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Technological tools to increase motivation and combat detraining – Study carried out by the POLAR system

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Abstract :
The purpose of this study is to highlight the importance of technological tools and their contribution to the continuation of training interrupted by the Coronavirus pandemic. Ten (10) football players were randomly selected. The group abstained from structured physical activity during the period of the COVID-19 pandemic, before embarking on a training program through the POLAR system for 8 weeks. We used the descriptive method to analyze the data. Our results showed that technological tools played an important role in communication in order to continue training during the confinement period.

Keywords: technological tools; POLAR system; detraining ; motivation.

Article info

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1. Introduction

Exceptional events such as wars, natural disasters, pandemics, etc. can force us to stop training and competitions for an uncertain period, as in the case of the COVID-19 pandemic, where all our habits have been turned upside down, forcing us to adopt a new approach to sports.

This unexpected health crisis has hampered the continuation of training because of the strict measures imposed by the authorities to limit the spread of the virus. In this new context of 'social distancing' - or rather physical distancing - personalized advice and support is losing ground, often resulting in players dropping out due to injury or lack of motivation; some coaches are content to give verbal instructions encouraging players to take part in sporting activities, or sometimes asking them to carry out voluntary training sessions, often unplanned, to avoid a possible drop in their physical condition. A total stoppage or virtual absence of training stimuli could have negative repercussions on the physical state of players and the performance forged by training (Mujika & Padilla, 2000) (Koundourakis & al., 2014) and several studies have concluded that a period of downtime and a reduction in training frequency cause alterations in body composition and physiological functions, leading to a partial or total loss of certain training-induced adaptations (Stergios & al, 2018)(Komsis & al., 2018)(Buchheit & al., 2015).in addition, the complete cessation of training can make the 'post-confinement' training resumption period a potential risk factor because of its particularity: high training volume and intensity, and a rapid increase in training load (Jeong & al, 2011)(rachid & al, 2014).

The new context imposed by the COVID-19 pandemic prompts us to develop effective strategies and appropriate means of dealing with it, particularly in terms of ongoing communication with players in order to guide, monitor and sometimes even motivate them.

In developed countries, the world of sport has been particularly agile and attentive to the needs of sportspeople during confinement. Taking part in sport has been made easier by the multitude of online offers. Athletes opted for either unilateral courses or interactive courses where coach and athlete could communicate. In short, thanks to technology, the barriers to practicing sport were completely lifted during confinement.

Over the last few years, the use and integration of technology has grown exponentially in the world of sport in general and football in particular. We are seeing more and more top sportsmen and women wearing devices (sensors, GPS) that enable them to measure and compare training and competition data, and coaches using software to analyse their athletes' performance precisely. In modern football, teams do not take advantage of the latest technology to quantify the load or to identify weak points in order to make the necessary improvements. Numerous studies have dealt with the close relationship between the motivational profile and feedback (larbi hadjem, 2015)(Swalus & al., 1991) which is generally defined as feedback provided by technology. It is worth remembering that the use of a device (e.g. POLAR) is considered to be a feedback lever. Moreover, (Richard & David, 2012) present extrinsic feedback as 'the use of an external device to increase a subject's sensitivity to sensory events that accompany performance'. Control theory (Carver & Scheier., 1981) also emphasises the importance of goal setting and feedback for motivation. In other words, having a fixed and precise objective (e.g. running 3 times for 30 minutes) can play a positive role in our motivation.

Given the need to continue training in order to avoid the negative effects of the interruption of training imposed by the pandemic, on the one hand, and the multiple advantages of technological means

to preserve and/or improve the physical capacities of players, on the other, this leads us to ask the following questions:

- How important are technological tools and how can they help to facilitate the continuation of training interrupted during the COVID-19 pandemic?

2. General objective of the study:

The aim of this study is:

1) To highlight the importance of technological tools and demonstrate their contribution in order to continue training during the downtime imposed by the COVID-19 pandemic.

2) To avoid the harmful changes that can occur in players' bodies during a period of imposed stoppage, using the technological tools available to us.

3. Procedural definition of the concepts mentioned in the research:

- COVID 19: Coronavirus disease (COVID19) is an infectious disease caused by the SARS-CoV-2 virus (World Health Organization WHO).

- Feedback: (larbi hadjem, 2015)(Swalus & al., 1991) feedback information provided by the technology.

4. Methodological procedures used in the study:

4.1. Method and tools:

- Exploratory study:

Before embarking on the main study, we carried out several procedures with the aim of :

- Check the quality of the teaching tools and equipment.

- ensure the validity and integrity of all the components of the POALAR system (V800 watches, belt and heart rate monitor)

- Prepare the administrative documents enabling us to start training using the POLAR system (commitment form).

- Study method: The descriptive method is used to analyse the data.

- The study sample: The population targeted by this study concerns footballers under the age of 19 (U19) in the central region, made up of 16 teams and around 400 players. Ten (10) players from Mouloudia Club d'Alger MCA were randomly selected to participate in this study.

- Ethical declaration

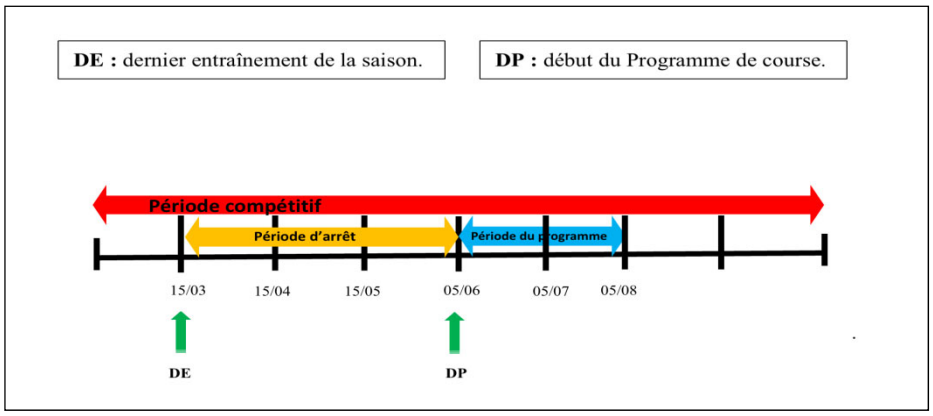
Each player gave written informed consent to participate. Study procedures were fully explained. All experimental protocols and related procedures were approved by the ethics committee of the (Laboratory for contemporary research into the sports training and human movement system). of the STAPS

department of the NourElbachir university centre (Elbayedh).

Intervention period

We selected 10 participants from 35 players aged between 18 and 19. After an 80-day break (15 March 2020- 05 June 2020) imposed by the COVID-19 pandemic, we proceeded to implement the programme, which was set to run from 05 June 2020 to 05 August 2020. All subjects had undergone in-depth training for four (4) days (20 June - 24 June 2020) to ensure better use of the tools made available to them, and prior familiarization with all the protocols to ensure a stable starting line.

Fig 1. Schematic illustration of the experimental design a schematic illustration of the experimental design is shown in Fig1.



POLAR running program

The Polar running program is a personalized program that can be adapted as training progresses, taking into account the personal qualities, training level and preparation time of each player. It is available on the Polar Flow web service at www.polar.com/flow

The POLAR system (Caminal, P et all, 2018)

Polar V800 heart rate monitor, this heart rate monitor with GPS function is designed for beginners and the most demanding athletes alike, offering programmed training sessions and live display of all the basic functions (calculation of heart rate, distance, calories, speed, altitude, gradients, etc.).

In just a few seconds, you can synchronize your running data using the Polar Flow application installed on your smartphone (using Bluetooth Smart technology) or on your computer using a micro USB cable, to relive your run and analyse your performance, with visual graphs and a route map.

Fig 2. Polar v 800 Watch

Fig 3. Data transfer between the V800 watch, the phone and/or the computer

The training diary lets you track your progress week by week. Worn on a daily basis, an activity sensor distils information and motivates you to get moving throughout the day.

InstantFix GPS technology picks up the satellite very quickly and provides highly reliable data. A special function indicates the direction of the starting point so you can explore more adventurous routes in complete safety. Smart coaching' motivates you during training and congratulates you on achieving personal bests. Large easy-to-read display. Polar technology, one of the most advanced in the field.

The Polar fitness test measures aerobic fitness at rest in just five minutes. The result assesses maximum oxygen uptake (Vo2max). The Polar Flow application, with its detailed visual analysis of your runs. The activity sensor, the little extra that makes all the difference and motivates you to get moving. Another bonus: the watch even records your sleep time. You'll need a little time to get used to the watch's 5 control buttons, and it's very easy to link the heart rate transmitter to the V800. You need to make sure that the watch is not discharged on each outing (even so, the battery life is 8 hours with the GPS function and heart rate transmitter).

The H7 heart rate transmitter

The Polar H7 heart rate transmitter transmits heart rate in real time to the V800 watch to help you get the most out of each session. The H7 transmitter uses Bluetooth Smart and 5kHz coded transmission to connect to most Polar heart rate monitors and compatible gym equipment. It is used with a Polar Soft Strap made from soft, supple and comfortable fabric.

Fig N°4. Chest belt and H7 heart rate transmitter

Fig N°5. The H7 transmitter location

Statistical analysis

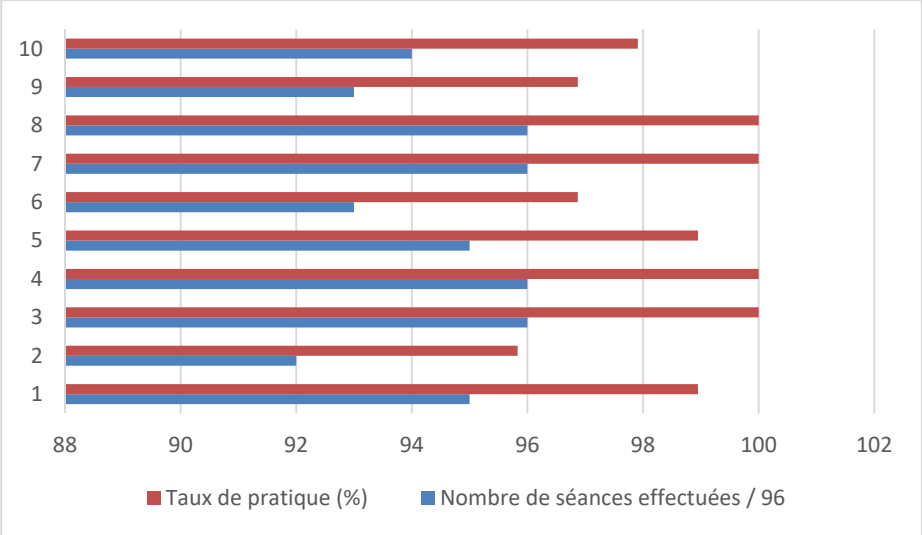
A statistical analysis was carried out using SPSS.25 software to determine the means and standard deviations (±SD).

4-2 Presentation and analysis of the results:

Table 1: The number and percentage of training sessions carried out by the players over a total of 96 sessions.

The athletes	Number of sessions held	Practice rate (%)
1	95	98,95
2	92	95,83
3	96	100
4	96	100
5	95	98,95
6	93	96,87
7	96	100
8	96	100
9	93	96,87
10	94	97,91
The mean	**94,6±1,50**	**98,54±1,56**

Fig 6. Number and percentage of training sessions carried out by players over a total of 96 sessions



4.3. Discussion and interpretation of the results:

The results of our analysis showed a high degree (98.54%) of practice and compliance with the program that was planned for each player, many experiments in experimental psychology show that a knowledge of the result or performance (feedback) is an element of maintenance and progress in the process of sports training. This shows that technological tools have an effect on the motivational profile of players, as highlighted by several studies (Larbi Hadjem, 2015) (Swalus & al., 1991). Indeed, (Magill, 1993) adds that extrinsic feedback (POLAR system) refers to 'the use of an external device to increase a subject's sensitivity to sensory events that accompany performance'.

Lee et al (1990) and Salmoni, Schmidt & Walter (1984) showed that a high frequency of feedback improved performance and increased motivation.

The different types of feedback provided by the Polar system (audio and visual) allow the athlete to monitor the pace of his or her progress, and are also an important incentive, as some studies (Susanne G, et all 2006) (Burgers et al., 2015) envisage that receiving information in both audio and visual format contributes to greatly improving motivation and performance. Indeed, receiving information during training and its effect on motivation is a feature of the polar system. In addition, setting daily, weekly and monthly goals has also been shown to raise motivation levels in line with the precepts of goal theory (Carver & Scheier., 1981).

5. Conclusion:

The scientific literature as a whole supports the idea that a break from training (transition period, COVID-19, illness or other) leads to changes in body composition and generates a deficit in the neuromuscular and cardiovascular systems and, consequently, leads to a loss of strength, speed, flexibility and endurance, which increases the risk of injury, unless specific training programs are implemented. The report concludes with a reminder of the role of various technological tools, which if taken into account are a guarantee of success and a driving force for change within a training session or program, keeping the focus on player performance.

Bibliographic references:

- Buchheit, M., Cholley, Y., & Lambert, P. (2016). Psychometric and Physiological Responses to a Preseason Competitive Camp in the Heat with a 6-Hour Time Difference in Elite Soccer Players. International journal of sports physiology and performance, 11(2), 176–181.
- Buchheit, M., Morgan, W., Wallace, J., Bode, M., & Poulos, N. (2015). Physiological, psychometric, and performance effects of the Christmas break in Australian football. International journal of sports physiology and performance, 10(1), 120–123.
- Burgers, C., Eden, A., van Engelenburg, M. D., & Buningh, S. (2015). How feedback boosts motivation and play in a brain-training game. *Computers in Human Behavior, 48,* 94–103.
- Caminal, P., Sola, F., Gomis, P., Guasch, E., Perera, A., Soriano, N., & Mont, L. (2018). Validity of the Polar V800 monitor for measuring heart rate variability in mountain running route conditions. European journal of applied physiology, 118(3), 669–677.
- Carver, C. S., & Scheier, M. F. (1981). Attention and Self-Regulation: A Control Theory Approach to Human Behavior. New York: Springer.
- Impellizzeri, F. M., Marcora, S. M., Castagna, C., Reilly, T., Sassi, A., Iaia, F. M., & Rampinini, E. (2006). Physiological and performance effects of generic versus specific aerobic training in soccer players. International journal of sports medicine, 27(6), 483–492.
- Jeong, T. S., Reilly, T., Morton, J., Bae, S. W., & Drust, B. (2011). Quantification of the physiological loading of one week of "pre-season" and one week of "in-season" training in professional soccer players. Journal of sports sciences, 29(11), 1161–1166.
- Koundourakis, N. E., Androulakis, N. E., Malliaraki, N., Tsatsanis, C., Venihaki, M., & Margioris, A. N. (2014). Discrepancy between exercise performance, body composition, and sex steroid response after a six-week detraining period in professional soccer players. PloS one, 9(2), e87803.
- Larbi hadjem, Zahra fares. (2015).Le rôle de la technologie d'apprentissage dans le développement de la motivation chez les élèves des classes secondaires. Revue de la créativité sportive, 6(3), 168-187
- Lee, T. D., White, M. A., & Carnahan, H. (1990). On the Role of Knowledge of Results in Motor Learning: Exploring the Guidance Hypothesis. *Journal of Motor Behavior*, *22*(2), 191–208.
- Mujika, I., & Padilla, S. (2000). Detraining: loss of training-induced physiological and performance adaptations. Part I: short term insufficient training stimulus. Sports medicine (Auckland, N.Z.), 30(2), 79–87.
- Mujika, I., & Padilla, S. (2000). Detraining: loss of training-induced physiological and performance adaptations. Part II: Long term insufficient training stimulus. Sports medicine (Auckland, N.Z.), 30(3), 145–154.
- Rachid Amanallah, mohamed Hbara, mourad Chahat. (2014). La surcharge et ses répercussions sur les blessures des sportifs chez les footballeurs seniors. Revue de la créativité sportive, 5 (2), 450-473.
- richard A. magill, anderson and david, the roles un uses of Augmented feedback in motor skill acquisition, Routledge ,2012.
- Salmoni, A. W., Schmidt, R. A., & Walter, C. B. (1984). Knowledge of results and motor learning: A review and critical reappraisal. *Psychological Bulletin, 95*(3), 355–386.
- Stergios, K., Maria, G., Zacharoula, P., Georgios, K., Athanasios, D., & Evangelos, B. (2018). Detraining effects of the transition period on endurance and speed -related performance parameters of amateur soccer players. *International journal of scientific research, 7(2) 40-42.*
- Swalus, P., Carlier, G., & Renard, J. (1991). Feedback en cours d'apprentissage de tâches motrices et leur perception par les élèves. Staps, 12, 23-35.
- Susanne Geister, Udo Konradt, Guido Hertel. (2006). Effects of Process Feedback on Motivation, Satisfaction, and Performance in Virtual Teams. Sage jornals. Volume: 37 (5), 459-489