

Development of specific competencies in gymnastics in specialized higher education

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Abstract

Background and Study Aim The modernization of the curriculum in higher education, through its importance and significance, aims to ensure optimal conditions in the creation and continuous improvement of the personality of the student/future teachers of physical education. The purpose of the study was the comparative analysis of the academic programs for development of specific competencies in the specialized higher education.

Material and Methods Three groups of subjects participated in the research: group A (Grade - A1, A2, A3) with a number of 83 students (the class of 2017-2020) from the Physical and Sports Education study program of the Physical Education and Sport Faculty (Romania). Group B (Grade – B1, B2) is formed of 18 students (the class 2017-2020) while group C (Grade – C1, C2) is formed of 20 students (the class 2018-2021). The subjects of groups B and C are students of the Faculty of Pedagogy (Republic of Moldova). The research was carried out depending on the status of the discipline "Gymnastics" within the curriculum of both study programs. Grade A1: first year – fundamental discipline "Basic Gymnastics". Grade A2: second year – bachelor's degree discipline "Theory and practice in the branches of gymnastics – Artistic gymnastics". Grade A3: third year - specialization discipline "Methods of teaching gymnastics in school". Grades B1 and C1: "Didactics of gymnastics I" (first semester). Grades B2 and C2: "Didactics of gymnastics II" (second semester). Each discipline provides data about the subject matter, estimated total time, total of study hours per semester and individual study, conditions of carrying out and weighting of the evaluation criteria. The Single Factor Analysis of Variance was used to compare the average differences between groups. The nonparametric Kruskal-Wallis Test was used for the differences between groups. Statistical significance was set at $p < 0.05$.

Results The comparative analysis of the study programs reveals differences in the status of disciplines (fundamental, bachelor's degree and specialization – Romania and component of orientation towards a specialty - Republic of Moldova). The results of the comparative analysis between grades in the program Romania highlights the decrease of the mean by 0.24 points at Grade A2 and 0.36 points at Grade A3. There are significant differences at $p < 0.001$ and at ANOVA Factor insignificant differences $p > 0.05$. The results of the difference between groups in Republic of Moldova highlights the increase of performances in Grade C1 by 0.73 points and by 0.41 points at Grade C2. As for the comparison of the performances between grades, significant differences were observed between Grade C1 with Grade A2 and Grade A3, $p < 0.05$. Regarding the other comparisons, the differences are insignificant at $p > 0.05$, which shows that there are the same curricular approaches between contents and performances.

Conclusions The comparative analysis carried out between the training programs of gymnastics specific competencies revealed different contents, different weightings of the number of hours and number of credits. The insignificant differences between programs in terms of grades highlight the same curricular approaches between contents and achieved performances.

Keywords: study program, status of disciplines, evaluation criteria, performances, statistical analysis

Introduction

In the current context of the developments in the

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European Union and the Republic of Moldova, more and more emphasis is placed on the progress of the role of education and, in general, on the process of continuous training/professional development [1]. The general objective aims at the complete

fulfilment of the Bologna process provisions and the further development of higher education by integrating training and research and by extending the connections of the educational institutions with the economic environment [2].

At the present moment, the programs of initial and continuous training of the teaching staff focus on the identification of the professional competencies. Didactic professional competency is an essential criterion for ensuring the pedagogic efficiency and performance. It helps the teaching staff to be able to identify mechanisms, strategies and resources and to reach the highest level of their professional performance. The efficiency of the professional training process must take into account the development of specific competencies in a heuristic framework in order to ensure the capacity for creative expression at individual level [1, 3, 4]. In this sense, professional competency represents the capacity to apply, transfer and combine knowledge and skills in various situations and work environments. The goal is to perform the activities required at the workplace at the quality level specified in the standard [2, 5].

Based on the analysis of the professional standards of the teaching staff, there were identified the basic requirements for teachers in several countries, namely: the Russian Federation, Australia, Great Britain, Hong Kong, Canada, Singapore, Scotland and the Republic of Moldova. The standards of professional competence of the teaching staff are the following [6]:

- the individual approach to students;
- the management of the class of students;
- knowledge of the legislation in the educational field;
- the evaluation of students;
- the professional training in the psychopedagogy field;
- the ability to develop study programs;
- the activity with parents;
- the contribution of the teacher to the development of the school/institution;
- the interaction of the teaching staff with other teachers and decision-makers involved in school activity;
- the continuous professional development of the teaching staff.

Therefore, the general and professional-pedagogic training system within the specialized university creates the initial guidelines for the didactical and pedagogical activity of the physical education teacher. Teaching practicum is a highly important factor in the training of future teachers of physical education [7]. Efforts are currently being made to find new solutions and operative ways to optimize the education process in all subjects studied in school. The mission of the study programs in these bachelor's degree fields in Romania is to

create a student-centered learning environment, which provides graduates with the necessary skills for their chosen professions. The Education Code of the Republic of Moldova (art.45) stipulates that the evaluation of the professional competencies of the teachers is a complex process both internally and externally [8, 9, 10].

Direction of teaching the subject of physical education by taking into account opportunities of institution of higher education and interests of student youth. The educational process of physical education teaching can be reformed and modernized in higher education institutions if the interests of the students and the possibilities of the institution are taken into account [11]. At the same time, the priorities in the strategic development of the university are: improving the quality of higher physical culture education in accordance with European and international standards [2]. One of the areas of activity constantly highlighted as causing worries among the physical education teachers is gymnastics [3]. Presently, there is an increasing trend in the Republic of Moldova regarding the number of students who every school year do not want to attend the lessons of physical education. In this regard, in order to better motivate the students to exercise, it is proposed to implement the gymnastics tests in physical education lessons or extracurricular lessons [14]. All these approaches and concerns highlight the need to know the gymnastics specific skills, depending on the status of the discipline – subject matter of this research.

Purpose of the Study. The study purpose was the comparative analysis of the academic programs for the gymnastics specific skills training in the specialized higher education.

Materials and Methods

Participants

Three groups of subjects participated in the research: group A with a number of 83 students (the class of 2017-2020) from the Physical and Sports Education study program (PSE) of the Physical Education and Sport Faculty of the Ecological University of Bucharest (EUB, Romania). Group B is formed of 18 students (the class 2017-2020) and group C is formed of 20 students (the class 2018-2021). The subjects of groups B and C are students of the Faculty of Pedagogy within the State University of Physical Education and Sport (SUPES, Republic of Moldova). All subjects were informed and gave their consent for voluntary participation in the research, respecting the Declaration of Helsinki and the Ethics Commission of the Ecological University of Bucharest.

Research Design

The research was carried out depending on the type of "Gymnastics" discipline of both study

programs. It was conducted during three academic years (October 2017 – June 2020) in group A (EUB). As for the groups B and C (SUPES) the research lasted only one academic year. The research period in group B was September 2017 - June 2018 and in group C - from September 2018 to June 2019.

In group A, Gymnastics as discipline is included in the curriculum as follows: first year of studies - fundamental discipline (F.D.) "Basic Gymnastics"; second year - domain discipline (D.D.) "Theory and practice in the branches of gymnastics - Artistic gymnastics"; third year - specialization discipline (SD) "Methods of teaching gymnastics in school".

As for groups B and C, Gymnastics discipline, as an orientation component towards a specialty, is found as follows: "Didactics of gymnastics I" (first semester) and "Didactics of gymnastics II" (second semester).

Content and requirements of the experimental program in group A:

"Basic gymnastics" (Grade A1): the main objective of the discipline sheet was the knowledge of the strategy of teaching and leading the sports exercises. These are exercises for selective influence of the locomotor system, organizational capacity and utilitarian-practical skills.

Data about the discipline: first year; first semester; evaluation type - Exam (E); discipline status - fundamental discipline (F.D.); number of credits (ECTS) - 4.

Estimated total time: no. hours /week - 3 hours, of which 1 hour of Course (C) and 2 hours of practical works (PW); total hours in the curriculum - 42 hours (namely C - 14 hours and PW - 28 hours).

*Total hours of study per semester (number of ECTS * 25 hours)* – 100 hours out of which 58 hours are assigned to individual study.

Conditions of carrying out: the course (C) – hall with video projection equipment; the practical works (PW) – gym of EUB.

Evaluation criteria: For C (60%) – oral evaluation regarding the correct explanation of the concepts and notions specific to basic gymnastics; knowledge of the didactic technology for creating and presenting the general physical development exercises (GPDE) and the methodology of their application. For PW (45%) – execution and command of the in-place and moving actions, also of composition and change of formations; putting into practice the knowledge related to the creation and leading of GPDE complexes, practical circuits and exercises applied in other fields.

Individual study (5%): it consisted of presenting a paper, with 6 complexes of GPDE: individual free exercises, exercises with handheld apparatus (club and medicine ball) and special equipment (gymnastics bench and rib stall).

"Theory and practice in the branches of gymnastics

- Artistic gymnastics" (Grade A2): the main objective was to know the basic technique of artistic gymnastics, specific to each apparatus.

Data about the discipline: second year; fourth semester; type of evaluation - Exam (E); discipline status - domain discipline for bachelor's degree (B.D.); number of credits (ECTS) - 5.

Estimated total time: no. hours /week - 4 hours, namely 2 hours of C and 2 hours of PW; total hours in the curriculum - 56 hours, of which C 28 hours and PW 28 hours.

*Total hours of study per semester (number of ECTS * 25 hours)* – 125 hours of which 69 hours are assigned to individual study.

Conditions of carrying out: the course (C) – hall with video projection equipment; the practical works (PW) – gym of the DINAMO School Sports Club of Bucharest, on the basis of a collaboration program.

Evaluation criteria: For C (60%) – Fundamental notions related to artistic gymnastics. Particularities of the events in men's artistic gymnastics and women's artistic gymnastics. For PW (45%) – Checking the level of mastery of the basic elements technique in vaults and floor (mandatory) and an apparatus (of one's choice).

Individual study (5%): it consisted of presenting a paper on a topic of the course.

"Methods of teaching gymnastics in school" (Grade A3) focused on the knowledge of design, planning and evaluation of the basic contents of the discipline with interdisciplinary orientation.

Specific objectives: Knowing the content of the curriculum in the middle school cycle; Applying the specific techniques for the realization of learning units according to the curriculum content; Using the teaching and assessment techniques in the physical education lesson; Elaboration of planning documents based on the content of the curriculum.

Data about the discipline: third year; sixth semester 6; evaluation type - Exam (E); discipline status - specialization discipline (S.D.); number of credits (ECTS) - 5.

Estimated total time: no. hours /week - 4 hours, out of which 2 hours of Course (C) and 2 hours of practical works (PW); total hours in the curriculum - 56 (namely C - 28 hours and PW - 28 hours).

*Total hours of study per semester (number of ECTS * 25 hours)* – 125 hours of which 69 hours are assigned to individual study.

Conditions of carrying out the C and PW: online teaching, using a G Suite for Education of EUB and Classroom platform.

Corroboration of the discipline content with the expectations of the representatives of the epistemic community, professional associations and important employers in the field related to the program: The content of the discipline is corroborated with the expectations of the representatives of

the community, professional associations and employers (School Inspectorate, School Sports Clubs, high schools and middle schools), respecting the requirements of the pre-university education curriculum.

Evaluation criteria: For C (60%) – Knowing the content of the curriculum; Applying the specific techniques for achievement of learning units in conformity with the curriculum content; Using the teaching and assessment techniques during the physical education lesson; Presentation of a didactic project. As for the PW (30%) – Checking the level of knowing how to teach the thematic content addressed.

Individual study (10%): it consisted of presenting a didactic project on a topic of the course content.

The *final grade* is the sum of the weighted grades obtained in exam, papers, practical assessment and active attendance at practical works.

Minimum standard of performance in all taught subjects– grade 5 points. It consisted of the Knowledge and application of the means of solving the instructional-educational objectives and the exercise structures included in the curriculum of pre-university education.

Content and requirements of the experimental program in groups B and C:

General objectives of the curriculum:

- continuous development of an integral system of knowledge, focused on the scientific and methodical theory of contemporary gymnastics;
- training and development of professional-pedagogical competencies, skills and abilities to apply knowledge;
- creation/development of motivations, general attitudes of civilized behavior respecting didactic norms and communicative skills within social interaction.

"Didactics of gymnastics I" (Grade B1 and C1)

Data about the discipline: first year; first semester; evaluation type - Exam (E); discipline status - component of orientation towards a specialty (S); number of credits (ECTS) - 4.

Estimated total time: no. hours /week - 4 hours, of which 1 hour of C and 3 hours of PW; total hours in the curriculum - 80 hours, out of which 16 hours of lectures (C) and 64 hours of PW.

*Total hours of study per semester (number of ECTS * 30 hours)* – 120 hours of which 40 hours of individual study.

The student shall know: the historical and social character of gymnastics; the methods of developing physical qualities; the characteristics of gymnastics exercises groups and the associated terminology; how to develop complexes of exercises for general physical development; basics of exercise technique on gymnastics apparatus; methodological and

sanitary-hygienic requirements related to injuries.

Also, the student *shall be able:* to use the terminology specific to gymnastics exercises; to create and use different applied exercises for physical qualities development during gymnastics lesson; to make a model program of general and special physical training; to properly explain and demonstrate the technique of performing exercises on the gym equipment; to describe and demonstrate correctly the connections between technical elements on gymnastics apparatus; to apply trauma prevention measures in concrete situations.

"Didactics of gymnastics II" (Grade B2 and C2)

Data about the discipline: first year; second semester; evaluation type - Exam (E); discipline status - component of orientation towards a specialty (S); number of credits (ECTS) - 4.

Estimated total time: no. hours /week - 4 hours, out of which 1 hour of C and 3 hours of PW; total hours in the curriculum - 80 hours, out of which 16 hours of lectures (C) and 64 hours of PW.

*Total hours of study per semester (number of ECTS * 30 hours)* – 120 hours of which 40 hours of individual study.

The student shall know: the purpose, objectives and values of planning documents such school syllabus, curriculum, didactic project; the methodology of carrying out the educational process during the gymnastics lesson; methods of regulating physical effort throughout the lesson; the way of organizing, conducting and judging the gymnastics competitions; the particularities of organizing and carrying out gymnastics shows and events; the specifics of gymnastics lessons with a different contingent of subjects; non-traditional forms of gymnastics.

The student shall be also able: *The student shall be also able:* to develop and use the long-term didactic project and the project per lessons; to select and apply 8-10 preparatory exercises and 5-6 special exercises for learning the basic elements of acrobatics, vaults, parallel bars, high bar, balance beam; to perform gymnastics exercises expressively; to judge the routines on gymnastics apparatus in a competition; to include compositions of technical elements of rhythmic gymnastics and dance during the carrying out of model lesson; to include elements of scientific research in the lesson.

Content of the curriculum: Didactics of gymnastics I and II included three modules: module A –general knowledge (C - 16 hours), module B –special knowledge (methodical and laboratory lessons - 18 hours) and module C – qualities and capabilities (PW - 64 hours).

Evaluation criteria: 1. Knowledge of evaluation of theoretical training (general, special and docimological tests); 2. Qualities and capacities – technical training, physical training, professional

pedagogical training. 3. Attitudes– portfolio with topics from the independent activity.

Calculation grid of the final grade: A [mean of the current evaluation (CE) x 0.6 (60%)] + B [mean of the final evaluation (FE) for technical and methodical training and the answers to the theoretical exam x 0.4 (40%)] = A + B = Grade of final evaluation.

Stages of the research:

- Stage I (academic year 2017-2018) – it was intended to develop and evaluate the specific skills at Grade A1 (UEB); Grade B1 and B2 (Republic of Moldova);
- Stage II (academic year 2018-2019) – it was intended to develop and evaluate the specific skills at Grade A2, Grade C1 and C2.
- Stage III (academic year 2019-2020) – it was intended to develop and evaluate the specific skills at Grade A3, conducted online (start of COVID 19 pandemic).

Statistical Analysis

The statistical indicators were calculated with the help of the KyPlot 6.0 (©1997-2020, KyensLab Inc) program, regarding the mean, standard deviation (SD), coefficient of variation (CV%) and Confidence Level of Mean (0.95), Lower and Upper Confidence Limit of Mean. Single Factor Analysis of Variance (Completely Randomized Design) was used to compare the average differences between grades. The comparison between groups: Romania (ROU) and Republic of Moldova (MD) was performed using the nonparametric Kruskal-Wallis Test. Statistical significance was set at $p < 0.05$.

Results

For a better understanding of the scientific approach regarding the training of gymnastics specific skills in the specialized higher education, the results are presented analytically for each

individual study program. Table 1 shows the results of the performances obtained in group A from EUB, Romania.

The results of the comparative analysis between grades highlight the decrease of the mean by 0.24 points at Grade A2 and 0.36 points at Grade A3. There is a decrease of the Confidence Level of Mean (0.95) by 0.10 at Grade A2 and 0.06 at Grade A3. It is also observed the decrease of the upper and upper confidence limit of mean by 0.22 at Grade A2 and by 0.14 at Grade A3. Grand mean is of 7.53 points, revealing significant differences at $p < 0.001$ and at ANOVA Factor insignificant differences of $p > 0.05$. These differences are due to the specific content of each discipline type (fundamental, bachelor’s degree domain and specialization), to the evaluation of theoretical and practical-methodical applied knowledge and to the independent activity.

In order to analyze the efficiency of applying the curriculum to gymnastics, a comparative analysis was carried out between two groups. Table 2 presents the results of the gymnastics performances obtained in the Republic of Moldova (MD).

The analysis of the comparative results between groups reveals the increase of performances in group C regarding Grade 1 (first semester) by 0.73 points and by 0.41 points as for Grade 2 (second semester). There is an increase of Conf. level of mean (0.95) by 0.05 - Grade 1 and by 0.2 - Grade 2. Concerning the difference between Lower and Upper Conf. Limit of Mean, one can observe 0.88 points at Grade 1 and 0.98 points at Grade 2. In terms of Grand mean, there are decreases by 0.24 points at Grade 2, with insignificant differences $p > 0.05$ at Grade 1 and significant differences $p < 0.15$ at Grade 2. These significant differences are due to the increased demands of this discipline concerning the assessment of knowledge, quality, capacity and attitude.

A multiple comparative analysis of the

Table 1. Results of the performances obtained at Gymnastics in group A, EUB, Romania (n=83)

Statistical indicators	Variables		
	Grade A1 (points)	Grade A2 (points)	Grade A3 (points)
Mean	7.73	7.49	7.37
SD	1.32	0.83	0.99
CV%	17.14	11.10	13.51
Conf. level of mean (0.95)	0.28	0.18	0.22
Lower Conf. Limit of Mean	7.44	7.31	7.15
Upper Conf. Limit of Mean	8.02	7.67	7.59
Grand Mean	7.53		
Test Statistic; P-value	18.29; 0.0001		
χ^2	3.79		
F; P-value	2.45; 0.088		

Note: SD – standard deviation, CV% – coefficient of variation; Single Factor Analysis of Variance (Completely Randomized Design)

Table 2. Results of the performances obtained at gymnastics - Republic of Moldova (MD)

Statistic indicators	Variables			
	Grade B1 (points)	Grade C1 (points)	Grade B2 (points)	Grade C2 (points)
Mean	7.22	7.95	7.39	7.80
SD	0.21	0.23	0.18	0.28
CV%	11.58	13.21	10.52	15.89
Conf. level of mean (0.95)	0.44	0.49	0.38	0.58
Lower Conf. Limit of Mean	7.28	7.46	7.00	7.22
Upper Conf. Limit of Mean	8.16	8.44	7.77	8.38
Grand Mean	7.84		7.60	
Test Statistic; P-value	0.44; 0.506		3.61; 0.057 (<0.15)	
χ^2	2.07		2.07	
F; P-value	0.51; 0.479		1.46; 0.235	

Note: SD – standard deviation, CV% – coefficient of variation; group B, n=18; group C, n=20; Single Factor Analysis of Variance (Completely Randomized Design)

Table 3. Results of the multiple comparative analysis of the performances achieved between groups in the two study programs of ROU and MD

χ^2 ; P-Value		MD			
		Grade B1	Grade C1	Grade B2	Grade C2
ROU	Grade 1	0.21; 0.645	0.83; 0.362	0.63; 0.426	0.07; 0.786
	Grade 2	3.18; 0.074	4.85*; 0.027	0.004; 0.949	1.58; 0.209
	Grade 3	3.46; 0.063	5.56*; 0.018	0.20; 0.652	2.38; 0.123

Note: χ^2 - Kruskal-Wallis Statistic; * - $p < 0.05$.

performances with each Grade obtained in Gymnastics subject was carried out. The purpose was to find whether there are differences between the study programs content in the two countries (ROU and MD). The results of the analysis are listed in table 3.

As for the comparison of the performances between grades, significant differences were noticed between Grade A2 and Grade C1, where Chi-Square = 4.85 while $p=0.027$, and between Grade A3 and Grade C1, where $\chi^2 = 5.56$ and $p=0.018$. Regarding the other comparisons, the differences are insignificant at $p > 0.05$, which highlights that the same curricular approaches are identified between contents and performances.

Discussion

The aim of the analyzed programs is to modernize the process of professional training of the students/future teachers of physical education and sport. Professional competencies in gymnastics are represented by knowledge (cognitive dimension), understanding and use of the specific language, explanation and interpretation; abilities (functional-factional dimension) with application, transfer and issues solving, critical and constructive reflection, creativity and innovation. Transversal competencies include competencies of autonomy, responsibility

and social interaction and competencies of personal and professional development [8, 18].

The comparative analysis of the study programs reveals differences in the status of disciplines (fundamental, bachelor's degree and specialization – ROU and component of orientation towards a specialty - MD). There is a different weighting of the number of credits / hours, where 14 credits total gymnastics discipline in the program of ROU has an equivalent of 350 hours (25 hours / credit) while in the MD program 8 credits correspond to 240 total hours (30 hours / credit). The proportion of the hours assigned to study in the ROU program is 64% physical hours and 34% individual study hours (IS). In the program of MD the proportion is 66.7% physical hours and 33.3% IS. According to the status of the disciplines in the education plan of ROU, the values are as follows: 25% FD (out of which 8.9% goes to Basic Gymnastics), 32.22% are UD (out of which 8.6% represents Theory and practice in gymnastics branches - AG) and 30.56% are SD (9.1% goes to Methods of teaching gymnastics in school). As for the program in MD, the SD is 40% (where each one of the Didactics of Gymnastics I and II has 5.6%).

As a study discipline in Romania, "Gymnastics" is applied in three status that ensure the continuous training of the students attending the "Physical

and Sports Education” study program. In this sense, it was presented as a fundamental discipline through its content in Basic Gymnastics [15], then as a bachelor’s degree discipline (BD) by addressing the theoretical and practical-methodical content of artistic gymnastics [16]. The following status is specialization discipline (SD) by applying the means of gymnastics in the achievement of the learning units of the curriculum [17].

In the realization of the specific skills in Basic Gymnastics, the practical works (PW) focused on the execution and command of the in-place and moving actions, also on the composition and change of formations. The knowledge related to the creation and leading of GPDE complexes, practical circuits and exercises applied in other fields was put into practice.

In order to show the effectiveness of the specific skills training in gymnastics, the performances obtained above grade 8.00 were compared. In this way it was observed that 49.4% have a performance level at the final evaluation - score A1. Regarding the curriculum content at BD – *Theory and practice in gymnastics branches – AG*, the course activity aimed to achieve the specific competencies. So, the student got to know the basic concepts related to the technical training in men’s and women’s artistic gymnastics. In this sense, for the individual activity, the student was requested to make a paper presenting the characteristics and technical content of an apparatus from MAG and WAG. It was observed that most of the female students chose the Balance Beam and the Floor. As for the male students, they chose the High Bar and the Handspring Vaults. For a more thorough knowledge of the technique used on apparatus, the course activity included video examples from YouTube and studies of video-computerized biomechanical analysis [18, 19, 20, 21]. In the final evaluation of the performances achieved in gymnastics, 42.20% of the students received more than 8.00 points at Grade A2. The learning units at SD – *Methods of teaching gymnastics in school* - were carried out based on the content of the basic gymnastics, acrobatic gymnastics, vaults, rhythmic gymnastics and dance elements. In the evaluation of the gymnastics exercises it was recommended to adapt the accumulated knowledge to BD – GA. The performances achieved at Grade A3 in the final evaluation highlight that 41.00% of the students obtained more than the mean 8.00.

As individual activity, the students had to make a paper – didactic project, using the learning units and contents of gymnastics according to curriculum. These papers showed that the most frequent topics were about motor skills - strength and acrobatic gymnastics. It should be mentioned that all the teaching-evaluation activity was conducted on-line, using, in addition to the course support, video examples provided by YouTube related to the

physical education lesson, different links and topics of the lesson.

„Didactics of gymnastics”, considered as an instructional discipline, is presented as a subject of study with special profile. It ensures the multilateral training of the students of the Faculty of Pedagogy. They acquire theoretical-methodological knowledge and practical skills necessary for their future professional activity. This subject will contribute to the development of special pedagogical knowledge related to the principles and methods of organizing and conducting activities of physical education, stimulation of the creative thinking of students etc.

The training process at the „ Didactics of gymnastics” takes place in the form of lectures, methodical and practical lessons and individual (independent) work of the students [22]. In order to show how the curriculum content is applied, the performances above 8.0 were compared between the groups. The results reveal a decrease by 12.8% in Grade 1 and an increase by 4.5% in Grade 2. The professional training of the master’s students of the State University of Physical Education and Sport (SUPES) from the perspective of psychopedagogy of physical education and sport is an indispensable educational dimension of the didactic process in the current higher education. Modern guidelines in the field of psychopedagogy of physical education and sport determine the importance of some key principles in order to ensure its efficiency and quality [23]. It was designed the educational process in physical culture and sport intended to ensure the physical and mental training of future specialists in the context of implementation of the federal state standards [24]. For example, the Slovenian teachers of physical education (PE) analyzed their current professional competencies in order to identify the principal needs in PE practicing. The main purpose is to revise the Slovenian curriculum of Physical Education and to improve their activity by continuous professional development programs [25].

Some specialists analyzed the professional competencies of the future fitness-trainers in higher educational institutions. They showed that these competencies are very important as they combine sports, medical-biological, social, pedagogical and psychological knowledge. The learning process is based on interdisciplinary links and continuous professional and pedagogical improvement. It uses state-of-the-art information and communication technologies [26, 27]. The specific sports competencies in art sphere as well are carefully addressed in the higher education institutions (for example, the circus artists, the air gymnasts etc.) [28]. An effective approach to integrate sport in higher education institutions was also designed as an effect of yoga practice [29]. The common content knowledge (CCK) was studied in order to determine their importance for the initial teacher education

and subsequent professional development [30]. The specialized content knowledge of physical education influences the pedagogical content knowledge in two ways. Teachers must be familiar with the rules regarding the technique and safety of a movement form in order to be able to teach it. Moreover, teachers must know to select and design instructional tasks [31].

The importance of motor performance for a good program of physical education is highlighted by the K-12 National Standards for Physical Education in which it is stated that students must show their competency in motor skills [32]. Following a theoretical-methodological analysis based on specialized professional competencies, a new strategy in the approach to professional training was created. It was determined the level of technical-methodical training and theoretical knowledge of the students attending the “In-depth training in a sports branch” specialization [4].

A study was carried out to identify the main elements of the basic Curriculum in the training of the teachers of physical education in Italy. The study shows that a new approach is required to enable these teachers to acquire the key competencies [33]. One of the programs associated with this approach is: „ *Theoretical and methodical bases of the professional training of the physical education teachers specialized in gymnastics*”. This course complies with the European standards for the education system of Bologna [14]. In general, the development of specific competencies in gymnastics at higher education level was studied by many specialists. Some of them focused on the identification of the efficient factors that can increase the interest of young students in the classes of physical education [11]. It is necessary to reinforce the specific initial training and also the in-service training of physical education teachers to ensure the proper acquisition of basic gymnastic skills. Within the perspectives of self-determination, self-control and self-regulation, it was studied how to manage the difficulties occurred during the implementation of the strategies to support the autonomy and collaboration in learning the gymnastics [34].

In numerous sports, performance targets lead to competitive structures and depend on age (such as in women’s artistic gymnastics). Therefore, athletes who do not reach performance according to the pre-established schedule are excluded from high performance [35]. The common elements and the differences between the curricula for physical education (PE) in secondary schools in Sweden, France and Switzerland related to PE teaching traditions (PETTs) were also analyzed [36]. Other specialists analyzed the evaluation system used in São Paulo by the university lecturers in Gymnastics subject and their conformity with the current principles [37]. The improvement of the system of

continuous professional training of the physical education specialists under the conditions of online training was also studied. The monitored department in this regard was “Methodology of teaching acrobatic gymnastics in physical education lessons” [38]. The effect of two teaching styles on the theoretical knowledge and technical learning of gymnastics connections in higher education was studied [39].

Gymnastics is considered one of the largest movement forms in all programs of physical education (PE) in Canada. However, in practice, less training time is assigned to gymnastics in comparison with all the other sports. This situation raised questions and misinterpretations such as lack of interest, confidence or competence from the part of the PE teachers [40]. It was studied how performance in gymnastics can be predicted on the basis of psychological abilities (especially the coping skills) and self-efficacy. The best performances were achieved by those gymnasts able to compete with enthusiasm and confidence, to set goals and prepare for competition [41]. Information about skills that vary depending on the qualification level and about perceptions of the motivational climate in the female gymnasts aged 12-14 years were addressed [42].

Another study examines the perceptions of the middle school students and of their physical education teachers on the implementation of a collaborative strategy for learning gymnastics in an educational context [43]. One of the effectiveness criteria of the physical education methodology is the health and fitness skills of the students. The effectiveness of the classes of physical education conducted according to this methodology specially developed for students to acquire health and fitness skills was examined [44]. There were investigated the changes in the locomotor system and balance skills of the high school students in Finland. Their level of self-reported physical activity increased throughout a special intervention program for the improvement of their fundamental movement skills [45].

Concerning the professional communication skills in foreign languages and the performances for achieving intellectual, sociocultural and sports tasks, they received informational value in the integrated training leading to the bio-psycho-social and cognitive development of the student [46]. Teaching Children Gymnastics will be helpful for adapting a gymnastics program to the teaching conditions. It will combine at the same time the best facets of developmental skills, health-related fitness and conceptual learning based on the process characteristics (body, space, effort and relations [47].

The analysis of the results and discussions in the specialized literature enhanced the scientific support in the achievement of the competencies specific to gymnastics in the specialized higher education.

Conclusions

The comparative analysis of the study programs under research shows differences in the status of the disciplines. There are various weightings of the number of credits / hours, of the hours assigned to study and in the status of the disciplines of the curriculum, which highlights different contents in the training of the gymnastics specific skills.

The results of the comparative analysis between grades in the program of Romania reveal the drop of the mean at Grade A2 and Grade A3. These differences are due to the specific content, both the evaluation of the theoretical and applied practical-methodical knowledge and the evaluation of the independent activity.

The analysis of the comparative results between groups in the program of the Republic of Moldova shows the increase of performances in group C as for Grade 1 and 2. These significant differences are caused by the increasing demands of the discipline requirements in terms of evaluation of knowledge, quality, capacity and attitude according to curriculum.

Regarding the performance comparison between grades in both programs, significant differences were observed between Grade C1 and Grade A2 and A3. The other comparisons show insignificant

differences at $p > 0.05$, which highlights that the same curricular approaches exist between contents and performances.

At the end of the bachelor's program, the student will acquire an optimum level of specific competencies, both professional and transversal, which will include those formed in the discipline of Gymnastics, in relation to the other disciplines of the program carried out during the research.

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Conflict of interest

There is no conflict of interest to declare.

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