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Sport Sciences scientific journals in Chile (1929-2014): bibliography, characteristics, quality

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Abstract—To date, several studies about sport sciences in Chile have been developed, but any of them has been focused on its scientific journals. Thus, the aim of the present study was to prepare a bibliography of the sport sciences scientific journals published in Chile until 2014 and describe their characteristics and quality. All journals dedicated to sport sciences and published in Chile until 2014 were included, registering their bibliographic information, characteristics and quality. Twelve journals published from 1912 to 2014 were discovered, six of them currently edited. Most of them were published by universities in the metropolitan region with a biannual frequency, did not include address information of editorial committee's members, used a non blind review process for submitted articles and were not indexed in any database. In conclusion, these journals should improve their formal aspects and characteristics for increasing their visibility and quality.

Keywords: history, periodicals, visibility

Resumo—“As revistas científicas de ciências do esporte no Chile (1912-2014): bibliografia, características, qualidade.” Até agora, têm se desenvolvido vários estudos sobre ciências do desporto no Chile, mas nenhum deles relativos a suas revistas científicas. Portanto, o objetivo desta pesquisa foi o de preparar uma bibliografia das revistas científicas de ciências do esporte publicada no Chile até 2014 e descrever suas características e qualidade. Sendo assim foram consultadas todas as revistas da área publicadas no Chile até 2014, registrando suas informações bibliográficas, características e qualidade. Foram encontradas 12 revistas publicadas no período 1912–2014, seis de elas presentes na atualidade. A maioria foi publicada por universidades na região metropolitana a cada seis meses, não incluindo membros do conselho editorial, usaram um processo de revisão de artigos não cegos e não estavam indexados. Em conclusão, estas revistas devem adaptar os seus aspectos formais e características para aumentar a sua visibilidade e indexação.

Palavras-chave: história, revistas, visibilidade

Resumen—“Revistas científicas de ciencias del deporte en Chile (1912-2014): bibliografía, características, calidad.” Hasta el momento se han desarrollado varios estudios relativos a las ciencias del deporte en Chile, pero ninguno de ellos sobre sus revistas científicas. Por eso, el objetivo de la presente investigación fue preparar una bibliografía de las revistas científicas de ciencias del deporte publicadas en Chile hasta el año 2014 y describir sus características y calidad. Para ello, se consultaron todas las revistas del área publicadas en Chile hasta el año 2014, registrando su información bibliográfica, características y calidad. Se encontraron 12 revistas publicadas entre 1912 y 2014, seis de ellas vigentes. La mayoría fueron publicadas por universidades en la región metropolitana con una periodicidad semestral, no incluyeron la afiliación de los miembros del consejo editor, utilizaron un proceso de revisión de artículos no ciego y no estaban indexadas. En conclusión, estas revistas deberían mejorar sus aspectos formales y características para aumentar su visibilidad e indexación.

Palabras claves: historia, revistas, visibilidad

Introduction

Sport sciences is a growing field of knowledge in Chile, reflected on the amount of degrees offered by higher education institutions (CNED, 2014; Ipsos Public Affairs, 2010; MINEDUC, 2015a) and the increasing number of academics, articles (Andrade,

López, Ramírez-Campillo, Beltrán, & Rodríguez, 2013), events (Clínica MEDS, 2014; Educarchile, 2014; Ramírez Campillo, 2014; s.a., 2014; UPLA, 2014) and scientific journals (Revista Observatorio del Deporte, 2015).

Particularly, scientific sport sciences journals are a key bond for the spreading and communication of scientific knowledge

as well as for the social, academic and professional legitimization of this field (Olivera Betrán, 2007, 2011). Due to this relevance, several studies have been developed for analysing sport sciences journals' history (Williams, Hardy, & Mutrie, 2008), productivity (Arbinaga Ibarzábal, Aragón Domínguez, & Tejedor Benítez, 2010; López Moreno & Velasco Martín, 2004), contents (Dogliotti, 2014; Perrino Peña, 2014), access (Job, Mattos, & Clipes Ferreira, 2013), management (Fernandez Vaz, Quintão de Almeida, & Bassani, 2014; Gomes de Barros, Rombaldi, Terra Borges, & Florindo, 2014; Moreira, 2014; Tani, 2014) or quality and visibility (Devís Devís, Antolín Jimeno, Villamón, Moreno Doña, & Valenciano Valcárcel, 2003; Valenciano Valcárcel, Devís Devís, & Villamón, 2008b; Valenciano Valcárcel, Villamón, & Devís Devís, 2008; Villamón, Devís Devís, Valencia-Peris, & Valenciano Valcárcel, 2007; Villamón, Devís Devís, & Valenciano Valcárcel, 2005) to name a few. Moreover, scientific journals are both important for the spreading of knowledge and the assessment of academics' research activity, being their quality, indexation and impact on the scientific community a reflection of the maturity of a certain field of study (Martín Sempere, 2001).

In relation to sport sciences in Chile, there have been developed several works regarding the history of Physical Education (Cornejo Améstica, Matus Castillo, & Vargas Contreras, 2011; Martínez Fernández, 2012), the General Office of Sports and Recreation (Muñoz Funck, 2001), Chilean sport (Marín, 2007; Modiano, 1997), the analysis of physical education curriculum and policy (Moreno-Doña & Gamboa Jiménez, 2014; Moreno Doña, Gamboa Jiménez, & Poblete Gálvez, 2014) or even a bibliometric and content analysis of the journal titled *Educación Física-Chile* (Pérez-Gutiérrez & Gutiérrez-García, 2015; Poblete Gálvez, Moreno Doña, & Rivera García, 2014).

However, no studies have been carried out in relation to the history of the scientific sport sciences journals published in Chile and their characteristics, although this information is relevant for discovering those publications that contributed to the spreading of sport sciences research as well as helps editors and authors to improve their journals' quality and choose the journal for publishing their works respectively (Valenciano Valcárcel, Devís Devís, & Villamón, 2008a). Therefore, the aim of the present study was to prepare a bibliography of the sport sciences scientific journals published in Chile until 2014 and describe their characteristics and quality.

Methodology

All scientific journals dedicated to sport sciences and published in Chile until 2014 were included. Scientific character and sport sciences terms were defined in accordance to Devís Devís *et al.* (2003) recommendations. In this way, those journals used by scholars to disseminate their works are considered scientific. Journals including in their title the words "sport," "physical activity," "physical education" or other related to sport were included. Moreover, the journal must be published in Chile.

The online catalogues of Chilean National Library and university libraries were consulted for information retrieval about sport sciences scientific journals. Scielo and Latindex databases were also checked for discovering indexed journals. A provisional bibliography was elaborated and sent to the different directors of sport sciences degree in Chile for checking it and reporting some undiscovered journal. New journals were not reported in this phase.

Then, all journals' issues were consulted, most of them in the Chilean National Library as well as in the library of the Department of Physical Education, Sports and Recreation at the Universidad Metropolitana de Ciencias de la Educación for being the first university in Chile preparing physical education teachers (Cofré Iluffi, 1986; Rubilar Solis, 2012). Other university libraries such as those of Universidad de la Frontera, Universidad de Playa Ancha and Universidad Central were also visited for consulting their journals. If possible, journal's webpage was consulted for downloading the full text of its articles and/or issues.

Then, journal's bibliographic information (title, ISSN, director, editor, place of publication, life span, frequency of publication and issues) was registered in Excel 2013 program. Moreover, journals were classified and adapted to the five sectors defined by the Frascati manual (OECD, 2002).

In relation to journal's quality, Devís Devís *et al.* (2003) work was followed. Thus, three indicators were selected for the journal content's quality such as the existence of the Editorial Committee, the appearance of affiliation information of Editorial Committee's members and the explanation of manuscript selection process. Finally, for the analysis of journal's visibility, two indicators were checked such as journal's indexation and the type of online access offered. This information was extracted from the last published issue of each journal for depicting its current situation, similar to other related works (Devís Devís *et al.*, 2003; Valenciano Valcárcel, Devís Devís, *et al.*, 2008a; Valenciano Valcárcel, Villamón, *et al.*, 2008; Villamón *et al.*, 2007).

Results and discussion

This chapter has been divided in three sections for presenting the bibliographic information of the sport sciences scientific journals published in Chile, complementary information about their characteristics and journals' quality respectively, together with their discussion.

Bibliographic information of the sport sciences scientific journals

After data mining, twelve sport sciences scientific journals were discovered from 1912 to 2014. Their main bibliographic information, such as title, ISSN, director, editor, life span and number of published issues, is chronologically presented on Table 1. The "?" character was used for indicating no reliable information due to all journal's issues could not be accessed. The "-" character was used for indicating the journal is currently published.

Table 1. Bibliography of sport sciences scientific journals in Chile and their main characteristics.

Title	ISSN	Director	Editor	Life	Issues
Revista de Educación Física	-	Guillermo T. Martínez	Guillermo T. Martínez	1912-1915?	17?
Educación Física-Chile	0719-1723	Marcelo González Orb	Universidad Metropolitana de Ciencias de la Educación	1929-	271
Revista de Educación Física del Ejército de Chile	-	Jefe de la Sección Educación Física del Ejército	Dirección de Educación Física	1940-1946	25?
Archivos de la Sociedad Chilena de Medicina del Deporte	0716-2111	Matías Morán Bravo	Sociedad Chilena de Medicina del Deporte	1956-	208?
Heracles	-	Kurt Claussen Sparenberg	Universidad de Chile – Sede Valparaíso	1980?	2?
Gymnasium	-	Boris Cáceres Riquelme	Universidad de la Frontera	1991?	2?
Revista Ciencias de la Actividad Física	0717-0300	César Oliva Aravena	Universidad de Playa Ancha	1993-2011	38
Ciencias de la Actividad Física U.C.M.	0719-4013	Rodrigo Vargas Vitoria	Universidad Católica del Maule	1998-	15
Motricidad humana	0718-9613	Luis Espinoza Oteiza	Pontificia Universidad Católica de Valparaíso	2003-	15
Revista de las Ciencias de la Actividad Física del Instituto Nacional de Deportes	0718-4492	Ricardo Loyola Moraga	Instituto Nacional de Deportes	2004-	9
Motricidad y persona	0718-3151	José Luis Reyes Fuentes, Héctor Trujillo Galindo, Sergio Carrasco Cortés	Universidad Central	2006-2012	10
Horizonte: Ciencias de la Actividad Física	0718-817X	Rodrigo Ramírez Campillo	Universidad de Los Lagos	2010-	9

As shown, the appearance of these publications is spread along time. While eight journals were published from 1912 to the end of the 20th century, four journals have appeared during the 21st century depicting an increasing development of this field. Moreover, six journals are currently published, including *Educación Física-Chile* and *Archivos de la Sociedad Chilena de Medicina del Deporte* as the oldest ones. On the other hand, *Heracles* and *Gymnasium* were briefly published, appearing only two issues respectively. It should be also noted that two journals have recently finished their publication after several years of life such as those edited by Universidad de Playa Ancha and Universidad Central. A brief explanation about the history, aim and publishing characteristics of each journal are chronologically presented in the following.

The first sport sciences scientific journal was titled *Revista de Educación Física* and appeared in 1912 due to the efforts of Guillermo T. Martínez. No affiliation was included in the journal but its editor in chief was full professor in the Instituto Nacional de Chile, so this journal should be supported, to some extent, by this educational institution which is the oldest one in Chile (Instituto Nacional General José Miguel Carrera, 2015). Its first editorial stated its aim was to become a mean for the spreading of the intellectuals' scientific and practical advancements (s.a., 1912).

Revista de Educación Física was monthly published but several interruptions occurred along time because of its editor's field trip abroad (Martínez, 1915). It included articles, reports, news

and information about the physical education activities developed in Chile as well as its syllabus and regulations, informing professionals, teachers and academics. In this was, it became an important publication for the dissemination and strengthening of physical education in that period. Moreover, Joaquín Cabezas, the later director of the School of Physical Education Teachers and editor in chief of *Educación Física-Chile*, also collaborated with this journal. This fact should have probably triggered the later publication of *Educación Física-Chile* as a mean for continuing with the promotion of sport sciences.

Thus, *Educación Física-Chile* firstly appeared in 1929 published jointly by the Physical Education General Office and the School of Physical Education Teachers from the Universidad de Chile. Its editor in chief, Joaquín Cabezas García, was responsible for both creating the school and the journal, driving physical education to the university level and spreading sport sciences research in Chile. The history of the journal has been studied by several authors (Croxatto, 1986; Guarda Etcheverry, 2006; Poblete Gálvez *et al.*, 2014; Salas, 1989), including a bibliometric approach (Pérez-Gutiérrez & Gutiérrez-García, 2015). Its history can be divided in four different periods according to its four different titles along time. Thus, it was firstly entitled *Educación Física* and published from 1929 to 1931. After two years of disappearance, in 1934 the journal was titled *Boletín de Educación Física* but in 1951 it changed to *Revista Chilena de Educación Física* and was published until 1969. The university reform occurred during the decade of the 1960s (Agüero, 1985;

Garretón & Martínez, 1985; Huneus, 1988) and the instauration of a military government in 1973 were reflected on the organization and management of this journal and its editorial committee (Aguero, 1985; Rubilar Solis, 2012), disappearing from 1970 to 1973. One year later, the journal was published again, being titled *Educación Física-Chile*.

From its beginning, *Educación Física-Chile* was strongly oriented to the dissemination of physical education and culture events, facts and scientific advancements, publishing along its history more than 250 printed issues and from 2011 onwards in digital format. However, it has been experiencing a decrease in the amount of published articles from the decade of the 1990s and several management changes during the last three years (three different editors in chief), holding a marginal position nowadays (Pérez-Gutiérrez & Gutiérrez-García, 2015).

In 1940, the Chilean Army by means of the National Office of Physical Education and Sport, started editing the journal titled *Revista de Educación Física del Ejército de Chile*, being its director the journal's editor in chief. Although the issues published from 1940 to 1944 could not be consulted, the National Library of Chile registered the existence of those issues and the numbering of volumes and issues fit with this date. Moreover, 1944 journal's editorial stated the bureaucratic and structure changes happened within the National Office had interrupted the publication of the journal (s.a., 1944). From 1944 onwards, Horacio Arancibia Laso, as director of the National Office, guided the journal until 1946 when it finally disappeared. It was published every two months. The journal aimed to show and teach all about physical culture in general and to become a reference source for instructors, including new and interesting studies and topics in relation to it (s.a., 1944).

The Chilean Army's journal was divided in different sections for including articles, interviews, and information about competitions, courses or sport reports. A total of 25 issues were discovered, compiling important information about the development of physical activities in both the Army and Chile. This journal together with *Educación Física-Chile* were the only publications presenting and publishing the sports culture and the scientific advancements at that time, being both of them reference sources for studying sports development and context during the first half of the 20th century.

The Sociedad Chilena de Medicina del Deporte (SOCHMEDEP, Chilean Society of Sports Medicine) was created in 1955 and one year later its own publication appeared under the title of *Archivos de la Sociedad Chilena de Medicina del Deporte*, being the oldest of its speciality in Latin America (SOCHMEDEP, 2015). Several editors have directed this journal for more than half a century, being Matías Moran Bravo its current editor in chief. During most of the time, the journal was published every four months, but from 2006 onwards, it has annually appeared. The scope of the journal was clearly focused on sports medicine and physiology and its aim was to present the activities developed by the SOCHMEDEP (s.a., 1956), but other topics have been also included such as sports psychology, anthropometrics or training (Rubilar Bernal, 2014).

At the beginning, this journal used to include information about the events and activities carried out in the Society together

with the results derived from its researches, but later scientific articles were only presented in its contents. More than 200 issues have been published in print format, and society's webpage includes the history, past presidents and some of the article's titles. Yet, it has not been indexed in any database.

Heracles was a publication from the Department of Physical Education, Sports and Recreation of the Universidad de Chile, located in Valparaíso campus (V Region). After the university reform occurred in 1981 in Chile (Ministerio de Educación Pública, 1980a, 1980b), this university was renamed to Universidad de Playa Ancha. It was firstly published in 1980 and Kurt Claussen Sparenberg was its editor in chief. It declared a biannual frequency of publication but only two issues have been discovered.

Spreading the activities developed at the university and becoming a specialized media were the journal's aims. For that purpose, six sections were included within *Heracles*, such as sports technique, biographies, essays, miscellany, recreation and others. Despite the academics' desire for publishing this journal, it disappeared in 1981 probably due to the university reform happened in that year that involved the regionalization of the Universidad de Chile.

The Department of Physical Education at the Universidad de La Frontera (IX Region) published the journal titled *Gymnasium* in 1991, being Boris Cáceres Riquelme its editor in chief. Its aim was to present new information about sport activities and foster reader's interest about the contents presented. In this way, *Gymnasium* included scientific and technical articles, essays about sport and physical activities and a miscellaneous section presenting advices for practicing physical activity and sport as well as concepts and information about the department's events.

In 1993 appeared the journal titled *Revista Ciencias de la Actividad Física* within the Physical Education Faculty of the Universidad de Playa Ancha (V Region), being Cesar Oliva Aravena its editor in chief from the beginning. This journal was biannually published until 2012 when it finally disappeared. According to the first issue's presentation, the journal aimed to contribute to the critical review of the knowledge production about physical activity sciences (Maurer Fürst, 1993). Moreover, it intended to show the several approaches around sport sciences to the scientific community and to establish exchange processes with other national and foreign journals. But it also stated that the journal was born for solving some problems such as the scarce of information about sport sciences published in Spanish and the limited scientific research developed in Chile (Maurer Fürst, 1993).

This journal was regularly published during 19 years, appearing a total of 38 issues, although some of them were published together due to the scarce number of articles included. It was edited in print format but volumes 1 to 16 can be downloaded from journal's webpage (<http://www.upla.cl/actividadfisica/publicaciones/>). In relation to its indexation, the journal was included in the International Association Sports Information, the Latin-American Sports Information Association and the Department of Documentation and Dissemination of Unisport Andalusia. It should be also mentioned that this Faculty has published two different bulletins for compiling the abstract of students' dissertation from physical education degree

(2003-2010) and physical activity and sport sciences degree (2010-2012) respectively. These bulletins were not included in the present study due to their contents.

In 1998, the Physical Education Department of the Universidad Católica del Maule (VII Region) started publishing the journal titled *Ciencias de la Actividad Física U.C.M.* From 2006 onwards, Rodrigo Vargas Vitoria has been its editor in chief, leading the journal from its print to digital format and from annual to biannual frequency. The journal was aimed to become a way for exchanging scientific information among physical activity professionals and trainers, sport coaches and other people interested in physical activity sciences in general (Montecinos Espinoza, 1998; s.a., 2013).

Along its history, the journal has published 17 issues with two issues per year in digital format from 2013 onwards. Its webpage (<http://www.faced.ucm.cl/revief/>) offers the possibility for fully downloading these issues, subscribe to the journal as well as contact and journal's information. Moreover, the journal is indexed in Latindex catalogue and EBSCO Host Research Databases.

In 2003 the Pontificia Universidad Católica de Valparaíso (V Region) started the publication of the journal titled *Motricidad humana* with a biannual frequency. After several organizational changes, Fernando Rodríguez Rodríguez is currently its editor. Those changes have not only influenced the journal's organic structure but the contents, sections and format. Thus, it was firstly published in print format from 2003 to 2008, and then has been changed to digital format. The aims of *Motricidad humana* during its first period were to become a link between Pontificia Universidad Católica de Valparaíso's academics and other sport sciences professors as well as to inform about the development of sport sciences (Espinoza Oteiza, 2003). During the second period, the journal has been mainly focused on the spreading of scientific research developed in physical education, human movement sciences and related fields for contributing to the discussion and development of these areas (s.a., 2015).

It has published 21 issues during its history, only interrupted in 2005. During the first period, the journal was divided in three sections dedicated to pedagogical strategies, scientific researches and information about university's events. Then, it was clearly oriented to a more scientific approach including both original articles, practical experiences and abstracts of the dissertations presented in the Physical Education School. The development towards a scientific-oriented journal has been finally achieved through its indexation in Dialnet, Latindex directory and Euro-American Scientific Journals Improving Program.

The most important institution regarding sport in Chile, the Instituto Nacional de Deportes (National Institute of Sports) started publishing the journal entitled *Revista de Ciencias de la Actividad Física y Deportes* in 2004, and then it changed its name to *Revista de las Ciencias de la Actividad Física del Instituto Nacional de Deportes* in 2007. An editorial committee has guided this journal from its beginning, publishing it annually except for 2006. Although no explanations were offered in the 2007 editorial about this appearance break, it should be noted that during the first period the journal did not include an ISSN, so the break possibly occurred for adjusting the journal to formal requirements.

The aim of the journal was stated in its first editorial, declaring that the journal would be a way for national and internationally disseminating the Instituto Nacional de Deportes' ability for developing and promoting the Physical Activity and Sport Sciences (Velasco Rodríguez, 2004). During its ten years of history, it has published nine issues in printed version for its spreading along the main libraries and sport institutions in Chile. The issues pertaining to the current period can be fully downloaded from the Instituto Nacional de Deportes' webpage (<http://www.ind.cl/>). Moreover, the journal has been indexed in Dialnet and Latindex catalogue.

Motricidad y persona began its publication in 2006 under the patronage of the Universidad Central. An editorial committee composed by José Luis Reyes Fuentes, Héctor Trujillo Galindo and Sergio Carrasco Cortés has managed the journal. Although it intended to be biannually published, the frequency could not be maintained in 2007, 2009, 2011 and 2012, in which only one issue appeared. The aim of *Motricidad y Persona* was three-fold: foster the scholar dialogue regarding human movement, spread of the scientific research in this area, and systematize the diversity of approaches around human movement sciences for achieving a consensus (s.a., 2006). In this way, it was mainly focused in human motricity sciences, accepting national and international contributions about this topic.

Although the journal has its own webpage (http://www.ucentral.cl/revista-motricidad-y-persona/prontus_ucentral2012/2012-01-03/164025.html), only its history, scope, organization and contact information is presented. It was only edited in printed version, publishing ten issues. Although the journal was indexed in Dialnet and Latindex directory, no more issues appeared from 2012 onwards.

Finally, *Horizonte: Ciencias de la Actividad Física* firstly appeared in September 2010, published by the Department of Physical Activity Sciences of the Universidad de Los Lagos, located in Osorno (X Region). Rodrigo Ramírez Campillo has been its editor from the beginning, keeping a biannual frequency. *Horizonte* pretended to become a mutual link between its publishing Department and the Physical Activity and Sport Sciences scientific community, including the research carried out within the Universidad de Los Lagos as well as national and foreign contributions (Negrón Molina, 2010). Thus, its aim was to create a place for contributing and promoting the research, together with the creation, spread, update, discussion and knowledge exchange in relation to the different areas and topics of physical activity sciences (Ramírez Campillo, 2011).

Horizonte is presented in printed and online versions, and its nine volumes appeared until 2014 can be download from its webpage (<http://revistahorizonte.ulagos.cl/>). It has not been yet indexed in any database, limiting the spreading and impact of its articles and journal's visibility.

Characteristics of the sport sciences scientific journals

The distribution of journals in relation to their frequency of publication is presented in Table 2. Most of them (58.33%)

were biannually published while only the *Revista de Educación Física* was monthly edited.

Table 2. Frequency of publication of sport sciences scientific journals in Chile.

Journals	Annual	Biannual	Bimonthly	Monthly
n	3	7	1	1
%	25.00	58.33	8.33	8.33

The number of journal's issues is strongly related to the amount of articles submitted and accepted for publication. A large amount of articles usually represents a high frequency of publication. Therefore, the non-existence of three- or four-monthly journals is indicating a slow pace of productivity in sport sciences research in Chile.

As shown in Table 3, most of the journals (77,27%) have been edited in Central Chile (Metropolitan and V Regions), while three journals have been published in other regions such as Maule, Araucanía and Los Lagos. But it should be noted that Santiago and Valparaíso concentrate the 40.6% and 10.1% of Chilean people (INE, 2014) and 60% of the universities have located their headquarters in Santiago de Chile (MINEDUC, 2015b), so journals are distributed in accordance with these demographic data.

Table 3. Place of publication of sport sciences scientific journals in Chile.

Journals	Metro-politan Region	V Region (Valparaíso)	VII Region (Maule)	IX Region (Araucanía)	X Region (Los Lagos)
n	6	3	1	1	1
%	50	27.27	9.09	9.09	9.09

The distribution of journals according to their publisher presents the kind of institutions supporting the development and spreading of sport sciences research in Chile (see Table 4). Universities were the main institutions editing scientific journals with the 66.67% of total publications. In comparison with the sport sciences scientific journals published in Spain, they were mainly edited by professional associations together with universities, collecting both institutions approximately 68% of them (Devis Devis *et al.*, 2003; Villamón *et al.*, 2007).

Table 4. Publishers of sport sciences scientific journals in Chile.

Journals	Professional associations	Universities	Government	Particular
n	1	8	2	1
%	8.33	66.67	16.67	8.33

But it is also interesting to point out the role played by the government for supporting the dissemination of sport sciences research. Thus, it has edited two journals in different periods of time, such as *Revista de Educación Física del Ejército de Chile* during 1940-1946 and *Revista de las Ciencias de la Actividad Física del Instituto Nacional de Deportes* from 2004 onwards. Among the powers conferred to the National Institute of Sports, created in 2001 by the passing of the 19712 sports law, was to carry out strategies for spreading values, ideas and knowledge about physical activity and sport. In this way, the government was not only promoting and supporting physical and sporting activities but also disseminating the knowledge about them. For that purpose, it created its own scientific journal, which has become an important mean for presenting the Institute's researches (Velasco Rodríguez, 2004) as well as those developed by other academics.

Quality analysis of the sport sciences scientific journals

The existence of journal's editorial committee and the information provided about its members is presented in Table 5. Most of the journals (75%) included an editorial committee for assessing the received manuscripts but a 58.33% of them did not indicate their members' address. This information is important for assessing the journal's institutional opening (Valenciano Valcárcel, Villamón, *et al.*, 2008) and the creation of networks and bonds with external academics. Moreover, the existence of an editorial committee is related to journal content's quality because it evaluates the relevance and quality of the submitted articles.

Table 5. Editorial committee and institution of its members.

Journals	Editorial Committee		Institution of Editorial Committee's members			
	Yes	No	No-one	Almost anyone	Almost everyone	Every-one
n	9	3	7	0	0	5
%	75.00	25.00	58.33	0	0	41.67

Therefore, editorial committee and the address information of their members should be included in all journals for improving the selection of the submitted manuscripts and determining the opening of this process and the journal's networks.

However, a clearer indicator of journal content's quality is the manuscript selection process. Table 6 shows the amount of journals distributed according to their kind of article selection process. Peer review process was used by seven journals, four of them with a blind process. On the other hand, the editorial committee carried out the article selection process in five journals. It should be highlighted the blind peer review process is the main method for evaluating scientific articles (Smith, 2006; Weller, 2002) and achieving journal's quality (Camí, 1997; Giménez Toledo & Román Román, 2001; McNutt, Evans, Fletcher, & Fletcher, 1990), but results show 67% of journals did not meet this criterion.

Table 6. Manuscript selection process in sport sciences scientific journals in Chile.

Journals	Editorial Committee		Peer review	
	Blind	No blind	Blind	No blind
n	0	5	4	3
%	0	42	33	25

Finally, journal's visibility is considered an indicator of its quality since its main aim is the spreading of knowledge and research among scholars and scientific community (Valenciano Valcárcel *et al.*, 2008). In this way, journal's indexation is related to its fulfilment of different format and content criteria defined by databases. Despite the significance of this indicator, seven journals were not included in any database (Table 7). Because of the relevance and impact of internet in present society for accessing information, more and more journals are published online, partially or completely. As shown in Table 7, three journals were edited in print and online respectively, while two were printed but also presented a webpage for consulting information about them. In addition, three journals were published both in print and online. In this way, sport sciences journals published in Chile have been adapting to digital format for making more accessible their information and improving their articles' visibility.

Table 7. Visibility of sport sciences scientific journals in Chile.

Journals	Databases		Publishing process				On-line
	Yes	No	Print	Print and web	Print and abstract online	Print and online	
n	5	7	4	2	0	3	3
%	41.67	58.33	33.33	16.67	0	25	25

In comparison with the studies related to Spanish sport sciences journals, the results are quite similar in quality but not in quantity. Thus, Devís Devís *et al.* (2003) found 26 Spanish sport sciences journals in 2000 that increased to 32 periodicals in 2007 (Villamón *et al.*, 2007), while the present study collected 12 journals, six of them currently published. Both Spanish and Chilean sport sciences journals are in the same situation since the information about authors' address, indexation and peer review process are their weaknesses.

Thus, sport sciences journals published in Chile should be adapted to formal requirements demanded by databases for improving their visibility, and possibly the amount of submitted articles (Villamón *et al.*, 2005). The non-existence of Chilean sport sciences journals indexed in Scielo, or other international databases such as Web of Science or Scopus, reduces their attractiveness, causing Chilean academics tend to submit their articles in foreign journals for achieving recognition, improving their scholar assessment and competing for research projects (Devís-Devís, Villamón, & Valenciano Valcárcel, 2014; Tani, 2014; Valenciano Valcárcel, Devís Devís, *et al.*, 2008b). This situation should be solved for strengthening sport sciences field in Chile, since journals contribute to the definition of this field

and establish quality criteria for the development and spreading of research (Tani, 2014). Therefore, they should firstly attempt to adapt to Scielo's formal requirements since it is the main national database supported by the National Committee of Scientific and Technological Research in Chile (CONICYT). This will also facilitate the improvement of sport sciences scientific journals because they could apply to the governmental funds created for that purpose (CONICYT, 2015).

Conclusion

The present study showed twelve sport sciences scientific journals published in Chile from 1912 to 2014, six of them currently published. All of them aimed to spread the scientific advancements related to sport sciences along time, but their scope, contents and life span were different.

Regarding their characteristics, they have been biannually published in the metropolitan region by universities mainly, due to the centralization of people and universities in Santiago de Chile. However, professional associations and the government have also developed some initiatives for supporting the sport sciences research dissemination.

According to their content quality and visibility, improvements should be carried out for adapting them to databases' formal requirements. Particularly, address information of all editorial members, blind peer review process for submitted articles and digital edition with online full text access should be adopted for achieving their indexation in main databases and increasing their visibility. These improvements are important for strengthening sport sciences research, journals and academics in Chile.

Future researches should be focused on the bibliometric analysis of sport sciences scientific journals for showing the main topics, subjects, authors, institutions and countries represented on them. Content analysis should be also developed for presenting the physical education and sports ideological orientation along time in Chile, represented on these journals.

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