

Qualis Journals and the production of scientific capital at Physical Education Graduate Programs

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Abstract: Aim: to verify official documents of Three-year Evaluations of Graduate Programs (PPGs) in Physical Education (PE) (three-year periods starting 2007 and 2010) and the operation of the Qualis Periodicals (Qualis P) program in determining objective rules for obtaining scientific capital. Methodology: A qualitative approach and explorative study were the most suitable methods to conduct the study. Six PE Graduate Programs were selected. We collected data in reviewers' comments in twelve Three-Year Evaluation sheets from 2007 and 2010. Conclusion: Qualis P functions as a structured framework for establishing the logical principle of accumulation of scientific capital.

Keywords: Evaluation. Scientific production. Graduate. Physical education.

1 INTRODUCTION

In Brazil, graduate studies are considered the locus for producing scientific knowledge and training researchers. The Coordination for Improvement of Higher Education Personnel (*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*, CAPES), in addition to evaluating master's and doctoral programs that comprise Graduate Programs (GPs), works with the National Council for Scientific and Technological

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Development (*Conselho Nacional de Desenvolvimento Científico e Tecnológico*, CNPq) to foster research and graduate studies. Together, CAPES and CNPq make the Brazilian government the main actor promoting and funding scientific production and researcher training. Thus, Brazil's standing in the international scientific context is a result of the expansion and consolidation of the National System of Graduate Studies linked to "the growth of Brazilian science, expressed mainly by advances in scientific production as measured by publication of papers in indexed journals of international circulation" (BRASIL, 2010, p. 223).

The Qualis Journals (*Qualis Periódicos* or Qualis P) system plays a fundamental role in this process. It is a tool to define criteria for classification of article production, being employed in graduate programs' stratification of scientific production in all areas of knowledge. Qualis P information is collected from the publication of articles by graduate programs. Classifying and consulting hierarchical lists of journals in each area of knowledge is made by the WebQualis application (COORDENAÇÃO..., 2013B). Articles produced by each program are classified according to the journal's position in Webqualis. Thus, each knowledge area has its Webqualis with the list of journals ranked under the parameter publicized in each area's Qualis P (COMISSÃO..., 2009; TANI, 2007; VITOR-COSTA; MAIA DA SILVA; SORIANO, 2012; MARCHLESWKI; MAIA DA SILVA; SORIANO, 2011).

Since the basis for indexing journals of the Institute for Scientific Information (ISI) and Scopus are excellence references in the international scientific scene, the ranking system employed by those bases is also used to build the Qualis P ranking criteria. Thomson Reuters's ISI is responsible for Web of Science (WoS) databasis. WoS adopts the citation-

based bibliometric indicator (BI) known as the Impact Factor (IF) to prepare the Journal of Citation Reports (JCR) ranking. Elsevier keeps the Scopus database and uses the h index to build the SCImago Journal Rank (SJR) (BUTLER, 2008; VITOR-COSTA; MAIA DA SILVA; SORIANO, 2012). Physical Education (PE) adopted the IF since the implementation of the Qualis P Three-year Evaluation (TE) of Graduate Programs – 1998-2000 (SOUZA, PAULA, 2002). From the 2007-2009 TE on, the h index was also incorporated into the PE Qualis P (COMMISSION ..., 2009). IF and h indexes were used to rank journals in the top two positions of Qualis P (COMISSÃO..., 2007a; 2009).

Journals included in rankings of prestigious institutions in the scientific field are the best way to ascribe symbolic credit. With this, the BIs that use citation as a measure have been considered as indicators of scientific prestige and therefore of scientific capital (BOURDIEU, 2004; ROMANCINI, 2006). Results obtained at prestigious institutions worldwide, such as ISI and Scopus, are good indicators of scientific capital.

Regardless of the calculation method to obtain the journals' IF or h index, in both BIs the value is not necessarily representative of the citations of all articles. An article can undergo peer review and be published on a journal with a high IF/h index, but that does not guarantee it will be cited (VITOR-COSTA; MAIA DA SILVA; SORIANO, 2012; MAIA DA SILVA; KUBO; CAMATA; SORIANO, 2013). Even though the article is not cited, quality assurance will have been ascribed to the peer review process of the article approved. However, the mainstream scientific production of each knowledge area can influence referees' decision-making (The halo effect), casting doubt on the "supposed" neutrality of peer review (DAVYT; VELHO; 2000; VITOR-COSTA;

MAIA DA SILVA; SORIANO, 2012).

Recognizing that Qualis P is “reorganized in accordance with the fluency and struggles of the scientific field” (VITOR-COSTA; MAIA DA SILVA; SORIANO, 2012, p. 583), the competitive scene of scientific production has led us to Pierre Bourdieu’s concept of “scientific”. The scientific field, as a social field, involves interests that go far beyond the contribution of knowledge produced for the advancement of a knowledge area. For Bourdieu, what is at stake in the scientific field, besides the search for social prestige achieved as a result of peer-competitors’ recognition, is the dispute for social positions that ensure authority to define what is (and what is not) scientific. In other words, the scientific field is a space in which there is a fight for dominant positions. The dominant position is achieved with possession of high levels of scientific capital and knowledge about the workings of the field’s objective rules, which, in turn, ensures the power to establish the limits of the field of problems, methods and theories considered scientific by those who are dominant in that field (BOURDIEU, 1975).

Scientific order can only be established with a set of institutions that guarantee (re)production and circulation of scientific goods. Prestigious journals play their reproductive role as institutions of the dominant scientific logic. Articles are recognized when they are approved under selection criteria in synch with principles of science considered official. To maintain scientific order, productions that are not in tune with official science are censored or discouraged. Furthermore, the system for training future researchers ensures the preparation of beginners within the scientific order that is dominant in the scientific field (BOURDIEU, 1975).

Since graduate programs are responsible for scientific

production and researcher training in Brazil, we can assume that the scientific field develops during graduate studies. As institutions, CAPES-CNPq supposedly ensure the preservation of the dominant scientific logic in Brazil's scientific field, impacting on knowledge areas (scientific fields). In turn, professors and students are subject to the scientific logic that governs knowledge production at graduate programs. With the pressure on those programs to disseminate the knowledge produced in journals with IF/h index, "not only professors, but also students end up focusing on publishing articles" (VITOR-COSTA; MAIA DA SILVA; SORIANO, 2012, p. 589).

We adopted the hypothesis that Qualis P, as a classification tool for graduate programs' intellectual production and part of the evaluation of PE programs, represents the objectified state of the current rule for accumulation of scientific capital in the scientific field of PE. The aim was to check official documents of the Three-year Evaluation of PE Graduate Programs (periods starting 2007 and 2010) for the operation of Qualis Journals in determining rules for obtaining scientific capital.

2 METHODOLOGY DECISIONS

The qualitative approach and exploratory research was the most appropriate means for conducting the study (MINAYO, 1998; RICHARDSON, 2008; CRESWELL, 2007; DENZIN; LINCON, 2006). Data were collected on the justifications made by the Evaluation Committee of Area 21 – Physical Education and on Evaluation Sheets (ES) for two periods: 2004-2006 – 2007 Evaluation (TE-2007); and 2007-2009 – 2010 Evaluation (COMISSÃO DE AVALIAÇÃO – EDUCAÇÃO FÍSICA, 2007b; 2007c; 2007d; 2007e; 2007f; 2007g; 2010b; 2010c; 2010d; 2010e; 2010f; 2010g). We analyzed the results of TE-2007 and TE-2010, since Book Ranking was incorporated after the TE-2007. That allows us to see, between the two ranking instruments for intellectual

production, the strength of Qualis P in determining objective rules for obtaining scientific capital.

The defining instrument of the ranking criteria for production of articles at PE graduate programs (Qualis P) was used as a support document. PE Qualis P was organized in the TE-2007 as IA, IB; IC (International); NA; NB and NC (National). IA and IB were the highest positions, with IF. At TE-2010, Qualis P had its format changed and was ranked by strata: A1 and A2 (higher, with IF or h index), B1; B2; B3; B4; B5 and C (COMISSÃO..., 2007a; 2009). We also used the Documents and Area Reports of TE-2007 and TE-2010, prepared by the PR Evaluation Committee with the main points arising from the Three-year Evaluation (COMISSÃO..., 2007a; 2009; 2010a). Finally, we used the Indicators Book – Program Proposal, completed according to graduate program and forwarded to CAPES (COORDENAÇÃO..., 2013a).

Selection of PE graduate programs was based on systematic evaluation employed by CAPES, which has internationalization as its main element for ascribing quality. CAPES conducts the evaluation every three years, ascribing scores from 1 to 7. The minimum score to start a graduate program is 3, and 6 and 7 are specific for programs with international partnerships that result in publication of articles in foreign journals, representing their standard of international excellence. The result is the official ranking of graduate programs by knowledge area (CENTRO..., 2010; COORDENAÇÃO..., 2006; BRASIL, 2010). The criterion for selection of graduate programs was high scores in TE-2007 and/or TE-2010 (COMISSÃO..., 2007b; 2007c; 2007d; 2007e; 2007f; 2007g; 2010b; 2010c; 2010d; 2010e; 2010f; 2010g). The high score indicates programs' excellence in scientific production and researcher training, since they have doctoral courses (BRASIL, 2010). It also shows that programs at the top of CAPES's evaluation ranking meet the rules for production of scientific capital.

No PE graduate program obtained score 7 in TE-2007 and TE-2010. Thus, we selected six graduate programs with scores 5

or 6 and analyzed 12 ES (6 ES from each three-year period). Then comes selected graduate programs' name, university, acronym and score in TE-2007 and TE-2010 (COMISSÃO..., 2007b; 2007c; 2007d; 2007e; 2007f; 2007g; 2010b; 2010c; 2010d; 2010e; 2010f; 2010g):

Physical Education Graduate Program – University of São Paulo – PPGEF/USP (6/6);

Motricity Sciences Graduate Program – Universidade Estadual Paulista Júlio de Mesquita Filho – PPGCM/UNESP (5/6);

Physical Education Graduate Program – Federal University of Santa Catarina – PPGEF/UFSC (5/5);

Human Movement Science Graduate Program – Federal University of Rio Grande do Sul – PPGCMH/UFRGS (4/5);

Physical Education Graduate Program – Federal University of Paraná – PPGEF/UFPR (4/5);

Physical Education Graduate Program – Gama Filho University – PPGEF/UGF (5/4).

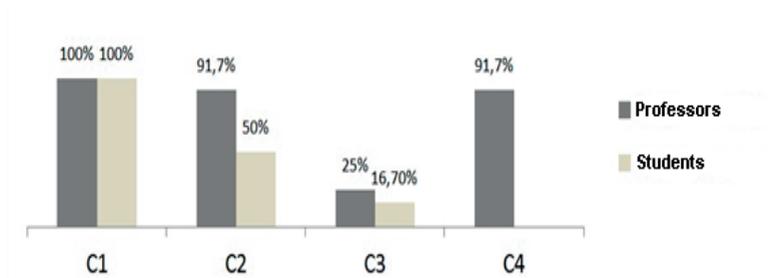
Lawrence Bardin (1977) was the reference for the steps employed in the analysis. Contents were defined after comments by evaluators present in ES. We organized those contents into three context units: (1) delimitations in professors' scientific production (DPSP); (2) delimitations of student's scientific production (DSSP); and (3) joint participation of professors' and students in scientific production (JPPSSP). An Excel spreadsheet was developed to identify the frequency of appearance (1) or absence (0), in the delimitations of six characteristics related to PE graduate programs' scientific production (characteristics were described during data discussion). For the choice of features, we considered the main change in the evaluation of intellectual production of graduate programs in area 21, from TE-2007 to TE-2010, namely: "greater importance to international integration" (COSTA, 2009, p. 48). We organized the data into a thematic category defined a posteriori.

Based on Pierre Bourdieu's General Theory of Social Fields (1975, 1983, 2004, 2007a, 2007b, 2011), "scientific capital" was defined as a unit of meaning for the thematic category discussed in this article.

3 QUALIS P AND CARDINAL POINTS FOR KNOWLEDGE PRODUCTION IN PE GRADUATE PROGRAMS

Figure 1 shows the frequency of four characteristics linked to Qualis P and Book Rankings in DPSP and DSSP:

Figure 1 – Relative frequency (%) of four characteristics linked to professors' and students' scientific production in 12 ES analyzed (TE-2007 and TE-2010).



Source: Adapted from Results of the 2007 and 2010 Three-year Evaluations. Evaluation Sheets for PPGEF/USP, PPGCM/UNESP, PPGEF/UFSC, PPGCMH/UFRGS, PPGEF/UFRP and PPGEF/UGF (COMISSÃO..., 2007b; 2007c; 2007d; 2007e; 2007f; 2007g; 2010b; 2010c; 2010d; 2010e; 2010f; 2010g).

The following terms were considered for each characteristic:

C1 – Publication of articles ranked in Qualis P: IA; IB; IC; NA; NB; NC (TE-2007); A1; A2; B1; B2; B3; B4; B5; C (TE-2010); Qualis; stratum; publications in journals; good indexation journals; publication of articles.

C2 – Publication of articles in journals with IF/h index: IA; IB (TE-2007); A1; A2 (TE-2010); articles of international impact; highest strata; upper strata; high strata; internationally indexed journals; international production.

C3 – Qualified publication of books/chapters: any highlights by the PE evaluation committee for production qualification of books/chapters. Mentions only to book and chapter count were not considered.

C4 – Researcher grant holder: Research Productivity Exchange (Research Grant) given by CNPq to researchers-professors especially in the scientific field (CONSELHO..., 2013).

Data in Figure 1 show that PE evaluation committee's comments are meant to encourage knowledge production following Qualis P logic. C1 appeared with $R_f = 100\%$ in DPSP and DSSP. In turn, the demand for professors to produce scientific capital was high: C2 obtained $R_f = 91.7\%$ (DPSP). For students, comments relating to C2 appeared with $R_f = 50\%$. The results on the frequency of comments related to book and chapter production were different. At C3, we find $R_f = 25\%$ (DPSP) and $R_f = 16.7\%$ (DSSP) (Figure 1).

Even with the implementation of Book Ranking from TE-2007 on, incentive for professors to publish articles in journals with IF/h index prevailed in PE evaluation committee's comments present in ES. Since demands for production of scientific capital by professors is higher, the following expressions were found in DPSP: “[...] The program has international production consistent with the number of permanent professors” (COMISSÃO..., 2007c, p. 3); “[...] the publication of higher strata articles is high, since A1 and A2 strata corresponded to 44% of all intellectual production

registered in the program” (COMISSÃO..., 2010b, p. 4); “[...] Note that 59 articles were published in upper strata (A1 and A2), amounting to an average of 3.1 A1 or A2 articles for permanent professors” (COMISSÃO..., 2010c, p. 3); “Their production has a satisfactory number in publications at upper strata” (COMISSÃO..., 2010d, p. 3). “Note that there are 12 permanent professors who have published at least one production in the upper strata of Qualis Journal (A1 and A2)” (COMISSÃO..., 2010e, p. 3).

Other sentences appear more than once in different ESs. The following sentence was used in three ESs: “The program needs to focus efforts on improving the balance of the amount of articles with international impact (IA and IB) among permanent professors for the next three-year period” (COMISSÃO..., 2007e, p. 3; 2007f, p. 3; 2007g, p. 3). Another sentence appeared twice in different ESs: “A significant increase is seen in production of articles on internationally renowned journals” (COMISSÃO..., 2010c, p. 3; 2010e, p. 3). In addition, the PE evaluation committee said in its TE-2007 Report: “Professors [...] have sought to publish their production in quality journals in the QUALIS system” (COMISSÃO..., 2007a, p. 12).

Their evaluation recognizes a professor profile with high scientific capital. Thus, Research Productivity grant holders (CNPq) were highlighted in the committee’s comments. The frequency of highlights for research grants in the comments (C4) in ESs was 91.7% (Figure 1), which shows the importance of a high index of individual scientific capital in the makeup of Graduate Programs’ scientific capital. On the TE-2010 report, the PE evaluation committee made it clear that:

Similarly, and in line with funding agencies, we decided to enhance the scientific community’s

natural recognition of researchers with acknowledged standing and scientific leadership in their core areas in order to ascribe scores to graduate programs with professors holding CNPq Research Productivity grants (COMISSÃO..., 2010a, p. 3).

According to CNPq's Advisory Committee for Physical Education, Phonoaudiology, Physiotherapy and Occupational Therapy, the process of selecting PQ grant holders adopts as its general criteria the volume of articles published on journals of international databases and supervision of masters' and doctoral studies at graduate school. Among the criteria for classification and decision when there is a tie, the most relevant is the "number of publications and impact indices of respective scientific journals over the past five years as well as the researcher's position as main author or supervisor" (CONSELHO..., 2013, p. 1). On the one hand, researchers depend on their condition as graduate professors in order to meet the criterion of supervision of masters' and doctoral studies in order to receive or keep the researcher grant. On the other hand, CAPES's evaluation recognizes graduate programs whose professors includes PQ researcher grants, since their high individual scientific capital (achieved with the publication of articles in journals with IF/h index) will contribute to the volume of scientific capital of the graduate program itself.

Research fellows "[...] are considered by Brazilian science policy as the most academically productive ones in scientific fields" (CAFÉ; CARVALHO; MENEZES; ODDONE, 2011, p. 20). In addition to status and recognition in Brazil's scientific field, this type of grant allows exercising power over the mechanisms of scientific capital accumulation. Individuals with high scientific capital know the means for symbolic appropriation of specific capital and are recognized by their own peers as those who can occupy positions that give them the right to evaluate other players. One of the requirements for an individual to be a member of CAPES's Area Committee, in charge of evaluating graduate programs, is "to belong to programs with a score of at least 4, and,

whenever possible, to hold a CNPq research productivity grant, preferably level 1 [highest]” (COORDENAÇÃO..., 2006, p. 6, term added).

The criterion for judging what is (and is not) scientific becomes the very object of contention in the scientific field. Evaluators supposedly end up playing the role of judges and players in the evaluation. As judges, they exert all their power and authority over criteria to rank scientific capital. As players, they are stakeholders interested in preserving the objective ranking structure for scientific capital that maintains them on the dominant position in the scientific field. Individuals who conform with the rules of the game have an interest in preserving what is produced in the field and thus are able to preserve themselves by preserving the very field (BOURDIEU, 1983).

With Qualis P there is a cycle of reproduction of the logic of research productivity coupled with publication of articles in journals with IF/h index as objective mechanism for production of scientific capital in PE. In turn, maintaining the objective law of scientific capital accumulation depends on joint production between professors and students as well as preparation of newcomers to assimilate the dominant logic of scientific production in PE postgraduate studies (Table 1):

Table 1 – Frequency of comments on joint production among professors and supervision of “Scientific Initiation” grant holders (undergraduate) (AT-2007 and AT-2010)

Delimitation	Characteristic	F*	Rf (%)*	
JPPSSP	C5		75	8.3
	C6		12	100
	Total		12	100

Source: Adapted from Results of 2007 and 2010 Three-Year Evaluation. Evaluation Sheets of PPGEF/USP, PPGCM/UNESP, PPGEF/UFSC, PPGCMH/UFPR and PPGEF/UGF COMISSÃO..., 2007b; 2007c; 2007d; 2007e; 2007f; 2007g; 2010b; 2010c; 2010d; 2010e; 2010f; 2010g)

*Absolute frequency (F) and relative frequency (Rf)

Terms considered for each characteristic:

C5 – Qualis P and joint production between professors and students: (Any Qualis P reference related to the terms) joint production between professors and students/graduates; production involving professors and students; intellectual production (refers to the postgraduate program's production and therefore professors) that involves student participation.

C6 – Professors' involvement with Scientific Initiation students' activity: Professors' involvement with activity of undergraduate students holding Scientific Initiation (SI) grants.

While the demand for professors to produce scientific capital is acknowledged (Figure 1), the maintenance of joint production between professors and students focused on the production of articles well ranked at Qualis P (C5 – Rf=58.3%) (Table 1). Thus, the preparation of beginners in the logic of the PE scientific field is also valued in the evaluation of PE postgraduate programs. Supervision of SI students stood out in evaluators' comments: we found Rf=100% for C6 (Table 1). Supervision of SI grant holders has been considered as “a passport for their professors' entrance in postgraduate programs and a strong signal of their interest in research” (LOVISOLO, 2003, p. 100).

When former SI grant holders enter graduate programs as students, they have often incorporated a practical sense of the rules of the scientific game. Thus, the ranking system for scientific capital can induce the adoption of the cycle of recognition exchange between individuals who possess scientific capital (keepers) and those who are just entering the field (aspirants). Beginners invest in capital accumulation by adopting succession strategies. This

often occurs in joint construction of the volume of capital between keepers and aspirants. Keepers use all of their prestige to leverage beginners' capital accumulation. In return, the latter help to further raise the capital of individuals already established in the field. This cycle reinforces the objective laws of capital accumulation, ensuring the exchange between keepers and aspirants, of power and authority on the mechanisms of the field. That keeps the continuity of a lineage and the conservation of the field itself (BOURDIEU, 1975, 1983).

Even with two ranking instruments for scientific production (Qualis P and Book Ranking), data showed that the process of evaluating PE graduate programs' scientific production has encouraged more publication of articles well ranked on Qualis P than books/chapters. The PE evaluation committee recognized the importance of books/chapters to groups that produce knowledge linked with the human and social sciences, and the Book Ranking was a strategy to mitigate the distortions in the process of classification of scientific production in the area (COMISSÃO..., 2007a; 2009).

PPGEF/UGF – the only program whose score was reduced from TE-2007 to TE-2010 (5 to 4) – explained that the standardized format of the ranking system of intellectual production (Qualis P) and the adoption of universal criteria do not take into account the different characteristics of knowledge production in the area, favoring graduate programs more adjusted to publication in journals with international circulation. Furthermore, PPGEF/UGF said that its professors invested in publishing in foreign journals to meet publication requirements. At the time of the TE-2007 and TE-2010, PPGEF/UGF had most of its research lines focused on production of books and chapters (PROGRAMA ..., 2007; 2010).

The evaluation committee also recognized, at TE-2007, the difficulty of PE groups linked to the humanities and social sciences to publish articles in journals with IF/h index: “If the hierarchy established for IA to NB levels makes sense to rank production

of areas of biodynamic orientation, the same cannot be said of sociocultural and pedagogical areas” (COMISSÃO..., 2007a, p. 14). At TE-2010, the PE evaluation committee added other limitations: (a) difficulty in listing journals that meet production areas related to basic and applied research; (b) limited amount of journals focused on publication of applied research; and (c) lower impact factor of journals in the social, cultural and educational areas when compared to journals in biology areas (COMISSÃO..., 2010a).

Even with the difference in the process of producing and disseminating existing knowledge in PE, the alternative proposal by the committee focused on improving production of articles of the groups linked with humanities and social sciences. Since that group had more articles on national journals, the strategy suggested was to encourage qualification of the latter by adopting the international standard (COMISSÃO..., 2007a). Thus, two of the main Brazilian PE journals are on JCR. *Motriz*, listed on JCR Science Edition 2011, was the only Brazilian PE journal to appear in the list of 84 journals classified in the sports sciences area (the descriptor that is closest to the area). *Movimento* is on the list of another knowledge area – JCR Social Science Edition 2011, classified as social sciences, interdisciplinary (THOMSON REUTERS, 2012). *Motriz* and *Movimento* are the Brazilian PE journals best ranked at Qualis P: A2 (COORDENAÇÃO..., 2013c). The adoption of international standards with regard to production of articles encourages Brazilian PE journals to adopt international characteristics such as search for FI/h index and publication in English. For example, *Motriz* began to publish articles in English only (MOTRIZ, 2013). Thus, Brazilian magazines tend to get indexed in international databases to improve their Qualis P ranking and researchers tend to publish their articles on journals best ranked in Qualis P (TANI, 2007).

Qualis P has proved too be a mechanism for ranking positions among groups producing knowledge in different PE lines. Qualis P is also composed, in the same ranking, by journals that have different citation dynamics. Journals related to biological sciences tend to have a higher IF/h index than those closer to the humanities and

social sciences (VITOR-COSTA; MAIA DA SILVA; SORIANO, 2012). We supposed that there is pressure to force the subfields of PE to adjust to the logic of scientific production of the dominant subfield: the PE group with production linked to biological sciences, i. e. biodynamics.

What we see in the PE area with Qualis P is the “Matthew effect” (MERTON, 1968). Those who already have scientific capital are encouraged to increase their capital while those who have no scientific capital have their chances of producing it increasingly reduced. Encouraging adoption of international standards by Brazilian journals was posed as an alternative to alleviate the difficulty that groups linked with the humanities and social sciences have to publish on international journals. However, it has legitimized the objective rule to produce scientific capital, favoring scientific products of dominant actors.

We believe that PE Qualis P works as a structured and structuring structure for the scientific field of PE. A structured system establishes the logical principle that organizes the perception of the social field (scientific field) as classes/hierarchical positions. At the same time, it is a structuring system that guides practice and how that practice is perceived. A structured and structuring system can play an imposing and legitimating role of domination by one group over another (BOURDIEU, 2004, 2007a, 2007b). Based on the data analyzed, we can say that PE Qualis P works as a structured structure. Therefore it is a structure for exercising power on the ranking of scientific production of PE graduate programs. Qualis P is based on objective logic for targeting the production of knowledge by professors and students. At the same time, it legitimizes the hierarchy of social positions within PE graduate programs.

4 CONCLUSION

In Three-year Evaluation Sheets for PE graduate programs, we note that a cycle of conservation of the objective rule for

accumulation of scientific capital is established. Qualis P, formed from the scientific production of graduate programs, represents the mainstream of scientific production by professors. On the other hand, Qualis P itself is used to direct the production of graduate programs. Thus, it guarantees that the predominant type of scientific production in PE graduate programs remains the dominant type of scientific production: biodynamics.

We consider that evaluation of scientific production by PE graduate programs plays a key role in the process of maintaining the objective laws of scientific capital accumulation, with Qualis P working as a structured structure. The conservation of the objective structure for scientific capital production is guaranteed by players themselves (professors/students). By assuming (favorable or contrary) positions, players play by the rules of the game and conform to the logical principle of Qualis P by investing in producing scientific capital to ensure their stay in graduate programs.

By acting as judges occupying positions on CAPES's area committees in charge of evaluating graduate programs, players themselves will supposedly seek to reproduce the criteria to judge what they consider "scientific" (based on their accumulated capital), which in turn, maintains their dominant positions. They thus guarantee the conservation of the objective structure of scientific capital accumulation in PE graduate programs.

Since we limited ourselves to checking the official documents of the Three-Year Evaluations of PE graduate programs (periods starting 2007 and 2010) for the operation of Qualis Journals in determining objective rules for obtaining scientific capital, it would be necessary to investigate, in the scientific production published by professors and students, how Qualis P works as a structuring structure of scientific capital accumulation – that is the limitation of this study.

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Received on: July 5, 2011

Approved on: Oct 2, 2013