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Online training of sports coaches: bibliographic review

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Abstract

The current situation created by the global COVID-19 pandemic has put distance learning to the test at an unprecedented scale. The purpose of this study was to review the existing literature on online education of sports coaches carried out by official institutions (public bodies, federations, universities) and unofficial institutions (foundations, service companies and other educational organisations) through a systematic search of various databases. Data on study design, participants, variables, instruments, and results were extracted. After a selective search of the articles, the PRISMA checklist was used to select suitable articles for subsequent analysis and evaluation, which was carried out using the modified version of the Downs & Black checklist (1998). Fourteen descriptive and review studies were analysed for the coaches online learning preferences, its functionality and the applicable improvements. The analysis of the content of the articles allowed the identification of four main lines of research: description of the technological and computer tools available to the coaches, examination of the coaches' preferences, analysis of the use of resources by the coaches, and evaluation of the effectiveness of existing resources. The analysis of all of them allowed us to conclude that online learning is an extremely useful resource for the education of coaches, due to its advantages over traditional learning, despite some limitations such as the absence of physical interaction.

Keywords: COVID-19, education, sport, technologies, training.

Introduction

The application of new technologies to the educational field has made it necessary to investigate the generation of new forms of knowledge transmission. Nowadays, almost all information is available on the Internet. Therefore, getting information is no longer a problem. The challenge is, as always, as shown by Mester and Wigger (2011), knowing how to compile, harmonise and adapt the information to the needs of the practical applications and also how to provide suitable feedback to the scientists.

The current situation created by the global COVID-19 pandemic has put distance learning to the test at an unprecedented scale (Callary et al., 2020). The success of this type of distance learning in training lies, according to García-Aretio (2009), in a series of aspects that characterise it: openness, ease of offering a wide range of courses; flexibility in timetables, space, rhythm, etc.; effectiveness; economy; ongoing education; motivation and initiative; privacy and individualisation; interactivity; active learning; collaborative learning; macro information; smart recovery; democratisation of education; democratisation of information; diversity and dynamism; immediacy; innovation; permanence; multi-format; multi-directionality; tele-ubiquity; freedom to edit; freedom to disseminate and interdisciplinarity. In addition, this training is, among other things, in line with new trends in physical activity and sports (Veiga et al., 2017), with the changes in the sports habits of groups such as sports science students (Rodicio-García et al., 2020) and with professional club training practices (Tarragó et al., 2019).

Online training and the sports coach

The training of sports coaches has received considerable attention from researchers, who have shown that the preferred sources for knowledge acquisition by coaches extend well beyond professional training courses and include a wide and varied range of informal and self-guided learning situations. There have been studies in this area of whether coaches actively select these modalities or if they only access them for convenience, due to the lack of availability, or the weakness, of other options (Reade et al., 2008).

The COVID-19 pandemic has put greater value on distance learning tools for coaches. Although many institutions and coaches have had these types of tools available, they were not being fully used (Callary et al., 2020). Beyond this exceptional situation, distance learning tools provide a resource that can increase the time spent on training courses, allowing the coach, who generally combines their education with their professional activity, to study and train whenever it suits them best (Over, 2008).

For in-person training, the relationship between teacher and student is direct and is fundamentally based on the direct transmission of knowledge in the classroom. But, in the digital classroom, teaching is based on studying using specially prepared materials (Gros et al., 2012).

In recent decades, a large number of sports organisations have begun to offer a wide variety of online resources for the teaching and training of coaches as well as other sports-related groups. For example, the most representative international sports organisation, the International Olympic Committee (IOC), on its Athlete 365 web platform, offers online training courses in various sporting fields, targeted at and accessible to athletes, coaches, referees and all interested parties (COI, 2021).

The sports federations for the various disciplines now include innumerable online training resources in their development programmes. So, by way of example, the International Tennis Federation (ITF) has developed an online platform, the ITF Academy, in which it offers a wide variety of courses, covering both general and tennis specific topics. The courses are presented using text, images, video, audio and also animations, to ensure that the content is both interesting and attractive. In addition to the courses, the platform offers the official ITF library, in which can be found exercise videos, lectures, articles and research papers to meet all of a coach's information needs (ITF, 2021). This is an example of a platform on which coaches can easily access up-to-date resources prepared by proven coaches, allowing quality ongoing education throughout their careers, if they want it (Sackey-Addo and Pérez, 2016). As Over (2008) argues, any strategy that makes training more attractive, functional, and practical for coaches will ultimately have a positive effect on the quality of the work of coaches around the world. Therefore, in order to create and offer new digital content and material, it is crucial to understand the needs of those involved.

In addition to the International Olympic Committee and the international federations of the various sports, most national federations and other academic, state and sporting institutions are also offering, as part of their coach education programmes, the option of accessing online education through training courses and educational resources on their web platforms. Thus, UEFA (Union of European Football Associations) offers, as part of its training programme, UEFA Academy, a combination of

its in-person courses with some online modules and some fully online courses (UEFA, 2021).

It is also important to highlight the training offering from foundations, service companies and other educational corporations that develop training resources. Many of them are endorsed by recognised entities or by federations and universities, providing greater recognition of their resources. This is the case for the High Performance platform, which offers in-person and online courses that are taught under the Europe Active standards, formerly known as EHFA (European Health and Fitness Association) and that are endorsed by the University of Alicante. They are aimed, among others, at athletes and coaches in various sports and include training in physical fitness, sports performance, nutrition, etc. (Alto Rendimiento, 2021).

Given the importance of online training in the education of coaches, the purpose of this systematic review was to identify and analyse studies into the use by sports coaches of online resources for their training. To this end, a search was carried out of the Web of Science databases (WOS, CCC, DIIDW, KJD, MEDLINE, RSCI, SCIELO), SCOPUS, PubMed and EBSCO (SportDiscus, ERIC, Education Research, APA PsycInfo, MedLine, CINAHL) .

Methodology

Sample

First we identified the terms for the bibliographic search, the descriptors and the synonyms in English and Spanish related to our work topic: ("coaches" OR "coach education"), "online ", "sport" and ("learning" OR "education"). With these terms the equation suited to each information source consulted was created, according to the characteristics and options each of them offered: (1) ("coaches" OR "coach education") AND "online" AND "sport" AND ("learning" OR "education"), and (2) ("entrenadores" OR "formación de entrenadores") AND "en línea" AND "deporte" AND ("aprendizaje" OR "formación").

The bibliographic search was carried out over several documentary sources in both English and Spanish. First, a search was performed on the Web of Science online bibliographic reference database of scientific information. This is an online scientific information service, a multidisciplinary database of bibliographic references that allows access to the electronic collections of Thomson Reuters, enabling a global search of all its databases. This enabled access to a large number of articles, giving an overall view of the status of the study. The search was then continued of the following databases: Scopus, PubMed, and EBSCO. Finally, the process was completed by carrying out an additional search to complement the equation used, reviewing the article references and using other sources.

Process

After entering the search equation into the various databases, the following results were obtained * (since 2005/no books, conferences, etc.): WOS, 65 results; Scopus, 41 results; PubMed, 24 results; EBSCO, 97 results, giving a total of 224 articles, among which a total of 104 repeated references were detected, giving a final result of 120 articles obtained. In turn, an additional manual search was performed by reviewing the bibliography of each of these articles. The Cited References Search tool from the Web of Science database was also used to identify studies that had cited the articles identified in the main search. These references, added to those previously mentioned, resulted in a total of 138 articles.

The title of each of these articles was reviewed to determine their potential relevance to our review. If the title of the article seemed appropriate, the abstract was read to confirm whether it was related to our study. Research was excluded according to any of the following criteria: articles not written in Spanish or English, articles that did not show the full text in their digital version and articles with references to the use of technology in training, but not in the education of the coaches. After this filtering, a total of 16 articles were included for final review. To confirm their validity for the study, the articles that met the inclusion criteria were read in their entirety: articles in English or Spanish, published since 2005 and related to the use of online education or the use of new technologies for education. Of the 16 articles reviewed, two more were excluded, because the study sample was made up of students rather than coaches and because they were limited to the use of one specific resource such as online blogs. Finally, 14 articles were selected that met the inclusion criteria established for performing the study (Figure 1).

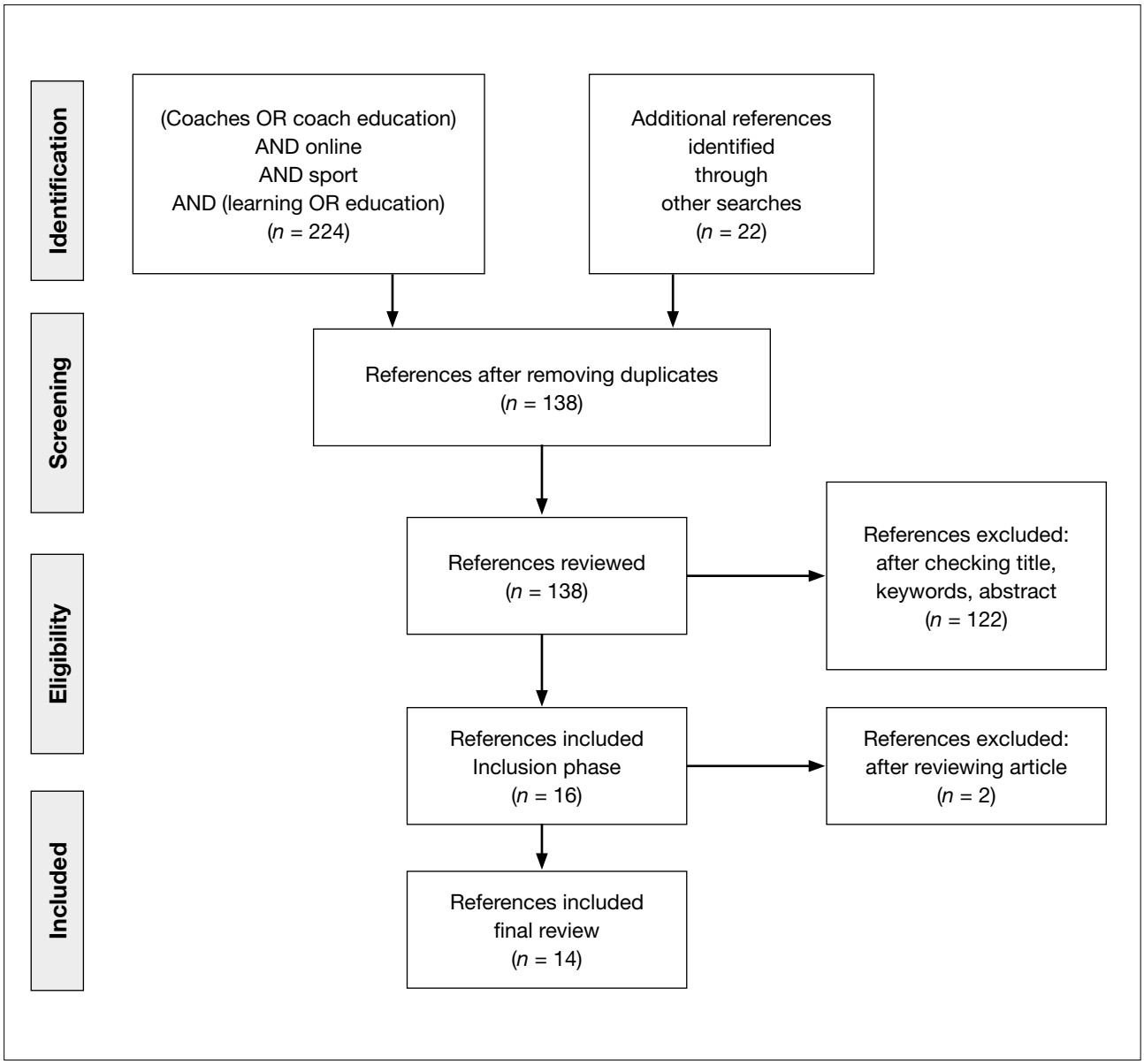

Figure 1
Flow chart based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).

Literature analysis

After using the PRISMA checklist in order to select suitable articles for the subsequent analysis, the quality of the research methodology used in the articles included in the final selection was assessed using the modified version of the Downs & Black (1998) checklist. This method was applied to assess each article in the following categories: study purpose, background of the literature, study design, sample, statistical significance, data analysis methods, results, conclusions and implications for future research (see footnote to Table 1). These questions were assigned a rating of + (meets criteria), - (does not meet criteria), or NR (not recorded) for each article. An NR score indicates that no information was available on the reliability or validity of the instruments used in this systematic review. The scores obtained for the ten questions were added for each article, counting the NR score as 0. Table 1 shows the methodological quality of the reviewed studies. A total score of less than 5 indicates low quality, a total score between 5 and 7 points indicates good quality, and a total score of 8 points or more indicates high quality (Van der Fels et al., 2015).

Table 1
Scores for a modified version of the checklist (Downs and Black, 1998).

	Question number										
Author (Year)	1	2	3	4	5	6	7	8	9	10	Total
Cushion and Townsend (2018)	+	+	+	+	+	+	+	+	+	+	10
Driska (2018)	+	+	+	+	-	+	+	+	+	+	9
Koh et al. (2017)	+	+	+	+	+	+	+	+	+	+	10
Stoszkowski and Collins (2015)	+	+	+	-	+	+	+	+	+	+	9
Kubayi et al. (2016)	+	+	+	-	+	+	+	+	+	+	9
Sackey-Addo and Pérez (2016)	+	+	NR	NR	+	NR	+	+	+	NR	6
Pope et al. (2015)	+	+	+	-	+	+	+	+	+	-	8
Augustýn and Jůva (2014)	+	+	+	-	+	+	+	+	+	-	8
Callary et al. (2011)	+	+	+	+	+	+	+	+	+	+	10
Mester and Wigger (2011)	+	-	NR	NR	+	NR	+	+	+	NR	5
Sanz (2011)	+	+	NR	NR	+	NR	+	+	+	NR	6
Cushion et al. (2010)	+	+	NR	NR	+	+	+	+	+	+	8
Reade (2008)	+	+	+	+	+	+	+	+	+	+	10
Over (2008)	+	-	NR	NR	+	NR	NR	+	+	+	5

Note. NR = not recorded; + = meets the criteria; - = does not meet the criteria; (1) Was the objective of the study clearly stated? (2) Was relevant prior literature reviewed? (3) Was the sample described in detail? (4) Was the sample size justified? (5) Was the design appropriate for the question investigated? (6) Were the results reported with their statistical significance? (7) Were the analysis methods appropriate for the investigation design? (8) Were the conclusions appropriate given the study findings? (9) Are there implications for future research given the results of the study? (10) Did the authors acknowledge and describe the limitations of the study?

Results and discussion

Table 2 shows the first author of the study and the year, the objective of the study, the method used and a summary of the results obtained for the 14 articles included in the review. The analysis of the article content allowed us to identify four lines of research. Table 3 shows these lines and the articles that cover them. This classification gives us a global vision of the research that analysed the use of online resources by coaches. Although some articles may cover several topics, they have been included in the one that is considered most representative of their objective.

Describing the technological and computer tools that coaches have available for their education and training is the first line of research that was found from the analysis of the articles. It focuses on a description of the technological tools and resources that coaches have at their disposal for their online education. Cushion et al. (2010) highlighted that coaches learn in various ways and from various informal and formal sources. They suggest that informal learning through coaching experience and interaction with other coaches remains the dominant mode of learning compared to online learning.

Table 2
Summary of the most relevant characteristics of each of the studies included in this review.

Study	Objective	Method and sample	Results
Cushion and Townsend (2018)	To consider evidence of technology-enhanced learning in the education of coaches	Review study: systematic review	Despite the use of technology in training, teaching and learning, the evidence for its efficacy is weak, and its use requires further research
Driska (2018)	Assess the effectiveness of online education programmes	Descriptive study. Semi-structured interviews. *N* = 21	The assessment showed positive perceptions of the course and demonstrated that it can help expand learning opportunities and professional development
Koh et al. (2017)	To investigate the perceived benefits of using internet coaching resources, the types of internet resources sought by youth soccer coaches, and also how the resources are used to improve their coaching knowledge	Descriptive study. Personal interviews. *N* = 10	The Internet was seen as a source for learning, due to its easy accessibility, time saving, low cost and the availability of new ideas. Google, Facebook, YouTube and Twitter were the most common platforms used to find learning resources, but checking the credibility of these learning resources is the biggest challenge that coaches face
Stoszkowski and Collins (2015)	Explore coaches' perceptions of their actual and preferred methods of acquiring new training knowledge	Descriptive study. Online survey. *N* = 320	Coaches preferred, and mostly acquired, coaching knowledge through informal learning activities
Kubayi et al. (2016)	To examine the coaches' preferences for their ongoing education	Descriptive study. Surveys during attendance at training courses, workshops and seminars. *N* = 224	Coaches wanted to learn more about motivational techniques and were more likely to continue their education as coaches if they wanted to train at a high level if the topics were relevant, and if the courses were available online
Sackey-Addo and Pérez (2016)	Analysing the evolution of online learning for sports coaches: a tennis perspective	Review study: systematic review	The use of good quality resources and materials obtained through online learning platforms produced benefits, not only for tennis coaches, but also for the tutors
Pope et al. (2015)	To examine the content of the information that coaches get from online sports psychology resources and its use	Descriptive study. Online survey. *N* = 253	Coaches currently get information from online sports psychology resources "a few times a year," but would get it "once a month" if more accessible and credible resources were available

Table 2 (Continuation)
Summary of the most relevant characteristics of each of the studies included in this review.

Study	Objective	Method and sample	Results
Augustýn and Jůva (2014)	To analyse the use of ICT in informal education and informal learning for handball coaches	Descriptive study. Questionnaires. *N* = 186	The most frequently used sources are the materials on the Federation's websites and the least used are paid-for sources, E-learning, webinars and video conferencing. 91% of coaches regularly use methodological materials on the Federation's website. A computer is the most frequently used ICT medium for coaches for their education, but not especially so during training or matches. Progressively greater use of mobile phones is also to be expected, due to their many functions, such as a camera and the ability to work with video, but there is apparently a lack of suitable applications to allow their wider use
Callary et al. (2011)	To use information from a survey to continue developing their coach education programme	Descriptive study. Online survey. *N* = 765. It is estimated 45% of active coaches	The authors considered ways that sports organisations could use the survey information to further develop their coach education programme from an ongoing learning perspective
Mester and Wigger (2011)	To explore online resources for the education of coaches	Review study: systematic review	Accessing information is no longer a problem. The challenge is, in any case, knowing how to compile, harmonise and adapt the information to the needs of the practical application and also to provide feedback to the scientists
Sanz (2011)	To describe some of the most frequently used tools for the ongoing education of tennis coaches	Review study: systematic review	New technologies for education are already available and the internet has had a great impact on access to information and education
Cushion et al. (2010)	Provide an overview and analysis of existing research on coach learning	Review study: systematic review	Coaches learn in a variety of ways and from various sources: informal, non-formal, and formal. Informal learning through coaching experience and interaction with other coaches remains the dominant mode of learning
Reade et al. (2008)	To discover how high-performance coaches access the knowledge of sports scientists	Descriptive study. Questionnaire. *N* = 205	There are differences between what coaches are looking for and the research that is being carried out, especially in the area of tactics and strategy. Coaches are more likely to consult other coaches or to attend coaching conferences for new information
Over (2008)	To describe current advances available to coaches and players through information technology and computers	Review study: systematic review	The accessibility of these resources and the progress of technology allow training in areas and lifestyles for people who had not previously been exposed to this quality of information, at relatively low cost for both the coach and the federations

Table 3
Lines of research and studies which they consist.

Line of research	Studies
To describe the technological and computer tools available to coaches for their education and skill acquisition	Over (2008), Cushion et al. (2010), Sanz (2011), Sackey-Addo and Pérez (2016)
To examine coaches' preferences for their education	Reade et al. (2008), Callary et al. (2011) Pope et al. (2015), Kubayi et al. (2016), Stoszkowski and Collins (2015)
To analyse the use of online resources by coaches for their education	Mester and Wigger (2011), Augustýn and Jůva (2014)
To assess the effectiveness of online education resources and programmes for the education of coaches	Koh et al. (2017), Driska (2018), Cushion and Townsend (2018)

For his part Sanz (2011) stated that new technologies intended for education are here now and that the internet has had a great impact on access to information and training. Along the same lines, Sackey-Addo and Pérez (2016) highlighted the importance of using resources and content of proven quality in online education platforms for coaches.

In view of the studies analysed in this line of research, one proposal for improvement would focus on the need to delve into the typology of the various tools and resources used by coaches and, especially, go deeper into their quality.

Examine the coaches' preferences for their education. This second line of research focuses on examining the coaches' preferred education techniques. Several descriptive studies have been done using surveys to discover their opinion on the information they can obtain and their usage preferences. The results of Pope et al. (2015) showed that they acquire information from online sports psychology resources "a few times a year", but would obtain it more frequently if more accessible and better quality resources were available.

From the study by Callary et al. (2011) it is appropriate to highlight the importance of the online surveys given to the users/coaches of the education platforms. After surveying 765 coaches, these authors argued that sports organisations could use the survey information to continue developing coach education programmes for ongoing education. In contrast, the article by Stoszkowski and Collins (2015) concluded that coaches preferred, and mostly acquired, knowledge about coaching from informal learning activities, especially when these allowed social interaction. For their part, Kubayi et al. (2016) in their study concluded that sports coaches were more likely to continue their education as coaches if they wanted to train at a high level, if the topics were relevant and if the courses were available online.

A proposal for improvement for this second line of research would be related to a study of the level of accessibility of the online resources, of their relevance to coaches and, specifically, to the importance of ongoing education or ongoing professional development.

The third group of studies is made up of those that analyse the use of online resources by coaches for their education. Some results showed that the coaches habitually used ICT resources both in their personal life and in their education. Two-way communication and e-learning courses on the Internet, forums, webinars, etc., were used significantly less.

Augustýn and Jůva's (2014) study concluded that coaches did not use ICTs too often during training or a match, hoping that with the development of new applications they will begin to use them more often. For their part, Mester and Wigger (2011) concluded their study stating that accessing information is no longer a problem. In their opinion, the challenge is, in any case, knowing how to compile, harmonise and adapt the information to the needs of the practical application and also to provide feedback to the scientists.

For this third line of research, a proposal for improvement would focus on the analysis of the use of new applications that provide coaches with access to online resources in various personal and professional circumstances, specifically those that allow their use during training sessions and matches.

The fourth and final line of research focuses on evaluating the effectiveness of online education resources and programmes for educating coaches. After this systematic review, we can verify that most of the articles highlight online education of coaches as a resource they all appreciate and that, in turn, improves and facilitates the learning of new skills (Koh et al., 2017) . Cushion

and Townsend (2018) stated that, despite the increase in the use of technology in teaching and learning, the evidence for its efficacy is weak, so further investigation is required. On the other hand, Driska (2018) highlighted how the coaches learned and implemented changes in their training thanks to their learning from the online education they took part in. The assessment showed positive perceptions of online courses and also showed that using them could help expand learning and professional development opportunities for its members. The coaches saw the Internet as a source of learning, due to its easy accessibility, time saving, low cost and the availability of new ideas. Google, Facebook, YouTube, and Twitter are common platforms for locating learning resources, but assessing the credibility of those resources is the biggest challenge facing coaches (Koh et al., 2017).

Proposals for improvement related to this line of research could be aimed at analysing the effectiveness of online learning and, specifically, its practical application in the context of the daily work of coaches in training and competition situations.

Conclusions

Most of the articles selected agree in pointing out that online learning is a very useful resource for the education of coaches, although some limitations were identified. In most of the research, the online learning the coaches took part in stands out in a positive way, except for one of them, for which it was determined that social interaction helps more in the acquisition of knowledge. Therefore, it is possible to conclude that research agrees that online learning can be a very useful tool for educating coaches. Therefore, due to its use, importance, application and acceptance, we consider that it is a field of study that requires not only further development but also greater research effort.

As for the future prospects of online learning, the results of our study confirm that this modality is increasingly being consolidated into all educational and work areas in general and among sports coaches in particular. So it is of vital importance to carry out more research to enable the in depth discovery of the characteristics of the contents and the available resources required for this trend to be truly useful to the user. For this reason, we consider that it is necessary to open future lines of research that are aimed at studying in greater depth the specific characteristics that define this field. Thus, it will be possible to contribute to the discovery and analysis of suitable types of resources for coaches in terms of new technologies and online education and learning systems.

For the practical applications, we consider that it is essential to identify and study both general and specific content that coaches need to access to improve their education and which of them they prefer, if they opt more for material resources that help them to follow self-administered education or are more in favour of a more formal strategy through targeted courses. It is also important to know the type of material that is of most interest to coaches: short videos, lectures, explanatory dossiers, case studies, question and answer sessions, exercises, etc. Finally, the most suitable structure and delivery options in which to offer the resources should be investigated so that coaches or other users can access them using online platforms, social networks, mobile applications or other systems yet to be discovered.

Authors' note

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