DIFFERENT QUALIFICATIONS FEMALE VOLLEYBALL PLAYERS
POWER QUALITIES LEVEL DEVELOPMENT FORMATION

Kudryashov E.V. – candidate of pedagogics, associate professor
Perm National Research Polytechnic University,
Perm

e-mail: kudryashov-e-v@mail.ru

Keywords: volleyball, a model, development level, power qualities, qualification.

Annotation. In recent years, a considerable experimental material, concerning the issues of model characteristics development, is accumulated. Different methods for their determination were used. Since the method of modeling in sports science is widely used, models creation is considered as the main tool in complex systems management.

Among the most important aspects of this problem is the most effective training programs identification and systematization on the basis of the main sides of athletes’ readiness modeling. Modeling as the method of scientific research helps to select from a great variety of features, properties and characteristics of the athlete’s readiness sufficiently limited set of the most essential parameters.

Material. To achieve the goal, 186 female volleyball players of different qualifications from the IIIrd sports category to the master of sport were examined. With the help of dynamometer system by V.M. Abalakov and the methodology by B.M. Rybalko the power of different muscle groups was estimated: hip flexors and extensors, crus flexors and extensors, foot plantar flexor, shoulder flexors and extensors, forearm flexors and extensors, hand muscles strength, body flexor.

Research methods: scientific-methodical and special literature analysis, specialists-practitioners’ advanced experience summarizing in the sphere of volleyball, pedagogical observations over competitive and training activities, polydynamometry, methods of mathematical statistics.

Results. The presented scientific article has the materials concerning the model of power readiness of female volleyball players. Particularly clearly is seen the growth of a relative power, with the volleyball players’ qualification improvement, according to the total indices of 5 muscle groups of a leg (from the IIIrd sports category to master of sports the increase was 33%), 5 muscle groups of a hand (from the IIIrd sports category to master of sports the increase was 27%) of 11 muscle groups (from the IIIrd sports category to master of sports the increase was 31%).

Conclusion. The materials, obtained during the research works, show the need for a comprehensive power training of female volleyball players at all stages of a long-term sports perfection. The revealed model of power readiness can serve as a guiding line of power indices formation for coaches. It can help to control the training process of volleyball players in accordance with the principles of physical qualities development adequacy and the direction to the highest achievements in sport.

Introduction. There were a lot of changes in modern volleyball in recent years, which are connected with competitions rules evolution, new elements of technique appearance, the conditions development of competitions and the training process organization. Some of these changes are the following: appearance of a new game role of a player as “libero”, appearance of pitching jumping, rules correction concerning
scorekeeping, video repetition of some game moments introduction and others. All these innovations demand additions introduction into the training and competitive process [1; 2; 5].

While the training programs and plans realization it is necessary to evaluate systematically if the real changes of the athletes’ readiness correspond to the planned by the trainer changes, to reveal the rate of readiness indices increase at all stages of a long-term development, the dynamics of the training loads.

**Urgency.** One of the urgent problems in the training process in recent years became the problem of sportsmen’s many-sided athletic training in sport games. The appearance of a power pitching in volleyball, more “rough” struggle in basketball, apart from such kinds of sport as Rugby, hockey or football.

Very often we see that referees shut their eyes to insignificant faults during players contact during a football or handball match. The analysis of the peculiarities of modern games was the reason for scientific research works in this sphere [5].

The problem of power training was studied by many specialists in different kinds of sport: athletics, table tennis, team games [1; 4; 5; 6].

Y.A. Kompaniets experimentally proved the structure of power readiness of female basketball players according to the indices of 11 different muscular groups [3]. A.N. Kasatkin created the model of different qualifications volleyball players’ power readiness [4].

Literature analysis reveals the necessity to create the model of the athletes power readiness in sport games.

**Aim of the research:** to create the model of different qualifications female volleyball players power qualities level development.

**Research methods:**

6. Scientific-methodical and special literature analysis.
7. Specialists-practitioners’ advanced experience summarizing in the sphere of volleyball.
8. Pedagogical observations over competitive and training activities.

**Research organization.** To achieve the goal, 186 female volleyball players of different qualifications from the IIIrd sports category to the master of sport were examined. With the help of dynamometer system by V.M. Abalakov and the methodology by B.M. Rybalko the power of different muscle groups was estimated: hip flexors and extensors, crus flexors and extensors, foot plantar flexor, shoulder flexors and extensors, forearm flexors and extensors, hand muscles strength, body flexor.

**Research results and their discussion.** The received results were converted to relative power values: the indices of an absolute power were divided by an athlete’s body weight and it gave an opportunity to compare power indices among the female athletes with different indices of weight and height.

After that the results were summarized into the indices of 5 muscular groups of a leg, 5 muscular groups of a hand and 11 examined muscular groups (picture 1) (table 1).
Picture 1. The dynamics of indices change of 11 muscular groups relative power among female volleyball players of different qualifications
CM - candidate master, MS – master of sports, c.u. - conventional unit

Table 1

<table>
<thead>
<tr>
<th>Relative power indices</th>
<th>MS</th>
<th>CM</th>
<th>The 1st category</th>
<th>The 2nd category</th>
<th>The 3rd category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$X \pm m_k$</td>
<td>$X \pm m_k$</td>
<td>$X \pm m_k$</td>
<td>$X \pm m_k$</td>
<td>$X \pm m_k$</td>
</tr>
<tr>
<td>n=30</td>
<td>n=32</td>
<td>n=38</td>
<td>n=40</td>
<td>n=46</td>
<td></td>
</tr>
<tr>
<td>5 muscular groups of a leg</td>
<td>4.93±0.05</td>
<td>4.81±0.05</td>
<td>4.75±0.06</td>
<td>4.57±0.08</td>
<td>3.68±0.03</td>
</tr>
<tr>
<td>5 muscular groups of a hand</td>
<td>2.41±0.06</td>
<td>2.25±0.04</td>
<td>2.1±0.02</td>
<td>2.05±0.04</td>
<td>1.89±0.03</td>
</tr>
<tr>
<td>11 muscular groups</td>
<td>7.78±0.01</td>
<td>7.51±0.01</td>
<td>7.26±0.02</td>
<td>7.0±0.03</td>
<td>5.93±0.01</td>
</tr>
</tbody>
</table>

Power readiness results analysis helped to reveal the tendency to a relative power indices increase, with the qualification improvement among female volleyball players, of the following muscular groups: hip extensors, crus extensors, shoulder extensors, forearm flexors, hand muscles strength.

Particularly clearly is seen the growth of a relative power, with the volleyball players’ qualification improvement, according to the total indices of 5 muscle groups of a leg (from the IIIrd sports category to master of sports the increase was 33%), 5 muscle groups of a hand (from the IIIrd sports category to master of sports the increase was 27%) of 11 muscle groups (from the IIIrd sports category to master of sports the increase was 31%).

Conclusion
The materials, obtained during the research works, show the need for a comprehensive power training of female volleyball players at all stages of a long-term sports perfection.

The revealed model of power readiness can serve as a guiding line of power indices formation for coaches. It can help to control the training process of volleyball players in accordance with the principles of physical qualities development adequacy and the direction to the highest achievements in sport.

References
1. Aftimichuc, O.E. Rhythm importance in the system of professional pedagogical and sports training /O.E. Aftimichuc, Z.M. Kuznetsova// Pedagogical-psychological and medical-biological


