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METHODOLOGICAL JOURNAL**<http://mentaljournal-jspu.uz/index.php/mesmj/index>**IMPROVING THE QUALITY OF EQUILIBRIUM AMONG STUDENTS OF  
SPECIALIZED UNIVERSITIES WITH THE MEANS OF GYMNASTICS****N.Kh. Fethullova**

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**ABOUT ARTICLE**

**Key words:** students, gymnastic and acrobatic exercises, coordination abilities, static and dynamic balance, and special physical training.

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**Abstract:** The purpose of this article is to substantiate the effectiveness of applying a set of exercises aimed at improving the quality of balance in students of various specialties. The results of the comparative analysis of balance indicators in students are presented using representatives of water sports and wrestling as examples. The effectiveness of applying coordination and acrobatic-oriented exercise complexes aimed at developing balance function and contributing to increasing the level of students' special physical fitness and the successful mastery of gymnastic element techniques has been experimentally substantiated.

**Introduction.** According to a number of researchers such as M.L. Zhuravin [2], N.G. Tsilke, G.N. Pshenichnikova [11], and M.N. Umarov [13], gymnastics is a fundamental discipline with a vast arsenal of exercises, forms, and methods of organizing training sessions. It is considered one of the most complex sports in terms of the diversity of its elements and the richness of its programs.

The studied volume of motor skills and abilities is aimed at developing students' professional competencies, improving physical qualities, and expanding their functional capabilities.

Research has shown that during the performance of gymnastic exercises, instructors pay particular attention to developing students' ability to maintain balance, which plays a crucial role in mastering program requirements across various sports. For example, in combat sports, rapid reaction to the opponent's changing position and the ability to maintain dynamic body balance under competitive conditions are essential [8]. Canoe rowers are required to maintain stability under increased demands on vestibular stimulation [4].

In synchronized swimming, performing complex coordinated elements—such as lifts, combinations, rotational movements, acrobatic and choreographic exercises in various planes—requires a high level of coordination, spatial orientation, sense of balance, and stability in water, where athletes often experience temporary “weightlessness” [7].

Despite the popularity and wide range of gymnastics tools, this aspect of training is often not given sufficient attention in educational practice. Many students do not fully utilize their physical and functional abilities to maintain balance due to:

- a low level of special physical preparedness (coordination, strength, vestibular stability, joint mobility);
- underestimation of the health-improving value of balance exercises;
- insufficient knowledge about mastering gymnastic exercises;
- lack of methodological literature on this aspect of training [14, pp. 7–10].

The aim of the study is to substantiate the effectiveness of a set of exercises aimed at developing balance function in students of different sports specializations.

**Methodology.** The study involved 30 first-year students specializing in combat sports and water sports. Their sports qualification level ranged from first-class athletes to Candidates for Master of Sport.

To achieve the research objectives, special exercise complexes were developed, including general developmental exercises, acrobatic exercises, and balance-oriented tasks using reduced support surfaces and partial visual deprivation.

In the preparatory part of the session, exercises focused on developing dynamic balance were used. In the main part, acrobatic and static exercises were applied, engaging multiple sensory systems (vestibular, visual, auditory) to enhance vestibular stability (Table 1). Additionally, these exercises were assigned as homework.

Table 1. Exercises for Developing Balance Function  
(Formatted and translated accurately)  
Preparatory Part

No.	Exercise Content	Dosage
1	Walking with head tilts forward, backward, left, and right (two movements per step)	30–40 sec
2	Walking with turns toward the leading leg while maintaining visual focus on a partner	30–40 sec
3	Running with 360° turns	15–30 sec
4	Leg swings with 360° turn	4–8 reps
5	Squat support → push-up → turn	4–8 reps
6	Forward bending with rotations, balance on one leg (eyes closed)	4–8 reps
7	Head turns + balance on toes	4–8 reps
8	“Swallow” balance exercise sequence	4–8 reps

#### Main Part

No.	Exercise	Repetitions
1	Forward rolls with turns	2–4
2	Paired forward rolls	2–4
3	Forward/backward rolls after turns	2–4
4	Headstand and handstand	3–5

#### Final Part

No.	Exercise	Repetitions
1	Push-ups with head movements (eyes closed)	10–12
2	Squats with 360° turn	12–15
3	One-leg jumps along geometric paths	10–12

Balance level was assessed using control tests:

- Yarotsky test
- Romberg test
- Three forward rolls
- “Swallow” balance test [4, pp.132–134; 12, p.5].

Results and Discussion

Preliminary results showed that students lacked sufficient knowledge of gymnastic techniques. More than half failed to perform basic movements correctly.

Common errors included:

- incorrect technique (no grouping, poor amplitude, limb misalignment);
- insufficient fixation of static positions;
- falls from apparatus or balance positions.

**Table 2. Typical Errors**

Exercise	Errors
Rolls	Lack of grouping, incorrect head position
Shoulder stand	Non-vertical body, wide elbows
Side cartwheel	Limb misalignment
Headstand/handstand	Poor balance, bent limbs
“Swallow” balance	Leg below horizontal, instability

Initial testing showed very low balance performance, especially in the Romberg test (2.0–3.5 sec). This is due to the absence of visual control and reduced support area.

**Table 3. Initial Balance Indicators**

Sport	Rolls (sec)	Yarotsky	Swallow	Romberg
Kurash	3.4	9.7	3.0	2.0
Swimming	4.2	10.4	2.4	3.5
Sync swimming	3.9	12.3	4.8	3.2
Rowing	4.3	9.4	3.2	3.0

Final results (after 15 weeks) showed improvement across all groups.

**Table 4. Final Balance Indicators**

Sport	Rolls	Yarotsky	Swallow	Romberg
Kurash	3.0	12.5	5.5	2.7
Swimming	3.7	13.3	3.5	3.9
Sync swimming	3.4	16.0	6.0	4.0
Rowing	4.0	11.0	3.9	3.5

**Conclusion.** Balance exercises have important applied significance and vary depending on the sport.

Comparative analysis revealed significant differences in balance indicators based on sports specialization.

The developed exercise complexes are recommended for inclusion in gymnastics training programs to improve technical and special physical preparedness, facilitating effective mastery of gymnastic skills.

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