

Anatomy teaching to physiotherapy students: preliminary study in the European higher education area setting

C. Melguizo¹, J. Prados², F. Rodríguez-Serrano³, F. Hita³; M. Peran¹, H. Boulaiz², C. Velez³, J.A. Marchal³, O. Caba², R. Ortiz², A. Martínez³, E. Carrillo², L. Alvarez² and A. Aránega²

1- Department of Neuroscience and Health Sciences, University of Almería, Almería, Spain

2- Department of Anatomy and Embryology, School of Medicine, University of Granada, Granada, Spain

3- Department of Health Sciences, University of Jaén, Jaén, Spain

SUMMARY

The integration of the Spanish university system within the European Higher Education Area implies a change in the current educational model towards a more flexible system that establishes the equivalence of degrees and encourages greater competition among courses. In this system, students will be expected to make a greater contribution to real learning in order for it to be more useful in their future professional activity. These changes will involve new student-teacher relationships, new methodologies, new teaching strategies and different evaluation systems. The success of this project will depend on a thorough knowledge of the present state of the courses that we teach. This is the first study to address the current state of human anatomy and embryology learning in the physiotherapy degree course. The analysis was performed in first-year students and focussed on the subject designated the structure and function of the human body, skeletal and muscle system anatomy at the Universities of Almería and Jaén. Student opinions were sought on the appropriateness of these subjects to their degree, on the methods used in practice and theory classes and on the evaluation and tutorial systems. Results obtained were similar between the two universities included in this

study and indicated that: 1) students have a good opinion of the usefulness of the subject contents in human anatomy and embryology, 2) students prefer the new technologies to traditional educational systems, and 3) students have a positive appreciation of written examination versus oral examination or continuous continuous assessment. These findings will assist teachers of anatomy and embryology to establish approaches to improve the quality of learning in the setting of the European Higher Education Area.

Key words: Anatomy – Physiotherapy – European Higher Education Area – Undergraduate

INTRODUCTION

Spanish universities are currently immersed in a process of profound change in their educational structures that began in 1999 with the Declaration of Bologna and continued with the Prague 2001 statement. Integration within European Higher Education will entail the following changes in the Spanish university system: a new structure for university courses, new undergraduate and postgraduate study portfolios and changes in study programmes, a new modular structuring of teach-

Correspondence to:
Dra. Antonia Aránega. Dpto. Anatomía y Embriología Humana, Facultad de Medicina, Universidad de Granada, Avda. Madrid s/n, 18012 Granada, Spain.
Fax: +34 958 246296. E-mail: aranega@ugr.es

ing (European Credit Transfer System, ECTS and SET), and a new methodology to improve the quality of institutions and courses (Martinez and Sauleda, 2006). The most important of these changes for teachers of anatomy and embryology are those related to the acquisition and transmission of knowledge (Peck and Skandalakis, 2004). Elements of this transformation include: more student-centred learning, a changing role for the teacher, greater definition of learning objectives, changes in the approach to educational activities, a shift from input to output and a change in the organization of learning (Cochran-Smith, 2005; Cochran-Smith and Zeichner, 2005; Graham et al., 1999). The growing interest in the development of competences in educational programmes is consistent with an approach to education that is primarily centred on students and their capacity to learn. This requires greater leadership and participation by the students, who must develop their capacity to handle original information and access and

evaluate information in a more varied form (Prada et al., 2003; Vázquez et al., 2005).

This also corresponds to a changing role for the teacher. Currently a teacher is someone who structures knowledge, plays a key role in the teaching and articulation of key concepts, and supervises and directs the work of students and is responsible for assessment of their knowledge. A student-centred approach gives the teacher more of an accompanying role, with the learner acquiring certain competences. While the teaching role remains critical, it shifts more and more towards the offering of advice, counselling and motivation related to the importance and place of areas of knowledge and to the understanding and capacity to apply that knowledge in relation to the target profile for the student (McCrorie, 2000; Miller et al., 2002). The teacher also has a role in assisting students to identify their personal interests, weaknesses and capacities and to critically select materials and sources and organise learning situations.

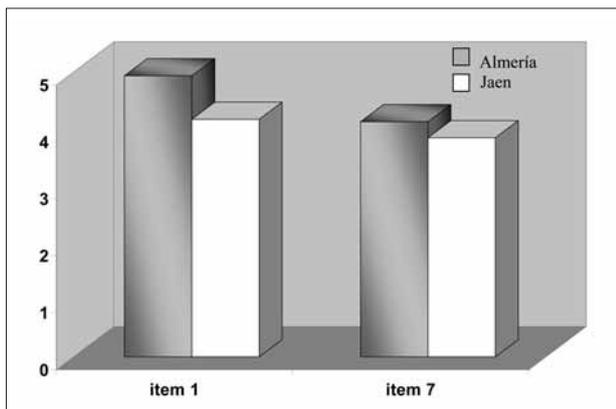


Figure 1. Student evaluations of the inclusion of anatomy in the physiotherapy course (item 1) and the appropriateness of the contents of the course to their degree (item 7).

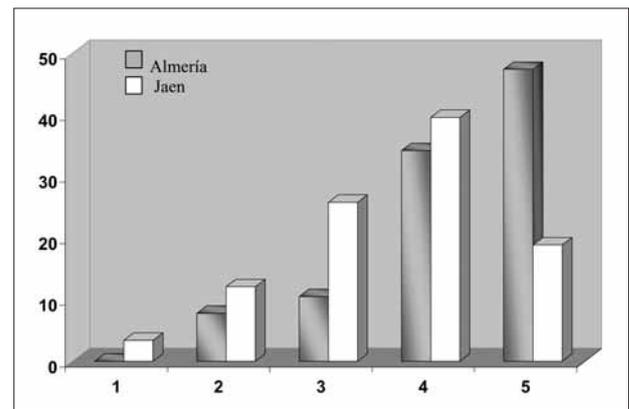


Figure 2. Evaluation of the master class (traditional anatomy teaching method) (item 5) at the Universities of Almería and Jaén, expressed as the percentage of students assigning each possible score (1-5).

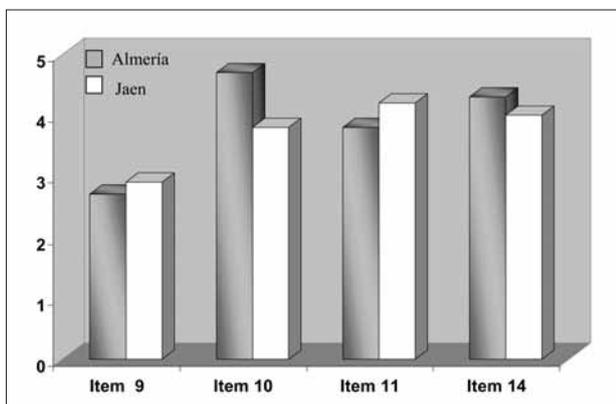


Figure 3. Student opinions of the different teaching resources used in the theoretical and practical teaching of anatomy in physiotherapy item 9, blackboard; item 10, slide; item 11, multimedia presentations and item 14, anatomy models.

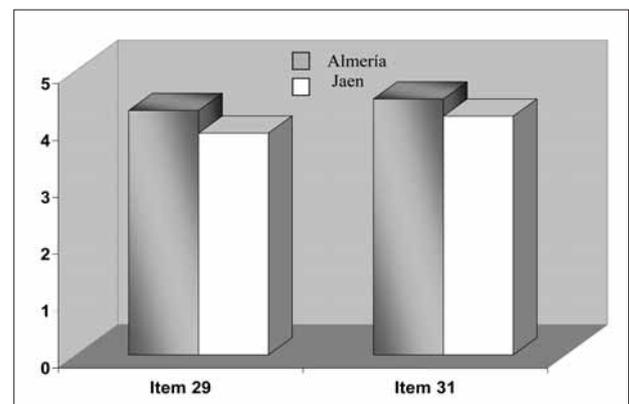


Figure 4. Student opinions of the system of evaluation of their theoretical and practical knowledge: item 29, written examination and item 31, anatomical schemes.

MATERIAL AND METHODS

A group of Anatomy teachers from different universities were involved in developing this project. A total of 56 students from the School of Physiotherapy of Almería and 61 from the School of Physiotherapy of Jaén University studying skeletal and muscle system anatomy in the first year of their degree course were surveyed in this study. A test with a Likert-type response scale (1-5) containing 35 items grouped in three blocks was used to assess the opinion of students on: 1) the appropriateness of the subjects to their degree (items 1-8); 2) the methodology used for practical and theoretical learning (items 9-17); and 3) the contents of the skeletal and muscle System anatomy programme and the evaluation and tutorial system (items 18-35). The SPSS 12.0 package was used for statistical analysis of the results.

RESULTS AND CONCLUSIONS

The results for each of the three main blocks of this survey will be discussed in turn. The first block contained a series of general questions together with questions related to the students' evaluation of the traditional system in health sciences and the adaptation of anatomy teaching for their course. The physiotherapy students of both universities considered the inclusion of this subject in their degree course to be highly appropriate (item 1), with a score for this item of 4.9 and 4.1 by Almería and Jaén students, respectively. In relation to the adaptation of the objectives for each thematic unit (item 7), 85% of Almería students and 65% of Jaen students considered the proposed objectives to be very appropriate (mean scores of 4.1 and 3.8 respectively) (Figure 1).

Likewise, the students also considered the relationship between the theoretical and practical contents (item 2) to be appropriate, with scores of 3.7 (Almería) and 3.3 (Jaén) (data not shown). The methodology traditionally used by the teachers involving master classes was evaluated (item 5) very positively (mean of 4.2) by 80% of Almería students) and by 50% of Jaen students (mean of 3.5) (Figure 2).

The second block of questions evaluated the teaching resources used in the theoretical and practical teaching of anatomy within the physiotherapy course (Figure 3). For the theory teaching, the blackboard (item 9) received a lower rating (2.7 in Almeria and 2.9 in Jaen University) versus new presentation systems

(multimedia or other means). A higher percentage (75%) of physiotherapy students at the University of Almería rated the use of slides (item 10) with the highest score, whereas the Jaen students gave a more favourable rating for multimedia presentations (item 11), with a mean score of 4.2. For practical classes, anatomical models (item 14) were the most highly valued resource at both universities (4.3 and 4 in Almería and Jaen, respectively) (Figure 3).

The third block of questions analysed the system considered by students to be most appropriate for evaluating their acquisition of knowledge on the structure and function of the human body (skeletal and muscle system anatomy). The students gave a positive evaluation of written examinations (tests) for the assessment of their theoretical knowledge (Item 29). In Almeria, 80% of students rated the test exam with a mean of 4.3 (Figure 4) compared with a mean of 3.9 by 60% of Jaen students (Figure 4). For assessment of the practical contents, the students considered evaluation by means of anatomical schemes (Item 31) to be the most appropriate method (mean of 4.5 and 4.2, respectively, by Almería and Jaen students).

REFERENCES

- COCHRAN-SMITH M (2005). The new teacher education: for better or for worse? *Research Points*, 34: 3-17.
- COCHRAN-SMITH M and ZEICHNER KM (2005). Studying teacher education. The report of the AERA panel on research and teacher education. Washington, AERA.
- GRAHAM HJ, WOODFIELD SJ and Seabrook MA (1999). Structured packs for independent learning: A comparison of learning outcome and acceptability with conventional teaching. *Med Educ*, 33: 579-584.
- MARTINEZ MA and SAULEDA N (2006). Las universidades en la era numérica: nuevas tecnologías, nuevos problemas, nuevas teorías. In: Martinez MA, Carrasco V (eds.) *La construcción colegiada del modelo docente universitario del siglo XXI*. Editorial Marfil SA, Alcoy, pp 5-26.
- MCCRORIE P (2000). The place of the basic science in medical curriculum. *Med Educ*, 34: 608-613.
- MILLER SA, Perrotti W, Silverthorn DU, Dalley AF and Rarey KE (2002). From college to clinic: reasoning over memorization is key for understanding anatomy. *Anat Rec*, 269: 69-80.
- PECK D and SKANDALAKIS JE (2004). The anatomy of teaching and the teaching of anatomy. *Am Surg*, 70: 366-368.
- PRADA JA, VERASTEGUI ESCOLANO C and VELAZQUEZ MARTINEZ R (2003). Aportaciones del alumnado al estado actual de la calidad de la docencia en Anatomía. *Educación Médica*, 6: 153-158.
- VAZQUEZ R, RIESCO JM and CARRETERO J (2005). Reflections and challenges in the teaching of human anatomy at the beginning of the 21st century. *Eur J Anat*, 9: 111-115.