



# Levels and Characteristics Of Physical Fitness Of Girls In Volleyball

Odilova Feruza Valijon qizi

Foundation Doctoral Student, Institute Of Physical Education And Sports Scientific Research

\*Correspondence : Odilova  
Feruza Valijon qizi  
[oferuza872@mail.com](mailto:oferuza872@mail.com)

Received: 21-02-2025  
Accepted: 11-03-2025  
Published: 09-04-2025

Copyright © 2025 by  
author(s) and Scientific  
Research Publishing Inc.  
This work is licensed under  
the Creative Commons  
Attribution International  
License (CC BY 4.0).  
<http://creativecommons.org/licenses/by/4.0/>



## Abstract

Physical fitness plays a pivotal role in enhancing the performance of athletes, especially in volleyball, where different game roles demand specific motor abilities. The study by Odilova Feruza investigates physical development indicators such as strength, endurance, coordination, flexibility, and aerobic capacity among qualified female volleyball players across different playing positions (striker, setter, libero). While general training approaches exist, there is limited data on the differentiated impact of training according to ampoule (playing roles) and the necessity of targeted microcycle programming in female volleyball training. This study aims to evaluate and compare the physical performance and physiological characteristics of female volleyball players in control and experimental groups using standardized physical and physiological tests. The findings reveal significant differences in body weight, hand strength, high jump, lung capacity, and aerobic indicators like PWC170 and  $VO_2$  max between the groups. Stratified training showed greater improvements in special physical abilities, particularly in flexibility and strength, in the experimental group. The research introduces a differentiated training methodology tailored to the playing roles of volleyball girls, supported by empirical results and coach surveys. Implications: The study underscores the importance of ampoule-based stratification and specialized training programs in improving physical fitness attributes critical for volleyball performance, providing a foundation for future long-term training strategies and injury prevention programs

## Keywords

Volleyball, Physical Preparation, Strength, Agility, Endurance, Flexibility, Female Athletes.

## Introduction

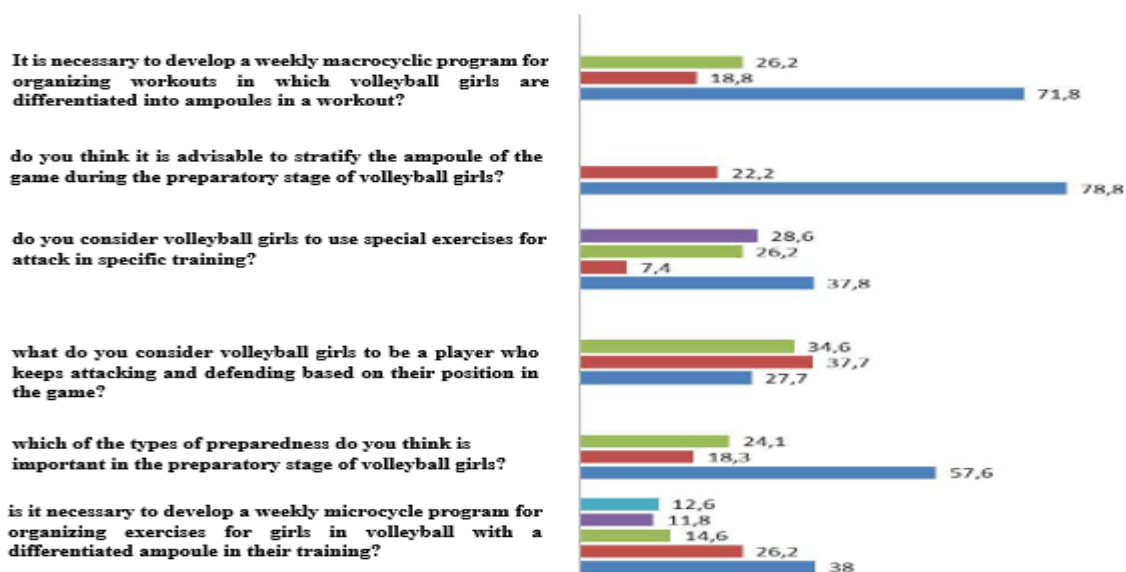
This article will study the levels of physical fitness, physical development of volleyball girls in the ampoule of the game. Before the study, volleyball players were considered on the basis of the results of the level of development of physical performance skills and leading qualities of movement, identified in girls, according to control and experimental groups:

studies have examined the physical fitness characteristics of volleyball girls with different game amplua (striker, setter and libero) with the involvement of volleyball girls. In the course of studies, indicators of physical development (body length and weight), indicators of general physical performance abilities and aerobic specialization (PWC170 and MKU), indicators of flexibility (forward tilt (OE), right and left paw strength (Fnp. and Clev), Fast-Power Options (throwing a ball of filler-TBF), high jump in Abalakov (HJA.), running and jumping long (US), agility ("Archa simon" running, 9 m.to run, motion reaction time (HRV)), fast endurance (3x10m.to moksimon running), indicators of coordination abilities (reaction to a moving object - HOR) and the state of vegetative systems (frequency of heart contraction in a calm state - th.YQS), breath retention (noNU and nchnU), lung vitality capacity(OTS) indicators were evaluated in breathing and exhaling.

In addition, a special level of training was determined on the results of the following tests: a special set of exercises was used, such as receiving the hit ball from the herd (round 6-3) in Zone 6, passing to Zone 3 and receiving the ball, a second transfer from Zone 3 to Zone 4 (3-4 IU) and entering the ball into

## Methods

The organization of the training process of volleyball girls in practice was surveyed in 28 coaches who carry out activities in volleyball with at least 5 years of work experience with advanced experience in eliminating the factors that are hindering in increasing the activity of stratified training in amplua in training



Question 1. Is it necessary to develop a weekly microcycle program for organizing classes of volleyball girls in a differentiated ampoule in training ? those who answered “Yes” 26.2%, “no” 18.8%, and “very important” 71.8%.

Question 2. Do you think that it is advisable to stratify the amplitude of the game during the preparatory stage of volleyball girls ? when asked, 78.8% said Yes and 22.2% said No.

Q3. Do you consider the use of special exercises for the attack in the special training of volleyball girls ? they answered that 37.8% had technical training, 7.4% had tactical training, 26.2% had physical training, and 28.6% had physical development.

Q4. What types of preparations do you think are important in the preparatory stage of volleyball girls ? the answer to the question: offensive 27.7%, fullback 37.7%, libero 34.6%.

Question 5. What types of preparations do you think are important in the preparatory stage of volleyball girls? when asked, 57.6% answered special-technical, 18.3% general physical, 24.1% special-physical.

Question 6. Is it necessary to develop a weekly microcycle program to organize classes of volleyball girls in their training with ampoule stratification?, answered by respondents as follows 38% would help develop physical quality in amplua, 26.2% would clarify tasks performed by field players, 14.6% would detect early game ampoules, 11.8% would improve physical condition, 12.6% would help sort.

## **Results and Discussions**

According to the survey analysis, it was recognized that in the practice of organizing the training process at the stage of physical training, it is important to organize a differentiated training of volleyball girls in the training group, as well as in amplua.

To determine the effectiveness of the differentiated methodology of volleyball girls ' physical training, the organization of a pedagogical experiment covering the total preparatory period indicates that the main task of the carried out training process is aimed at increasing the general and special physical fitness of volleyball girls. As a result of training, it was envisaged to increase the general and special physical performance abilities and physical fitness of the girls of the experimental group volleyball players at the expense of the definition and optimal compatibility of individual physical loads on the amplitude of the game.

Some of the indicators under study have not changed reliably. In our studies, it can be seen that there are differences in the results of physical fitness, such as high jump tests. This proves the points in the learned scientific and methodological literature. Of particular importance is the “forward tilt” test, which is given in terms of the degree of development of the physical quality of flexibility[6]. In the control group (Uzdjtsuff), this indicator was high, it is worth noting separately that it was not unreliable when compared with the observed indicator in the experimental group (AndDU). This, of course, showed that athletes have the greatest difference in mobility in the joints. According to a number of scientists, it is noted that the calculation of the

sensitive period for the rapid development of flexibility in qualified volleyball players is carried out.

At the same time, it should also be noted that the level of elasticity observed in control group volleyball players (on average  $+3.24 \pm 0.39$  CM), slightly less than the indicators presented in the special literature. In experimental group volleyball players, this figure averages 0.11sm.ni makes up. It is also worth noting that some other indicators of volleyball players listed in the literature and recorded in our studies were shown by the strength of the claws, the ability to come running and jump long, jump high, cross-country running, comparing them to a slightly lower level.

**Table 1.** Indicators of physical development and physical fitness of volleyball girls at the beginning of the study

Control tests	Guruhlar						t	P
	Control group (O'zDJTSUFF) n=29			Experimental group (AndDU) n=29				
	$\bar{X}$	$\sigma$	V	$\bar{X}$	$\sigma$	V		
Body length, sm	165,13	6,36	8,64	167,98	4,32	6,14	1,50	>0,05
Body weight, kg	48,10	2,35	4,88	50,69	2,37	8,67	3,12	<0,01
Agility ,sm	+3,42	0,39	9,95	+3,31	0,31	9,37	1,22	>0,05
Right hand power, kg	36,84	1,33	7,90	38,31	1,44	7,32	3,97	<0,001
Left hand power, kg	35,61	1,38	8,84	36,74	1,37	8,18	3,05	< 0,01
3kg. gimnastika to'ldirma to'pni uloqtirish, metr	8,82	0,37	6,95	8,86	0,38	6,48	0,50	>0,05
High jump, sm	28,31	1,87	8,78	26,67	1,96	8,28	3,21	<0,01
Running and jumping long, sm	310,47	12,49	7,69	309,39	12,59	7,26	3,71	<0,01
"Archasimon " running", sek.	18,87	1,63	5,65	17,47	1,41	5,13	3,90	<0,01
50 m, Ga run,sek.	10,10	0,19	6,31	1,15	0,17	5,92	2,37	<0,05
3x10 m ga mokisimon run, sek.	8,10	1,17	4,66	8,24	1,02	5,13	0,60	>0,05
Action advertising time, sec.	0,217	0,012	5,53	0,218	0,011	5,29	0,50	>0,05
Reaction to a moving object, sh,b,	1,07	0,24	7,82	1,25	0,23	7,08	3,2	<0,01

The indicators of physical development and physical fitness at the beginning of the study of the control and experience group of qualified volleyball player student girls are shown in the table above.

A comparative analysis of the studied indicators made it possible to conclude as follows, the control group qualified volleyball player Student girl body length, CM average 165.13 sm.ni,

experimental group qualified volleyball student girls body length, sm average 167.98 sm.ni (the difference is 2.85 CM.). The control group consists of a qualified volleyball player who can gain the body weight of female students, kg. 48.10 average kg.ni, the experimental group of qualified volleyball girls had a body weight of kg, an average of 50.69 kg.ni (the difference is 2.59 CM.). Control group qualified volleyball player student girls forward bending, sm. 3.42 average sm.ni, the experimental group consisted of qualified volleyball girls leaning forward, sm. 3.31 average sm.ni (the difference is 0.11 CM.). Control group qualified volleyball player student girls right arm power, kg. 36.84 average kg.ni, the experimental group consisted of qualified volleyball girls ' right-handed power, kg. 38.31 average kg.ni (the difference is 1.47 CM.).

Control group qualified volleyball player student girls left arm strength, kg. 35.61 average kg., the experimental group consisted of qualified volleyball girls ' left arm power, kg. 36.74 average kg. (the difference is 1.13 CM.). Control group qualified volleyball player student girls 3kg.Gymnastics stuffing throw the ball, (meter). the average is 8.82 meters, the experience Group is 3kg of female qualified volleyball players.Gymnastics stuffing throw the ball, (meter).the average was 8.86 metres (0.04 metres difference). Control group qualified volleyball player student Girls ' High Jump, sm average 28.31 CM. experimental group qualified volleyball player student Girls ' High Jump, sm. 26.67 average sm. (the difference was 1.64 CM). Control group qualified volleyball players come running student girls and jump long, sm. 310.47 average sm. the experimental group consisted of qualified volleyball girls running and jumping long, averaging 8.86 CM. (difference 0.04 meters). Control group qualified volleyball player student girls " Archasimon " running, (sek). average 18.87 (sek). experience group qualified volleyball player student girls ' "Archasimon" running, (sek) average 17.47 sek.ni (the difference was 1.4 seconds). Control group qualified volleyball player student running mokisimon to 3x10 m of girls, (sek). average 8.10 (sek). experience group qualified volleyball player student girls 3x10 m mokisimon running, (sek) average 8.24 sek.ni (the difference was 0.14 seconds). Control group qualified volleyball player student Girls Action time, (sek). average 0.217 (sek). experience group qualifying volleyball player student Girls ' movement Time, sek.average 0.218 sek.ni (the difference was 0.001 seconds). Control group qualified volleyball student girls reaction to moving object, average 1.07 (sek). experimental group qualified volleyball girls reaction to moving object,, b, average 1.25 (sek.) (difference 0.001 seconds).

in studies conducted, young volleyball player PVC170, maximum oxygen consumption, average volume of indicators of vegetative functions of the body in breathing, breathing, breathing, number of heart contractions, physical performance abilities. lung capacity, aerobic activity and breathing capacity. the average volume of indicators of vegetative functions of the body was studied

**Table 2.** At the beginning of the study, indicators of the physical performance abilities and vegetative level of volleyball players (x)

Control tests	Groups						t	P
	Control group (O'zDJTSUFF) n=29			Experimental group (AndDU) n=29				
	$\bar{X}$	$\sigma$	V	$\bar{X}$	$\sigma$	V		
PWC <sub>170</sub> , kg m/min,	583,43	21,02	10,97	596,13	23,34	10,44	2,25	<0,05
PWC <sub>170</sub> /weight, ml/min /kg.	13,39	2,22	9,85	14,29	1,94	9,33	1,18	>0,05
Maximum oxygen consumption l/min.	3,57	0,24	11,79	3,42	0,27	11,16	2,58	<0,05
Maximum oxygen consumption / weight , ml/min /kg.	63,52	5,79	10,82	66,89	4,87	10,17	2,41	<0,05
Holding breath breathing, (sek)	42,90	1,06	11,84	43,39	1,73	11,16	1,37	>0,05
Holding breath exhaling/(sek)	31,78	2,89	12,69	32,89	3,02	12,13	1,42	>0,05
Number of heart contractions beat, min ,	71,32	6,79	9,94	68,37	5,79	9,14	1,79	>0,05
Lung living capacity me	3100,1	258,9	10,79	3329,01	296,8	10,14	3,13	<0,01

The physical fitness indicators presented in the table above, a comparative analysis of the studied indicators, made it possible to conclude as follows, the control group is the PWC of qualified volleyball girls 170, kg m/min, on average 583.43 kg m/min. , the experimental group of qualified volleyball girls averaged 596.13 kg m / min, (difference 12.7 min.),  $p < 0.05$ . Control group qualified volleyball player student girls PWC<sub>170</sub> / weight, ml/min / kg. average 13.39 ml/min/kg, experience group qualified Volleyball Girls average 14.29 ml/min /kg.(the difference is 0.9 ml/ min/kg.) difference was determined. Control group qualified volleyball player student girls breath holding, breath holding, (sek) average 42.90 sek.ni, the experimental group of qualified volleyball student girls averaged 43.39 SEC. (difference 0,49 SEC.). Control group qualified volleyball player student girls breath holding, exhaling, (sek) average 31.78 sek.ni, the experimental group of qualified volleyball student girls averaged 32.89 SEC. (difference 1,11 SEC.). Control group qualified volleyball player student number of heart contractions of girls, heart beat / min, average 71.32 heart beat / min. experience group qualified volleyball student Girls average 68.37 tattoo / min. (difference 1,11 SEC.). Control group qualified volleyball student girls lung capacity, ml average 3100.1 ml, experience group qualified volleyball student Girls average 3329.01 ml. (the difference is 228.91 ml.).

## Conclusion

This study shows different physical characteristics of volleyball girls depending on their playing positions. Optimal performance emphasizes the need for targeted training programs to develop physically necessary attributes. Future research needs to learn strategies to adapt to long-term training and prevent injury to further improve player development.

## References

- A. A. Geraskin, G. D. Babushkin, и Yu. P. Denisenko, «Lichnost, deyatelnost i podgotovka libero v voleybole», *Theory Methodol. Phys. Cult.*, т. 66, вып. 4, сс. 49–56, 2021.
- A. V. Dvornikov, E. M. Denisova, и D. A. Volkov, «Faktory, vliyayushchie na effektivnost trenirovochnogo protsessa v voleybole», *Phys. Cult. Upbringing Educ. Train.*, вып. 1, сс. 23–24, 2022.
- A. V. Goncharova, «Povyshenie nadezhnosti zashchitnykh deistviy voleybolistok s uchetom resheniya sportivnykh dvigatelnykh zadach», *Theory Pract. Phys. Cult.*, вып. 12, сс. 45–49, 2007.
- Bouzigues, T. (2024). Differences in training load, jump performance and injury occurrence in elite youth volleyball players. *Journal of Sports Medicine and Physical Fitness*, 64(5), 465-474, ISSN 0022-4707, <https://doi.org/10.23736/S0022-4707.23.15442-9>
- D. A. Dashkovsky, A. E. Lopatin, A. A. Prudnikov, и A. D. Kuznetsova, «Evaluation of the effectiveness of priema podach v razlichnykh zonakh igrovoy ploshchadki na primere zhenskogo chempionata po voleybolu», *Molodoy Uchenyy*, т. 430, вып. 35, сс. 137–139, 2022.
- D. V. Guba и A. V. Rodin, «Obosnovanie individualnoy takticheskoy podgotovki kvalifitsirovannykh sportsmenov v igrovyykh vidakh sporta», *Phys. Cult. Upbringing Educ. Train.*, вып. 4, с. 46, 2012.
- Ferman, B. (2024). Adolescent Athletes with Stronger Athletic Identity Perceptions Have Weaker Fear Avoidance Perceptions during Musculoskeletal Injury Rehabilitation Return to Sports Preparation. *Journal of Pediatric Orthopaedics*, 44(8), 489-496, ISSN 0271-6798, <https://doi.org/10.1097/BPO.0000000000002723>
- G. N. Germanov и E. V. Tsukanova, «Trenirovochnoe zadanie kak pervichnaya edinitsa mikrostruktury sportivnoy trenirovki», *Uchyonye Zap. Univ. Im PF Lesgafta*, вып. 4, сс. 29–34, 2011.
- G. N. Germanov, E. G. Germanova, и M. E. Zlobina, «Sovremennye traktovki kategorii „trenirovochnoe (dvigatelnoe) zadanie“ i tekhnologii strukturirovaniya trenirovochnogo protsessa yunyx sportsmenov», в *Terminy i ponyatiya v sfere fizicheskoy kultury*, SPb, 2007, сс. 62–65.
- Hao, X. (2024). The Influence of Volleyball Training on the Psychological Health Development of College Students. *Revista de Psicologia del Deporte*, 33(1), 258-269, ISSN 1132-239X
- Hastie, P.A. (2023). The Impact of Sport Education on Chinese Physical Education Majors' Volleyball Content Knowledge and Performance. *Research Quarterly for Exercise and*

Sport, 94(3), 618-626, ISSN 0270-1367, <https://doi.org/10.1080/02701367.2022.2026866>

- L. P. Volkov, Theory and methodology of children's and youth sports. Kiev: Olimpiyskaya literatura, 2002.
- Liu, H. (2023). The Impact of Sport Education on Physical Education Majors' Basketball Content Knowledge and Performance. *Journal of Teaching in Physical Education*, 42(3), 480-489, ISSN 0273-5024, <https://doi.org/10.1123/jtpe.2022-0058>
- M. A. Godik, Physical training of football players. Moscow: Terra-Sport, 2006.
- M. R. Glukhareva, «The role of coordination abilities and successful acquisition of engine skills in volleyball», *Uchenye Zap. Univ. Im. P F Lesgafta*, т. 201, вып. 11, сс. 95–98, 2021.
- Morán-Pedroso, L. (2024). Pedagogical analysis of the cardiovascular adaptations of the university champion team of masculine volleyball. *Revista Medica Electronica*, 46(1), ISSN 1684-1824
- Musa, R.M. (2023). Identification of high-performance volleyball players from anthropometric variables and psychological readiness: A machine-learning approach. *Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology*, 237(4), 317-324, ISSN 1754-3371, <https://doi.org/10.1177/17543371211045451>
- N. N. Zlobin, R. S. Tumasov, и O. I. Stupnikov, «Sovershenstvovanie sportivnoy tekhniki v voleybole i osnovnye problemy pri zanyatiyakh etim vidom sporta», в *Intellectualnyy potentsial obshchestva kak drayver innovatsionnogo razvitiya nauki*, Orenburg, 2019, сс. 146–148.
- N. Tsunawake, Y. Tahara, K. Moji, S. Muraki, K. Minowa, и K. Yukawa, «Body composition and physical fitness of female volleyball and basketball players of the Japan inter-high school championship teams», *J. Physiol. Anthropol. Appl. Human Sci.*, т. 22, вып. 4, сс. 195–201, 2003.
- Nagorna, V. (2023). Gender-specific issues for sport preparedness of elite female athletes in team sport games. *Health, Sport, Rehabilitation*, 9(3), 74-90, ISSN 2520-2677, <https://doi.org/10.58962/HSR.2023.9.3.74-90>
- Nagorna, V. (2024). Innovative technologies in sports games: A comprehensive investigation of theory and practice. *Journal of Physical Education and Sport*, 24(3), 585-596, ISSN 2247-8051, <https://doi.org/10.7752/jpes.2024.03070>
- Patti, A. (2024). The Influence of Ankle Mobility and Foot Stability on Jumping Ability and Landing Mechanics: A Cross-Sectional Study. *Journal of Functional Morphology and Kinesiology*, 9(3), ISSN 2411-5142, <https://doi.org/10.3390/jfmk9030160>
- R. Lidor и G. Ziv, «Physical and physiological attributes of female volleyball players-a review», *J. Strength Cond. Res.*, т. 24, вып. 7, сс. 1963–1973, 2010.
- Sieroń, A. (2023). Changes in Body Composition and Motor Fitness of Young Female Volleyball Players in an Annual Training Cycle. *International Journal of Environmental Research and Public Health*, 20(3), ISSN 1661-7827, <https://doi.org/10.3390/ijerph20032473>
- V. A. Grigorev и A. Yu. Grigoreva, «Osobennosti peremeshcheniya voleybolista v gruppovom blokirovanii», *Theory Pract. Phys. Cult.*, вып. 4, сс. 69–70, 2016.
- Yago, C. (2024). Analyzing the psychological variables linked to performance in beach volleyball:

an integrative review and practical recommendations. Cuadernos de Psicología del Deporte, 24(1), 33-59, ISSN 1578-8423, <https://doi.org/10.6018/cpd.582951>

Yu. D. Zheleznyak, Yu. M. Portnov, и V. P. Savin, Sportivnye igry: Sovershenstvovanie sportivnogo masterstva. Moscow: Izdatelsky center AKADEMIYa, 2012.