Libero role testing in volleyball as monitoring of physic level drills

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Abstract:
Testing is used to measure performance and, therefore, check for improvements resulting from training activities. More and more frequently, coaches require checks even during the current sporting season to measure the status of the athletes’ performance and to eventually change their training plans in order to make them more productive. Therefore, more and more often testing has a monitoring function and, for this reason, an adaptation to ordinary training activities is required to allow it. The purpose of this study is to monitor the state of some physical abilities of a 21-year-old volleyball player who plays in the role of libero in B1 series. The method is experimental longitudinal and it consists in detecting the initial and the final data in a period of time of 8 months (racing season duration) for the following skills: articular mobility and flexibility, moving speed and reaction speed to a stimulus. The tests used are the following: Squat Test; Straight Leg Raises Test; Adductor Flexibility Test; Reactivity Test; Rapidity Test. From the results, it comes out that the physical abilities (resulting from the training activities) were optimally monitored. The goal is therefore achieved, because the coach has verified the athlete's performance status and he has specifically noted an improvement. At the end, the study was useful for the purpose but it is necessary to improve the evaluation tools and to adapt them to the training plans.

Key words: enabably physical abilities, high level women's volleyball, tests, longitudinal case, role of libero, monitoring and evaluation system.

Introduction
The high-level agonistic female volleyball concerns that part of the volleyball which includes all categories of volleyball ranging from A1 to B2 series (D’Isanto et al, 2019). In high-level competitive women's volleyball there is no monitoring system, with the characteristics shown there, concerning training activities and the collection of qualitative and quantitative informations. (Di Tore et al, 2018). Do not forget that a monitoring process can be expected at any age, both on males and females (Parisi&Raiola, 2014, Raiola, Di Tore, 2012ab). All types of analysis can be used to support this monitoring system, such as video analysis. (Raiola et al, 2013; Izzo et al, 2018). Video analysis applied to volleyball didactics to improve sports skills. In essence, the evaluation of sports performance is fundamental at every level, in its theoretical aspects and its practical indications (D’Isanto, T., D’Elia, F., Raiola, G., Altavilla, G., 2019). What is proposed in this article is a monitoring system for training activities in the context of high-level competitive women's volleyball. Monitoring means the application of a system which, based on the use of specific and appropriate criteria, aims to control the duration of a training or a whole competitions season in a structured manner and with recurrent step, for the purposes of:

- highlight the trend, starting from elementary variables of the observed phenomenon;
- record the deviations between what is taking place and what was expected;
- inform the players of the monitoring system (recipients, beneficiaries, users, controllers) about the critical issues that arise from time to time to search for the most appropriate solutions.

By monitoring we therefore mean: preparation of an information gathering system:

- coded;
- registered;
- constantly updatable.

The monitoring system therefore constitutes the essential support to the evaluation process on the libero-athlete and on the workout methodology used by the coach or coaches (D’Isanto et al. 2017). So thanks to data collected by this monitoring system, we can evaluate our training activities and the athletes in the role of libero. This type of system is being proposed because in the high-level competitive women's volleyball, in particular in the role of the libero, scientific instruments and simple fruition about the objective monitoring of training actions and their effectiveness are lacking. More and more frequently, coaches require checks even during the current sporting season to measure the state of the athletes' performance and possibly change their training plans in order to make them more effective. Increasingly testing has also a monitoring function and,
therefore, is expected in the ordinary training activities without changing the annual planning: in fact, testing is used to measure the performance and, therefore, to verify the resulting improvements to training activities. Therefore, to do this, it is necessary to provide a type of functional tests for training.

Material & methods
The method is experimental and longitudinal and it consists in detecting the initial and final data in a period of time of 8 months for some physical skills of a volleyball player in the role of libero in B1 series. To perform these tests, no specific equipment is needed: all you need is a wall, a ruler and a stopwatch. The main contents which are to be presented:

Participants: 21-year-old libero-player and 2 volleyball sport technicians.

Procedure: no different heating is required than the usual joint mobility of each training start.

Tests description:
1) Squat Test
Starting from an upright position, with feet shoulder-width apart and arms extended and stretched forward, the subject bends over the legs simulating the squat exercise, taking care to keep the back straight (physiological curves active) and looking forward, until it reaches its point of maximum flexion: that is, where the weight of the body leaning forward causes the heels to lift off the ground.

2) Hamstring Flexibility Test
Lying on the ground in a supine position, making sure that the lumbosacral area remains well adherent to the floor, the subject raises one leg at a time, trying to bring it to himself as close as possible until he feels the need to flex it.

During the execution of this mono-limb test, however, particular attention must be paid to any movements of the pelvis, which could cause false positives or false negatives. In particular:
1. a test performed with an antiverso basin, could make judge ischiocrural retracts actually of normal length;
2. if during the lifting of the leg we are witnessing a retroversion of the pelvis, it is possible to judge ischiocrural in normal length actually retracted.

3) Adductor Flexibility Test
Against a wall, in a supine position but with the lumbar area well adherent to the ground, the subject raises his legs to the wall assuming a squared position and tries to spread them in such a way as to form the widest possible angle. If necessary, for greater stability, stretch the arms perpendicular to the torso.

4) Reactivity Test
A 15 cm ruler is maintained by the coach in a vertical position by squeezing it by the top. The athlete, on the other hand, places the thumb and forefinger at least 2 cm apart at the sides of the ruler near the bottom (therefore more or less at the height of the zero sign). The coach then releases the ruler without warning and the athlete tries to grab it as soon as possible by squeezing the two fingers. Finally, the value that the ruler indicates at the socket is shown.

3 tests are performed.

5) Rapidity Test
Positioned 4 cones, 1 meter apart, like the vertices of a square, the subject starts from the center of the latter - meeting point of the diagonals - also designated by another cone: in the shortest possible time, the subject must move each time from the center to one of the vertices (returning each time to the center) completely passing (both forwards and backwards) with the feet each cone.

3 tests are carried out with recovery time 1’30”.

Results
Results were collected in the following tables:

Table 1. Squat Test

<table>
<thead>
<tr>
<th>Date</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 November 2018</td>
<td>52°</td>
</tr>
<tr>
<td>7 February 2019</td>
<td>72°</td>
</tr>
<tr>
<td>7 May 2019</td>
<td>61°</td>
</tr>
</tbody>
</table>
Test – Squat test (before and after)

<table>
<thead>
<tr>
<th>Coupled differences</th>
<th>Average</th>
<th>StdDeviation</th>
<th>Confidence interval of 95% difference</th>
<th>Sign. (Two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAR01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAR02</td>
<td>10.00000</td>
<td>1.05409</td>
<td>3.3333</td>
<td>10.75405</td>
</tr>
</tbody>
</table>

Significance level p>0.05 – There is a significant difference between the two surveys of Squat test (0.000)

Table 2. Hamstring Flexibility Test

<table>
<thead>
<tr>
<th>Date</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 November 2018</td>
<td>74°</td>
</tr>
<tr>
<td>7 February 2019</td>
<td>69°</td>
</tr>
<tr>
<td>7 May 2019</td>
<td>91°</td>
</tr>
</tbody>
</table>

Hamstring Flexibility Tests correlation (Right and left)

| VAR00002 | Pearson’s correlation | 1 | .999 |
| VAR00003 | Pearson’s correlation | .999** | 1 |

The correlation is perfect and positive 0.999

Table 3. Adductor Flexibility Test

<table>
<thead>
<tr>
<th>Date</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 November 2018</td>
<td>126°</td>
</tr>
<tr>
<td>7 February 2019</td>
<td>130°</td>
</tr>
<tr>
<td>7 May 2019</td>
<td>133°</td>
</tr>
</tbody>
</table>

Table 4. Reactivity Test

<table>
<thead>
<tr>
<th>Date</th>
<th>Cm</th>
<th>Cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/11/2018</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>7/02/2019</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>7/05/2019</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Reactivity tests correlation (Cm and Cent.)

| VAR00001 | Pearson’s correlation | 1 | .997** |
| VAR00002 | Pearson’s correlation | .997** | 1 |

The correlation is excellent and positive 0.997

Table 5. Rapidity Test

<table>
<thead>
<tr>
<th>Date</th>
<th>I try</th>
<th>II try</th>
<th>III try</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/11/2018</td>
<td>4” 92</td>
<td>4” 53</td>
<td>4” 39</td>
</tr>
<tr>
<td>7/02/2019</td>
<td>6” 30</td>
<td>5” 93</td>
<td>5” 65</td>
</tr>
<tr>
<td>7/05/2019</td>
<td>4” 40</td>
<td>4” 25</td>
<td>3” 96</td>
</tr>
</tbody>
</table>
T-Test – Rapidity test (before and after)

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>StdDeviation</th>
<th>Standard error</th>
<th>Confidenceinterval of 95% difference</th>
<th>t</th>
<th>gl</th>
<th>Sign. (Two-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAR01</td>
<td>0.38000</td>
<td>1.46333</td>
<td>.46275</td>
<td>-0.66680 - 1.42680</td>
<td>.821</td>
<td>9</td>
<td>.433</td>
</tr>
<tr>
<td>VAR02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significance level p>0.05 – There is no significant difference between the two surveys of Rapidity test (0.433)

Discussion

With these simple tables we are able to monitor the progress of training activities for an entire season. The surveys were carried out every 3 months. Each of the surveys went to check which physical skills were increased and which not. Tests supported the technical and tactical evaluation as well as the intrinsic motivation of the players to be examined.

Conclusions

Tests have once again shown that constant training is the only winning key! In particular, from the results it turns out that the training activities are constantly monitored and, therefore, the purpose can be considered achieved because the coach has occurred over time the physical and performance level of the athlete, also noting a final performance improvement, confirmed by data collected during the competitions too. In conclusion, the study was useful for the purpose but it is necessary to improve the evaluation tools and adapt them to the training plans. An improvement of this system is envisaged with the addition of tests to monitor many other skills.

Conflicts of interest - If the authors have any conflicts of interest to declare.

References


