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Identification Learning Levels of Gymnastic Competence in Pre-Higher Education Training

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Abstract

The practice of basic gymnastic and acrobatic activities should be developed at early ages and within formal education in the subject of Physical Education. However, the levels of motor competence in students who reach university seem to be insufficient in these specific skills. Therefore, the aim of this study is to know what the specific pre-university experience and training in the Spanish and Latin American context in order is to analyze the differences in relation to these issues, as well as to identify the gymnastic modalities and activities developed at school. In this descriptive and mixed study, 209 students of Physical Activity Sciences from a Spanish and a Latin American university participated. The instrument for data collection was the semi-structured interview. The results indicate that the students at both universities have mostly had gymnastic experience and training prior to the university stage. In addition, four different levels of difficulty in gymnastic practices have been detected. In both countries, the acrobatics that are implemented the most are the basic ones, with those of medium and high level of execution being underrepresented. Given these findings, we can point out that the identification of the levels of practice according to the difficulty of the acrobatics learned during school age can guide the identification of which methodological strategies would be the most suitable to reduce the deficiencies found and to propose appropriate strategies at the beginning of the initial training, designing more personalized and individualized learning environments.

Keywords:gymnastic content, acrobatics, initial training, higher education.

1. Introduction

The most competitive approaches of the various gymnastic modalities are more popular in society and are practiced by small groups of athletes of limited ages, however, the presence of basic gymnastic and acrobatic activities that may encompass a longer practice over time and to different population groups is scarce in society. These premises are established based on the results obtained in the project called "Analysis of the Teaching and Learning of Gymnastic and Acrobatic Skills in Higher Education Students", within the Program RedesInnovaestic 2020, as well as in relation to another recent research carried out on the subject (Ávalos-Ramos &Vega-Ramírez, 2020; Ávalos-Ramos&Vernetta, 2020).

Gymnastics practice with educational, health or recreation and leisure approaches do not have the recognition or social impact that performance gymnastic disciplines have, despite the various benefits both at the motor, cognitive or social interaction level that all these practices can offer regardless of the character of these practices (Burt, Ducher, Naughton, Courteix, & Greene, 2013; Vernetta, Montosa, &Peláez, 2018). The presence of basic gymnastic and acrobatic activities that may allow for longer practice over time and encompass different

population groups is scarce in society. In this sense, we are aware that these practices must be developed at an early age and within formal education at different educational stages and must be included in the classroom schedules of the subject of Physical Education (PE). However, we are aware that the levels of motor skills in students arriving at university are insufficient in these specific skills (Ávalos&Vega, 2020).

The acquisition of sports skills will result from motor experience and practice by defining this learning as the set of internal processes related to practice and motor experience, thus producing relatively lasting changes in the ability to produce motor activities, and not considering short-term changes (Magil&Anderson, 2007; Schmidt& Lee, 2013). In the specific case of the gymnastic skills DelasKalinski, Miletic and Bozanic (2011), they point out that to promote adherence to the practice and scope of quality learnings, varied and continuous motor experiences must be fostered for learning with less effort and optimal.

Different levels of student competence require different approaches. There are many factors that can influence motor learning such as physical education teachers, the type of feedback offered to apprentices, the variety of motor practice, the motivation and predisposition of the individual, the level and initial experience of the skills to be learned or the selection of appropriate strategies and methods (Magill& Anderson, 2007). Focusing on the methodology in the gymnastic field authors such as Fernández and Méndez (2012) or Ávalos, Martínez and, Merma (2019) agree on the importance of enhancing within gymnastic teaching the competence to learn to learn, as well as in teamwork, emphasizing social values such as collaboration, participation, and integration. Carrying out those teaching styles that provide the student with personal autonomy, together with those who manage to involve him cognitively within a collaborative context can guarantee the integral development of the student (Kirk, 2010; López&Gea, 2010).

Gymnastics skills can be considered difficult especially for low-skilled or inexperienced students such as high school students, whose previous experiences in these disciplines are scarce (Ávalos, Martinez, &Merma, 2015). The emergence of certain obstacles in the learning of gymnastic activities in the Primary and Secondary stages is associated with problems such as the lack of initial training of physical education teachers, the inadequate methodology used, the fears, the lack of previous experiences or negative gymnastic experiences of the students (Ariza-Vargas, López-Bedoya, Dominguez-Escribano, &Vernetta, 2011; Ávalos, Martínez, &Merma, 2015; Reyes, 2016). Hence, the learning activities of this content should lead students to active experiences adapted to their level, in a motivational climate towards the task, which gives them the opportunity to build meaningful learnings, positively influencing their practical motivation (González-Cutre, Sicily, & Moreno-Murcia, 2011).
For all the above, we wanted to know what the situation is in the context of a university in Spain and Ecuador and, specifically, in university students who pursue the career of Physical Activity and Sport Sciences (PASS) to analyze the differences in relation to these issues. Specifically, the aims of this research are to analyze the previous training and experiences of university students in the development of gymnastic and acrobatic content, according to the universities of study: University of Alicante (UA) and Central University of Ecuador (CUE). And, on the other hand, identify the modalities and gymnastic activities developed in the Primary and Secondary training stage from the subject of PE, as well as the level of technical difficulty of them.

2. Method

This research has a mixed design with a descriptive approach. The first students of the degree in PASSfrom a Spanish public university (University of Alicante) were invited to participate. UA) and a Latin American public university (Central University of Ecuador. CUE). A total of 209 PASS students participated voluntarily; of which a total of 96 students (64 men and 32 women) with an average age of 19.67 are Spanish and a total of 113 students (89 men and 24 women) with an average age of 23.27 are Ecuadorians.

2.1. Instrument

The instrument for the collection of data on pre-university gymnastic training and experience has been the semi-structured interview appropriate tool for this type of research that revolves around educational contexts (Coulter & Smith, 2009). Three open questions were raised mainly associated with educational stages, gymnastic modalities and the type of acrobatic skills developed in the subject of PE. The data was collected in face-to-face

format in the university context (classrooms) and in non-face-to-face format (via meet platform) with an average duration of 20-25 minutes, always guaranteeing the anonymity of the participants.

2.2. Procedure

After collecting the information, it was tested. We start with reading the qualitative data collected, corresponding to the open responses of the students. Three university professors carried out this process: two from the Body Expression Area and one from the Area of Physical Education and Sports. After several readings of the participants' semi-structured interviews, and through an inductive analysis, the main categories and their respective codes were extracted. The emerging categories are:

- Previous experience in gymnastics in Primary, Secondary and Baccalaureate.
- Gymnastics modalities and acrobatic elements developed in the pre-university stage.

Four levels of the acrobatic skills were established from the identification of the various skills according to the degree of technical difficulty. Once the levels are set, we rely on AQUAD 7 software, for counting the absolute frequencies (AF) of them; this is the number of times a find is repeated. Finally, the main theme of the research was established being this:

Theme 1. Training in gymnastic skills from the subject of Physical Education.

3. Results

The results are presented according to the emerging theme, the categories and the identified codes grouped into tables with AF and their percentage (%AF).

3.1. Theme 1. Training in gymnastic skills from the subject of Physical Education of the total number of participants, a high percentage has received pre-university gymnastic training at both universities as noted in Table 1.

Table 1. Academic training in gymnastic content, according to universities

Codes	UA	CUE	TOTAL
Specificacademic training	92.7%	90.3%	91.4%
Nospecificacademic training	7.3%	9.7%	8.6%

This topic also includes the categories of educational stages where specific training in gymnastics, gymnastics modalities and acrobatic elements learned at these stages were received.

The specific stages identified where students received gymnastic training during their pre-university formal education period and from the PE subject (Table 2) are Secondary Education (UA: 40%; CUE: 30.3%), Baccalaureate (UA: 42.4%; CUE: 27.5%) and finally, in lower percentage Primary Education (UA: 32.5%); CUE: 27.3%).

Table 2. Stages of pre-university gymnastic training, according to university

Codes	CUE		UA	
	AF	%AF	AF	%AF
PrimaryEducation	54	27.3	65	32.5
SecondaryEducation	60	30.3	80	40
Baccalaureate	84	42.4	55	27.5
Total	198		200	

AF: absolute frequency; AF%: absolute frequency percentage

About the gymnastic modalities received in PE classes during non-university academic training (Table 3), we note that the modalities of gymnastics on apparatus (CUE: 30.9%; UA: 22.7%) rhythmic gymnastics (CUE: 17.6%; UA: 8.3%) are more prevalent in the CUE than in the UA. In contrast, UA participants further point to the practice of floorskills such as basic flips (UA: 35.4%; CUE: 24.6%), Acrobatic Gymnastic (UA: 31%; CUE: 26.5%), and other gymnastic modalities such as Aerobic Gymnastics or Gymnastics for All (UA: 2.6%; CUE: 0.4%), with respect to CUE students.

Table 3. Gymnastics modalities developed during the previous stages of the university

Codes	**CUE**		**UA**	
	AF	AF%	AF	AF%
Floor BasicExercises	67	24.6	81	35.4
GymnasticsonApparatus	84	30.9	52	22.7
AcrobaticGymnastic	72	26.5	71	31
RhythmicGymnastic	48	17.6	19	8.2
Aerobic Gymnastic/GymnasticforAll	1	0.4	6	2.6
Total	272		229	

AF: absolute frequency; AF%: absolute frequency percentage

The results that refer to the acrobatic elements they have experienced in their previous training (Table 4), we identify four levels of acrobatics according to the degree of difficulty. First, the level 1 Skill Group emerges, including forward roll, backward roll, and cartwheel. Spanish university students have more experience at this level 1 (UA: 63.2%; CUE: 46.9%). Second, level 2 gymnastic experiences appear that collect the handstand, headstands, handstand bridge and backward roll to handstand. At this level university students have a similar experience (CUE: 31.7%; UA: 30%), with the CUE pointing slightly from the UA.

With lower percentages they score gymnastic skills that require a higher technical requirement listed as level 3 of difficulty. This level 3 is composed ofroundoff, handspring and flic-flac (ECU: 15.9%; AU: 5.6%). Finally, level 4 of difficulty emerges where we identify acrobatics with aerial phases such as mortal forward or mortal backward (CUE: 5.5%; UA: 1.2%). At both levels, UA students have had the least experiences with higher-level technical acrobatics during their schooling period.

Table 4. Difficulty levels of acrobatic elements developed in previous training, according to the University of Study

Codes	**CUE**		**UA**		**TOTAL**	
	AF	%AF	AF	%AF	AF	%AF
Level1	272	46.9	215	63.2	487	52.9
Level2	184	31.7	102	30	286	31.1
Level 3	92	15.9	19	5.6	111	12.1
Level 4	32	5.5	4	1.2	36	3.9
	580		340		920	

AF: absolute frequency; AF%: absolute frequency percentage

4. Discussion

The aim of this research has been to analyze the training and previous experience of UA and CUE university students in the development of gymnastic and acrobatic content in their school academics years. As well as identify acrobatic level groups from the initial diagnostic.

The results indicate that the students at both universities have had, for the most part, experience, and previous training of the gymnastic content, being their most marked development in the secondary stage in the case of Spain and, during the Baccalaureate in the case of Ecuador. Therefore, we identify that gymnastic training has been carried out more intensely at late ages in both countries. It should be noted that gymnastic skills must be developed at an early age to be acquired progressively by posing simple tasks in the early stages, up to the complex ones according to the mature ages of the practitioners (Carrasco, Parra,& Pérez, 2015). In the same line, the learning and acquisition of these specific motor skills should be achieved in the Primary stages so that acrobatic skills can subsequently have sufficient motor baggage to cope with sports skills typical of Secondary Education, (Proios, 2019) such as the most demanding acrobatic. As opposed to these premises, a large majority of Spanish participants stated that the acrobatic elements developed in PE and in Secondary stages were the basic flips, motor skills of their own to develop in previous and earlier stages, in addition to the Acrobatic Gymnastic. In the case of Ecuador, the gymnastic activities on devices are the most noted together with the Acrobatic Gymnastic, as was the case in the Spanish context in the latter case. Modalities such as Rhythmic Gymnastics, Artistic Gymnastics or Aerobic Gymnastics do not have a presence in the previous training of the participants. García, Varela, Viana and Barela (2011), and Rudd, Barnett, Farrow, Berry, Borkoles and Polman (2017), point out the importance of starting to develop varied gymnastic skills in children as they contribute to development and improvement in postural control, spatial orientation and stabilization, and significant improvements in general coordination and even self-concept.

On the other hand, of the stunts that participants learned during their school training, four levels have been identified and established according to their degree of technical difficulty. The basic and simplest level (level 1), where the forward roll, backward roll, and cartwheel appear, has greater representation in both the Spanish and Latin American contexts. However, levels 3 and level 4 where acrobatics require greater technical requirements have had greater representation in the Latin American context with respect to Spanish students. In this sense, our study reflects that in both countries the most difficult gymnastic content has less representation in adolescence stages, such as Secondary Education, where learning and acquiring these specific motor skills should be achieved. In the Spanish context, students in the pre-university training stages do not reach sufficient level of achievement to perform basic gymnastic and acrobatic skills in their university beginnings. In a study conducted by Ávalos and Vega (2020) more than 60% of PASS university students on first day of class did not pass, for example the realization of cartwheel or handstand.

Our results reflect an imbalance in the approach of these skills and their level of difficulty as there is a higher percentage of basic skill representation at all educational stages. In this way, the development of specific and higher level sports skills in pre-university training stages is neglected. In this line, authors such as Ruiz-Pérez (2019) and Tester, Ackland, and Houghton (2014), have pointed out that in recent times there is a low motor competition for children and adolescents. Therefore, one of the keys to PE teachers should be the planning and structuring of the content of their subject matter according to the sensitive stages of learning of the students and the choice and implementation of appropriate strategies to achieve it.

The main conclusions of this study are directed towards the need to be able to rethink the beginnings in the different stages of training so that the adaptive phases are progressive for students and that the learning processes are adequate and ensure a prevalence of these. That university and non-university teachers know the previous experiences of students in the gymnastic field is essential as these could influence their teaching-learning process, their ability to effort and involvement. It is therefore apparent from this research that the information provided by university students in both universities of gymnastic content in its previous educational stages is a form of approach to the reality of these, providing useful reflection for the future, to rethink and optimize gymnastic training in the school stages.

For future lines of research, it would be necessary to expand the study sample, as well as the study of other European universities and countries. In addition, to identifying differences between countries, we would focus the action on designing and implementing possible teaching strategies based on the different levels of previous experience identified to address specific curriculum content in a more personalized way. More individualized teaching could reinforce the needs of college and non-college students.

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