diabetes (Stampfer et al., 2000). The risk of death from cardiovascular disease rises steeply above a BMI of 30 kg/m² (WHO, 2000). There are several mechanisms that obese can cause cardiovascular disease. First, obese increases the risk of coronary atherosclerosis by inducing several risk factors in parallel. For example, obese is associated with hypertension, insulin resistance, dyslipidemia, and coagulation abnormalities, which separately and collectively promote the development of cardiovascular disease (Schunkert, 2002). Exercise improves mental health by reducing anxiety, depression, and negative mood and by improving self-esteem and cognitive function. The psychological skills necessary to perform well are fairly straightforward: relaxation, concentration, imagery, self-talk and a pre-competition mental routine (Franchini et al., 2012).

Sports science students should study for 4 years to graduate this major. So physical performance is important with help to develop fitness it is necessary to student to make themselves a good healthy and become to the student goal of sports science students at Buriram Rajabhat University.

2. Objectives of the study
   To investigate physical performance in the first year students of sports science program at Buriram Rajabhat University.

3. Methodology
   Study design and population
   A design of this study is Quasi - experimental research in human. The participants are assigned to assignment.
   Number of subjects are the first semester in sports science program at Buriram Rajabhat University. 78 sports science students both males (N=50) and females (N=28). The aim of this study is to investigate physical performance in the first year students of sports science program at Buriram Rajabhat University. Subjects all will complete pass physical examination and anthropometry by a physician.

   Anthropometry
   Height (cm)
   Subjects in a free-standing position with the feet together and heels, buttocks and upper parts of the back touching the scale of balance scale were weighted.

   Body weight (kg)
   Subjects will be barefoot and wear as a little clothing as possible and stands on the platform of the scale with his/her weight distributed evenly over both feet. The arms hang by the sides of the trunk, with palms facing the thighs. The subject is instructed to maintain a stable position while the measurement is taken.
Body mass index (BMI) Height and body weight were then used to calculate body mass index (BMI) using the formula BMI = body mass (kg) / height (m)². (ACSM 2009)

Physical performance
Muscle strength is determined by hand grips. Flexibility is determined by trunk flexibility sit-and-reach instrument. Zigzag run test is power, speed, quickness, and body control in multiple planes of movement. The test also assesses lower extremity control, including the ability to perform plant and cut types of movements correctly (Ortiz et al. 2005). Distance Run (1600 m) test is indicate muscle endurance and cardio-pulmonary capacity.

Statistical Analyses
Data of all was used percentage of all subjects to perform the statistical analysis. Paired t-test was used to compare differences in characteristics and all parameters between the physical range test.

4. Results
Baseline characteristic of the first year student were determined by measure body mass index (BMI) and percentage of total body fat. The results of BMI were showed in normal range 73.08 % (18.5-22.9 kg/m²) and less than normal as underweight 16.67% (<18.5 kg/m²).

The result of percentage of total body fat was showed normal 41.01% and high to highest range 42.31% while this result of less than normal was showed 16.67% (as show in table 1)

The results of physical performance were assessed by Zig-Zag Run test for power, speed, quickness, and body control and the results of this test showed 100% of very high range. Sit and reach test for trunk flexibility, the results showed mostly in normal range 47.44% and high to highest 34.61% while less than normal 17.95%. Distance Run (1600 m) test was done to indicate muscle and cardio-pulmonary capacity. The results of this test was showed in high (38.76%) and normal range (34.61%), while the less than normal was showed 20.52% and highest 3.85%. For the test of leg muscle strength and muscle endurance by using 60 seconds chair stand, the results was showed mostly in high, to highest range 93.59%. The results of hand grips test for hand and arm strength was showed mostly in low (34.62%) to lowest (14.10%) range, while in normal range was showed 30.76% and high 14.11% to highest 6.41% (as show in table 1).

For the conclusion of the Physical performance that were good in Zig-Zag run test, 60 seconds chair stand test and Distance Run (1600 m) test, while normal range in sit and reach test and less than normal or not good in hand grips test in the first year students of sports science program at Buriram Rajabhat University.
**Table 1**  
Results of characteristics and physical performance in the first year students of sports science program at Buriram Rajabhat University (N=78)

<table>
<thead>
<tr>
<th>Items</th>
<th>Lowest</th>
<th>Low</th>
<th>Normal</th>
<th>Good</th>
<th>Excellence</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body mass index (BMI) (kg/m²)</td>
<td>13</td>
<td>0</td>
<td>57</td>
<td>0</td>
<td>8</td>
<td>78</td>
</tr>
<tr>
<td>Percentage of total body fat</td>
<td>9</td>
<td>4</td>
<td>32</td>
<td>14</td>
<td>78</td>
<td>78</td>
</tr>
<tr>
<td>hand grip strength test (kilogram)</td>
<td>11</td>
<td>27</td>
<td>24</td>
<td>14</td>
<td>15</td>
<td>78</td>
</tr>
<tr>
<td>60 seconds chair stand times</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>32</td>
<td>73</td>
</tr>
<tr>
<td>Sit and Reach test (centimeter)</td>
<td>0</td>
<td>0</td>
<td>14</td>
<td>17</td>
<td>32</td>
<td>6</td>
</tr>
<tr>
<td>Zig-Zag Run test (second)</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>19</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Distance Run (1600 m) test (minute and second)</td>
<td>1</td>
<td>15</td>
<td>30</td>
<td>37</td>
<td>78</td>
<td>78</td>
</tr>
</tbody>
</table>

Data are presented as BMI body mass index, % of total body fat, hand grip strength test, 60 seconds chair stand, Sit and Reach test, Zig-Zag Run test, Distance Run (1600 m) test

5. Discussion

From the results found that mostly of the first year students of sports science program at Buriram Rajabhat University had normal range in BMI, however, it was noticed that there were in underweight 16.67%. This underweight BMI may be low body weight (BW). That is indicated to inadequate food intake. It was possible that some people in this area were poverty or the students lacked of the knowledge in good nutritional consumers. The result of less BMI was showed in the same direction of percentage of total body fat less than normal range 17.67%. However, this result was showed in high and highest range 42.31%. It was indicated that subjects had percentage of normal equal to high and highest range. Therefore, subjects showed develop fit and firm muscle more than fat.

Physical performance of all subjects indicated that they subjects had good capacity in leg muscle strength and power, speed, quickness and body control including
muscle endurance, cardio-pulmonary capacity in long distance running test. We found that the problem in BMI, arm and hand strength, muscle endurance and cardio-pulmonary capacity, trunk and flexibility less than normal. While subjects were weak in hand and arm muscle strength by using hand grips test. Therefore, the first year students of sports science program at Buriram Rajabhat University should practice or developed the exercise techniques for increase hand and arm strength including upper extremities and body. However, the results of flexibility test was showed in normal range and high to highest range and less than normal reach to 17.98%. Even though, the flexibility test showed mostly in normal to high range, but it might be possible to practice the exercise techniques for development of trunk flexibility.

6. Conclusion

This study was investigated the physical performance of the first year students in sports science program at Buriram Rajabhat University as basic knowledge for development exercise approaches subjects had good capacity in leg muscle strength and power, speed, quickness and body control including muscle endurance, cardio-pulmonary capacity in long distance running test. This study found that the first year of BRU had the problem in BMI 30% both obese and underweight. Additionally, they had arm and hand strength, muscle endurance and cardio-pulmonary capacity, trunk and flexibility less than normal. However, they should received the basic knowledge about good nutrition and exercise for fit and firm. Including, the exercise techniques to improve upper extremities and body and trunk flexibility were suggested.

7. Suggestions

1. The further study may be compare the physical performance of the first year to the fourth year students for investigate physical performances.
2. The next study may investigate other psychological performances.
3. The study should be investigated in various faculties of Buriram Rajabhat University students in physical basic knowledge for developmental healthy approaches.
4. For further studies, physical performance should assessment to population in Buriram city for planning to develop make a healthy city.
ORAL PRESENTATION: HEALTH SCIENCES

Reference