DEVELOPMENT OF UNIVERSITY WOMEN BASKETBALL PLAYER’S ABDOMINAL FORCE

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Abstract
Basketball is one of the world’s most popular sports game practiced in universities. Our preoccupation a view with to attract a higher number of young students to practice this game is permanent. Materializing these efforts is also reflected by the formation of university representative teams participating in University national championship as well as in international competitions. Thus, in this paperwork we will try to tackle our preoccupation for improving abdominal force that plays an important role in basketball game. Criteria by which we will assess and evaluate the effort force-resistance will be the intensity expressed in relation with the full force effort as well as volume respectively. As the form of manifestation of individual capacity force-resistance, we have encountered the term of resistance force-speed dependent on the capacity for the recovery of muscles involved in effort (aerobic, lactacyd anaerobic and a-lactacyd anaerobic). The abdominals are vital in sport performance. Female student’s subjects in this experiment formed a homogeneous sample and representative for Romanian university basketball teams.

Keywords: abdomen, basketball, development, strength, university environment.

JEL classification: I20, I25

1. Introduction
Basketball is a physical education mean and it has a formative role, thus contributing to social inclusion and to a complete instruction of the female students. Also, basketball is an educational tool for strengthen health, harmonious physical development, development motor skills, to educate team spirit and competitiveness as well as to develop the capacity for self-organization. Contemporary training is an activity which requires many hours of work as part of training routine. The volume and workout intensity were increased continuously, and the exercises were repeated several times. Each sportsman must work 6-8 hours/week for fitness, in addition to other technical, tactical and specific components. It is obvious that boredom and monotony gradually may become an obstacle in motivation for performance improvement. To overcome this obstacle the variety of the training programmer may be a valid answer. This variety
can come from changing the nature of exercise, the environment, the training group; all this depending on the coach creativity (Thomson, 2009).

2. Research purpose

In order to improve performance in the basketball national university championship and the results in international student competitions, there is a concern for permanent improvement of fitness level. By this work we try to bring our contribution to the Romanian university basketball development by implementing a program for abdominal strength.

3. Hypothesis

Hypothesis work if they will introduce methods and new and appropriate means, and will apply to investigations complex with a minimally to an accident, then we predict obtaining objective information on development level abdominal force involved in specific effort on university female basketball players in different major moments of training. If the workout will be with variations of intensity, volume and complexity, it will reach a maximum of workout effects and at the highest level of performance.

4. Methods

- Bibliographic documentation and of the field method.
- Experimental method.
- Statistical and graphic analysis.

5. Experiment content

Training of force is used in basketball because it represents an important psychological factor in sports competition. A very good performance could not be achieved without vital contribution of labor. Labor performance benefits in sports are felt as long as his nerve-muscle system maintains cellular adaptations developed by their practice of force. When cease their practice of force properties of contractile muscle decreases and as a direct consequence, reduces the role or positive. (Bompa O.T. - 1996).

In their practice of force for developing stomach muscles should be pursued certain instructions, such as: to begin with a series of 4-6 times for each financial year, an attempt is made to maintain a slight abdominal contraction along series, shall be reduced to the minimum possible pause between series and will never do pause between drills same series, always first time is requested muscles may weaken them. To maximize abdominal muscle force development is aimed at oblique muscles of the abdomen, the lower part of the abdomen, the upper part of the
abdomen (Brittenham, G. - 1997).

There are some exercises used to develop abdominal strength:

- Oblique contraction with straight legs;
- Target: oblique muscles;
- Method: Sitting lying on left side with your legs straight. Place right hand behind your head and your left hand to touch the oblique muscles working. It will press the right oblique muscle. Avoid excessive bending back, the direct lateral movement;
- Duration: will maintain top position to the count of two. It will perform a full range then repeat on the opposite side.
- Oblique twisting knees bent
- Target: superior oblique muscle of the abdomen.

Method: the shoulders lying on the floor, knees bent and turn on the left, put his hands behind his head (do not pull the head or neck during exercise) will push the abdominal muscles and maintain top position until are 2. The target remains the trained muscle. Avoid bending shoulders and head and shoulders will rise slightly toward the ceiling (keep your head back slightly). It will perform a full range then repeat on the opposite side.

Lower abdominal contraction
Target: lower abdominal muscles.
Method: dorsal recumbent position with legs bent at 90° from the hips and knees, will put his hands crossed on your chest or in the head. Only the lower abdominal muscles are contracted and amounting to about 10-15 cm ankle backwards and upwards. No returns on balance, because inertia balance enables ease of movement. It descends slightly ankles and lower torso to the floor and repeat immediately.
Duration: continued until all the numbers of repetitions of the series.

Contractions cross
Target: the upper and oblique muscles of the abdomen.
Method: crossing the right leg over the left, the left foot being on the floor and hands crossed on the chest, or positioned slightly below the head (do not pull the head and neck with your hands during exercise) are contracted abdominal muscles, lift rotates, then left elbow touches your right knee, hold the top position to the count of two, then gently bring back shoulder blades off the floor and repeat immediately.
Duration: provides a full range, repeating with the left leg above the law.

Contractions of 90°
Target: upper abdominal muscles
Method: dorsal recumbent position with legs bent at 90° from the hips and knees.
Use the same arm position as the "coils". Place arms crossed on the chest or under your head. Senior abdominal muscles contract and keep two. "Keep flexing the
hips and knees legs at 90° throughout the year.  
Duration: continued until all the numbers of repetitions of the series.

In order to develop abdominal strength I watched over two academic years representative team women's basketball Polytechnic University of Bucharest. Abdominal strength test investigation for 30s was the simultaneous lifting of the trunk and limbs lying dorsal to 90°. The first test was conducted in the second semester of the academic year 2011/2012 when there was a poor abdominal strength training component of female students UPB representative team, which was necessary to intervene in preparing students with methods and resources. We introduced the female students in the training program appropriate means and abdominal strength development were then performed three trials (first semester of the academic year 2012/2013, the second semester of the same academic year and the first semester of the academic year 2013/2014).

6. Results

Table 1 Raise torso and legs at 90° of lying dorsal 30"

<table>
<thead>
<tr>
<th>TESTS</th>
<th>INITIAL TEST</th>
<th>CONTROL TESTING</th>
<th>CONTROL TESTING</th>
<th>FINAL TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B. A.</td>
<td>32</td>
<td>33</td>
<td>34</td>
</tr>
<tr>
<td>2</td>
<td>D. I.</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>3</td>
<td>C. S.</td>
<td>34</td>
<td>36</td>
<td>37</td>
</tr>
<tr>
<td>4</td>
<td>M. C.</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>5</td>
<td>T. A.</td>
<td>33</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>6</td>
<td>C. L.</td>
<td>41</td>
<td>42</td>
<td>41</td>
</tr>
<tr>
<td>7</td>
<td>M. A.</td>
<td>37</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>8</td>
<td>B. A.</td>
<td>34</td>
<td>35</td>
<td>36</td>
</tr>
<tr>
<td>9</td>
<td>G. A.</td>
<td>34</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>10</td>
<td>G. F.</td>
<td>43</td>
<td>43</td>
<td>44</td>
</tr>
<tr>
<td>11</td>
<td>B. C.</td>
<td>34</td>
<td>34</td>
<td>35</td>
</tr>
<tr>
<td>12</td>
<td>M. C.</td>
<td>31</td>
<td>33</td>
<td>33</td>
</tr>
</tbody>
</table>
7. Discussion

Students were trained for this test.
- Students D.I. and C. L. gave similar results to the first three tests.
- Four students, B. A., C. S., B. A. and GF, gave similar results (each) in the third and fourth tests.
- Student M. C. obtained the same results for the four tests.
- Except MC student, all students have achieved superior results from the first test to the last test.
- The best result I got student G.F. - 44.
- The worst result I obtained BA students, TA and M. C. - 34.

<table>
<thead>
<tr>
<th>Arithmetic mean</th>
<th>Standard deviation</th>
<th>Coef. variability</th>
<th>Test student “t”</th>
<th>Coef. correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>initial 35.50</td>
<td>final 37.08</td>
<td>initial 3.55</td>
<td>final 3.09</td>
<td>6.09</td>
</tr>
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<td>initial 35.50</td>
<td>final 37.08</td>
<td>initial 3.55</td>
<td>final 3.09</td>
<td>6.09</td>
</tr>
</tbody>
</table>

Test driver for abdomen, measured in the second semester of academic year 2011/2012 (1) linked to the same test measured semester of the academic year 2013/2014 (4) shows that:
- The arithmetic mean is 35.50 and standard deviation of 3.55 for the initial test and final test is the arithmetic mean of 37.08 and standard deviation is 3.09;
- Coefficient of variation in the first case is 10.01% and the second is 8.33%. This shows that this group is homogeneous, the variability is substantially equal to 10%;
- Calculating test student "t" to check the null hypothesis, we find that the value of
"t" is 6.09. Comparing it with the value in Table Fisher, the p> 0.01 and frequency of the selected sample n-1, we find that the "t" value computed is greater than "t" of the table.

The difference statistically significant, so the null hypothesis is rejected. The correlation coefficient is 0.97. Result outcome of the initial test is 426.00 and the final test. We found getting better results, changes occur in the same direction, so direct correlation is significant and positive coefficient.

8. Conclusions

Through a systematic training regime has been achieved through changes in training and high performance in the experiment results showed that most female students have improved abdominal strength.

By applying new means specific to basketball game coaches could find individual characteristics and therefore the application of optimal solutions can develop and improve abdominal strength and subsequent the fitness development for each student.

REFERENCES