

PRINCIPLES OF MACRO-METHODIC OF JUNIOR FEMALE GYMNASTS' TRAINING TO SPORT EXERCISES FOR GYMNASTIC ALL ROUND COMPETITIONS AT SPECIALIZED BASIC STAGE

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Abstract. *Purpose:* working out of principles of junior female gymnasts' macro-methodic training to sport exercises for all round competitions at stage of specialized basic training. *Material:* in the research 19 girl-gymnasts from reserve of combined team of Romania participated. Measurements and assessment of technical fitness at training sessions and in conditions of competitions were conducted at 120 training sessions (10 sessions a week). *Results:* we worked out and realized experimentally and in training sessions principles of macro-methodic training to gymnastic exercises. Macro-methodic of training is presented in structure of long-term programs of training for all round competitions. Macro-methodic is presented as combination of elements of motor, technical, didactic and technological structures of sport exercises (in the present article it was described on material of vaults of Yurchenko's type). *Conclusions:* macro-methodic permits to state optimal algorithm of mastering of theoretical and practical materials at training sessions. Besides, it permits to demonstrate steady growth of sport results at competitions. With it individual-age features of junior female gymnasts, tendencies and specialists' requirements are considered.

Key words: sportswomen, gymnastic, bio-mechanic, exercises, basic training, macro-methodic.

Introduction

Olympic sport gymnastic develops in compliance with regularities and tendencies of world sports [1, 13, 16, 22, 26, 27, 38]. Main tendencies of women's sport gymnastic are increasing of complexity of competition programs at all round, rising of quality of performance, expansion of geography of sport gymnastic development in the world, winning of medals at large international tournaments and main competitions of 4 years' period. Important role is taken by deepening of specificity of development of kinds of gymnastic all round competitions, increasing of quantity of exercises of different structural groups on apparatuses and increasing of quantity of competitions. Sport compete of national combined teams grows. In this connection coaches have to start training of junior female gymnasts since very early age. It permits to master "school of movements", basic exercises, exercise of high and highest complexity by, approximately, beginning of puberty period; i.e. to fulfill exercises from tables of difficulty groups of International federation of gymnastic (IFG) «D» and «E», and even «F». Analysis shows there is no sufficient quantity of normative documents (logistically constructed plans of junior female gymnasts' training, considering age features and level of fitness, training programs, methodic and practical materials and technologies of their realization), which could ensure success of basic training on systemic principles or they are absent at all. For example, in the best world gymnastic school (Romania) junior female gymnasts start competition activity since 9 years' age. Federation of sport gymnastic and its coaches do not have required methodic literature for trainings at preliminary, preliminary basic and specialized basic stages. Alongside with it, since 11 years' old age junior female gymnasts start mastering of difficult exercises and in 12- 15 years' age (stage of specialized basic training) master highly difficult exercises from Rules of competitions of IFG. Analysis of junior female gymnasts' training shows that coaches are in conditions of "race" for sport results and, that is why, train exercises in accelerated manner. In this period trainees have no finally formed motor skills and formation of individual style of sport technique goes against the background of technical mistakes, made with fulfillment of exercises [8, 12, 13, 16, 18, 26, 27, 36, 38]. Actually a coach forces gymnast's transition to next stage of training. Such imperfect training and competition construction was made in favor of momentary sport achievements of junior female gymnasts. It is intrinsic to basic stages of training in many countries of the world. For mastering of exercises with complex coordination of movements trainees shall repeat exercises for many times and fulfill them intensively. Often it is accompanied by fear of complex exercise's fulfillment. It results in different negative after-effects on training sessions and at competitions [1, 11, 16, 18, 22, 23, 35, 37, 38].

Purpose, tasks of the work, material and methods

Purpose: working out of principles of junior female gymnasts' macro-methodic training to sport exercises for all round competitions at stage of specialized basic training.

The tasks of the research: 1. Analyze development and process of perfection of gymnastic exercises from different groups of complexity on apparatuses of women all round; specificity and to-day's content of stage of specialized basic training in structure of many years' sport perfection.

2. Study indicators, which characterize level and dynamic of junior female gymnasts' individual-age features, their sensor-motor coordination; basic, special motor and special technical fitness as well as progress of sport-technical fitness at stage of specialized basic training.

3. Study and identify kinematic and dynamic indicators of sport technique's key elements in the process of development and perfection of phase structure of basic gymnastic exercises. These exercises were fulfilled by junior female gymnasts on apparatuses of women all round competitions at specialized basic stage in conditions of training sessions and competitions.

4. Work out and use principles of macro-methodic of junior female gymnasts' training to sport exercises on apparatuses of women gymnastic all round competitions at specialized basic stage and in pedagogic experiments (in laboratory conditions) as well as in conditions of competitions (field conditions). Test effectiveness of influence of macro-methodic as system on perfection of sport-technical fitness.

Methodology of the researches: 1. Theoretical-methodic analysis of junior female gymnasts' training at specialized basic stage by the data of literature and existing in sport gymnastic practical experience. In modern scientific-methodic literature [5, 9, 11, 12, 16, 17, 18, 22, 27, 30, 33, 38] theoretical substantiation of sportsmen's basic training is given. On the base of it scientific-methodic and practical development of training process and competition functioning shall be realized. Conception of elite female gymnasts' training (as many years' controlled process) shall be based on unity of organizational and program-methodic principles, on material provisioning. Besides, it shall be realized with complex and systemic application of specific training means and methods. All these are realized in combination with pedagogic and medical-biological control [1, 6, 11, 12, 15, 16, 17, 21, 23, 32, 34, 37, 38].

2. Systemic-structural approach to assessment of gymnastic exercises' sport technique is realized with the help of algorithm of movements' analysis [11, 12, 13]. Technique of gymnastic exercises was taken as subject of training. Basic motor actions and gymnastic movements (static balance, dynamic balance, push offs, pulling, jumps and landings; kinematic, dynamic of unsupported travels and rotations). Cause-effect structure of movements; kinematic and dynamic structure of movements; phase structure of movements.

3. Video-computer program analysis of gymnastic exercises with the help of systems: Panasonic mini DV, Pinnacle Studio, Kinovea, Physics ToolKit. Program Pinnacle Studio is designed for converting of video AVI at speed of video recording of 30 frames per second. Computer program «Kinovea» is used for measuring of joint angles, body links of key elements of gymnastic exercises' sport technique in vaults of Yurchenko type, in dismounts from bars of different height, dismounts from balance beam and in acrobatic exercises like double back flip in floor exercises. Program «Physics ToolKit» is intended for receiving of indicators of kinematic and dynamic structure of gymnastic exercises' key elements (error of measurement 3–3.5 %).

4. Method of gymnastic exercises' simulation was used for solution of main tasks: studying of movements, exercises and training to them. Prof. N.A. Bernstein [2] points that model shall be sufficiently rigid and, at the same time, flexible, able for transformation. The structure of simulation process, to be realized in researches and experiments, was the following: description of task, choice of model, studying of model, control [14].

4. Method of postural points of movements for analysis and assessment of key elements of exercises with complex coordination. Method of postural points of movements [8] is bio-mechanical study of sport exercises by means of measurements, analysis and assessment of preceding and subsequent body postures in phase structure of the fulfilled exercise. Its purpose is determination of key elements of sport technique. Method of postural points of movements was worked out and offered for analysis of sport technique of gymnastic and acrobatic exercises at the end of 70-ies [3]. Then conception and methodology was being perfected as well as scientific-practical application in works by V.N. Boloban [4, 5, 7, 8], Ye. Sadovskiy, T. Nizhnikovskiy, A. Mastalege, V. Vishniiovskiy, M. Begaylo [7, 20], V.A. Potop [19, 34, 35], N. Andreeva [28]. With the help of method of postural points of movements we identified key elements of sport technique. In phase of preparatory actions key element is start posture of body (SP). SP is bio-mechanically rational posture of body for entering main phase of exercise. In phase of main motor actions key element is multiplication of body posture (postures) (MP). MP is regarded as process of successive fulfillment of instant fixed postures of single-profile exercise (for example double back flip tuck) or exercise of combined profile (for example double back flip tuck with 360 degrees' turn in first flip). Its purpose is creation of holistic motor action with controlled change of body postures. MP determines content and structure of exercise. In final phase key element is final posture (FP). FP is a key element, which characterizes body stability on support with finishing of exercise or for creation of conditions for fulfillment of next combination of exercises. Conceptual essence of method of postural points of movements is that every preceding body posture in fulfilled exercise shall positively influence on bio-mechanic of next body posture. It permits to fulfill exercise without extra reconstructions in order not to accumulate technical mistakes in demonstration of exercise or combination of exercises.

5. Pedagogic observation, questioning, talks were techniques of the research. They were intended for objective assessment of training process, effective connection of training content, skills of trainees with growth of sportsmanship in structure of many years' sport training.

6. Experts' assessment is solution of research's tasks with the help of committee (group of experts, consisting of specialists of Federation of gymnastic of Romania, scientists, referees, coaches). Its purpose is to objectively assess quality of mastering of gymnastic and acrobatic exercises; determine authenticity of sport technique's perfection, course and results of the research and experiments in dynamic of their realization.

7. Pedagogic experiments (ascertaining and forming) were fulfilled by technique of one group (comparative, successive). The tested had different individual level of sportsmanship.

8. Method of tests and control tasks.

9. Didactic principles meeting the requirements of modern kinds of sport gymnastic [4, 5, 9, 10, 11, 16, 17, 36, 37].

10. Training methods, which activate mastering of gymnastic and acrobatic exercises with different coordination complexity [4, 5, 9].

11. Method of linear-branched programming of training tasks and perfection of gymnastic/acrobatic exercises [5, 6].

12. Mathematical statistic (with the help of computer program KyPlot»).

Organization of the research

The research and experiments were conducted in three stages:

First stage (initial, 2012) was analysis and assessment of content of modern standard program of junior female gymnasts' training. Measurement and assessment of sensor-motor coordination, special motor fitness, level of basic and special technical fitness and personal features of junior female gymnasts. Assessment and identification of bio-mechanical indicators of junior female gymnasts' of sport technique's key elements in conditions of competitions was the next step. Measurement and assessment of technical fitness at training sessions and in competition conditions at 120 sessions (10 sessions a week) was conducted. In ascertaining pedagogic experiment 19 female gymnasts of stage of specialized basic training participated. Ascertaining pedagogic experiment was conducted in Olympic junior gymnastic center, Deva, Romania, in 2012. Results of ascertaining pedagogic experiment are presented as well as results of junior female gymnasts' performances in three national female sport gymnastic competitions in Romania 2012.

The second stage of the research (intermediate, 2013) included forming pedagogic experiment, in which 14 female gymnasts of specialized basic stage participated. We worked out theory and methodic of construction of long term programs of motor, technical, didactic and technological structures elements' combining in process of sport exercises' mastering. Studying and identification of kinematic and dynamic indicators of sport techniques' key elements in process of development and perfection of phase structure of basic gymnastic exercises, fulfilled by junior female gymnasts on apparatuses of female gymnastic all round in training and competition conditions. Working out of element-by-element content (principles) of macro methodic of junior female gymnasts' training to sport exercises of stage of basic specialized training and in pedagogic experiments as well as at competitions. We also carried out testing of quality of gymnastic exercises' training and effectiveness of sportsmanship perfection under influence of macro methodic as system. In forming experiment 14 female gymnasts participated. Results of forming pedagogic experiment are presented as well as results of junior female gymnasts' performances in three national female sport gymnastic competitions in Romania 2013.

The third stage of the research (final – 2014) was continuation of pedagogic experiment and its finalizing. Dynamic of combination of motor, technical, didactic and technological structures of sport exercises' mastering on the base of long term training programs was realized. Comparative analysis of kinematic and dynamic indicators of sport technique's key elements in process of perfection of basic gymnastic exercises' phase structure was fulfilled. These exercises were fulfilled by junior female gymnasts on apparatuses of female gymnasts all round competitions in training and competition conditions. Pedagogic experiment was conducted in Olympic gymnastic center, Izvoran, Romania.

Results of junior female gymnasts' performance at national competition, Bucharest, Romania, 2014 are presented.

Results of the research

Analysis of scientific-methodic literature, practical experience of sport gymnastic coaches resulted in registration of new process of sport training, connected with increasing of its show character and performance level of junior female gymnasts. The process also included modern technologies and results of many years' training of female sport gymnastic meeting requirements of IFG.

It was found that specificity and world requirements to sport fitness of junior female gymnasts are characterized by care of their health, formation of trainees' sufficient "fund" of movements, mastering of great number of different gymnastic and acrobatic exercises of different coordination complexity, perfection of special technical fitness and competition programs. Prof. Yu.K. Gaverdovskiy (2007, pg.13) [11] writes that in contrast to other kinds of sports (track and fields, different motor functioning, outdoor games, martial arts, weight lifting and etc.) technical-aesthetic kinds of sports require constant upgrading and complication of competition program. Up to 80% of all training time (not considering competitions) gymnasts, acrobats, skaters spend for mastering and perfection exactly technique of exercises (i.e. on technically oriented training). Alongside with it consideration of age and individual features of trainees is not sufficient; forced technical training still exists. It results in overloading of natural physical abilities and central nervous system. In its turn it results in sport traumas and giving up of sport gymnastic trainings. Prof. V.N. Platonov (2013, pg.37), [17] points: "Junior athletes shall be oriented on optimally constructed process of many years perfection. In practice exploitation of junior athletes is manifested in their orientation on sport result and victory in competitions. It results in preparation of junior champions, who will stop progress in the future. In the future they yield to their peers who did not endure such pressing. Under such training junior athletes have the following after effects: adaptation resource is spent too early; over tension and over training occur; they become weaker than their peers with less potentials but who did not endure forced training".

Scientific-methodic literature, practical experience of female sport gymnastic coaches, results of competition performances witness that training of exercises with constantly growing complexity is usually in period of gymnasts' 12-15 years' old age. For example, after mastering of back flip arching (end of stage of preliminary basic training – 10-11 years' old age)T at stage of specialized basic training they have to master back flip arching with turn by 180 degrees (half of pirouette). Further (in didactic sequence) female gymnasts master flip pirouette, one and half pirouette, double pirouette, two and half pirouette and even triple pirouette (flip with turn by 1080 degrees). When training easier exercises of this structural group standard methodic is realized or its separate modifications in the form of means, techniques, approaches, local technologies of program material's mastering. Besides, corrections are worked out and introduced in already applied by coach programs of preparatory, imitating exercises. When training more complex exercises of the mentioned structural group the applied methodic is perfected. Special and general didactic principles, techniques of training, local technologies are introduced. Author's means of result's achievement, additional methods of training's activation are applied. Means of regulation and control, correction through biological feedback are realized. Important pedagogical constructions and algorithms of training material's mastering in time are created. We should remind that we

speak about training of elements of only one structural group of gymnastic exercises. Training of gymnastic exercises of different structural groups, different coordination complexity at stage of specialized basic training can not be crammed in pedagogical borders of one or several fragmented training methodic.

We suppose that strategic role in effective control over process of mastering and perfection of gymnastic exercises at stage of specialized basic training shall be played by modern dynamic system, which includes individualized motor, technical, didactic and technological structures of mastering of valid exercises of different coordination complexity. It is regarded as macro methodic of gymnastic exercises' training. Macro – from Greek (μακρός) – points at big dimensions or significant size, at combination of something. Methodic – is ready “receipt”, algorithm; procedure of realization of some purposeful actions. In education it is description of certain techniques, means of pedagogical functioning. Structurally macro methodic is a functional combination of long term programs of junior female gymnasts' training to exercises of “school of movements”, to basic level, specialization, competition exercises in vaults, on bars of different height, balance beam and in floor exercises. It includes motor, technical, didactic and technological structures of valid exercises' mastering (exercises of different coordination complexity, providing following didactic requirements and rules of trainings at stage of specialized basic training).

We have worked out and studied macro-methodic principles of gymnastic exercises' training at stage of specialized basic preparation for gymnastic all round competitions in female sport gymnastic. Macro-methodic is a dynamic system of theoretical and training-methodic materials, which shall be realized in process of junior female gymnasts' training. Macro-methodic consists of twelve key principles, having scientific novelty and practical significance at stage of specialized basic training of gymnastic all round competitions in female sport gymnastic.

1. Tendencies of development of female sport gymnastic are as follows: specificity of kinds of female gymnastic all round competitions; requirements and rules, worked out by specialists for trainees at stage of specialized basic training.
2. Content and orientation of stage of specialized basic training imply mastering as many as possible of new movements in form of training exercises and in form of elements, which can be applied in competition practice. Program basis of training is composed of most important elements of special technical training in the form of “school” of general and specific purposes (the so-called “basic blocks”: complex skills, ensuring fulfillments of waving movements, push offs, complex rotations, landings, balance); holistic basic elements of kinds of all round (accelerations, connections, “profiling”), combinations and basic combinations. Total scope of junior female gymnasts' work at stage of basic specialized training is great and intensive. Bent for trainings, trainability are main criteria of detection of talented female gymnasts.
3. Individual and age specificities of junior female gymnasts of stage of specialized basic training (12-15 years old age) and content of stage of specialized basic training as well as level and dynamic of general, special motor, basic and sport-technical fitness; content of stage of specialized basic training. Mastering of sport grade material, which permits to participate in competitions and receive necessary qualification. Mastering of program of first adult sport grade, candidate master of sports and master of sports. Regular systemized pedagogic and medical-biological control.
4. Mastering of gymnastic exercises of different structural groups of complexity in kinds of female gymnastic all round competitions (vault, bars of different height, balance beam and floor exercises), from which compulsory, free and final programs of female gymnasts are formed. Bio-mechanical indicators of key elements of exercises' sport technique in all kinds of female gymnastic all round competitions, which shall be fulfilled by junior female gymnasts at stage of specialized basic training.
5. Stages of gymnastic exercises' mastering are as follows: training of “school” of movements, pedagogic technologies of formation of ideas about mastered exercise – initial training. Deepened training is consolidation and further perfection of competition programs' elements.
6. Long term programs of training of gymnastic exercises with different coordination complexity are: macro-methodic elements of training of exercises with complex coordination, logical-structural schema of their functioning, active period of their realization. They ensure effective mastering of gymnastic, acrobatic exercises in structure of stage of specialized basic training [6, 29, 36]. Main purposes (MP) and specific purposes (SP) of sport training can be represented as solid and dotted lines. Their constant dynamic links and relations in realization are the basis for working out of training programs. These programs are of long term character. They are prolonged by development of female gymnastic and their specific features, their mastering and improvement of exercises' sport technique; by growth of their complexity and peculiarities of development of competition functioning's structural elements. In fig. 1 we can see approximate long term program of training of Yurchenko-type vaults. Horizontal lines in vertical columns mean prevailing realization of training-methodic materials from long term programs of junior female gymnasts' training to Yurchenko-type vaults.

Long term program and its elements for training to Yurchenko-type vaults at stage of specialized basic training	Age of junior female gymnasts					
	12 years old	13 years old	14 years old	15 years old		
General and special physical fitness					ГЦ:	
Quickness	-----	-----	-----			
Sensor motor coordination	-----	-----	-----			
Strength	-----	-----	-----			
Speed power qualities. Jumping	-----	-----	-----			
Special endurance	-----	-----	-----			
Flexibility	-----	-----	-----			
Elastic-rigid interaction of limbs with support	-----	-----	-----			
Acrobatic and trampoline fitness						
Rolls, somersaults, flips, fulfilled on acrobatic track, on mat for floor exercises. Formation of skill of postures' multiplication in jumping on trampoline	-----	-----	-----			
Basic technical training						
“School” of movements	-----	-----	-----			
Acceleration	-----	-----	-----			
Front arms, courbette	-----	-----	-----			
Rondat, rondat on bridge	-----	-----	-----			
Flic flac, half flic flac in stand	-----	-----	-----			
Rondat – back flip, arching and with turn by 180 degrees	-----	-----	-----			
Rondat – back flip, arching and with turn by 360 degrees		-----	-----			
Rondat – back flip, arching and with turn by 540 degrees			-----			
Rondat – back flip, arching and with turn by 720 degrees			-----			
Special technical training. Formation of key elements of sport technique						
Starting position of body	-----	-----	-----			
Rondat on bridge – half of flic flac on support	-----	-----	-----			
Courbette from support	-----	-----	-----			
Multiplication of posture: straightened in the first (half of flic flac) and the second (flip arching) flight phases						
Multiplication of posture: straightened in the first (half of flic flac) and the second (flip arching 180° and 360°) flight phases						
Multiplication of posture: straightened in the first (half of flic flac) and the second (flip arching 540 °) flight phases						
Multiplication of posture: straightened in the first (half of flic flac) and the second (flip arching 720 °) flight phases						
Final body posture (formation and perfection of skill to land properly)						
Yurchenko-type vaults in competitions: YuSP, YuS180°, YuS360°, YuS540°, YuS720°						
Tests	-----	-----	-----	-----	-----	
Sport grades	SP:	Jun. II	Jun.I	Ad. I	CMS	MS

Fig.1. Long term program and its elements for training of Yurchenko-type vaults and logical-structural schema of its realization, built on the base of algorithms of main purposes (MP) and specific purposes (SP) interaction (in diagram they are solid and dotted lines) at stage of specialized basic training. [by 6].

Legend: **MP** –main purpose of sport training: to master Yurchenko-type vaults of different groups of complexity; fulfill requirements for CMS and MS; **SP** – specific purposes of sport training: to master vaults of qualification, free, and final programs; to fulfill requirements of sport grades: Jun. – junior; Ad. – adult; CMS – candidate master of sports; MS – master of sports.

7. Special and general didactic principles, method and means, which activate process of training of gymnastic and acrobatic exercises at stage of specialized basic training in sport gymnastic [4, 8, 9, 10, 11, 16, 17, 25, 26].

8. Transfer technology (vertical, horizontal) of training of gymnastic exercises of different all round structural groups [18, 33]. Vertical technology implies mastering of exercises with increasing complexity of one or different profiles in one kind of all round competitions. Horizontal transfer technology envisages application of already mastered exercise (formed motor skill) in competition programs on different apparatuses of female gymnastic all round competitions. For example, back flip arching after rondat in floor exercises, mastered by female gymnast, is included in program of vaults (Yurchenko flip, arching), dismounts from bars and balance beam.

9. Functional pedagogic equation (FPE) was worked out by prof. V.N. Boloban [4, 5]. It illustrates modern technology of realization of didactic elements in process of training of gymnastic and acrobatic exercises of different coordination complexity at stage of specialized basic training in female sport gymnastic. In fig. 2 we present FPE, which is an element of macro methodic structure, intended for training of gymnastic and acrobatic exercises in female gymnastic all round competitions at stage of specialized basic training.

$$P \rightarrow DP \rightarrow DR \rightarrow MT \rightarrow TM \rightarrow MFTO \rightarrow RC \leftrightarrow RT$$

Fig.2. Functional pedagogic equation (FPE) as technology of junior female gymnasts' training to Yurchenko-type vaults at stage of specialized basic training [by 4, 5, 29]

Legend: P – purpose and tasks of training; DP – didactic principles; DR – didactic rules; MT – method of training; TM – training means; MFTO – method and forms of trainees' organization; RC – regulation and control; RT – result of training.

Algorithm of FPE acting: by planned result of training (RT) of junior female gymnasts to Yurchenko-type vaults at stage of specialized basic training (in formula it is right part of equation, which is a pedagogic doctrine – to train (!) sport exercise, i.e. to achieve the planned result) didactic programming and structuralizing of content of forming knowledge, motor skills of the mastered gymnastic and acrobatic exercise is conducted. I.e. the most adequate and the most effective structure as well as content of didactic elements are selected (in formula it is left part of equation). In connection with dynamic character of training process functional pedagogic equation is regarded as creative search of the most effective elements of training. In this case main condition is female gymnasts' fitness level. It pre-suppose formulation of purposes and tasks of training, selection of didactic principles, method, means, forms of trainings, means of trainees' organization, elements of regulation and control with the help of biological feedback as well as their relations with planned result of training.

10. Linear-branched programming of training material: reduction of knowledge content, motor skills to algorithms in process of training of gymnastic and acrobatic exercises of different coordination complexity (see fig.3).

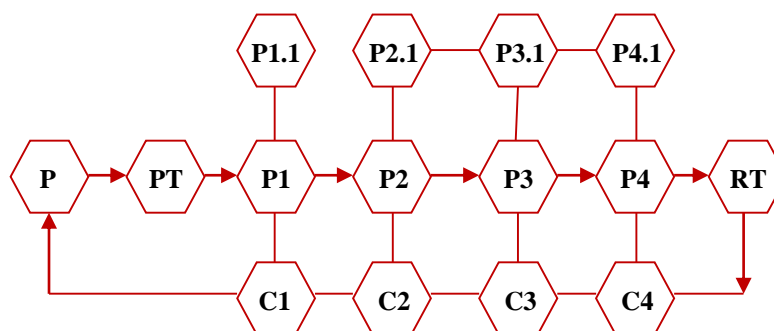


Fig.3. Algorithm of linear-branched programming of training material for training of Yurchenko-type vaults.

Legend: P – purpose of training; PT – pedagogic tasks; P1, P2, P3, P4 – portions of training material (preparatory exercises); P1.1, P2.1, P3.1, P4.1 – additional portion of training material of preparatory character; C1, C2, C3, C4 – control, correction of training process; RT – result of training [5, 6, 36, 37]

11. Sensor motor coordination as the basis of technical training and technical fitness of junior female gymnasts. Sensor systems and their integration. Static-dynamic and static kinetic stability. Coordination training [8, 24].

12. Elements of regulation, control and correction of training of gymnastic exercises, considering biological feedback (BFB). BFB is regarded as mean of control over training process and perfection of gymnastic exercises' sport technique in competition conditions.

In table 1 we present results of performances of 12-14 years' old female gymnasts in national competitions on female sport gymnastic, Romania, 2012. In table 2 we present results of performances of 13-16 years' old female gymnasts in national competitions on female sport gymnastic, Romania, 2013, 2014. Realization of macro –methodic resulted in growth of competition programs' complexity against the background of perfection of exercises' key elements, their stable fulfillment and rising of performance quality of pedagogic experiment's participants. These gymnasts were included in

the nearest and remote reserves of sport gymnastic combined team of Romania.

Table 1

Results of performances of female gymnasts of specialized basic training stage (participants of pedagogic experiment) in national competitions on female sport gymnastic, Romania, 2012

Gymnastic apparatus	C1- CNEJ Constanta , 2012, N=18			C2 – CNIJ Deva, 2012, N=14			C3 – CNM Oneshty, 2012, N=15		
	D	E	NF	D	E	NF	D	E	NF
V	4.41	8.88	12.44	4.29	8.76	13.04	4.52	8.77	13.25
BDH	4.33	8.41	12.73	4.67	8.18	12.86	4.3	7.65	11.95
BB	5.21	8.08	13.31	5.3	7.96	13.24	5.22	8.18	13.38
FE	4.91	8.99	13.88	5.2	8.88	14.05	5.08	8.36	13.45

Table 2

Results of performances of female gymnasts of specialized basic training stage (participants of pedagogic experiment) in national competitions on female sport gymnastic, Romania, 2-13, 2014

Gymnastic apparatus	C4- CNEJ Oneshty, 2013, N=8			C5 –CNM Bucharest, 2013, N=13				C6 – CNIJ Oneshty, 2013, N=9			C7 – CNM Bucharest, 2014, N=7
	D	E	NF	D	E	Pen.	NF	D	E	NF	NF
V	4.55	8.97	13.52	4.63	9.09	0.10	13.68	4.71	8.83	13.54	13.56
BDH	4.65	7.23	11.88	4.83	7.85		12.79	5.18	7.62	12.80	12.38
BB	5.6	8.63	14.38	5.36	8.71	0.10	14.06	5.8	8.53	14.33	13.83

Gymnastic apparatus	C4- CNEJ Oneshty, 2013, N=8			C5 –CNM Bucharest, 2013, N=13				C6 – CNIJ Oneshty, 2013, N=9			C7 – CNM Bucharest, 2014, N=7
	D	E	NF	D	E	Pen.	NF	D	E	NF	NF
FE	5.23	8.82	14.03	5.2	8.9		14.10	5.16	8.95	14.07	13.74

Legend: V – vault, BDH – bars of different height, BB – balance beam, FE – floor exercises, C1-7 - № of competitions; N – quantity of female gymnasts; CNEJ – Team national championship of juniors; CNJI – Individual national championship of juniors; CNM – national championship of masters; D – complexity; E – execution; Pen.- points' deductions; NF – final mark in points.

Discussion

Detail study of urgent problem of female sport gymnastic trainees' sport training at stage of specialized basic training and its actual status in the world permitted to find direction of priority: working out and experimental substantiation of macro-methodic of theory's improvement, methodic and practice of sport exercises' training in structure of long term programs of training material' mastering. We mean combined registration, usage and conjugation (in process of long time of training of still newer exercises for general and special motor fitness) of sport techniques' key elements' indicators in all kinds of gymnastic all round competitions, transfer technology [18, 33]. Besides, we mean functional pedagogic equations with their didactic content. It is necessary for formation of motor skills in process of gymnastic exercises' mastering and algorithms of their realization [5, 8, 9]. Effectiveness of macro-methodic of junior female gymnasts' training at stage of specialized basic training has been proved on material of training to basic exercises' sport technique for all kinds of gymnastic all round competitions. In this article (on example of Yurchenko-type vaults) we showed content and orientation of sport fitness of junior female gymnasts at stage of specialized basic training. Results of the tested gymnasts' performances in sport gymnasts' competitions of Romania (2012, 2013, 2014, see tables 1 and 2) are the proof of effectiveness of realization of training macro-methodic, applied to junior female gymnasts at stage of specialized basic training.

Conclusions

1. In structure of many years' training in Olympic female sport gymnastic one of the most important by scope of work and intensity is stage of specialized basic training. On this stage there are realized: controlled sport training, attention to children's health is paid, basis of sportsmanship is embedded. Overloads of young organism, forced training are obvious; frequent traumas, failure in fulfillment of training plans are possible. It is connected with a number of reasons: deficit of scientific-methodic literature devoted to training of female gymnasts at basic stages, increased international sport competitiveness, especially for adolescents, insufficient personnel support. Analysis has shown that key problem of basic specialized training stage for junior female gymnasts is insufficient quality of training of gymnastic exercises from different structural groups of complexity for all round competitions. It results in low level of performances' stability on competitions.
2. In successive pedagogic experiments we studied theory and practice of gymnastic exercises' training at basic specialized stage and gave experimental foundation to working out, development and perfection of macro-methodic of gymnastic exercises' training (as dynamic system). It includes motor, technical, didactic and technological structures of valid exercises' mastering (of different structural groups and complexity levels). We mean system of long term programs of development and purposeful perfection of sportsmanship in all round competitions (see fig.1); combined usage and conjugation of key elements indicators in phase structure of sport technique; transfer technology of gymnastic exercises' training as well as functional pedagogic equations (see fig.2) with their didactic content for formation of motor skills in process of exercises' mastering.
3. Conceptual essence of macro-methodic of junior female gymnasts' training to sport exercises at specialized basic stage (as holistic system) is dynamically agreed, internally interconnected main purpose and specific purposes of many years sport training. In their basis there are experimentally grounded for practical application means and method of long term programs of training material's mastering. The participants of pedagogic experiment demonstrated growth of complexity of competition programs, perfection of sport technique's key elements, stable rising of performance quality in conditions of female sport gymnastic national competitions, Romania, 2012, 2013, 2014 (the tested were included in nearest and remote reserves of female sport gymnastic combined team of Romania).

The prospects imply development and perfection of principles of macro-methodic of exercises' training for female gymnastic all round competitions in structure of many years' sport training.

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Conflict of interests

The author declares that there is no conflict of interests.

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