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In Italy compatibility between qualifying training objectives of degree courses in sport sciences and exercise and the kinesiologist profile

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Abstract

Introduction. In Italy the 2021 sport reform established the new profession of kinesiologist, granted only to graduates of three-degree courses in sport sciences. The curricula of these degree courses, in addition to complying with training objectives to become a physical education (PE) teacher, must also be compatible with the profile of a kinesiologist. Aim of Study. The aims were two: 1) measuring the European credits transfer system (ECTS) of three training domains: sport and physical activity, biomedicine and psychopedagogy, to establish their consistency with kinesiology; 2) verifying the relationship between ECTS of the three training domains in all degree courses. Material and Methods. The sample was the whole population of degree courses in sport sciences in Italy. Central tendency and dispersion indices were estimated to analyze the ECTS score to achieve the first aim, while the Chi Square test was performed to achieve the second one. Results. The lower number of ECTS credits for sport and physical activity made the formation not congruent respecting the qualifying training objectives and the fluctuation of mean, median and mode values as well as standard deviation, made the formation even less compliant with respect to the three professional profiles of kinesiologist. Three significant relationships were identified among the ECTS of the three domains in two-degree courses, which therefore implied that they were probably part of the formation of the system. Conclusions. The study did not present limitations of sampling because the entire population was analyzed and the originality was high, because no similar study could be found in the literature.

KEYWORDS: sports sciences, physical education, health, well-being, reform.

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Introduction

On February 26, 2021, the sports reform was enacted, marking a turning point for sport science [8]. In this reform, the law proposed on August 8, 2019 no. 86 was approved, starting a set of very important procedures, including the recognition of the profession of a kinesiologist at the legislative level in its three forms. In fact, the professions of the basic kinesiologist, the kinesiologist of preventive and adapted physical activities, sports kinesiologist and sports manager have been established [9]. In application of this reform, a register will be established, which main advantage is connected with the qualification for the profession, the exercise of which is exclusive. Before this legislation, the kinesiologist profession did not exist and the related professional activities were also exercised by those, who did not possess the specific qualification, required by the new legislation. Recognition of the profession will also imply advantages from a contractual point of view; contracts will also have to be regulated with the norms inherent to the national collective work

contract system. In order to exercise the professional activity of basic kinesiologist, it is necessary to have a three-year degree in Sport Sciences and Physical Activity (code L-22). The article no. 41 point 1 of the decree states that the exercise of the professional activity of basic kinesiologist has as its object: "the conduct, management and assessment of individual and group physical activities with a compensatory, educational, recreational and sports character, aimed to maintain and recover the best condition of physical well-being in various age groups, through the promotion of active lifestyles" [8]. Consequently, those who have acquired this degree, will have a specialization in personal training and non-competitive athletic training. For the professional activity of a kinesiologist of preventive and adapted physical activities, it is necessary to have a Master's degree in Science and Techniques of Preventive and Adapted Physical Activities (code LM-67). The article no. 41 point 2 of the decree states that the exercise of the professional activity of a kinesiologist of preventive and adapted physical activities has as its object: "the conduct, management and assessment of individual and group physical activities with a compensatory, educational, recreational and sports character, aimed to maintain and recover the best conditions of physical well-being in various age groups, through the promotion of active lifestyles" [8]. Particular interest deserves the profession of a sports kinesiologist. According to article no. 41 point 4 of the decree, the exercise of the professional activity of a sports kinesiologist has as its object: "the design, coordination and technical direction of athletic training activities in the competitive field up to the highest levels of competition for associations and sports clubs, sports promotion bodies, institutions and specialized centers, physical and technical preparation, finalized to individual and team competitions" [8]. Consequently, those who have acquired this degree will have a very specific specialization, in what concerns agonism. Finally, the professional activity of sports manager requires a master's degree in organization and management of services for sports and physical activities (code LM-47). The article no. 41 point 5 of the decree states that the professional activity of sports manager has as its object: "the planning and management of sports facilities; the management of public and private facilities where physical activities are performed, including recreational activities; the organization, as an expert and consultant, of sports events, including recreational activities" [8]. For these legal requirements, there must be the necessary consistency in the choice of training activities for each individual degree (three-year and master's) and, above all, the congruence (quantity of these training activities in terms of units of measurement defined at the international level by the Bologna ECTS process) in those areas peculiar to the three new professional profiles.

Today, the term kinesiology is only a question of academic and scientific consensus. It should be accepted as a global and universal term for the science and profession in question. However, such agreements are often more political than truly scientific in nature [2]. The kinesiologist is a professional figure, employed in the field of human movement, with the aim of promoting personal well-being. To help educate more experienced coaches in participation and performance, a number of governing bodies have instituted coach-mentoring systems [12]. If mentors are to be effective in training experienced coaches, we argue accordingly that a focus on personal epistemology is necessary. Thus, the goal is twofold. Firstly, it is to promote activity theory as a credible and alternative lens for viewing and researching sport coaching. Secondly, it is to position this statement within the larger debate about coaching epistemology [11]. The recognition of this event is also important to preserve people's health and well-being, through the adoption of correct lifestyles [13]. In Italy, physical activity was not a regulated professional field, like physiotherapists, for whom the law prescribed only academic degrees to carry out professional activities.

Therefore, the importance of the formation of the kinesiologist, able to operate in the field of active human movement, and aimed to the prevention, achievement and improvement of the psychophysical well-being, emerged. When considering the need to investigate this topic, we believed it was important to assess the quality of the research carried out; in particular, to verify the consistency between the theoretical referential adopted and the methodological choice, involving the epistemological line of thought as well as the research techniques selected by the authors of that research [1, 7]. Starting from the legislative change and the specificity of the kinesiologist role, it was necessary to analyze the training domains of L22, LM67 and LM68 degree courses, to verify the most qualified profile for the profession of physical education (PE) and sports science teacher in school [4, 5]. The problem was that each University's degree course had a different distribution of ECTS in the three training domains, i.e., sport and physical activity, biomedicine and psychopedagogy. Sport and physical activity

domain unified the academic disciplines on sport and physical activities; the psychopedagogical domain comprised the academic disciplines of pedagogy, didactics and psychology; finally, the biomedical one with the academic disciplines on the biological, medical and clinical aspect of locomotion and sport [3]. The curricula of these degree courses, L22, LM67 and LM68, in addition to being congruent to training objectives to become PE teacher, thanks to the addition training in pedagogical field, must also be congruent with the profile of kinesiologist.

Aim of Study

The aims were two: 1) measuring the amount of European credits transfer system (ECTS) of three main training domain: sport and physical activity, biomedicine and psychopedagogy, to establish their congruence to kinesiologist; 2) verifying the relationship among ECTS of the three training domains in all degree courses. The usefulness of the first objective was to describe the state of the art of the distribution of ECTS, related to three training domain of degree courses in sport science. The second aim was useful to verify the achievement of the training objectives of the kinesiologist and whether they were part of a systemic action of all degree courses of PE in Italy, in order to obtain the full involvement of the scientific community at the highest level, as it was desirable for the profession of PE teacher in primary school [6], in view of the compulsory two hours of PE in primary school by the teacher with a master's degree in sport science [10].

Material and Methods

Design and participants

The sample was the whole population of degree courses in sport sciences in Italy: no. 41 of L22, no. 31 of LM67 and no. 20 of LM68. The survey was documental, using the Universitaly portal, a platform that allows having all the data of the degree and higher education courses in Italy, including the ECTS for each degree course of all the Universities. The Universities that offered these three-degree courses were collected, and their ECTS, relating to the three training domains, were extrapolated.

Statistical analysis

Central tendency and dispersion indices were estimated to analyze the number of ECTS of the three training domains. Chi Square was performed to test the relationship among ECTS of the three training domains in all degree courses. This non-parametric test responded better to the demands formulated in the objective because it was able to identify possible significant relationships. Statistical significance was set at $P < 0.05$. Data were analyzed using SPSS (IBM SPSS Statistics for Windows, Version 25.0, Armonk, NY).

Results

The central tendency indices (mean, median, and mode) and dispersion indices (standard deviation) of ECTS in L22, subdivided by training domains, are shown in Table 1.

Table 1. Central tendency and dispersion indices of ECTS in L22 courses subdivided by training domains/areas

L22 – no. 41 Universities	Domain		
	Sport and physical activity	Biomedical	Psychopedagogical
Tot ECTS	2132	2552	855
Mean	25	19	10
Mode	24	9	10
Median	24	17	10
Standard deviation	10.2	12.6	5.6

The indices of central tendency (mean, median, mode) and the indices of dispersion (standard deviation) of ECTS in LM67, subdivided by training domains, are shown in Table 2.

Table 2. Central tendency and dispersion indices of ECTS in LM67 courses subdivided by training domains/areas

LM67 – no. 31 Universities	Domain		
	Sport and physical activity	Biomedical	Psychopedagogical
Tot ECTS	884	1069	315
Mean	28	34	10
Mode	20	18	7
Median	28	35	8
Stardard deviation	7.2	9.1	4.3

The indices of central tendency (mean, median, mode) and the indices of dispersion (standard deviation) of ECTS in LM68, subdivided by training domains, are shown in Table 3.

Table 3. Central tendency and dispersion indices of ECTS in LM68 courses subdivided by training domains/areas

LM68 – no. 20 Universities	Domain		
	Sport and physical activity	Biomedical	Psychopedagogical
Tot ECTS	718	539	172
Mean	35	26	8
Mode	28	15	6
Median	36	26	7
Standard deviation	6.3	9.1	4.7

From Chi Square analysis, a significant relationship was found between: ECTS of sport and physical activity and biomedical domain in L22 (X^2 = 1376.76; p = 0.00); ECTS of biomedical and psychopedagogical domain in L22 (X^2 = 706.76; p = 0.01); ECTS of sport and physical activity and biomedical domain in LM68 (X^2 = 186.66; p = 0.03). A detailed description is shown in Table 4.

Discussion

The ECTS of sport and physical activity, biomedical and psychopedagogical domains were 2132, 2552 and 855 in L22; 844, 1096 and 315 in LM67; 718, 539 and 172 in LM68 degree courses with mean, mode and median, as well as standard deviation different. The indices of central tendency and dispersion of ECTS related to the three domains, so inhomogeneous and dispersive, did not permit the identification of common matrix of the three-degree courses. This is because, by law, the scientific profile of the basic kinesiologist, the sports kinesiologist and the kinesiologist of preventive and adapted motor activities is defined. Therefore, it could be said that there was no systemic action at the level of the degree courses.

Regarding the adequacy of training credits relating to the profession of kinesiologist and therefore strictly to the sport field, only LM68 class had this characterization. This situation emerged from a comparison of the qualifying educational objectives of the three-degree programs and the respective objectives of the professional figures of the basic kinesiologist, the sports kinesiologist, and the

Table 4. Chi Square analysis between ECTS of all domains in all degree courses

Variable 1	Variable 2	Chi Square (X^2)	Sign.
ECTS in sport and physical activity domain (L22)	ECTS in biomedical domain (L22)	1376.76	0.00
	ECTS in psychopedagogical domain (L22)	464.04	0.84
	ECTS in sport and physical activity domain (LM67)	208.59	0.71
	ECTS in biomedical domain (LM67)	395.25	0.21
	ECTS in psychopedagogical domain (LM67)	176.14	0.35
	ECTS in sport and physical activity domain (LM68)	175.833	0.11
	ECTS in biomedical domain (LM68)	201.66	0.37
	ECTS in psychopedagogical domain (LM68)	119.72	0.29
ECTS in biomedical domain (L22)	ECTS in psychopedagogical domain (L22)	706.76	0.01
	ECTS in sport and physical activity domain (LM67)	289.85	0.42
	ECTS inn biomedical domain (LM67)	496.00	0.34
	ECTS in psychopedagogical domain (LM67)	209.80	0.67
	ECTS in sport and physical activity domain (LM68)	187.50	0.47
	ECTS in biomedical domain (LM68)	245.00	0.36
	ECTS in psychopedagogical domain (LM68)	144.16	0.30
ECTS in psychopedagogical domain (L22)	ECTS in sport and physical activity domain (LM67)	131.33	0.17
	ECTS in biomedical domain (LM67)	207.35	0.31
	ECTS in psychopedagogical domain (LM67)	102.04	0.18

ECTS in psychopedagogical domain (L22)	ECTS in sport and physical activity domain (LM68)	79.72	0.72
	ECTS in biomedical domain (LM68)	118.33	0.32
	ECTS in psychopedagogical domain (LM68)	56.29	0.72
ECTS in sport and physical activity domain (LM67)	ECTS in biomedical domain (LM67)	311.89	0.14
	ECTS in psychopedagogical domain (LM67)	148.98	0.12
	ECTS in sport and physical activity domain (LM68)	111.66	0.71
	ECTS in biomedical domain (LM68)	160.00	0.35
	ECTS in psychopedagogical domain (LM68)	89.16	0.44
ECTS in biomedical domain (LM67)	ECTS in psychopedagogical domain (LM67)	216.26	0.55
	ECTS in sport and physical activity domain (LM68)	207.50	0.30
	ECTS in biomedical domain (LM68)	260.00	0.35
	ECTS in psychopedagogical domain (LM68)	145.00	0.46
ECTS in psychopedagogical domain (LM67)	ECTS in sport and physical activity domain (LM68)	93.50	0.09
	ECTS in biomedical domain (LM68)	107.66	0.35
	ECTS in psychopedagogical domain (LM68)	48.16	0.76
ECTS in sport and physical activity domain (LM68)	ECTS in biomedical domain (LM68)	186.66	0.03
	ECTS in psychopedagogical domain (LM68)	106.25	0.09
ECTS in biomedical domain (LM68)	ECTS in psychopedagogical domain (LM68)	127.50	0.15

preventive and adapted physical activity kinesiologist. There must be consistency between what is defined by law and the qualifying objectives of these three-degree programs. Today, due to the specific provision of the law, "By decree of the President of the Council of Ministers or the political authority delegated by him on sports, in agreement with the Minister of University and Research, are dictated the implementing provisions concerning the training path and the identification of the professional profile of the basic kinesiologist, the sports kinesiologist and the sports manager" [8] it is no longer appropriate to verify whether there is consistency and congruence with the educational objectives of the current regulatory provisions on the classes of study L22, LM67 and LM68.

In addition, LM67 had a prevalence of ECTS in the biomedical domain, compared to the sport and physical activity and psychopedagogical, therefore, was closer to the health professions and not the educational ones. It is necessary to consider that there already exist the three-year degree and the master's degree in physiotherapy, which have other qualifying educational objectives with respect to the three-year and master's degree courses in exercise science. In fact, the graduates in the class of degrees in health professions, pursuant to Article 6, paragraph 3 of legislative decree 30/12/1992 no. 502 and subsequent amendments and additions are indicated as "the only ones appropriate to carry out activities directed to prevention, care, rehabilitation and functional evaluation procedures in the implementation of the regulations concerning the identification of figure and related professional profiles" [8] defined by decree of the Ministry of Health. This comparison shows that the kinesiologist should not have a health profile but an educational profile. So, there should be more credits of psychopedagogical and sport-motor than biomedical ones.

Also, in L22, the prevailing domain was the biomedical one. According to D'Elia's study [4], in Italy, regarding the three-year degree course in L22, most of ECTS were focused on the biomedical area, followed by sport and physical activity and psychopedagogical. Bachelor's degree courses were mainly designed to develop biological, biomedical and clinical competencies rather than competencies in design, management, planning and evaluation of sport and physical activity. In LM68, the prevalence of the sport and physical activity domain emerged, so it seemed to be the most

appropriate degree course respecting the professional figure of the kinesiologist. Finally, the profiles of PE teacher and kinesiologist were unbalanced regarding the psychopedagogical domain because in LM68 there were 172 ECTS, while in LM67 there were 315 ECTS. In brief, the lower number of ECTS of sport and physical activity made the formation not congruent respecting the qualifying training objectives and the oscillation of mean, median and mode values as well as standard deviation, made the formation even less congruent with respect to the three professional profiles of kinesiologist.

Three significant relationships were identified among the ECTS of the three domains in two-degree courses, which therefore implied that they were part of the formation of the system. The first concerned the relationship between the ECTS of the sport and physical activity domain and those of the biomedical domain in L22 degree course. The second one concerned the relationship between the ECTS of the biomedical domain and those of the psychopedagogical one in L22 degree course. The last one concerned the relationship between the ECTS of the sport and physical activity domain and those of the biomedical domain in LM68 degree course. This implied a connection between the ECTS of sport and physical activity biomedical domain both in L22 and LM68, and between the ECTS of the biomedical and psychopedagogical domain in L22, which were probably part of the formation of the system, unlike the others which, being independent of each other, were not part of it. The absence of significant relationships between the ECTS of the three training domains in LM67 was a clear sign that it needs a revision at the level of the distribution of ECTS in the three domains, in order to make the formation more appropriate for the profession of kinesiologist. It should balance an increase in the tabular minima of the three domains in order to equalize the distribution over the population of data, to make it part of a systemic action.

The study did not present limitations of sampling because the entire population was analyzed and the originality was high because no similar study could be found in the literature. This study provides useful elements for the fulfillment of the specific legal requirement of article 41 that: "By decree of the President of the Council of Ministers or the political authority delegated by him on sports, in agreement with the Minister of University and Research, the implementing provisions are dictated concerning the training program and the identification of the professional profile of the basic kinesiologist, the sports kinesiologist and the sports manager" [8].

Conclusions

In conclusion the formation of degree course that most reflected the kinesiologist role was proposed by LM68 for the greater presence of ECTS related to sport and physical activity domain compared to the other two. Particular attention should be given to the other two-degree programs, L22 and LM67, because the prevalence of ECTS were both in the biomedical domain, and poorly reconciled with the profession of kinesiologist. In particular, LM67 was particularly unbalanced on the biomedical domain, more appropriate for the physiotherapist profile. An attempt should be made to homogenize the degree programs, also trying to take into account the characteristics and formation of the professional figure of kinesiologist. Finally, it was found a connection between the ECTS of sport and physical activity biomedical domain both in L22 and LM68, and between the ECTS of the biomedical and psychopedagogical domain in L22, which were probably part of the formation of the system, unlike the others which, being independent of each other, were not part of it.

Conflict of Interest

The authors declare no conflict of interest.

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