

# PODIUM

Journal of Science and Technology in Physical Culture

UNIVERSITY EDITORIAL

Volumen 17  
Issue 1

2022

University of Pinar del Río "Hermanos Saíz Montes de Oca"

Director: Fernando Emilio Valladares Fuente

Email: fernando.valladares@upr.edu.cu

Translated from the original in spanish

Original article

## Functional training as a post-competition recovery method in U-12 soccer. Criteria of specialists

### Entrenamiento funcional como método de recuperación poscompetencia en fútbol sub-12. Criterios de especialistas

### Treino funcional como método de recuperação pós-competição no futebol sub-12. Critério dos especialistas

Carlos Luis Paucar Haro<sup>1\*</sup>  <https://orcid.org/0000-0001-8372-3543>

Erick David Revelo Jurado<sup>1</sup>  <https://orcid.org/0000-0001-8480-5700>

Mónica Mercedes Cabezas Flores<sup>1</sup>  <https://orcid.org/0000-0002-7597-8498>

<sup>1</sup>University of the Armed Forces ESPE, Quito. Ecuador.

\*Corresponding author: [clpaucar@espe.edu.ec](mailto:clpaucar@espe.edu.ec)

**Received:** 08/09/2021.

**Approved:** 10/02/2022.

How to cite ítem: Paucar Haro, C., Revelo Jurado, E., & Cabezas Flores, M. (2022). Functional training as a post-competition recovery method in U-12 soccer. Criteria of specialists/Entrenamiento funcional como método de recuperación poscompetencia en fútbol sub-12. Criterios de especialistas. *PODIUM - Journal of Science and Technology in Physical Culture*, 17(1), 258-273. Retrieved from <https://podium.upr.edu.cu/index.php/podium/article/view/1186>



## ABSTRACT

Recovery is a functional state of the athlete once the physical stimulus stops, which is essential for the bioadaptation of the organism. Functional training, by simulating an activity of daily life in an integral way, can be used for muscle recovery, and is an alternative for post-competition recovery in beginner soccer players. In this sense, the purpose of this study is to demonstrate whether functional training allows post-competition recovery in U12 soccer players. The research is transversal-correlational, of qualitative orientation, it studies a population of 21 U-12 soccer players, to whom an intervention proposal with functional exercises was implemented, the fatigue index was measured in two moments of the preparation and the criteria of 13 specialists were consulted. The seven phases of the Bangsbo *test* (Pretest) decreased their effectiveness as the tests went on (Test 1: 7.35s; Test 7: 6.99s) and in the posttest, the effectiveness was better (Min: 7.59s to Max: 7.86s), the fatigue index was reduced by 1 % (from 1.55s to 0.78s). On the other hand, the specialists did not consider that functional training has a significant influence on post competition recovery (*Low and Medium* 2.54points). The application of functional training evidenced improvements in the fatigue index, it is an effective alternative for post competition recovery in U-12 soccer, although the specialists consulted from the theoretical point of view have not considered the importance of functional training to optimize the processes of organic recovery.

**Keywords:** Functional training; post-competition recovery; U-12 soccer.

## RESUMEN

La recuperación es un estado funcional del deportista una vez que el estímulo físico se detiene, lo que es esencial para la bioadaptación del organismo. El entrenamiento funcional, al simular una actividad de la vida cotidiana de forma integral, puede ser utilizado para la recuperación muscular, es una alternativa para la recuperación poscompetencia en futbolistas de iniciación. En tal sentido, se plantea como propósito demostrar si el entrenamiento funcional permite la recuperación poscompetencia en futbolistas Sub-12. La investigación es transversal-correlacional, de orientación cualitativa, estudia a una población de 21 jugadores de fútbol Sub-12, a los cuales se les implementó una propuesta de intervención con ejercicios funcionales, se les midió el índice de fatiga en dos momentos de la preparación y se consultaron los criterios de 13 especialistas. Las siete fases del *test* Bangsbo (Pretest) disminuyeron su efectividad en la medida que se sucedieron las pruebas (Prueba 1: 7.35s; Prueba 7: 6.99s) y en el postest, la efectividad fue mejor (Min: 7.59s a Máx: 7.86s), se redujo el índice de fatiga en 1 % (de 1,55s a 0.78s). Por otra parte, los especialistas no consideraron que el entrenamiento funcional posee una influencia significativa en la recuperación poscompetencia (2.54 puntos *Baja y Media*). La aplicación del entrenamiento funcional evidenció mejoras en el índice de fatiga, resulta una alternativa efectiva para la recuperación poscompetencia en fútbol Sub-12, aunque los especialistas consultados desde el punto de vista teórico no han considerado la importancia que posee el entrenamiento funcional para optimizar los procesos de recuperación orgánica.

**Palabras clave:** Entrenamiento funcional; Recuperación poscompetencia; Fútbol sub-12.



## RESUMO

A recuperação é um estado funcional do atleta quando o estímulo físico pára, o que é essencial para a bi adaptação do organismo. O treino funcional, através da simulação de uma atividade da vida quotidiana de forma integral, pode ser utilizado para a recuperação muscular, é uma alternativa para a recuperação pós-competição em jogadores de futebol principiantes. Neste sentido, o objectivo deste estudo é demonstrar se o treino funcional permite a recuperação pós-competição em jogadores de futebol sub-12. A investigação é transversal-correlacional, de orientação qualitativa, estuda uma população de 21 jogadores de futebol sub-12, aos quais foi implementada uma proposta de intervenção com exercícios funcionais, o índice de fadiga foi medido em dois momentos da preparação e foram consultados os critérios de 13 especialistas. As sete fases do teste Bangsbo (Pré-teste) diminuíram em eficácia à medida que os testes prosseguiam (Teste 1: 7,35s; Teste 7: 6,99s) e no pós-teste, a eficácia foi melhor (Min: 7,59s para Max: 7,86s), o índice de fadiga foi reduzido em 1% (de 1,55s para 0,78s). Por outro lado, a formação funcional não foi considerada pelos especialistas como tendo uma influência significativa na recuperação pós-competição (2,54 pontos Baixo e Médio). A aplicação do treino funcional mostrou melhorias no índice de fadiga, é uma alternativa eficaz para a recuperação pós-competição no futebol sub-12, embora os especialistas consultados do ponto de vista teórico não tenham considerado a importância do treino funcional para otimizar os processos de recuperação orgânica.

**Palavras-chave:** Treino funcional; Recuperação pós-competição; Futebol U-12.

## INTRODUCTION

Soccer today has been the subject of great research that allows science to improve the way to perfect the qualities of the athlete throughout the stage of training and competition. The competition in this sport demands periods of activity that vary in intensity and duration, which are interrupted by periods of recovery in which the activity is light or the player is stationary (Drust, 2007).

In recent years, an expansion of sport sciences has been predominant due to research conducted on different populations of athletes and on different areas of performance. (Calero, 2019). Due to the research conducted, specialists on strength and conditioning, working in soccer teams, are becoming necessary figures in multidisciplinary working groups, (Turner & Stewart, 2014) and the knowledge of how to improve the performance of physical trainers is of utmost importance.

According to Hernández-Moreno (1993), soccer is a team sport of collaboration and opposition, played in a *semi-wild* and common space, with simultaneous participation. The development of the game action depends on individual and collective actions performed in a situation of collaboration with teammates and opposition with opponents, according to an individual tactical thinking that must be coordinated with the rest of the teammates. This determines that the individual action is the important part and its performance throughout the competition allows achieving objectives that must be improved in each training. Maintaining sports performance in any sport, given the comprehensiveness of the science under study, also requires the improvement of post-competition recovery methods, this process being of great relevance after the competition, (Rey, 2012; Vásquez, Riquetti, & Morales, 2017; Marulanda, et al., 2020) refer, among other aspects, to the application of stimuli through specialized physical



exercises, regardless of bearing in mind other factors such as physiotherapy and applied massage, (García, 2016; Villamizar-Sierra, 2017).

In the post-competition recovery process at early ages, training planning models include periods or phases of rest or return to calm (usually between one to two months at least), (Matveev, 1980) where active rest is applied by performing activities other than the usual ones, usually low-intensity activities. Functional training, which aims to work the muscles by imitating everyday movements or specific sporting gestures, individualizes the training routines according to the needs of each athlete, (Boyle M., 2017; Boyle M., 2010) It can serve as a basis for an active rest model as part of the active recovery phase implicit in the culmination of a major competition.

In order to cover all aspects of soccer training, it is important that physical fitness training is well integrated into an overall training program, (Bangsbo, 2008; Morales & González, 2015) who keep in mind aspects such as intensity, volume and recovery (rest), they prioritize game actions as close as possible to the reality of the game, (Calero, 2019). Currently, functional training has usually been applicable as injury prevention, due to its low intensity characteristics, which according to Boyle (2010) is described as a group of exercises to teach athletes to manage their body weight in all planes of movement, very suitable for specific conditioning in sports initiation.

Functional training additionally comprises tactical elements that can be used simultaneously, including the development or maintenance of the athlete's physical capacities, including soccer. For (Sport, 2000) functional training, it is the use of specific techniques that the athlete needs to play in a certain position in the team. This training teaches players how and where to use the basic techniques and tactics unique to their role in the team.

The benefit of the practice of functional training is determined in the time-resource and physical condition, the increase of efficiency in the activation of the muscles adjacent to the joints, thanks to the stabilization of those. This act allows to relate directly to soccer training and pursues the recovery in a functional way and its post-competition application.

Training by functional areas is the application of determined workloads, which cause specific functional modifications, (Mercedes, Álvarez, Guallichico, Chávez, & Romero, 2017) taking into account the different demands within the aerobic area itself and in which different percentages of energy substrates are used (Hegedüs & Molnar, 1999). The objective of the research is related to the possibility of demonstrating whether functional training allows post-competition recovery in U-12 soccer players, determined if recovery can be carried out by means of lower intensity and specific work, maximizing time and resources in general.

## **MATERIALS AND METHODS**

The research was carried out in Sangolquí in the parish of San Pedro de Taboada in the San Pedro soccer academy, belonging to the Rumiñahui canton, province of Pichincha, Republic of Ecuador. The study was conducted on a population of 21 soccer players of the U-12 category, it was handled within the facilities and the own material of the San Pedro stadium, research implemented in the period April-June 2019.



The application of the functional recovery method was represented by exercises involving complex, multi-joint movements of the upper and lower body and core. These movements allow a better functioning of the body and an improvement in performance through better coordination and adequate muscular stimulation. The functional intervention proposal is basically described below:

### Application of the exercise circuit

Within the application of the exercises and the benefits mentioned above, a planned guide of post-competition exercises was executed to improve the determinant capacities in base soccer (Table 1), (Table 2), (Table 3), (Table 4) and (Table 5).

**Table 1.** - Explosive strength

Exercise	Development	Repetition/Time	Rest
Eccentric with garter	Jumping over fence with garter strength attached to a pole	Ten repetitions, four sets	One per series
Plyometric bosu	Short skipping and jumping on bosu while maintaining balance	Five repetitions, four sets	30'' per series
Push fitball against the wall	Insistent back push of fitball against wall	One per repetition, three sets	One per series

**Table 2.** - Displacement speed

Exercise	Development	Repetition/Time	Rest
Girth work	Speed work with belt and double garter must move over a distance of two meters.	Eight repetitions three sets	One per series
Lateral displacement	Five meters of short speed with ankle garter.	Eight repetitions three sets	One per series
Frontal displacement	Ten meter speed with medicine ball 2kg	Ten repetitions three sets	Two per series

**Table 3.** - Technical gesture

Exercise	Development	Repetition/Time	Rest
Pass flush to the floor inside edge	Ankle tie and inner rim	One work per leg, five sets	One per series
Inner edge halfheight pass	Inside edge hits to tennis balls at half height.	One work per leg, five sets	One per series
Driving	Zigzag driving with inner and outer edge of both feet	One work, five series	One per series
Definition	Front drive is oriented to the right or left profile and kicks to the goal.	Five repetitions three sets	30'' per series



**Table 4. - Balance**

Exercise	Development	Repetition/Time	Rest
Disk Balance	Touch inner rim on top of the disc	Five repetitions per leg, three sets	30'' per series
Disk Balance	Instep touch on top of the disc	Five repetitions per leg, three sets	30'' per series
Balance in step	Inner edge touch in step	Two work per leg, 5 sets	Two per series

**Table 5. - Endurance to strength**

Exercise	Development	Repetition/Time	Rest
Fitball plank	Place feet on the fitball and arms on the floor maintaining the position.	45'' of work 3 series	1'30'' per series
Lumbosacral butterflies	Face down, the lumbar muscle is contracted by raising the legs together.	45'' of work 3 series	1'30'' per series
Lateral plank with garters	Place the garter on the ankles and stand sideways and open one leg strengthening obliques and lateral abdomen.	One minute of work three series	Two per series

### Instrument

The Bangsbo sprint test aims to evaluate the physical condition of a player by repeating maximum speed sprint to measure the fatigue obtained, which as a final result of the test averages the best time between the sprints performed, the time between all repetitions. The test is based on a course that simulates competition. It is also known as the Bangsbo Sprint Test or TEST RSA Repeat Sprint Ability, a test performed to measure the aerobic endurance to short-duration effort and the cardiac recovery capacity, therefore, the fitness level of a person.

### Procedure

At the starting point, two poles or cones are placed. Perform the same activity every 10 meters and two parallel poles or cones at 5 meters distance between meters 10 and 20 (see figure) to indicate the route and where the player should make the change of direction. In the case of having high precision equipment to measure the time of each sprint, it should be placed at the beginning (A) and at the end of the sprint (B) (Figure 1).







**Fig. 1.** - Graphical description of the circuit test

The evaluation of the *test* consists of seven repetitions, recording the duration of each sprint. The player must perform a sprint from A to B along the marked lines, followed by 25 seconds of jogging or low intensity running from B to C, where it is governed by a formula to obtain a result where the Fatigue Time or Fatigue Index is the difference between the slowest and fastest time (Equation 1).

#### Formula

$$TF = T_{\max} - T_m \quad (1)$$

Where:

TF as the final time of the test,  
T<sub>max</sub> as maximum travel time and  
T<sub>m</sub> as minimum time executed.

#### Standards

- If the player falls or trips, the time of this sprint is not counted as valid and must be replaced by the average time of the previous and next sprint.
- You must finish the entire course without stopping.

For the criteria of the specialists (13 soccer training professionals, graduates in Physical Activity and Sports, with experience in the preparation of initiation soccer players), the application of a survey was taken into account, it was valued by means of a five-level Likert scale (Level 1: Very Low; Level 2: Low; Level 3: Medium; Level 4: High; Level 5: Very High), the variable "Influence" was valued, described as "The power of a variable to affect another variable", for the indicative case that "Functional training influences post competition recovery in U-12 category soccer players".





In the comparison of the data obtained in the pretest and posttest, the nonparametric statistic, Wilcoxon Signed Ranks Test ( $p \leq 0.05$ ), was used.

## RESULTS AND DISCUSSION

The table 6 shows the results achieved in the seven phases of the Bangsbo test; at the end of the table, the average per test is found, where in Test 1 a maximum time of 7.38s was achieved (Table 6). At the same time, the average is reduced until the seventh test with 6.99s, which *indicates* a low performance of the athlete. On the other hand, the fatigue index in seconds achieved is described in table 7 (Table 7).

**Table - 6.** Test results in seconds (s). Bangsbo Pretest

Players	Category	Age	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7
1	CAT A	12	7,15	6,52	7,13	6,9	6,07	7,54	6,2
2	CAT A	12	6,01	6,96	7,64	7,84	7,8	6,11	7,89
3	CAT A	12	7,44	7,88	7,86	7,41	7,09	6,25	7,33
4	CAT A	12	7,86	7,35	7,38	6,32	6,34	6,33	7,58
5	CAT A	12	7,98	6,41	7,09	6,58	6,05	7,58	7,64
6	CAT A	12	7,73	7,04	7,89	6,24	6,29	6,72	6,12
7	CAT A	12	7,4	7,86	7,13	7,02	7,42	7,83	6,08
8	CAT A	12	7,99	6,44	7,02	6,86	7,21	7,95	6,74
9	CAT A	12	7,71	7,89	6,84	7,78	7,39	7,02	6,21
10	CAT A	12	7,52	7,39	6,64	7,13	6,8	6,17	7,97
11	CAT A	12	7,82	6,94	7,32	6,21	7,57	6,76	6,8
12	CAT B	12	7,21	7,13	6,3	6,03	7,7	7,21	6,19
13	CAT B	12	6,37	7,85	6,4	7,73	7,95	6,45	7,05
14	CAT B	12	7,23	7,86	6,59	7,91	7,56	7,28	7,21
15	CAT B	12	7,3	6,37	6,75	6,41	7,99	7,03	6,83
16	CAT B	12	6,67	6,63	6,23	7,51	7,39	6,97	7,06
17	CAT B	12	6,76	6,68	7,39	7,9	6,5	7,41	6,67
18	CAT B	12	7,87	7,71	7,02	7,82	6,2	7,98	6,96
19	CAT B	12	7,85	7,36	7,44	7,37	7	6,83	7,01
20	CAT B	12	7,53	7,11	6,91	6,93	6,17	7,45	6,94
21	CAT B	12	7,55	6,03	7,95	6,52	7,85	6,03	7,35
		<b>Prom</b>	<b>7,38</b>	<b>7,11</b>	<b>7,09</b>	<b>7,07</b>	<b>7,06</b>	<b>7,01</b>	<b>6,99</b>



**Table 7.** - Fatigue index in seconds (s). Bangsbo Pretest

Players	Position	Category	Age	Prom	T min	T max	IndFat
1	ARQ	CAT A	12	6,79	6,07	7,54	1,47
2	DEF	CAT A	12	7,18	6,01	7,89	1,88
3	DEF	CAT A	12	7,32	6,25	7,88	1,63
4	DEF	CAT A	12	7,02	6,32	7,86	1,54
5	FORWARD	CAT A	12	7,05	6,05	7,98	1,93
6	VOL	CAT A	12	6,86	6,12	7,89	1,77
7	FORWARD	CAT A	12	7,44	7,02	7,86	0,84
8	DEF	CAT A	12	7,17	6,44	7,99	1,55
9	VOL	CAT A	12	7,26	6,21	7,89	1,68
10	FORWARD	CAT A	12	7,09	6,17	7,97	1,8
11	VOL	CAT A	12	7,11	6,21	7,82	1,61
12	VOL	CAT B	12	6,82	6,03	7,7	1,67
13	DEF	CAT B	12	7,11	6,37	7,95	1,58
14	VOL	CAT B	12	7,38	6,59	7,91	1,32
15	VOL	CAT B	12	6,95	6,37	7,99	1,62
16	VOL	CAT B	12	6,92	6,23	7,51	1,28
17	FORWARD	CAT B	12	7,04	6,5	7,9	1,4
18	ARQ	CAT B	12	7,37	6,2	7,98	1,78
19	VOL	CAT B	12	7,27	6,83	7,85	1,02
20	VOL	CAT B	12	7,01	6,17	7,53	1,36
21	VOL	CAT B	12	7,04	6,03	7,95	1,92
			Prom	7,11	6,29	7,85	1,55

The table 7 shows important values such as the average Tmax of 7.85s which is very high, maintaining a large difference between the average Tmin value of 6.29s, indicating that the average fatigue index was 1.55s, resulting very high in the recovery.

Once the intervention proposal was implemented with the functional exercises, we proceeded to study the indicators mentioned in the table 6; in a second moment of the sports training management process, data described in table 8 (Table 8).



**Table 8.** - Results of the application of the Bangsbo test. Postest

Players	Category	Age	P1	P2	P3	P4	P5	P6	P7
1	CAT A	12	7,57	7,56	7,45	7,03	7,77	7,1	7,92
2	CAT A	12	7	7,82	7,92	7,9	7,05	7,94	7,76
3	CAT A	12	7,72	7,96	7,7	7,54	7,12	7,66	7,77
4	CAT A	12	7,93	7,93	7,16	7,17	7,16	7,79	7,68
5	CAT A	12	7,99	7,54	7,29	7,02	7,79	7,82	7,55
6	CAT A	12	7,86	7,94	7,12	7,14	7,36	7,06	7,01
7	CAT A	12	7,7	7,56	7,51	7,71	7,91	7,04	7,72
8	CAT A	12	7,99	7,51	7,43	7,6	7,97	7,37	7,45
9	CAT A	12	7,85	7,42	7,89	7,69	7,51	7,1	7,97
10	CAT A	12	7,76	7,32	7,56	7,4	7,08	7,98	7,68
11	CAT A	12	7,91	7,66	7,1	7,78	7,38	7,4	7,46
12	CAT B	12	7,86	7,85	7,76	7,42	8,01	7,48	8,14
13	CAT B	12	7,4	8,05	8,13	8,12	7,44	8,15	8,01
14	CAT B	12	7,97	8,17	7,96	7,83	7,5	7,93	8,02
15	CAT B	12	8,14	8,14	7,52	7,53	7,53	8,03	7,94
16	CAT B	12	8,19	7,83	7,63	7,42	8,03	8,05	7,84
17	CAT B	12	8,09	8,15	7,49	7,51	7,69	7,45	7,41
18	CAT B	12	7,96	7,85	7,8	7,97	8,13	7,43	7,97
19	CAT B	12	8,19	7,8	7,74	7,88	8,18	7,69	7,76
20	CAT B	12	8,08	7,73	8,11	7,95	7,81	7,48	8,18
21	CAT B	12	8	7,65	7,85	7,72	7,47	8,18	7,95
		Average	7,86	7,78	7,62	7,59	7,61	7,63	7,77

The table 9 indicates that, once the functional recovery method is applied, the average does not vary so much in the athletes, it is from 7.59s to 7.86s, that is, they are in a better recovery phase. Like the table 7, a fatigue index was applied, available as part of table 9 (Table 9).



**Table 9.** - Fatigue indexes of the Bangsbo test result. Posttest

Players	Position	Category	Age	Prom.	T min	T max	IndFat
1	ARQ	CAT A	12	7,49	7,03	7,92	0,89
2	DEF	CAT A	12	7,63	7	7,94	0,94
3	DEF	CAT A	12	7,64	7,12	7,96	0,84
4	DEF	CAT A	12	7,55	7,16	7,93	0,77
5	FORWARD	CAT A	12	7,57	7,02	7,99	0,97
6	VOL	CAT A	12	7,36	7,01	7,94	0,93
7	FORWARD	CAT A	12	7,59	7,04	7,91	0,87
8	DEF	CAT A	12	7,62	7,37	7,99	0,62
9	VOL	CAT A	12	7,63	7,1	7,97	0,87
10	FORWARD	CAT A	12	7,54	7,08	7,98	0,9
11	VOL	CAT A	12	7,53	7,1	7,91	0,81
12	VOL	CAT B	12	7,79	7,42	8,14	0,72
13	DEF	CAT B	12	7,9	7,4	8,15	0,75
14	VOL	CAT B	12	7,91	7,5	8,17	0,67
15	VOL	CAT B	12	7,83	7,52	8,14	0,62
16	VOL	CAT B	12	7,86	7,42	8,19	0,77
17	FORWARD	CAT B	12	7,68	7,41	8,15	0,74
18	ARQ	CAT B	12	7,87	7,43	8,13	0,7
19	VOL	CAT B	12	7,89	7,69	8,19	0,5
20	VOL	CAT B	12	7,91	7,48	8,18	0,7
21	VOL	CAT B	12	7,83	7,47	8,18	0,71
			Average	7,7	7,27	8,05	0,78

The table 9 shows the numerical values where a higher average (8.05s) is obtained than before the post-test and the fatigue index was reduced by 50 % (from 1.55s to 0.78s), indicating that the proposed intervention had favorable results from the point of view of the fatigue index.

After comparing the data in the two tests implemented, the Wilcoxon Signed Ranks Test obtained a value of  $p=0.000$ , which is less than the expected level of significance (0.05), therefore, it is concluded that there is a significant difference, functional training is effective for post-competition recovery in U-12 category soccer.

On the other hand, the criteria of the specialists consulted show as part of table 10 the results theoretically considered by the respondents (Table 10).



**Table 10.** - Responses of the specialists consulted

No	Valuation
1	2
2	2
3	3
4	2
5	2
6	4
7	5
8	3
9	2
10	3
11	2
12	1
13	2
Average	<b>2,54</b>

The table 10 evidences with the mean or average obtained a quantitative qualification of 2.54 points that, according to the Likert scale used from the qualitative point of view, would be between *Low and Medium* the level of influence that in consideration of the results exist between functional training and the possibility of being a significant component for the post competition recovery in initiation soccer players. The previous results are analyzed, it is estimated the need for a better professional development plan to instruct Ecuadorian coaches in the advantages of functional training in general and specifically for the field of study of the research, given that the results achieved establish improvements in the dependent variable studied.

The development of new techniques to improve sports performance has been the maximum of the sciences applied to sport; therefore, functional training has been developed with great welcome, given the benefit granted to the athlete, as evidenced by Malone, (2015), manifesting the need for research on the methodology of specialized training, seeking an optimization of performance without exceeding the limits of physiological tolerance of players (Morales, 2018; Calero-Morales., 2014).

Contemporary competitions and training have been standardized worldwide, but their development in methods varies according to age, gender, physical condition, technique and age, among others, determining a series of changes such as the prioritization of the principle of individualization, although the training components between volume, intensity and rest do not change.

Physical characteristics exert a selective function in the conditions of performance in a sport discipline. In this case, those who present an acceleration in their growth have a temporary advantage compared to those who show a delay (Carabalí, 2011). This allows



understanding that the association in the advantage is the growth of performance that occurs in training, it is for this the function or training that is functional to the conditions of soccer to generate a competitive advantage.

It is presented that children or young people of the same age do not have a homogeneous rhythm in their physical development, (Cruz, 1995) for this reason, controlling the pace of training and prioritizing many times the rest or recovery can ensure the functionality of the organism, (Boyle M., 2017) aspect related to the concept of functionality of the athlete, which improves the function and movement towards specific skills.

Stimulation of motor control through training has shown significant results in improving functional performance and postural control in soccer players, (Heleno, *et al.*, 2016) thus its benefit is increased, (Cook, Burton, & Hoogenboom, 2006) correlations exist with the objective of preventing injuries, among other aspects. The effect of functional training varies in two priority objectives of the research, the ability to improve recovery and perform specific exercises and the possibility of preventing injuries.

The importance of functional training in a team determines the potentialities and individual as well as collective advantages in the development of the competition. For this, it is necessary that the direction of the training has a balance between the components. The difference always lies in the way we use functional training, but its benefit in training is present in specific actions of the sport, as evidenced in this research.

## CONCLUSIONS

The application of functional training as a method of post-competition recovery in soccer players of the U-12 category showed improvements in the fatigue index of the population under study, indicating that it is an effective alternative to fulfill the object of study, although the specialists consulted, from the theoretical point of view, have not considered the importance of functional training to optimize the processes of organic recovery in soccer players of initiation.

## REFERENCES

- Bangsbo, J. (2008). Entrenamiento de la condición física en el fútbol. Barcelona: Editorial Paidotribo. [https://books.google.com/cu/books/about/ENTRENAMIENTO\\_DE\\_LA\\_CONDICION\\_FISICA\\_E.html?id=TzAjNIIt0mSUC&printsec=frontcover&source=kp\\_read\\_button&hl=es-419&redir\\_esc=y#v=onepage&q&f=false](https://books.google.com/cu/books/about/ENTRENAMIENTO_DE_LA_CONDICION_FISICA_E.html?id=TzAjNIIt0mSUC&printsec=frontcover&source=kp_read_button&hl=es-419&redir_esc=y#v=onepage&q&f=false)
- Boyle, M. (2010). Adelantos en entrenamiento funcional. USA: otpbooks. [https://books.google.com/cu/books/about/Adelantos\\_en\\_Entrenamiento\\_Funcional.html?id=NoKADwAAQBAJ&source=kp\\_book\\_description&redir\\_esc=y](https://books.google.com/cu/books/about/Adelantos_en_Entrenamiento_Funcional.html?id=NoKADwAAQBAJ&source=kp_book_description&redir_esc=y)





- Boyle, M. (2017). El entrenamiento funcional aplicado a los deportes. USA: Tutor. ISBN 8416676305, 9788416676309 254 p  
[https://books.google.com/cu/books?id=IJKWswEACAAJ&dq=El+entrenamiento+funcional+aplicado+a+los+deportes&hl=es&sa=X&redir\\_esc=y](https://books.google.com/cu/books?id=IJKWswEACAAJ&dq=El+entrenamiento+funcional+aplicado+a+los+deportes&hl=es&sa=X&redir_esc=y)
- Calero., S. (2019). Fundamentos del entrenamiento deportivo optimizado. Departamento de Ciencias Humanas y Sociales. Curso de Postgrado de la Maestría en Entrenamiento Deportivo. XIII Promoción (págs. 2-76). Quito: Universidad de las Fuerzas Armadas ESPE. [https://www.researchgate.net/publication/320053667\\_Fundamentos\\_del\\_entrenamiento\\_optimizado\\_Como\\_lograr\\_un\\_alt\\_o\\_rendimiento\\_deportivo\\_en\\_el\\_menor\\_tiempo\\_posible](https://www.researchgate.net/publication/320053667_Fundamentos_del_entrenamiento_optimizado_Como_lograr_un_alt_o_rendimiento_deportivo_en_el_menor_tiempo_posible)
- Calero-Morales., S. (2014). Optimización del proceso de dirección del entrenamiento en deportes de cooperación-oposición. Universidad de Guayaquil, Facultad de Educación Física, Deportes y Recreación (FEDER). Guayaquil: Eduquil.
- Carabalí, D. (2011). Programa de entrenamiento de futbolistas prejuveniles entre 14 y 17 años de edad enfatizando en desarrollar la fuerza rápida. Calí: Universidad del Valle.
- Cook, G., Burton, L., & Hoogenboom, B. (2006). Pre-participation screening the use of fundamental movements as an assessment of functionpart1. North American journal of sports physical therapy: NAJSPT, 1(2), 62-72. <https://europepmc.org/article/pmc/2953313>
- Cruz, J. (1995). Estudio sobre las relaciones observadas entre algunos índices antropométricos, motores y psicofuncionales de futbolistas en edades de 18 años. Cali: Universidad del Valle.
- Drust, B. A. (2007). Future perspectives in the evaluation of the physiological demands of soccer. Sports Med, 37(9), 783-805. doi:10.2165/00007256-200737090-00003
- Hegedüs, J., & Molnar, G. (1999). Las Áreas Funcionales Aeróbicas. Recuperado el 13 de momarandu.com: <http://www.momarandu.com/amanoticias.php?a=0&b=0&c=93712>
- Heleno, L. R., da Silva, R. A., Shigaki, L., Araújo, C. G., Candido, C. R., Okazaki, V. H., & Macedo, C. D. (2016). Five-week sensory motor training program improves functional performance and postural control in young male soccer playersA blind randomized clinical trial. Physical Therapy in Sport, 22, 74-80. doi:10.1016/j.ptsp.2016.05.004
- Hernández-Moreno, J. (1993). Una metodología de la observación de juego en el fútbol. Cuantificación del tiempo de pausa y de participación. Ciencia y técnica del fútbol: I Congreso Internacional, (págs. 181-191). Madrid.
- Malone, J. J. (2015). Seasonal training-load quantification in elite English premier league soccer players. International Journal of Sports Physiology and Performance 10(4) 489-497. <https://pubmed.ncbi.nlm.nih.gov/25393111/>
- Marulanda, A. G., Segura, L. M., Mosquera, E. E., Vallejo, M. A., Riascos, I. T., & Ararat, D. C. (2020). Revisión de las técnicas de recuperación post entrenamiento más usadas para disminuir la incidencia de fatiga crónica en futbolistas. Revista Veritas Et Scientia-Upt, 9(2), 253-262. doi:10.47796/ves.v9i2.400



- Matveev, L. P. (1980). Fundamentos del entrenamiento deportivo. Madrid: Lib Deportivas Esteban Sanz. [https://books.google.com/cu/books/about/Fundamentos\\_del\\_entrenamiento\\_deportivo.html?id=YJ4ADAAAQBAJ&printsec=frontcover&source=kp\\_read\\_button&hl=es-419&redir\\_esc=y#v=onepage&q&f=false](https://books.google.com/cu/books/about/Fundamentos_del_entrenamiento_deportivo.html?id=YJ4ADAAAQBAJ&printsec=frontcover&source=kp_read_button&hl=es-419&redir_esc=y#v=onepage&q&f=false)
- Mercedes, M., Álvarez, J. C., Guallichico, P. A., Chávez, P., & Romero, E. (2017). Entrenamiento funcional y recreación en el adulto mayor: influencia en las capacidades y habilidades físicas. *Revista Cubana de Investigaciones Biomédicas*, 36(4), 1-13. <http://www.revibiomedica.sld.cu/index.php/ibi/article/view/22>
- Morales, S. C., & González, S. A. (2015). Preparación física y deportiva. Quito, Ecuador: Editorial de la Universidad de las Fuerzas Armadas ESPE. <http://repositorio.espe.edu.ec/bitstream/21000/10201/1/Preparacion%20fisica%20y%20deportivaf.pdf>
- Morales., S. (2018). Nuevas tendencias mundiales en el proceso de dirección del entrenamiento deportivo. Curso de Postgrado impartido en la Universidad de Guayaquil. (págs. 2-18). Guayaquil: Instituto de Investigaciones.
- Rey, E. (2012). Estrategias de recuperación post-ejercicio en el fútbol. *Revista de Preparación Física en el Fútbol*, 1-12. [https://d1wqtxts1xzle7.cloudfront.net/31303734/69-240-1-PB.pdf?1369576004=&response-content-disposition=inline%3B+filename%3DEstrategias\\_de\\_recuperacion\\_post\\_ejercic.pdf&Expires=1614731607&Signature=NKH3ID2y6rzZf1uPKp3oxLI9SG3RDy~gUDPkPUD7HeMyA1c35xrDREMG](https://d1wqtxts1xzle7.cloudfront.net/31303734/69-240-1-PB.pdf?1369576004=&response-content-disposition=inline%3B+filename%3DEstrategias_de_recuperacion_post_ejercic.pdf&Expires=1614731607&Signature=NKH3ID2y6rzZf1uPKp3oxLI9SG3RDy~gUDPkPUD7HeMyA1c35xrDREMG)
- Sport, L. R. (2000). Manual de entrenamiento de fútbol. California: La84foundation. <https://la84.org/wp-content/uploads/2016/09/LA84SpanishSoccerManual.pdf>
- Turner, A. N., & Stewart, P. F. (2014). Strength and conditioning for soccer players. *Strength & Conditioning Journal*, 36(4), 1-13. doi:10.1519/SSC.0000000000000054
- Vásquez, V. E., Riquetti, H. A., & Morales, S. C. (2017). Estudio del ácido láctico en el crossfit: Aplicación en cuatro sesiones de entrenamiento. *Revista Cubana de Investigaciones Biomédicas*, 36(3), 1-13. <http://www.revibiomedica.sld.cu/index.php/ibi/article/view/73>

**Conflict of interest:**

The authors declare that they have no conflicts of interest.

**Authors' contribution:**

**Carlos Luis Paucar Haro:** Conception of the idea, literature search and review, preparation of instruments, application of instruments, collection of information resulting from the instruments applied, statistical analysis, preparation of tables, graphs and images, preparation of database, general advice on the subject matter, drafting of the original (first version), revision and final version of the article, authorship coordinator, translation of terms or information obtained, review of the application of the bibliographic standard applied.

**Erick David Revelo Jurado:** Conception of the idea, literature search and review, preparation of instruments, application of instruments, collection of information resulting from the instruments applied,



statistical analysis, preparation of tables, graphs and images, preparation of database, general advice on the subject matter addressed, drafting of the original (first version), revision and final version of the article, authorship coordinator, translation of terms or information obtained, review of the application of the bibliographic standard applied.

**Mónica Mercedes Cabezas Flores:** Proofreading of the article, review of the application of the bibliographic standard applied.



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.  
Copyright (c) 2022 Carlos Luis Paucar Haro, Erick David Revelo Jurado, Mónica Mercedes Cabezas Flores

