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*Translated from the original in spanish*

**Original article**

## **The TICs usage in the sport training: an operative proposal during COVID-19**

**El uso de las TIC en el entrenamiento deportivo: una propuesta operativa ante la COVID-19**

**A utilização das TIC no treino desportivo: uma proposta operacional perante a COVID-19**

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### **ABSTRACT**

It has become accustomed to the practice of sport in a face-to-face relationship, in-situ, but the social distance inherent in the confinement produced by the COVID-19 dismissed face-to-face meetings, generating distance between the coach and his/her athlete. The objective of this article is to offer a conceptual and operational resource with examples of the approach to the use of ICTs as an alternative solution for sports training. The phenomenological-hermeneutic method was used, applying the interview technique and the bibliographic review, which instruments were validated by experts' judgment; the first one was applied to eight coaches of collective sports whose sports work is developed in the province of Tungurahua, whose function was to obtain empirical information that serves as a complement to the review, both allowed a critical analysis of two categories: the labor implications on the face to face distance and virtual approach and the needs for sports training generated by the crisis of COVID-19. It was concluded that facing the crisis could be worrying initially, but the examples presented will help to direct a new



way of managing and conducting training by applying ICTs giving a real alternative solution.

**Keywords:** Information and communication technologies use approach; Sport training; COVID-19.

## RESUMEN

Se ha acostumbrado a que la práctica del deporte se haga efectiva en una relación presencial, *in situ*, pero el distanciamiento social propio del confinamiento producido por la COVID-19 desestimó la presencialidad, generando distancia entre el entrenador y su deportista. El objetivo de este artículo es ofrecer un recurso conceptual y operativo con ejemplificaciones del enfoque de uso de Las Tecnologías de la Información y las Comunicaciones como alternativa de solución para el entrenamiento deportivo. Se utilizó el método fenomenológico-hermenéutico, aplicando la técnica de la entrevista y la revisión bibliográfica, cuyos instrumentos fueron validados por juicio de expertos. La primera se aplicó a ocho entrenadores de deportes colectivos cuya labor se desarrolla en la provincia de Tungurahua, Ecuador, cuya función fue obtener información empírica que sirviera de complemento a la revisión. Ambas técnicas permitieron realizar un análisis crítico de dos categorías: las implicaciones laborales sobre el distanciamiento presencial y el acercamiento virtual y las necesidades para el entrenamiento deportivo, generadas por la crisis de la COVID-19. Se concluyó que, enfrentar la crisis, pudo ser preocupante inicialmente, pero las ejemplificaciones presentadas ayudarán a direccionar una nueva manera de dirigir y realizar entrenamientos aplicando la tecnología de la información y las comunicaciones, a través de una verdadera alternativa de solución.

**Palabras clave:** Enfoque de uso de las Tecnologías de la Información y las Comunicaciones; Entrenamiento deportivo; COVID-19.

## RESUMO

Habitou-se à prática do desporto numa relação cara a cara, *in situ*, mas o distanciamiento social típico do confinamento produzido pela COVID-19 dispensou a presença, gerando distância entre o treinador e o seu atleta. O objetivo deste artigo é oferecer um recurso conceptual e operacional com exemplos da abordagem da utilização das Tecnologias de Informação e Comunicação como uma solução alternativa para a formação desportiva. Foi utilizado o método fenomenológico-hermenéutico, aplicando a técnica da entrevista e a revisão bibliográfica, cujos instrumentos foram validados pelo julgamento de peritos. O primeiro foi aplicado a oito treinadores de desportos coletivos cujo trabalho é desenvolvido na província de Tungurahua, Equador, cuja função era obter informações empíricas que serviam de complemento à revisão. Ambas as técnicas permitiram uma análise crítica de duas categorias: as implicações laborais da distância presencial e da abordagem virtual e as necessidades de formação desportiva geradas pela crise da COVID-19. Concluiu-se que, face à crise, poderia ser inicialmente preocupante, mas as exemplificações apresentadas ajudarão a orientar uma nova forma de dirigir e a fazer formações aplicando a tecnologia da informação e das comunicações, através de uma verdadeira alternativa de solução.

**Palavras-chave:** Abordagem do Uso das Tecnologias de Informação e Comunicação; Formação desportiva; COVID-19.



## INTRODUCTION

Each profession must rethink its work activity in the face of the crisis of the COVID-19 and a reasonable option is to resort to reliable sources to generate knowledge that contributes to the struggle to address the situation. Information and Communication Technologies [ICTs] have been proposed for different purposes, but at this time they are as appropriate and relevant as a solution to the existence of physical distance and the interruption of normal activities, ie, the virtual emerged as a real option for sports training. In this sense, *Posso Pacheco, Otáñez Enríquez, Paz Viteri, Ortiz Bravo and Núñez Sotomayor (2020a)* propose that ICTs should be used to provide an opportunity for sports training, because they have what it takes to counteract the problems of the pandemic. Consequently, a contextualized didactic should be proposed where sports trainers are guided and supported in their work.

There is no doubt that there was a very large process of maladjustment to the training programs, which especially affected the cardiorespiratory and neuromuscular systems, so the alternative to reverse this is to design, through ICT, work programs at home and through social distancing (*Domínguez, Arjol, Crespo and Fernández, 2020*).

In this sense, *Yanguas, Domínguez, Ferrer, Florit, Mourtabiby Rodas (2020)* recommend that the context of the impact of COVID-19 on each of the athletes should be known, because it will be different, before returning to training. This information will allow training programs to be adapted to meet individualized objectives, with the application of ICTs, to ensure that sports performance is not lost and can be developed. In full agreement, *Mohr et al., (2020)* corroborate that players, to return to normal, must be in the same physical condition as they were before the pandemic, so that they can have the expected sporting achievements in each of the matches, as is the case with soccer. In this circumstance, there is an opportunity for coaches to see virtuality as a resource that solves these problems.

It can be said that there is a real risk for athletes, when they get sick with COVID-19, because the consequences, left by the disease, can affect their body. *Schellhorn, P., Klingel, K. and Burgstahler, C. (2020)* mention that the disease can leave sequelae, damage to the heart tissue, although the long-term consequences are not precise, because this virus and its influence on athletes is only now being fully understood. It is necessary that there are more in-depth studies to understand the reality of the disease. In this principle, training, supported by ICTs, should be proposed more than ever in conjunction with physical distancing. This will ensure that athletes do not get sick and that at the end of the pandemic they can continue with their training, in a normal way, adjusted to the coaches' guidelines.

There is a lot of agreement on the importance of athletes being as fit or close to being fit as they were before the pandemic. That is why *Eirale, Bisciotti, Corsini, Baudot, Saillant Chalabi (2020)* also state that it is necessary to adapt training as a consequence of the pandemic and that is why they advise to modify it and for this it is necessary to forget the traditional ways of teaching and to offer the opening of information and communication technologies that, added to the hygiene and care protocols, will guarantee, in further development, a care and protection without any risk of contagion by COVID-19; Furthermore, they recommend that there are more in-depth studies in this field to help trainers.



The objective of this article is to offer a conceptual and operative resource with examples of the approach of using ICT as an alternative solution for sports training. In that sense, the article gives a proposal to counteract the problematic effects, generated in the field of sports training, through the approach of use of ICT.

## MATERIAL AND METHODS

The research is framed in the phenomenological-hermeneutic method, because it will focus, in great part, on the personal experiences of the participants, answering the question what conceptual and operative ICT resource will be an alternative for sports training in the context of the COVID-19 pandemic? The focus of the coach needs inquiry will be to complete the information required.

The instruments used, both the question bank and the mixed card, were validated by the judgment of seven experts, who were selected according to their experience of more than five years of exercise as coaches, in addition, to their third level training as a sports coach and currently being in charge of a sports team. The validators had an affirmative match, so only one validation circulation was performed.

With this, it was possible to make a record of the points of view of eight collective sports trainers whose work development was the province of Tungurahua of Ecuador. The interviews were applied through several virtual meetings through the zoom platform. All these data served to complement the information obtained by the bibliographic review of several scientific articles, from the Google Academic database.

From the triangulation of instruments, two categories could be determined. A critical analysis was made of each one of them. The first category was the labor implications of face-to-face distance and virtual approach, and the second was the needs for sports training generated by the COVID-19 crisis.

## RESULTS AND DISCUSSION

The results obtained by the bank of interview questions are presented in a table, which synthesizes the feeling and experience of each of the coaches; their coincidences were sought, framed in category, subcategories and criterion (Table 1).

**Table 1.** - Results of interviews with coaches of team sports

Categories	Subcategory	Criteriom	Amount of answers
<b>Labor implications of face-to-face distance and virtual approach</b>	Isolation and Distancing	No professional training oriented to distance education in sports, generating temporary suspension of sports programs.	8
		The paralysis of training and competencies generated professional, labor and personal instability.	8
	Virtual approximation	Training in the use and application of the virtual platforms was very slow and in some cases scarce.	7
		Daily training plans have been sent by digital means.	7



<b>Needs for sports training, generated by the crisis of COVID-19.</b>	Coach needs	There is no virtual platform with which to replace face-to-face training.	6
		There is difficulty in adapting the training to be directed with the ICT	8
	Athletes' needs	There is difficulty in training in homes and non-sporting locations	8
		The distance generates that this important contact to the tactical development does not exist	8

### Labor implications of face-to-face distance and virtual approximation

The social distancing measure was endorsed by the World Health Organization [WHO] (2020) in conjunction with the Pan American Health Organization [PAHO] (2020) as a response to the COVID-19 pandemic. It was considered a non-pharmacological, social protection provision and consisted of minimizing exposure to persons infected with the SARS-COV-2 virus. This measure incorporated a set of micro measures, applied to people, such as: isolation, home confinement and home confinement of the entire population.

As a response to this measure of physical non-presence, virtuality, as a new form of presence, burst into all scenarios. The International Labor Organization [ILO] (2020) proposed three fundamental pillars established for the protection of workers in the workplace, such as: promotion of economic activity and support for employment, and within which the adaptation of labor agreements included distance work as a legitimate action, it was nominated as teleworking and added the strengthening of workers' capabilities and resilience.

Consequently, technological skills were promoted as a response to the crisis, within the framework of a skills-based approach, urging development in the face of the need to learn at times when change calls for action to live and work, and thus to achieve capacity building and resilience.

### Needs for sports training, generated by the COVID-19 crisis

The sports training, like almost all activities, was stopped because of the situation that faced the world. According to the website of Barça Innovatio (April 9, 2020) the world of sport faces the suspension of competitions, an uncertain reopening and repercussions on the physical training and fitness of players, the management of sport and its economic losses. In particular, regarding athletes, it was considered the importance of repercussions such as: loss of muscle mass due to confinement, the need for daily monitoring and home routines, psychological impact including stress due to loss of fitness, effective infection of players, the need to promote resilience to adapt to extreme situations and the impossibility of group training.

It is the responsibility of the sports trainer to attend to the needs faced by the athletes and to acquire autonomy, which is of great importance that it has been consolidated in him (Posso, Barba, Marcillo, Acuña and Hernández). His profession urges him to have knowledge of sport and mastery of pedagogical skills. A characterization of the needs, which he currently has to assume, shows a labor reality where he has to face issues such



as: interruption of the sport activity, need of immediate action, sustainability of the sportsman's condition, protection against the transmission channels of the coronavirus and integral attention of the sportsman.

Verkhoshansky (2018) stated that sports preparation and training determine new and more complex tasks for the coach and that these stimulate new searches for the training process. None of the author's considerations, as tasks, even anticipated the crisis of COVID-19. In this sense, it was determined that the need emerging from the crisis seeks to find a model of the training process to address the situation-problem that coaches and athletes face, from the assumption of the development of technological skills, promoted by the ILO (2020).

### **An operative proposal in the face of the COVID-19**

In this proposal, it is assumed that the sports training model is based on the approach of ICT use and that it will be the dynamic, changing, complex and uncertain context of the COVID-19, from where it is proposed to make effective a proposal appropriate to the context in which it works. In this particular case, it is presented as a theoretical-conceptual resource for this moment of emergency, but which can later be applied in other problematic contexts.

Consequently, the proposal is formulated to add the operational aspects to enrich it with its own specifications for what it is being executed; the sports trainer, within his or her model, with the consequent adaptations of the sports training methodology, will adapt to the suggested strategies. Such adaptations can be infinite and can also be constantly reformulated to obtain the learning that, in this precise case, is only limited to facing the virus and achieving sports training during its existence.

The sports training model in times of COVID-19 has as its starting point the interruption of activity and teleworking as a response, which becomes everything else. At this very moment, the trainer is faced with selection and decision making. The important thing is to recognize that digital content creation, platforms, networks and constant innovation are abundant and their adaptation to needs is always possible. The orientation given to coaches, in this context, is directed towards maintaining the physical fitness of the athlete (Spanish Society of Medicine, 2020).

The important thing here is to keep the sports trainer prepared for any imminence, so the advice for their professional training is to innovate constantly and try not to repeat what they did before or compare the present with the previous. This unprecedented situation demands that you keep on a constant search for ICT support to turn them into the resources that support your training plan.

Specifically, the proposed alternative solutions offer precise guidelines for this plan as a way of confinement that will be developed jointly by the sports trainer, based on the assumption of teleworking which, in this case, can be nominated *as sports training with ICT support*:

Training plan (with micro, meso and macro cycle) oriented exclusively towards the maintenance of physical fitness. The plan contemplates the training session cards, schedules, adaptation to the place where the training is done, the specific exercises should be aerobic, strength, flexibility and sport specific techniques.



Follow-up, monitoring and evaluation in a Comprehensive Action Plan. This Plan is a framework plan in which various elements are considered according to the needs of the athlete. The agreed upon and participatory action is appropriate for the purpose of the athlete himself/herself expressing his/her requirements. The comprehensive perspective involves, then, in addition to the maintenance of physical fitness, what relates to mental health and nutrition. About mental health and its stability in times of COVID-, there are many ICT alternatives and also about nutritional health; what is necessary is to look for information, select resources and make decisions.

Constant communication to keep the athlete informed of action protocols is fundamental. The uncertainty of the situation affects athletes, so the sports coach is responsible for updating these protocols that include technical-sports rules, health rules, and rules of confinement, among others. The emphasis is on protecting the channels of transmission of the virus in athletes.

Cooperation mechanisms should be used for the comprehensive care of athletes. Clubs, foundations, universities, schools, social networks, among others, have dedicated the production of programs, content and ICT resources to address the crisis. It is the responsibility of the sports trainer to adhere to this range of possibilities that can be used in any need faced by his or her athlete; in this case, we refer to the use of ICTs. The coach should not necessarily produce, but use what is offered (from different fields: psychological, nutritional, educational, technical-sports) to make them part of his plan. The current state of the athlete can vary imminently and it is necessary to maintain constant communication, via virtual, to attend to any eventuality.

Then, possible examples of didactic applicability can be provided, showing ICT activities and resources, which in times of COVID-19 are produced to support the world of sport. The trainer's activity has all the wide range of ICT at the service of his action, for its incorporation in the work of the sports trainer as support to his plan (Table 2).

**Table. 2** - Examples of activities for the sports training plan, with ICT support to COVID-19

Suggested instructional strategy	Examples with ICT support
Reading digital content: to keep updated information	-World Health Organization Coronavirus Disease Outbreak (COVID-19). <a href="https://www.who.int/es">https://www.who.int/es</a> -Spanish Government Sports Council Ministry of Culture and Sports. (2020). COVID-19 Pandemic. Basic action protocol for the return to training and the resumption of federated and professional competitions. [Cartilla descargable]. <a href="https://as00.epimg.net/descargables/2020/05/02/35c3897f55854245a4dce65ac90ef520.pdf">https://as00.epimg.net/descargables/2020/05/02/35c3897f55854245a4dce65ac90ef520.pdf</a>
Tasks with ICT integration, allocation of ICT resources, guidance through social network, e.g.)	-Acceso a Programa de Atención al Deportista de Alto Nivel del Estado y Alto Nivel de Castilla y León. Junta de Castilla y León. España. <a href="https://deporte.jcyl.es/web/jcyl/Deporte">https://deporte.jcyl.es/web/jcyl/Deporte</a> -Campaign #I'm MovingHome. Superior Council of Sports. Official Colleges of Physical-Sports Educators, Spain. <a href="https://www.csd.gob.es/">https://www.csd.gob.es/</a> - Instagram: Messi, Leo [@leomessi] (March 14, 2020) These are difficult days for everyone. We live worried about what is happening and we want to help by putting ourselves in the place [Photo attached] [Feed]. Instagram. <a href="https://www.instagram.com/p/B9t8tu4KeYK/">https://www.instagram.com/p/B9t8tu4KeYK/</a> - Facebook : Vázquez, Greivis [@Greivis Vázquez] (May 15, 2020) We are living in very difficult times. The COVID-19 has paralyzed us and put thousands of people around the world at risk. [Video attached] [Public message]. Facebook. <a href="https://www.facebook.com/greivis.vasquez/">https://www.facebook.com/greivis.vasquez/</a>





<p>Email trainer-athlete, WhatsApp, other</p>	<p>-Trainer-athlete communication for the fulfillment of the sport training plan and comprehensive plan: training plan, evaluation reports of the plan or its adequacy, training session sheet.</p> <p>-Treating videos: correction of exercises performed by the athlete, demonstration of proper exercise by the trainer.</p>
<p>Search and selection for information gathering on topics</p>	<p>-Search for information, collection of various topics aimed at having immediate response to situations of athletes, for example:</p> <p>*Diary of an athlete for mental work. <a href="https://proad.csd.gob.es">https://proad.csd.gob.es</a></p> <p>*Barça Innovatio: Consequences of confinement in professional athletes. (15 May 2020). <a href="https://barcainnovationhub.com/">https://barcainnovationhub.com/</a></p> <p>-Permanent training of the coach, for example:</p> <p>*WEBINAR: The challenges of the sports industry in the post-COVID-19 era. CRUIFF Institute. <a href="https://www.youtube.com/">https://www.youtube.com/</a></p> <p>*WEBINAR COVID-19 contingency plans: "Challenges in sports management and sports tourism". Chair of Sport, Polytechnic University of Valencia. <a href="https://mastergestiondeportivaupv.com/">https://mastergestiondeportivaupv.com/</a></p>
<p>Digital resources in the classroom (TV, video, social network, films, digital books, educational software, computer in the classroom, among others)</p>	<p>-TV program: Zen Life 360. FitforLife Television.</p> <p>-Video "The life of the athletes while the sport is in quarantine by COVID-19". CNN. March 15, 2020. <a href="https://cnnespanol.cnn.com/">https://cnnespanol.cnn.com/</a></p> <p><a href="https://www.youtube.com/">https://www.youtube.com/</a></p> <p>-Social network Timpik for forums, statistics and events. <a href="http://www.timpik.com">www.timpik.com</a></p> <p>-Viktre social network: for messages from athletes, campaigns or events). <a href="http://www.jobs.viktre.com">www.jobs.viktre.com</a></p> <p>-Digital book: Coronavirus. COVID-19. Self-defense manual. 2020. <a href="https://books.google.co.ve/books">https://books.google.co.ve/books</a></p> <p>Digital book: Ryan, Monique. (2016). Sports nutrition for endurance athletes. Paidotribo. <a href="https://books.google.co.ve/books">https://books.google.co.ve/books</a></p>

The strategies presented and their exemplifications show how prolific the information about COVID-19 is, in any digital resource. What is important is its appropriateness to the work of the sport itself.

Another example focuses on problem solving. There is an addition at this time to spend time in confinement in some productive action. Probably both, coach and athlete, have made good practices, enriching in some way the technical and sport-specific exercises, has meritorious advice for other athletes in order to correct errors in sport practice, among others; these can be the center of the application of this level (Table 3).



**Table 3.** - Examples of activities for the Sports Training and Knowledge Generation Plan

Suggested instructional strategy	Examples with ICT support
Constitution of work groups under the modality of attendance and virtual	- Constitution of working groups in networks: *@MetasSports. (December 12, 2017). 6 ways to exercise the lower back and how to do it. Take note. [Tweet]. Twitter. <a href="https://twitter.com/metassports?lang=es">https://twitter.com/metassports?lang=es</a> *Facebook account: Canal Claro. Exercise routine for the abdomen. 8 minute quarantine routine. <a href="https://www.facebook.com/watch/">https://www.facebook.com/watch/</a> *WEBINAR Athletes and sportsmen. From confinement to return to training. Center Clinic. Sports Medicine. <a href="https://www.youtube.com/">https://www.youtube.com/</a>
Creation of digital scenarios (blog and Facebook account, e.g.) for the creation of content	Creation of digital scenarios: *Blog: "I'm a marathon runner". Training diary. Carlos Jiménez. <a href="https://www.soymaratonista.com/blogs/@carlosjimenez">https://www.soymaratonista.com/blogs/@carlosjimenez</a> *YouTube channel: Martinez, Marcos and Arnas, Manu (2020). Physiotherapy and sports nutrition in times of confinement. El pozo murcia. <a href="https://www.youtube.com/">https://www.youtube.com/</a> *Digital Forum: Castrillón, Diego (moderator) Health, nutrition and sport in the post-COVID-19 era. San Ignacio de Loyola University. <a href="https://www.youtube.com/">https://www.youtube.com/</a>
Design of resources with diverse contents.	-Gasol, Pau. (April 3rd, 2020). We may be isolated, but we are in this together. [Text for reflection]. [Social network of sportsmen]. <a href="https://www.theplayerstribune.com/">https://www.theplayerstribune.com/</a> -Nutrition Service of the Spanish Paralympic Committee ADOP Plan. Physiology VI. COVID-19 and training at altitude. (May 26, 2020). <a href="https://www.youtube.com/">https://www.youtube.com/</a> - Logroño Physiotherapy: Frozen Shoulder - Treatment with exercises, self-massage and stretching. (n.d.). <a href="http://logrono.fisio-clinics.com">http://logrono.fisio-clinics.com</a> - SlideShare: Recommendations for safety measures in times of COVID-19 in the physical activity of gyms Department of Recreation and Sport. Puerto Rican Institute. Álvarez León, Pablo. (June 17, 2020). <a href="https://es.slideshare.net/">https://es.slideshare.net/</a>

The sports training plan with ICT support is the necessary tool for the sports trainer in times of COVID-19. The levels and their multiple examples show the profusion that supports a proposal like this. The levels and their multiple examples show the profusion that supports such a proposal. The more ICT resources are sought or produced, the richer the operationalization will be. The sports trainer will be responsible for the richness of his or her final proposal; he or she will select and make decisions. However, for levels two and three, the athlete must be involved because they act in a participatory and co-creative approach to incorporate the learner into the ICT approach.

Protecting oneself from the impact of COVID-19 on one's life and professional, work, emotional or daily activities may seem a difficult task.



## CONCLUSIONS

This research article is an expression of the falsity of that belief. In spite of the current crisis, which is barely being experienced, all those who have been able to contribute something from their knowledge have done so and, consequently, the prolific production of knowledge is enormous, as are the conceptual resources that have already been bequeathed to the world, such is the case of the ICTs that are now becoming a platform for this proposal.

In particular, the international organizations have taken care to respond to the fateful moment we are experiencing. The contributions of these, of the academy, of the professionals, of all who have knowledge are appreciable and diverse. The Information and Communication Technologies (ICT) in their multiple resources are the way to spread and obtain. Both (those who contribute and those who receive) find in them the perfect scenario to face the COVID-19.

Facing the crisis could be worrying initially. However, the examples provided in this article, which show how much can be done and has already been done by others to create a new way of training and conducting training, are proof that in ICT there are answers to be used so as not to worry.

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**Conflict of interests:**

The authors declare not to have any interest conflicts.

**Authors' contribution:**

**Razo Yugcha Abigail Alexandra:** Conception of the idea, literature search and review, instrument application, literature search and review, general advice on the topic addressed, statistic analysis, preparation of tables, graphs and images, database preparation, drafting of the original (first version), review and final version of the article, article correction, general advice on the topic addressed, translation of terms or information obtained, review of the application of the applied bibliographic standard.



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