

The fitness “working class” and its relationship with fitness equipment: a systematic review La “clase trabajadora” del fitness y su relación con los aparatos de fitness: una revisión sistemática

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Abstract. Fitness equipment nowadays represent something common in human beings daily life routines. For this reason, the number of sector professionals and human resources are quantitatively and significantly increasing worldwide. This paper provides a comprehensive systematic review of the current status of scientific research on field workers in relation to the usage of fitness products and resources. The performed thematic synthesis allowed to define and sort contents into three pyramidal categories and selected keywords offered about 49 articles that have been extensively analysed: (1) owners / directors; (2) personal trainers; and (3) instructors. Discussions of each category and all the existing relationships with fitness equipment are advanced and defined. Health and sport workers must recognise the relevant contribution of these stakeholders’ characteristics in the way to maximise the role of fitness equipment in promoting leisure and healthy habits inside societies. In addition, practitioners and researchers could take advantage in deepening knowledge and education on these kinds of resources. Due to the current importance of the sector, standardization and regulation of each fitness industry work category is ready to be strengthened also under these scientific to practice points of view.

Keywords: fitness directors, fitness equipment, fitness professionals, fitness workers, personal trainers

Resumen. Hoy en día Los equipamientos de fitness representan algo común en la vida diaria del ser humano. Por ello, el número de profesionales del sector y de recursos humanos (cargos laborales) está aumentando cuantitativa y significativamente a nivel mundial. Este documento proporciona una revisión sistemática integral del estado actual de la investigación científica sobre trabajadores del sector en relación con el uso de productos y recursos de acondicionamiento físico. La síntesis temática realizada permitió definir y ordenar los contenidos en tres categorías piramidales y las palabras clave seleccionadas ofrecieron alrededor de 49 artículos que han sido ampliamente analizados: (1) propietarios/directores; (2) entrenadores personales; y (3) instructores. Se avanza y define la discusión de cada categoría y todas las relaciones existentes con los equipamientos de fitness. Los trabajadores de las áreas salud y deporte deben reconocer la contribución relevante de las características de estos agentes para maximizar el papel de las maquinarias de fitness y bienestar en la promoción del ocio y los hábitos saludables dentro de las sociedades. Además, los profesionales e investigadores podrían aprovechar de los datos proporcionados para profundizar el conocimiento y la educación sobre estos tipos de herramientas. Debido a la importancia actual del sector, la estandarización y regulación de cada categoría de trabajo de la industria del fitness está lista para ser fortalecida también bajo estos puntos de vista, tanto científicos como prácticos.

Palabras clave: directores fitness, equipamiento físico, profesionales fitness, trabajadores fitness, entrenadores personales

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Introduction

Industry’s confirmation moment

The fitness industry is an environment which, according to Rosado et al. (2014), has been continuously changing since the beginning of its existence. New physical education (PE) techniques and equipments represent the ‘trends’ that international businesses and markets constantly demand to meet their needs. Exercise equipment is an accessible means and resource of education and can be successfully used for accomplishing, objectifying, and setting the goals of fitness-themed lessons. So, in different ways, it is possible to increase the effectiveness and attractiveness of the services provided by the same facilities (Dobrescu & Dănilă, 2013). Additionally, the fitness sector is still in growth in response to the worldwide consumers that require innovative products and services (Viallon et al., 2003; Rutgers et al., 2021; Thompson, 2022).

The last thirty years, moreover, in terms of business models, have shown the most relevant and rapid change that has been detected since the beginning of the history of post-modern fitness; going from the first-generation franchises, through intermediate configurations, until reaching the latest innovative options offered by the sector (Addolorato et al., 2022). Total industry revenue, as cited by IHRSA

(2017; 2022), reached an estimated US \$83.1 billion in 2016, as roughly 200,000 clubs served 162 million members all over the world. The North American and the European markets are leading this growth with their robust performance. Other areas are also posting and demonstrating strong growth; in order, they are: Asia-Pacific, Latin America and the Middle East / North Africa (MENA). North America, in particular the US, have in recent decades been the pioneers in both consumption and purchase of fitness fashions and newly well-being apparatus, and for professional ‘movements’ classes, and the other continents tend to follow its lead (Sekendiz et al., 2009).

Fitness facilities have changed a lot during the various stages of development of the industry, and they continue to change in response to trends. According to the latest product sectoral differentiations (Gray & Finch, 2015; Gray et al., 2016; Keyzer et al. 2014; Kniveton, 2005; Paulson et al., 2013; Sekendiz et al., 2014b; Sekendiz et al., 2016) they regularly include: (1) cardiovascular machines (detected in the 98% of the evaluated sampled facilities, according to Sekendiz et al., 2014b; such as treadmills, different types of bikes, ellipticals, steps, etc.; most of them motorised); (2) strength-power or pin-loaded exercise equipments (98%; such as rowing, benches, any specific muscular or chain focuses, etc.); (3) heavy free-weights (92%; such as bar bells,

dumb bells, and kettle bells, nowadays translated into the defined 'functional workout movement' area); (4) 'unspecified' exercise equipments or 'specific conditioning' machines (15.2%; such as fitballs, proprioceptive - adaptive - balance devices, and active rehab instruments); (5) group exercise classes / studios areas devices (83%); (6) swimming pools apparatus (29%); and (7) racquet sports amenities (23%).

Either industry with its producers and the researchers in the field, to date, have not highlighted yet the emphasis that fitness equipment possesses to achieve the goals that customers require for their subjective health purposes. The appropriate use of these techniques, practices and methods is given, educated and taught by all those sectoral human resources who everyday train and act through this kind of exercise and workout targeted systems. Finally, from the manufacturing realities perspectives, proactive actions directly focused to sectoral practitioners, have been carried out, by e.g., both by Johnson Health Tech. Co. Ltd (Kennedy-Armbruster *et al.*, 2011) and Precor Inc. (Takaki, 2005).

Workers state of the art

Fitness professionals are undoubtedly the unifying 'ring' between physical equipment, related services and final users. According to Monachie and Sappey (2013), since the last decade of the past century, small groups of employers in the commercial Health & Fitness (H&F) industry sought industrial regulation through an industry-specific award that previously was non-existent. Again, the same authors (Monachie & Sappey, 2011), define the body as relevant part and mean, both, to carry out activities and reach personal objectives; and as well represent a 'cultural' (imposed by society) product and not yet a 'natural' phenomenon. Numerous scientific articles embrace themes related to the workers in this industry under different points of view: relationships with final users or with different levels of internal management, loyalty procedures, and overall quality management (Houston, 2007; Lagrosen & Lagrosen, 2007). While a smaller number of studies focused on fitness equipments that clubs possess, in every size of local, national, or international environment, and how workers and management evaluate and define their daily exploitation.

As affirmed by Boned *et al.* (2015), the predominant professional profile in the sector is right at the border between Generation X (born from 1965 to 1981) and Millennials (born from, approximately, 1982 to 2000), with a university degree or professional training, and proven field experience of almost ten years. They also possess a sufficient training level to perform the main task they are in charge of within technical staff (Cerca *et al.*, 2023; Waryasz *et al.*, 2016); almost three out of four obtained exercise-related bachelor's (80.4%) and master's degrees (72.4%). Apart from these ages' subdivisions, others independent variables have recently been analysed: gender, city size, and type of organization in which field professionals tend to operate (Campos-Izquierdo *et al.*, 2016; Estrada-Marcén *et al.*,

2019; Juan-Llamas, 2015). According to Alsac-Seitz (2009), there are three influential and active generations at any level of the 'hierarchical pyramid' in the fitness workers industry (owners, managers, trainers, employees, etc.). 'Baby boomers', born from 1946 to 1964, appreciate face-to-face conversations, have very strong ethics, are workaholics, and generally shy away from lecture-style sessions. 'Generation Xers' respond to succinct forms of communications, are quite techno-literate, have developed a much more relaxed and flexible job approach and tend to be more autonomous learners. Millennials absolutely love to communicate are incredibly goal-oriented and optimistic in professional aims, prefer learning in a relaxed and fun atmosphere, and focus on developing critical thinking skills and using technology to complement sessions and classes. The incoming 'Z' and 'Alpha' generations, the fourth and fifth categories, are ready to debut (some, evidently, are already exerting) among the sector practitioners (exercise science field, educators, etc.) moving all together in the same environment.

Fitness equipment societal necessities

Among national and international welfare social plans there are several traits referable to healthy habits and physical activity (PA), based on self-awareness and positive experiences generable inside current societies (Csikszentmihalyi & Figurski, 1982; McKenzie, 2013). An overview is given by the research evidence pertaining to the contribution of sport and PA to personal enjoyment (fun flow), personal growth (overall physical health and psychological well-being), social integration (socialization, intergroup relations and community integration) and social change (educational attainments, social status and mobility). In all four areas, there is seen to be a potential for significant positive contributions: the critical feature then becomes identifying the prerequisite activity, leadership, organisational and environmental conditions for facilitating positive outcomes (Wankel & Berger, 1990).

At the same time, between these desired contextual results, it is already well known that the H&F industry is an important contributor to local preventative health policies against overweight and obesity, and directly associated with the related human risk factors (Sekendiz, 2014a; Sperandei *et al.*, 2016). For this reason, every fitness centre, as well as every sport recognised spot or facility worldwide, plays an important role, and every type of available fitness equipment is one of the most common mean (tool for science) through which is possible to meet market and population demand, and as well lead any business in the desired direction.

According to the relevant number of publications encountered inside sport and leisure management literature (García-Fernández *et al.*, 2018; Park, 1996; Pedragosa & Correia, 2009), final consumers are, definitively, mostly studied with the intent of trying to keep their loyalties as active clients (internal evaluations, perception and satisfaction levels, etc.), and evidently less for those categories of

workers who are the real merging point between the multinational companies and the 'real' commercial fitness world. The main rationale is probably due to the immediacy that these kinds of outcomes offer inherent in the hypothetical usability and put into practice of valid and up-to-date information aiming results, useful for the final purpose of maintenance and economic sustainability within the traditional sports structures, mostly focused on the fitness branch. Following this path, however, the human capital that unites the accessibility of the product to the final consumer (Business-to-Consumer, B2C), as well as the same methods of delivery and consumption of the related service (Business-to-Business, B2B), are completely left in the background. Additionally, the initial scientific limit encountered corresponds to the lack of evidences directly and strictly interconnected between sectoral human resources and the importance of fitness equipment along societies, and the corresponding dynamics that could emerge among them.

For the above listed motivations, this paper is able to identify relevant articles published over a period of thirty years (from 1992 to 2022), supposedly the most important stage of the fitness industry registered until now. The research was guided by two broad questions:

(1) is scientific literature revealing, among main or secondary findings, the importance of these equilibriums and assessments between the products used and the professionals who deliver their work activities by using them?

(2) is scientific point of view, with its literature-led evidence, emphasizing and reflecting industry 'real world evidence' in which sectoral human resources act in their everyday practices?

For all the aforementioned reasons, the final purpose of this study is to examine, through a systematic review of the available literature, the nature of existing relationships between fitness equipment and the population of sector professionals ("fitness working class"). The offered focus could generate attractiveness for all current and future hierarchical working positions inside the H&F field of fitness and, more in general, enrich the level of knowledge along sport and leisure management literature.

Methodology

Data searches and sources

Inclusivity criteria and approaches of both searches and sources methods have been defined before the searching phase of the study has been embark (*Table 1*). Fitness equipment is a widely accepted and used term in most of the languages represented, as in scientific sectoral literature and selected starting databases. The keywords used for the analysis were: 'fitness equipment' (1) intersecting concepts, such as 'sector professional' and 'human resource' (2), and using the Boolean logic joined with 'AND'. Singular forms have been employed in order to encompass both possibility, singular and plural versions, of every adopted keyword.

Searches and effective attempts were carried out, also,

with the common synonyms of both main (1) and secondary (2) variables (alphabetical order):

- (1) exercise, health, rehab, training, workout, etc.;
- (2) apparatus, device, good, hardware / service amenity, machine, machinery, object, product, system, quality physical material, etc.

For example, for the specific case of synonym keywords selected as secondary dependent variables, has been partially discarded due to the focuses offered by the same scientific contributions: most of these publications embrace topics such as purely medicine and surgery or rehabilitation protocols, applied sports physiology, and overall experiments / tests utilising fitness equipment which could not lead to actual assessment usefulness. These additional keywords have been taken into consideration and been assessed during the preliminary analysis, but excluded (in most instances, see in detail the full reference list provided) to better focus on the criteria-rationale of the selected procedure, aimed to a more specialised selection of the targeted final findings (workers and practitioners acting in the field).

Given this starting point in terms of keywords an extensive systematic review of electronic databases, including ISI (Web of Science), Scopus, and SportDiscus was initially performed to identify relevant articles. The reference list of each selected article was deeply examined to identify other potentially relevant papers, following the 'snowball' technique (Atkinson & Flint, 2001; García-Fernández *et al.*, 2014), typical of qualitative research and in sampling holistic procedure aiming hidden or marginalised populations (Trost, 1986; Woodley & Lockard, 2016).

With this method, starting from the reference lists and initially retrieved for each paper sorted from the starting databases, additional electronic databases were used for the continuation of the systematic analysis with the final goal of adding (and eventually include) valuable articles related to the purpose of the research. Among the various sources used, in order to amplify sectorised and valid literature, there have been (alphabetical order): Academic Search Complete, AMED, Business Source Premier, CINAHL, Cochrane Library, Embase, Ergonomic Abstracts, Google Scholar, MEDLINE, PsycINFO, and Science Direct.

The analysis was limited to research papers in a strict sense, including literature reviews (only admitted format among secondary research, due to similar procedure analyses), meta-analyses, and original articles. The following typologies were excluded: bibliographic articles and chapters, editorial and news articles, meeting abstracts, and sectoral letters. No boundaries of time, geographical areas, or original language (when additional translation to English has been performed) have been adopted.

Additionally, an effective limit encountered, searching in this field, was the incalculable number of published licenses and patents related to the products (already filed and sold, during these years, all over the planet) that appear in academic databases, even if they are not a relevant part of it (and for this reason excluded from the systematic review). Finally, relevant industry reports offered by IHRSA (2017;

2022), were sought by tracking the latest leading trends and

Table 1.

Systematic review criteria and approaches

Criteria	Approaches
Main topic	Fitness equipment
Related topics ('AND')	Sector professional, Human resource
Research method	Snowball technique
Boundaries (defined)	Title, abstract or keywords include topics (1st phase)
	Full-text content articles (2nd phase, assessed by Jadad Scale)
	Not by investigation areas
	Not by geographical areas
	Not by period/time frame
	Publications in English

The search took almost one year for the full analysis and the latest search was performed on 31 December 2022. Data collection and selection was conducted by an independent investigator, experienced in management and marketing of product/service solutions in the H&F field. The remaining members of the team gave a relevant contribution for the effective assessment of the sample retrieved.

Study selection and methodological quality assessment

The inclusion criteria were: (1) articles related to the content criteria for fitness equipment that were published in academic journals, directly connected to the topics of sector professional and human resource that should appear in the title, abstract or keywords; (2) where topics were not included in these key points, has been analysed if it has been extensively explained and faced between the contents of the full text version; (3) articles between 1992 (the lower limit was not pre-imposed, and was defined by the same literature analysis) and 2022, located in the areas of psychology, social sciences, medicine and surgery, management, marketing, consumer behaviours, and communication, etc.; and (4) articles published in English.

The initial search identified 362 articles. However, most were eliminated based on repetitive appearances in multiple databases, keywords logic of articles or full text contents that had nothing to do with the relevant subject matter for this study (Figure 1). At this stage, the titles and abstracts obtained were screened to remove the irrelevant or duplicated articles-and the full texts of the remaining articles were then read and analysed in detail to identify their eligibility. This evaluation step corresponds to the articles selected for full-text retrieval (n=184).

Once the relevant publications for the systematic review were finalised, the Jadad Scale was used to systematically determine the quality of the papers for approval and acceptance (Oremus *et al.*, 2001; Posadzki *et al.*, 2011). This scale was chosen because it has a linear design and the capacity to provide a global overview of the external and internal validity of the articles assessed. This method is used for polythematic and qualitative research fields, or those that encompass various and wide areas of interest at the same time.

Having been done by one reviser, a high standard was

geographical / society's product contributions.

set for the results of the articles sought or selected for the analysis. The standard set for selection was all articles that earned a score of 3 (or more) points on the Jadad Scale, which is an indication of good quality (Clark *et al.*, 1999; García-Fernández *et al.*, 2014; Türp *et al.*, 2004). For example, if the examined article separately includes only one of the pre-determined search keywords (for e.g., main or secondary variable separately), it didn't obtain the minimum score to be listed in the focused literature analysis. Ultimately, a total of 74 articles met the established criteria.

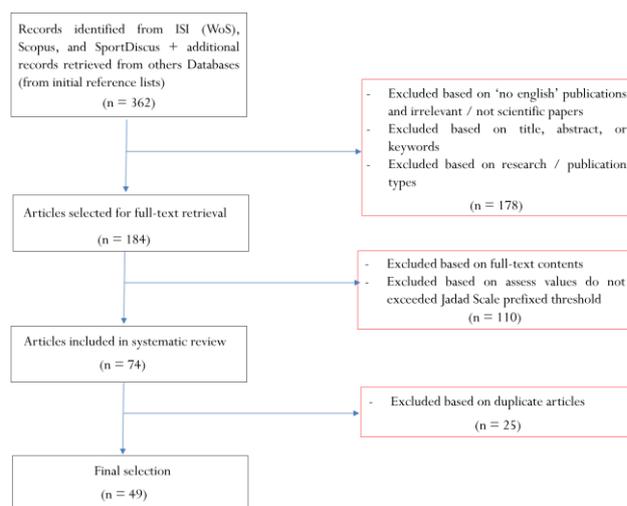


Figure 1. Selection Criteria

Data analysis and thematic synthesis

After two in-depth selection-based rounds, the final search resulted in 49 papers (after exclusion based on duplicated contributions) with previously explained criteria based on intended content were applied. Due to the multiple focus orientations, evidenced in various papers, different weights have been associated with each article, especially 0.5 instead of 1 (unique-themed, or singly focused) for each topic, when the paper addressed two thematic areas (multiple-themed, or double focused). With this schematic and mixed procedure, in both conceptual and practical pathways, was possible to ponder each selected article significance for the final calculation and for the same subdivision criteria (Jang *et al.*, 2008).

Another additional double intrinsic factor as assumed research position of the author, both for the analysis of data and their constructivist / thematic synthesis, has been the strategy of using methods such as generalisability (Holloway, 1997; Sánchez, 2010; Schwandt, 1997) and reflexivity (Denzin & Lincoln, 2000; Finlay, 2002; Kincheloe, 2005) for all the duration of the assessment and data production.

Once the articles were selected through the literature analysis, the authors proceeded on to data extraction following a thematic synthesis approach of qualitative research in systematic reviews (Boyatzis, 1998; Thomas & Harden, 2008). The three main stages have been followed: (A) coding of text, (B) development of descriptive themes and,

finally, (C) the generation of analytical ones. While there are many benefits to the use of thematic analysis within qualitative research, it has been noted that there are instances where this analytical approach is not the most appropriate (Braun *et al.*, 2016; Sparkes & Smith, 2009). A part of the three above mentioned main steps, the same process could be sorted following a six-phase model (Braun & Clarke, 2006), and with the basic support of an audit trail and an electronic log (Guillemin & Gillam, 2004; Richards, 2014): familiarization (A), initial code generation (A), searching for themes (A/B), reviewing themes (B), defining/naming themes (B/C) and, finally, writing-up (C).

The rationale for this proposition is that thematic analysis has been considered to be a useful and flexible instrument that can potentially provide a rich and detailed understanding of eclectic data, synthesise large amounts of diverse information, and emanating from the multiple data sources (Braun & Clarke, 2006; Braun *et al.*, 2016).

All the papers were categorised according to their nature (singly or double focused) by the criteria of the reviewer who proceeded to divide them into three themes based on the user-generated contents categorization (Clarkson *et al.*, 2020; Filo *et al.*, 2015; Franco *et al.*, 2015; Morton *et al.* 2010), which is also accorded to the pyramidal levels (hierarchy) of workers discussed within the articles: (1) owners, directors, managers and admins; (2) personal trainers and coaches; and (3) employees and instructors. For this reason, new categories have not been generated; all articles used in the present study were analysed, quantified, and categorised according to the thematic areas previously listed (Table 2). Additionally, a triple introductory part on the matter of timeline, most active journals, and geographical areas contributions has been provided to better focalise the selected and exposed investigation topic.

Table 2.
Thematic content areas of study

Thematic Areas	Selected Articles	
	n	%
Owners, directors, managers and admins	15	30.61
Personal trainers and coaches	5	10.20
Employees and instructors	29	59.19

Results

Timeline

When considering the year of publications, an increase in article addressing the topic of interest can be observed. For example, from 1992 (lower limit encountered during the analysis) to 2004, nine articles were published (18.37%). The second period assessed (the decade 2005-2014) produced the largest number of relevant publications, thirty (61.22%), starting with a relevant peak during 2005 and demonstrating a linear growth until 2014 (the largest amount of articles for the considered time period). The remaining eight years (2015-2022), the most recent period of the thirty years systematically reviewed, found a total of ten papers (20.41%).

Scientific journals

Regarding where the articles were published, there is a wide diversity of journals having accounted for up to twenty-seven indexed journals that published on these topics. Journals with a greater number of publications on the selected subject, included: *Journal of Sport Management*, with three articles; and *European Sport Management Quarterly*, *International Journal of Sport Management and Marketing*, *Journal of Science and Medicine in Sport* and *Work, Employment and Society*, with two articles each; these five journals were almost the fifth part of the total sample that published papers on the subject. The remaining selected papers were the only relevant ones in the journals where they appeared (Table 3).

Table 3.
Title of journal and number of related publications

Title of Journal	n° of Publ. per Journal
Journal of Sport Management	3
European Sport Management Quarterly	
International Journal of Sport Management and Marketing	2
Journal of Science and Medicine in Sport	
Work, Employment and Society	
American Journal of Public Health	
Anaesthesia	
Archives of Physical Medicine and Rehabilitation	
Disability and Rehabilitation	
Human Resource Management Journal	
Industrial Relations Journal	
International Journal of Sports Law and Management	
Irish Marketing Review	
Journal of Education and Work	
Journal of Industrial Relations	
Managing Leisure (now: Managing Sport and Leisure)	1
Perceptual and Motor Skills	
Relations Industrielles/Industrial Relations	
Research Quarterly for Exercise & Sport	
Revista de Psicología del Deporte	
Social Behavior and Personality	
South African Journal for Research in Sport, Physical Education & Recreation	
Sport Management Review	
Sports Medicine	
Total Quality Management	

Geographical locations

With regard to the geographic areas in which studies have been performed, the most active academics were recognized in Europe with more than a third (41.37%) of the total sample (active countries: France, Ireland, Norway, Portugal, Romania, Spain, Turkey, and UK), followed by Asia-Pacific with 27.59% (Australia, China, and Taiwan), North America with 25.87% (Canada, and US), Africa with 3.45% (South Africa), and Latin America with 1.72% (Brazil). No publications matched criteria for the MENA area. The three most influential markets are, in the order, represented by: Australia with 13 publications, the UK and US (each with 11). These countries richly represent almost half (44.82%) of the selected worldwide papers (Table 4).

Explaining the difference of the papers analysed (58 versus 49, officially) is due to the existence of international (extracontinental) research groups, different weights have been associated to each article, especially 0.5 instead of 1

(unique nation/continent) for each nation, when the paper enclosed two different geographical areas (multiple continent).

Table 4.
Numbers and percentages of publication's geographical areas

Geographical Areas	Countries	Selected Articles	
		n	%
Africa			3.45
	South Africa	2	
Asia-Pacific			27.59
	Australia	13	
	China	1	
Europe	Taiwan	2	
			41.37
	France	2	
	Ireland	1	
	Norway	1	
	Portugal	2	
	Romania	1	
	Spain	5	
	Turkey	1	
	UK	11	
Latin America			1.72
North America	Brasil	1	
			25.87
	Canada	4	
	US	11	

Owners, directors, managers and admins

A relevant opinion, offered by the literature, is what fitness facility 'leaders' opine about products in which they invest and trust, to lead their purposes and visions, to their daily life work activity in providing tangible services to their workers and clients. In this part, the job positions discussed are owners, directors, managers, and area administrators.

According to Chelladurai (1992), managers need not involve themselves with the prescription or supervision of the programs: professional services are based more on knowledge and expertise (e.g., exercise prescription) than on facilities and equipment, whereas consumer services (such as retailing and renting of fitness equipment and facilities) rely more on those defined as physical goods. The effectiveness of the user pleasure, in terms of health services, largely depends on the availability of physical sports structures/resources and the efficient scheduling of activities, normally weekly planned and maintained for a relevant part of the season. Leaders need to explore the opportunity for the sport centres to provide products, programs and services that allow men and women to meet other people outside their work, school, and family environments, during their 'leisure' time, aiming to satisfy well-being needs (Luna-Aroca & Li-Ping Tang, 2005). The key issues identified for a proper landing of a new sectoral facility: the location, providing the right product to the local profiling-customer base, better management of clients' data (focused on retention plans), combating increasing competition from new or refurbished facilities and maintaining like-for-like growth for mature facilities and, finally, conservation of good club managers and operational teams. Another focal point from managerial point of view is the re-designation of the market segmentation: from the process of dividing a large or heterogeneous trade into more homogeneous

groups of individuals (with similar needs, motivations, or demographic profiles), to whom a product may be targeted. Additionally, the same range of services can be explained by the logic behind actions and specific marketing strategies related to their micro-mentalities in possession of the fitness clubs' managers (Mischler *et al.*, 2009). This is why the direction of fitness centres plays a key role in the company and the method of management of the gym depends largely on the profile of the owner.

Among senior directors, 98% identify exercise machine as the most important factor in distinguishing their business from that of their competitors, while 95% list classes as differentiating elements; this is, however, surprising because most H&F centres offer broadly similar apparatus and courses and, therefore, these homogenous factors are unlikely to represent significant means of differentiations (Hurley, 2004). The top three striking and profitable activities, according to the point of view of the directors and following the most popular fitness trends offered from the American market since the mid-90s, are in the order: exercising on treadmills or cardiovascular amenities, working out on resistance machines, and finally training with free weights (Boned *et al.*, 2015; Connaughton *et al.*, 2002). These strategies allow to define a service-dominant logic and to examine existing service quality models in the context of sport and fitness (Polyakova & Mirza, 2016). This requires researchers to consider developing new contextual models that acknowledge service as co-creation of experience/value between suppliers and beneficiaries, understanding consumer behaviours (e.g., purchase motivation), and the goal of this co-design as fulfilment of customers' aspirations. The managers need to revisit their tools for capturing customer's perceptions incorporating and updating areas under the variables of 'modernity' and 'good condition' of the physical offerings.

Fitness business owners have the duty of care to their subordinates/dependents to provide them advices, within, and not beyond, their competency (Keyzer *et al.*, 2014b). H&F facilities implement strategies such as complaints handling, competitors' strategies, service monitoring, resource and incentive approaches, and membership renewal approaches to retain active users. Yet, is still underlined how the updating level of the products and high level of technologies, included in the physical services, are crucial in maintaining loyalties (Surujlal & Dhurup, 2012). Additionally, some studies analyse the Total Quality Management (TQM), that has been incorporated into many large business firms, including the fitness industry and its related physical amenities commonly purchased in different societies (Mawson, 1993; Powell, 1995; Tawse & Keogh, 1998). The TQM concept emphasizes that delivered services are a mixture of both tangible and intangible aspects; a hallmark of quality, reliability, and productivity, geared towards boost the context competitiveness selected in the wholesaling as it is for the evaluated business. The first one is the H&F product and the second, inside teams, corresponds to the communication between management and

instructors, upper and middle management, and every step of the organizational inbound management (also defined as internal service consumption representation). The compulsory competitive tending showed how final customer has an interest in soft behavioural and psychological issues, while the managers expressed a 'good' service as one measured by its tangible facets. Assumed clients may be employees from other units within the organization or they may be people who purchase the organization's product or service.

Due to the literature gap related to the needs of education and training for managers in comprehensive risk management programs in the H&F facilities an important contribution in this area of investigation is provided by Sekendiz (2009). Findings highlight the concept that reasonably safe service delivery can help to minimise legal liability (preventative nature in covering practices); for this purpose, the Health / Fitness Industry Risk Management Questionnaire has been created (Sekendiz, 2014a; 2014b). It includes four main categories, one of this is obviously related to the equipment and the facility in which is located. The six investigated sub-categories are: (1) inspections (check exercise equipment regularly for possible hazards); (2) programmes (ensure qualified supervision during all the proposed activities); (3) maintenance (owning preservation and preventative agreements with providers, notice when machines are out of order, make sure that equipment meets national/local safety standards, and ensure documentation system when technical support is performed); (4) construction and design (workplace, products and activities comply with the local Workplace and Occupational Health and Safety Act); (5) participant/membership forms (updated waiver forms when new devices are installed); (6) staff (facility provides in service trainings for new equipment usages). Similar procedures have been carried out, focused on safety alerts for treadmills (cardiovascular equipments), to generate the Australian Fitness Industry Risk Management (AFIRM, 2016) and an on-site observational tool (AFIRM-OAT) always addressed to the managing levels (still hazards, space and, eventually, re-allocation of specific pieces). Almost a quarter of the investigated sample (21%), of H&F administrators, is not sure that the workplace design of equipments and activities meet work safety requirements; they also affirm that 95% of the employees have first AID - Cardiopulmonary Resuscitation certification and approved training. Last but not least, director say that certification of their fitness professional subordinates (in which is included a percentage of knowledges related to physical products), does not seem to be accepted as a measure of competency in the fitness industry.

Personal trainers and coaches

Impacted publications have been found related to these kinds of roles, lately introduced inside job hierarchies of the H&F realities: personal trainers (PT) and coaches. Depending on how these positions are framed and located through societies, organisations and markets, it is possible to find partial shared information within the next broader

paragraph regarding "*Employees and instructors*". This could be represented especially between the most dated articles (until the previous century), due to the proximity of the carried-out activities, and both directly connected with the daily use of fitness equipment.

PT and exercise coaches are one essential service and currently prominently figure in the club (Liu, 2014; Moodley & Coopoo, 2006), and generate a significant portion of facility revenue (Chiu *et al.*, 2010; 2011). In response to market demands, the fitness club industry has developed a one-on-one (also named as one-to-one) PT course as one of its innovative service, which provide customers with customised professional exercise programs. The studies regarding these specialised roles present a list of seven competencies required by PT in relation to the products: (1) practical/operational abilities; (2) physical fitness evaluation and measurements (anamnesis, overall tests, etc.); (3) fitness equipment skills and the ability to operate any kind of available sports apparatus (including bodybuilding instructions); (4) safety management abilities; (5) injury protection and CPR (cardiopulmonary resuscitation) abilities; (6) maintain their physical strength for carrying out demonstrations; and (7) good communicative skills (in every pre-during-post workout moments).

One of the most common services delivered by PT is coaching in weightlifting, in which also the usages of physical devices is included. Beginner weight trainees need a high level of supervision, and good coaching techniques are likely to minimize the number of musculoskeletal problems, or potential injuries, caused by heavy weight trainings (Mazur *et al.*, 1993). Dedicated certifications programs for coaching are recommended, including for workers who are already actively inserted in the working system and only want to update their variegated backgrounds or starting extractions. Instructions may be obtained in collegiate or graduate school programmes, focused on strength assessment and training with, or without, the support of physical amenities.

Employees and instructors

The most analysed occupational levels, encountered in almost a half of publications (45%) and being those who interact the most with fitness equipments, on a daily basis, are without any doubt the exercise employees and instructors.

The greatest influence in encouraging people to start, and maintain, their PA and improve their physical fitness level is undoubted due to PE teachers, instructors, educators, and any kind of related job position and a variety of interconnected sub-roles (Kniveton, 2005; Liu, 2014; Lloyd, 2005a). Normally, in the H&F industry, these professionals are divided between aerobics, the fitness and strength machine area, basic supervisors, and maintenance (Connaughton *et al.*, 2002). An interesting study, offered by Felstead *et al.* (2007), embrace another specific and new occupational sub-group, the 'exercise to music' instructors, whose number have grown significantly in recent years (about by the advent of the new millennium) identifying

productive systems through which the aerobic classes are delivered (services carried out, mainly, without any pin-loaded/muscular machine but using small and buyable sport amenities). The topic is 'freestyle' versus 'pre-choreographed' licenses, due to the newly introduced certifications provided by international fitness brands. The undoubted goal is to create a productive system organized and managed by the owners of the sold immaterial 'concept', that is duplicated throughout societies worldwide and this trend continues to rise.

A large percentage of studies, mostly among secondary findings, are focused on the skills, duties, and abilities required in these kind of 'direct consumption' positions (Chelladurai, 1992; Chiu *et al.*, 2010; Fouladinejad & Roberts, 1998; Galv ez-Ruiz *et al.*; 2015; Gray *et al.*, 2016; Keyzer *et al.*, 2014a, 2014b; Lloyd, 2008; Lloyd & Payne, 2013; Maconachie & Sappey, 2011; 2013; Rosado *et al.*, 2014; Winingar, 2002). The complete list, as claimed by these authors, includes a total of nine key-points: (1) financial management (budgets, assets, schedule adjustments and employees shifts); (2) public and human relations, and communication (both via traditional and social media); (3) professionalism (skills, knowledges, education, service situation and evaluation, know appropriate reservation procedures and guidelines for equipment and facilities, use of quality material during activities); (4) personality (traits and peer relationships); (5) organisational administrative abilities (overall facility management); (6) curiosity and interest (never-ending education, lecture demonstration, peer to peer, self-study, and availability in being evaluated periodically); (7) technical support and cleaning abilities (hygiene appropriateness of used material, temperature, humidity, and illuminance checks); (8) safety and maintenance (purchase, exploitation, supply, and support keeping of sports equipments, overall hazards, adequacy of any kind proposal workout, avoiding cases of neglect related-to users scopes); and (9) 'extra-sector' skills (regulation level, evaluation and recruitment abilities, procedure policies, and collective employer action).

Two other relevant studies (Lloyd, 2005b; Sappey & Maconachie, 2012) analysed two unusual aspects for the workers in the field: the regulation of the 'license to practice', and the 'oculocentric labour'. The first one is defined as effective in raising skill levels and improving conditions of employees, the impact of self-regulation of training standards is used to explore some difficulties of this policy option. The second is explained as the workers seek the adoring gaze of the client as a primary reward; this is a fundamental internal process which needs to be known in order to put the, oftentimes, spread egocentricity of instructors at the same level of the products-services proposal.

One study also observes 'practice limits' as a main topic of investigation (Keyzer *et al.*, 2014b): this study reveals that most fitness professionals (69%) are regularly being asked to provide nutrition advice to customers, and 90.4% of them feel competent in providing it. The article ends with the question to their users: "How frequently do you

observe your instructor operating outside the limits of their competency?", and a worrying 15% select 'very' or 'extremely' frequently.

Another important point of view, encountered in the review, is the method used to investigate equipment-related information into this operational category. According to Gray *et al.* (2015), an online cross-sectional self-reported survey finds that professionals frequently communicate with their customer regarding exercise devices lying around (43.8%), whether the equipment design provided is good for personal objectives (90%), on machine misuse (41.9%), and that free weights are too heavy for the user at the moment (47.8%).

Results from surveys using the Cultural Index for Fitness Organizations (CIFO) have been analysed regarding employee job satisfaction and the intention to leave their membership's organization (Macintosh & Doherty, 2005; 2010; Macintosh & Walker, 2012). Related to exercise products are evaluated in terms of the following three features ("How things are", with 7-point Likert Scale): variety (5.61 ± 1.61); availability (5.41 ± 1.63), and quality (5.66 ± 1.39).

Rimmer and colleagues (2004; 2005), in relation to these variables, offer their view of a new assessment tool: Accessibility Instruments Measuring Fitness and Recreational Environment (AIMFREE). Among the issues assessed there are the accessibility for wheelchair and disabled users, the presence of special raised buttons on panel surfaces, and equipment 'appropriateness'. The findings show that only facilities at the 90th percentile (or above) are likely to provide adaptive devices, and fewer than 25% provide adequate clear adjacent spaces between workout pieces.

Professional information related to practitioners' development has been also studied in the fitness sector (Sekendiz, 2009). Certification held, level of education, etc. are resulted fundamental and not complementary, but fitness diplomas are still underrated by the H&F industry hierarchical categories. A recommendation offered by Lloyd (2005b), apart from offering their own preparedness for the business in which they are involved, is that instructors are advised to look nice, provide some music and a few exercises, and to show to clients how to set weights on various exercise apparatus. Nevertheless, it should not be forgotten that, after all, gyms, leisure, and sport environments are not just there to provide cardiovascular, strength, and group classes areas; for some they are also a perfect place of entertainment, socialising and enjoyment.

Discussion

Research paradigms and rationale

During the general analysis of qualitative data, inside this targeted share of fitness industry and related to textual information typical of a systematic review, the research process aimed to sense-making and on the attempt to understand a specific phenomenon, more than explain specific reasons of a study scopes that eclectic types of findings

normally tend to provide (Boyatzis, 1998; Braun *et al.*, 2016; Sparkes & Smith, 2009; Thomas & Harden, 2008). This is represented by the initial literature discrepancy found between the higher qualitative contributions offered compared to the purely quantitative ones. This could be due to the fact that reviews and meta-analyses are studies based on theoretical foundations that, in most of the cases, summarise a large (and vast, in terms of study areas) amount of empirical research information which in the current research are reflected in the chosen and analysed - fitness equipment - topic (Braun & Clarke, 2006; Braun *et al.*, 2016).

The constructivist approach adopted, with its generalisability (Holloway, 1997; Sánchez, 2010; Schwandt, 1997) and reflexive rationale paradigms (Denzin & Lincoln, 2000; Finlay, 2002; Kincheloe, 2005), underlined the major emphasis on descriptive-narrative findings at the expenses of analytical or rational-logical contributions, where exploratory research pathways are normally preferred to predictive ones (Morton *et al.* 2010). The main rationale intuited for the available sample is because, although such articles were positively assessed and included in the present evaluation, in most of cases, both assessment of dependent/independent variables have been analysed only under a qualitative point of view, or simply among the secondary reasons of the implementation of the corresponding studies.

This investigative trail leads to the thematic analysis provided: the themes themselves didn't correspond for all intents and purposes to new information, but instead reflected the already available hierarchical works categories (figuratively referable to a pyramidal organization, but not merely defining the importance order of each named group in the real everyday practice) in which the fitness 'working class' (operational sector) is formerly classified.

The guideline linking these three sectoral themes included in the synthesis, as underlined in more than one occasion, corresponds in deepening the existing relations between these targeted human resource positions and the applicability/usability of fitness equipment. The procedure is directly correlated to all those human-machine descriptive variables obtained from what scientific contributions are offering, to date, in the matter of every sorted level. For example, owners, directors, managers, and area administrators is primarily where the official process mentally and physically took place, until the last logical layering in which 'basic' employees and instructors put into practice the (end of) service consumption of the same that, in the real-world evidence, corresponds to the unifying ring and touch point with the final consumer.

Timeline, journals and geographical distribution

Although fitness sector revealed significant scientific interest since the beginning of the modern era of the same industry development (starting from the last thirty years of the last century) in its related and varied investigation topics, a real focus on products or amenities started to take society's attention and efforts at the beginning of the 1990s.

Subsequently, for available registered connections among physical equipment, service consumption and sector professionals, an important increase has been detected starting from 2009. This fact, for managerial or general leisure-sport facilities, seemed to correspond to a kind of care-topic for workers, since global economic crisis was typical of those financial years. During this period working class actions sought standardization and regulation of their roles that until that moment were not existents, and academic studies seemed to support these movements with tangible tools and practical findings (Lloyd 2005b; 2008; Sekendiz *et al.*, 2009).

Regarding journals that published on the selected topic there has been a variety of extractions, for this reason no rationale could be evidenced or provided to the lector in order to specifically address further contributions aiming the area of study selected for the analysis. In fact, in the order of appearance, is possible to find articles in the fields of: management/marketing, industrial relations sciences, medicine and surgery, education, psychology, etc. (Table 3).

Finally, in the matter of geographical locations, these data reflect what the latest international surveys affirm regarding the leading countries in each evaluated geographic area analysed (IHRSA, 2017; 2022). In the Americas it is the US (current census: revenue US \$27.6 billion; membership 57.2 million), Europe is led by the UK (\$6.1 billion; 9.7 million), and Australia is the leader for Asia-Pacific region; both for the potential 'for growth' environments, such as the cases of China and Turkey. No articles matching the criteria were found with authors from Germany, New Zealand, Russia, Poland, or India (still labelled as 'for growth' societies by redacted reports of field associations). A general increase by the less profitable areas is however expected and, at the same time, welcome to complete the current theoretical framework.

Work's hierarchical categories

As social, economic and environmental trends have led the importance of H&F spots and facilities worldwide, academics have searched for increasing interest in all that surrounds fitness equipment reasoning. One of these focuses led to the discovery of new horizons concerning the hierarchical categories of sector professionals or specialised human resources that in their own day-by-day practices are in strict contact with this kind of exercise and PA resources.

The results of this study, through the argued themes, support the final viability of the pyramid of practitioners who operate in the fitness operational field and how they interact with products and services. Yet these kind of processes and dynamics are logically already defined under the human-machine production process: from all B2B groups, until B2C affirmation 'lands' and applications (Appendix).

Although it seems to have a relevant importance in the creation, featuring, and diffusion of fitness amenities, collaborations between manufacturing realities and university or national / international associations are still in an

embryonic stage in scientific databases. To date this could represent an effective opportunity, for both sides working to foment this type of win-win relationships. Examples such as translational education or strengthen individual-organizational accountability could represent the starting point for these kinds of mixed actions ready to be put into practice in different contexts (Kennedy-Armbruster *et al.*, 2011; Takaki, 2005).

Overall, the average contributions on fitness leaders (such as owners, managers, etc.) leaned towards the retention-loyalty internal operations with the aim to keep user royalties as active as they can. Moreover, this trend inside scientific contribution evaluated, could represent an evident struggle in reducing prices in everyday operational practice, that evidently bring to a lowering of the quality delivered and seems not to be the right path to follow (Houston, 2007; Lagrosen & Lagrosen, 2007). Getting at the lowest part of the pyramidal hierarchy, but not for this reason covering a lesser significance or relevance inside fitness jobs field, is possible to read findings on personal training, fitness employees and instructors. Being a much more impacting sample in the market (both in terms of numbers and demand), also scientific efforts seemed to follow this trend; for this group more than a half (52.5%), of the studies accepted for the present systematic review, deal with issues related to it. Results shown how they can directly interact with physical exercise machines, and which are the main duties they need to cover in their practices in order to satisfy the final customer by means of what the structures (gyms, leisure-health-fitness centres, etc.), for which they work, make available to them for these healthy purposes. Since the advent of the new millennium, another sectoral highlight observed in literature corresponded to the introduction of the importance and desire to standardize-define-improve the same quality of work, and related workers' rights, required by these categories of practitioners themselves.

Conclusion

This work, aimed to systematically review the fitness professional's population, contributes to defining how fitness equipments are seen, assessed, and used by all the hierarchical pyramid of workers inside the H&F industry. The present research could also assist researchers and professionals alike in familiarising themselves with the extent of the work published in the most relevant databases.

To date scientific literature is revealing, among main or secondary findings proposed, that there is still a shortage in terms of contributions focalised to the proposed study goal. Among the most evident reasons is that fitness industry in general (1) and the sectoral workers acting in it (2) were not labelled as of vital importance until the developments of the same H&F manufacturing field (where fitness equipment come from). As late as this fact has been proved to be of important resonance both for for-profit business-revenues forecasting actions and market models and, as well as

(and hopefully in greater shape), for the general well-being of societies through new organised forms of PA.

According to the latest sectoral studies provided, there seems to be a direct connection between more developed geographical areas and societies (number of private clubs, active members, and overall revenues in which is included the propensity in inverting in exercise physical products) and the concrete contribution of the academic investigations focused on industry's workers (IHRSA, 2017; 2022). Even for the leading countries, such as Australia, UK, and US, for each evaluated continent (or group of different mainlands, as encountered in publication's subdivisions), further confirmation of relevance of the latest global market trends has been obtained.

In response to global trend offered by the industry, fitness personnel roles overview seemed to be only partially reflected, along targeted literature, for all those traits that affect them in their daily work activities. This situation appeared more ignored when the use of sectoral resources needed to be called into question: the use of such detailed and continuously updated tools require attention both from the scientific point of view and, consequently, by the real professional world where these human-machine potentials are applied.

Additionally, our data make evident how fitness manufacturing realities and national-international associations, probably due to information policies of privacy or internal marketing decisions based on competition, act to limit their own investigations (both at B2B, and B2C levels) to specific-themed surveys comprising single-issue questionnaires. These are usually annually reported and focused only on interested companies' current subjective parameters of evaluation that, for motivations not publicly exposed, don't usually become scientific knowledge published at an academic level.

The results of this study highlighted informal guidelines in which managers, directors and all leaders inside fitness industry can enhance the offered proposal starting from what they already have. One above all is how to strengthen the service with the help of physical amenities (fitness equipment and its related services) and human capital (professionals in the sector) in possession, which correspond to the sum that the research defines as a 'unifying ring' in the eviscerated human-machine process, and not just to focus on short-middle term goals such as turnover or only what final customer needs.

Simultaneously, roles at the basis of the hierarchical pyramid of fitness workers, that correspond to the largest part of the operational workforce, could offer a more complete service facing all final users categories and build up themselves in terms of pure knowledge of the potential offered by today's highly technological H&F resources and which are also able to objectify (and, therefore, demonstrate in numbers the improvements that can be obtained) the great work that already this gloomy of professionals is offering to the industry. Subsequently, the analysed papers in the present review, suggest the importance of quality-standards for

training and legislation oriented to standardising, regulating, and protecting sector professionals in a business that is, nowadays, ready to be strengthened also under these points of views.

Future research

Through this systematic review, it has become clear that there does not exist a unique paper that tries to investigate directly how field practitioners perceive and validate the physical apparatus, which they are in possession in their everyday activities. This kind of tool (validated questionnaires, patterned interviews, etc.) could be already necessary, intersecting independent factors such as facility environment categorisation, level of job position occupied, level of education gained (especially the areas of academic background), type of organization, and country of origin. In fact, as cited in various articles, and not closely tied to a single human resource category, even changing the society of application, the offered services (physical or not) are labelled as similar. This could represent a positive incentive for future searches aiming to examine the fitness industry globally to discover how workers evaluate the same themed-material available.

Further investigations should also consider these recommendations, with the final objective of actively contributing to generate useful scientific knowledge for all the interpreters that proactively live and act in the fitness industry. In this way, this highly demanded and emerging sub-sector of PA and general fitness, could be stimulated to generate innovative future lines of research on H&F/leisure management, and not only tied to the sports science area.

Limitations

The investigation performed had some limitations. Firstly, the number of data bases used could perhaps have been expanded, since the beginning and not only through the snowball technique adopted, so as to include more articles (Flint, 2001; Trost, 1986). Secondly, using only three search terms may have omitted papers that could have been relevant and of interest. For this reason, as explained in the sub-paragraph 'Data searches and sources' during the selection rounds, the main author took into consideration various synonymous of the keyword selected (*fitness equipment*), but only if the related manuscript's contents obtain the minimum Jadad Scale threshold previously declared in the same methodology adopted (Clark *et al.*, 1999; Oremus *et al.*, 2001; Posadzki *et al.*, 2011).

Secondly, but interconnected with the previous point, there is a small quantity of studies included in the offered analysis. This could be due to the elevated standard methodological quality assessment required for every admitted paper in the present review. In addition, the evident lack of analytical-predictive information, as widely stated, did not allow to amplify the provided vision with quantitative findings in the same frame of the descriptive-exploratory or

qualitative ones. However, it must be recognized that both main strands of the limits found can obviously be overcome: without a defined starting point (role that this study want to cover) and trying to make order in this multisectoral, eclectic and (still) not very popular field of research, offering further insights or specific details it didn't seem possible with the scientific background available.

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Appendix.

Resume of impacted research related to the fitness workers with 'fitness equipment' as dependent variable

#	Authors (Year)	Country	Workers group	Tools or investigation methods	Main topics evaluated	
1	Chelladurai (1992)	Canada		Case study	Knowledge and expertise, effectiveness and efficiency	
2	Fouladinejad and Roberts (1998)	UK		Fuzzy logic analysis	Methods of training and learning	
3	Lloyd (2005b)	UK		Literature review	Licence to practice, training standards	
4	MacIntosh and Doherty (2005, 2010); Maconachie and Sappey (2011)	Canada / Australia	Owners, directors, managers and admins	Case study / CIFO (Cultural Index for Fitness Organizations) and Exploratory factor analysis / Literature Review	Leader's intention, employee perception, Variety, quality, availability, lookism, physical capital	
5	Mazur et al. (1993)	US		Case study	Collegiate or graduate school paths, continuing education	
6	Polyakova and Mirza (2016)	UK		Literature review	Modernity, conditions, availability	
7	Sekendiz et al. (2014a, 2014b, 2016)	Australia		AFIRM (Australian Health / Fitness Industry Risk Management)	Inspections, programmes, maintenance, construction and design, participant, staff	
8	Surujlal and Dhurup (2012)	South Africa		Descriptive statistics and Exploratory factor analysis	Competitor strategies analysis, service level profitability monitoring, updating level	
9	Chiu et al. (2011)	Taiwan		Personal trainers and coaches	Literature review and In-depth interviews	Explanation, operation, testing
10	Mazur et al. (1993)	US			Case study	Collegiate or graduate school paths, continuing education
11	Gálvez-Ruiz et al. (2015)	Spain / Portugal		Employees and instructors	CECASDEP (Cuestionario de Evaluación de la Calidad Percibida en Servicios Deportivos)	Appropriateness, conditions, availability
12	Rimmer et al. (2004)	US	AIMFREE (Accessibility Instrument Measuring Fitness and Recreation Environment)		Appropriateness, accessibility (disabilities), level of workers instructions	
13	Tawse and Keogh (1998)	UK	Compulsory competitive tending (CCT)		Tangible and intangible aspects	

Note. The table include the papers that obtain highest Jadad Scale evaluations, for each investigated section