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Impact of Small-Sided Games and Hoff Circuit Training on Aerobic Capacity

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Abstract :
This study aimed to compare the effects of small-sided games (4 vs. 4) versus training in the Hoof technical circuit on improving aerobic capacity in soccer players. The study included 16 soccer players with similar characteristics (average age: 24.7 ± 3.28 years, average weight: 76.4 ± 4.2 kg, average height: 180.6 ± 3.2 cm), divided into two distinct training methods: small-sided games (4 vs. 4) and circuit training using the Hoof technical circuit. The results, analyzed statistically using SPSS, indicated no statistically significant differences between the two integrated training methods—small-sided games (4 vs. 4) and the Hoof technical circuit—in enhancing aerobic capacities such as maximal aerobic speed (VMA) and maximal oxygen consumption (VO^2 max). Both methods contributed to improving aerobic capacity at comparable levels, with a slight advantage observed in the post-test compared to the pre-test for both groups.

Keywords: Small-Sided Games, Hoof Technical Circuit, Maximal Aerobic Speed (VMA), Maximal Oxygen Consumption (VO^2 Max).

Introduction

The growing interest in enhancing players' performance has driven researchers and specialists to explore new training methods based on a deep understanding of the physiological changes occurring within the body in response to training. Through meticulous planning and continuous evaluation of training programs, it is possible to induce chemical changes in various body systems, leading to increased physical efficiency and the player's ability to endure physical exertion. In other words, sports training aims to improve the responsiveness of the body's vital systems to training loads, enabling athletes to sustain optimal performance over extended periods while maintaining high energy levels.

With the rapid development of soccer and the increasing level of competition, it has become essential to seek the latest training methods and techniques that allow players to reach their full potential. Current competitive scenarios require players to possess a wide range of physical and technical abilities. This continuous evolution in soccer demands advanced and specialized training methods from coaches and sports analysts (Sannicandro, 2020). As a sport, soccer involves a continuous alternation between aerobic and anaerobic exertion, characterized by high-intensity intermittent movements such as kicking, jumping, accelerating, decelerating, and changing direction. This unique nature of the game makes training design both more complex and critical, as training programs must address these diverse movement demands and develop players capable of managing them effectively.

During a match, a player runs approximately 8 to 14 kilometers and performs around 1,200 activity changes (equivalent to one change every 3–5 seconds), executed intermittently and non-cyclically. Soccer is a sport that develops both aerobic and anaerobic fitness (Rich D. Johnston, 2018).

The primary focus in football has shifted towards establishing new methods and strategies to prepare players for the highest levels of readiness and competition. On a broader scale, training methods have gained significant importance, varying based on the approach or technique employed. These methods leverage technological advancements to develop training programs aimed at enhancing physical abilities in alignment with football performance. The ultimate goal is to optimize the player's physical, technical, and tactical capacities and elevate them to their maximum potential.

A crucial aspect of physical preparation, particularly in improving players' aerobic capacities, is knowing how to effectively manage players' physical strength through ball-based exercises. Integrating the ball into physical training enables players to acquire technical, tactical, and physical capabilities (Selmi O. B., 2017).

Therefore, ball-based physical training is considered one of the most effective methods for enhancing aerobic capacity, improving competitive performance, and developing specific skills under opponent pressure. This approach achieves the aforementioned goals while incorporating physical, technical, and tactical exercises into training programs (Aguiar, 2012).

The scientific evidence underscores that the use of integrated ball-based exercises (integrated physical preparation) is richer and more comprehensive than traditional physical training. Beyond the advantages highlighted by recent research in integrating physical training with technical and skill-related aspects, other benefits include improved player motivation and the creation of realistic gameplay scenarios by increasing the number of biomechanical situations encountered in competition. This approach also facilitates strategic development, with energy demands closely resembling those of actual competition (Dellal A. , 2013).

Small-sided games (SSGs) have emerged as one of the most favored training methods among coaches and players alike, as they provide both psychological and physical workloads that closely mimic the demands of competition. The key advantage of this training method lies in its reliance on the ball, which imparts a specific and contextual quality to the training load, drawn directly from the characteristics of real competition (Selmi O. B., 2017) (Selmi O. H., 2017). This makes SSGs not only more effective but also more motivational compared to other training methods.

The significance of small-sided games lies in their ability to provide coaches with scenarios that closely simulate real football competition. This multifaceted approach targets various energy systems simultaneously (Little T. , 2009), alongside addressing the technical and tactical aspects specific to football. Small-sided games are structured as matches with either balanced or unbalanced numbers of players, organized according to the desired objective. These games replicate specific match-play situations and drills, defined by time, the number of players, and the space utilized.

The objective is to approximate actual match activities as closely as possible, based on data related to players' cardiac activity. Numerous studies have highlighted that small-sided games, typically ranging from **3 vs. 3** to **5 vs. 5**, produce maximum heart rate percentages similar to those elicited during continuous or intermittent endurance training. When considering high-intensity efforts, imposed technical constraints, and the interplay between technical-tactical components and physical exertion, small-sided games can be effectively integrated into football-specific physical conditioning programs (Hill-Haas, Coutts, Dawson, & Rowsell, 2010) (Rampinini, 2007).

The size of the playing area is considered one of the most critical factors in this type of training. It might seem intuitive to assume that the larger the playing area, the higher the energy expenditure. However, as (Selmi O. B., 2017) explained, several variables are studied and controlled in such games. These include changes in the field's size and dimensions, the number of players, the encouragement from the coaching staff, the number of ball touches allowed, and the presence or absence of goalkeepers within the designated goal area. The intensity and style of the game are also adjusted to meet various football-related demands.

Notably, variations in the playing area have a more significant impact on technical and tactical factors compared to changes in cardiovascular stimulation and aerobic capacity. Generally, the size of the playing area in small-sided games is directly linked to the number of players involved (Hill-Haas, Coutts, Dawson, & Rowsell, 2010) (Selmi O. B., 2017).

Small-sided games have emerged as one of the most favored training methods among coaches and the most engaging for players. This popularity stems from their ability to provide both psychological and physical loads during training, closely simulating the actual demands of competition. What sets this approach apart is its reliance on the ball, which gives the training load a distinctive quality derived from the specific nature of real competition. Consequently, small-sided games are considered more effective and motivating compared to other training methods (Silva, Santhiago, Papoti, & Gobatto, 2008) (Hill-Haas, Dawson, Impellizzeri, & Coutts, 2011) (Dellal A. O., 2012).

Conversely, circuit training remains one of the significant methods in sports training, operating within a defined framework chosen by the coach to achieve predetermined objectives. It serves as an organizational approach, utilizing continuous, interval, or repetitive load configurations. Circuit training organizes exercises into a specific circular structure according to a planned program, making it a versatile and structured method of implementing various training strategies (Taşkin, 2009).

Circuit training is recognized as a flexible training system that adapts to various variables. It involves performing relatively simple movements at successive training stations to develop and enhance multiple fundamental attributes as much as possible. This is achieved through doses of high-intensity endurance, characterized by constant variation in the level of strain on different parts of the body. The training groups are alternated individually or in small, independent groups within a circuit that is repeated, with minimal or no rest periods between exercises.

Circuit training can be utilized to provide consistent loading on all muscles as evenly as possible while supporting the cardiovascular, circulatory, and respiratory systems. Additionally, it contributes to the development of technical performance, motor skills, and fundamental physical attributes. It also plays a crucial role in enhancing the efficiency of the cardiovascular and respiratory systems, increasing fatigue resistance, and promoting adaptation to physical exertion. Furthermore, it is regarded as one of the most effective forms of sports training in fostering moral traits such as willpower, self-reliance, discipline, and integrity in performance.

The exercises selected for a circuit typically range between 6 and 10 and must account for the intensity of each exercise and the body parts targeted. When designing the circuit, exercises should sequentially engage all major muscle groups without repeating the same body part in consecutive exercises. The development and improvement of physical capabilities largely depend on the intensity of the exercises incorporated into the circuit (Belli, Marini, Mauro, Latessa, & Toselli, 2022).

The Hoof circuit is one of the training circuits that incorporates ball-based exercises and consists of activities such as jumping, forward and backward running, and direction changes through ball dribbling. These exercises have been shown to closely align with performance scenarios that occur during matches. Additionally, the circuit has proven effective in enhancing aerobic capacities, such as maximal oxygen consumption (VO^2 max), maximal aerobic speed (VMA), and maximum heart rate. Some experts recommend the Hoof circuit as an alternative aerobic training method, with heart rate monitoring serving as a valid and reliable indicator for tracking and assessing players' condition during training (Hoff, 2002) (Chamari, 2005).

Circuit training has become a cornerstone of sports training science, enabling experts and researchers to design general training circuits to enhance physical fitness and specialized circuits targeting specific attributes (strength, speed, endurance, flexibility, etc.). The "Hoff Circuit" is one such training model, aimed at utilizing continuous load training to broadly improve functional capacities. A study by (Hoff, 2002) demonstrated significant improvements in cardiovascular efficiency and oxygen consumption, as well as psychological and educational benefits such as self-reliance, decision-making ability, determination, and willpower (Helgerud, Engen, & Wisløff, 2001) (Hoff, 2002).

Given the integrative relationship between physical fitness and technical performance, combined with the Hoff Circuit's reliance on ball-based training, numerous studies have highlighted its effectiveness in enhancing aerobic endurance (aerobic threshold). Evaluations conducted within the Hoff Circuit have shown that aerobic capacity can be reliably used to predict maximal lactate steady-state levels and heart rate associated with aerobic endurance in specific tests.

(Hoff, 2002) emphasized that the significant improvement in players' maximal oxygen consumption (VO2max) during training on the Hoff Circuit is closely linked to the inclusion of the ball in the exercises. This underscores the ball’s role as a motivating factor for players.

Additionally, there is a strong relationship between aerobic endurance, technical performance, and the use of the ball during training (Mcmillan, et al., 2005) (Castagna, Manzi, Impellizzeri, Weston, & Alvarez, 2010) Recent findings regarding the field validity of the Hoff Circuit have demonstrated that aerobic endurance (specifically, the anaerobic threshold) assessed within this circuit is a reliable predictor of maximal lactate steady-state and heart rate associated with aerobic endurance in specific tests. However, a key knowledge gap remains: whether specific football-related exercises and non-sport-specific activities elicit comparable physiological responses and intensities.

(Zouhal, et al., 2013) reported that oxygen uptake, total oxygen consumption, and blood lactate levels were higher during the Hoff Circuit compared to high-intensity intermittent aerobic exercises (15-second/15-second intervals), although heart rate was similar between the two. However, the rating of perceived exertion (RPE) was higher during high-intensity intermittent aerobic exercises (Zouhal, et al., 2013).

Similarly, a study by (Esposito, et al., 2004) compared the relationship between heart rate and oxygen consumption during a laboratory treadmill test and a football-specific test. It was observed that the relationship between oxygen uptake and heart rate was similar in both tests. Nonetheless, this relationship may not always be identical, as the heart rate at which an athlete reaches their aerobic endurance capacity is likely to differ depending on the context (Esposito, et al., 2004).

Evaluating aerobic endurance capacity within the Hoff Circuit enhances the specificity of aerobic assessment and improves the description and monitoring of football training using tailored tools. Given the widespread use of small-sided games in football training, heart rates associated with aerobic endurance may vary when analyzed in the context of continuous running compared to sport-specific movements. Therefore, sport-specific heart rate metrics would be more effective for managing the training load in small-sided games.

Through this case study, we aim to explore the impact of two integrated training methods—small-sided games and the Hoof technical circuit—on improving the aerobic capacities of soccer players.

1.1 Study Objective:

This study aimed to compare the effects of small-sided games (4 vs. 4) and the Hoof training circuit on improving aerobic capacities in soccer players.

1.2 Methods and Approach:

1.2.1 Participants:

The study involved players from the senior team of Ittihad El Chaouia Football Club, competing in the Algerian Second National Division during the 2020/2021 season. All participants were free of injuries or chronic medical conditions, and goalkeepers were excluded from the study. Participants were purposefully selected, with a total of 16 players sharing similar characteristics (average age: 24.7 ± 3.28 years, average weight: 76.4 ± 4.2 kg, average height: 180.6 ± 3.2 cm).

1.2.3 Measurement Tool:

The VAMEVAL progressive field test was used to assess maximal aerobic speed (VMA) and maximal oxygen consumption (VO^2 max).

All players performed the VAMEVAL test (Figure 1) during the first session to measure VMA and VO^2 max. The test was conducted on a 200-meter outdoor track using 10 cones placed at 20-meter intervals in predetermined positions on the track. A pre-programmed auditory signal was used to guide the test. The starting speed was set at 8 km/h and progressively increased by 0.5 km/h every minute until exhaustion.

The test was terminated when the participant could no longer maintain the required running speed for two consecutive signals or felt unable to continue the stage.

Figure 1: Diagram Illustrating the VAMEVAL Progressive Field Test

1.3 Study Tools:

The participants underwent a mid-season training program lasting six weeks, with two sessions per week. The sample was divided into two equivalent experimental groups, each consisting of 8 players. The first experimental group followed a training program based on small-sided games (4 vs. 4) without goalkeepers. The dimensions and duration of the gameplay were precisely adapted from previous studies (Castellano, 2012). The second experimental group followed a training program using the Hoof training circuit (Figure 2), with the same number of sets, work durations, and rest intervals as applied to the first experimental group.

On the first day, at approximately 2:00 PM and under a temperature of 12°C, the participants performed the VAMEVAL test on an artificial grass field. This served as the measurement tool to determine the (VMA) and estimate the (VO^2 max).

Table (01): Specifications of the Training Programs Applied

	Small-Sided Games (4 vs. 4)	Hoof Technical Circuit
Number of Sets	4	4
Exercise Duration (minutes)	4	4
Rest Duration (minutes)	3	3
Field Dimensions (meters)	25 × 30	290

2. Small-Sided Games:

Starting from the second training session, the program was implemented, with players in the first experimental group performing small-sided games in a (4 vs. 4) format on an artificial grass field within a 35 × 25-meter square. During the allotted performance time, players were told to give it their all and keep it up. Additionally, they were instructed to hold onto the ball for as long as possible.

The small-sided games were conducted under the supervision of coaches positioned around the perimeter of the designated square to encourage the players and provide replacement balls whenever the game ball went out of play, ensuring the continuity of the game without interruptions.

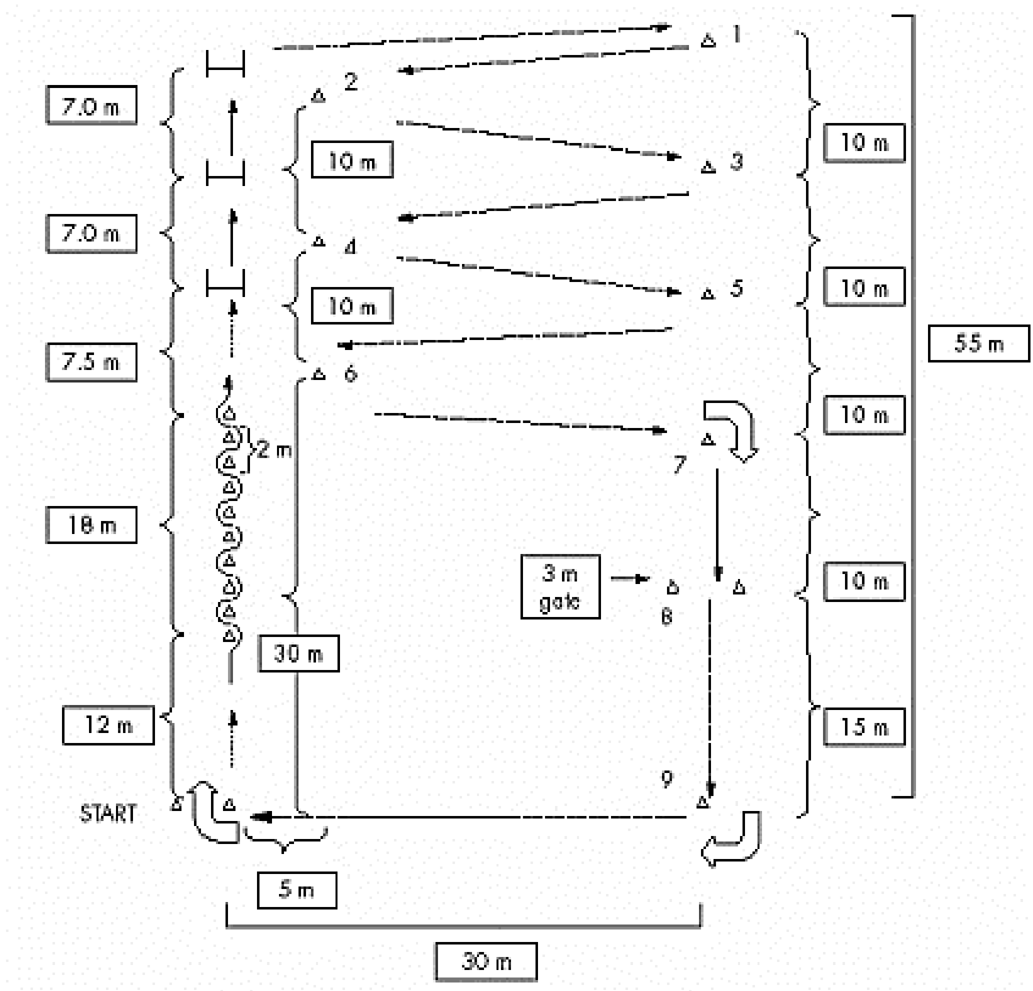
The (4 vs. 4) small-sided games were conducted without goalkeepers, over four sets, with each set lasting 4 minutes. Positive recovery periods of 3 minutes were provided between each set.

3. Hoof Technical Circuit:

At the same time, players in the second experimental group performed the Hoof technical circuit (Figure 2), where the ball accompanied the player over a continuous distance of 290 meters through a series of cones placed 18 meters apart, with a 2-meter gap between each cone. The player was required to jump three times over 60 cm-high hurdles spaced 7 meters apart. Following this, the player ran 27 meters at maximum speed, rolled the ball backward for 10 meters, and then sprinted forward for 45 meters. This sequence was repeated continuously until the allotted time expired (Hoff, 2002).

After completing the program, a training session was scheduled the following day to re-administer the VAMEVAL test, in which all players participated. This test aimed to determine the maximal aerobic speed (VMA) and estimate the maximal oxygen consumption (VO^2 max).

Figure 2: Diagram of the Hoof Technical Circuit.



3.1 Statistical Analyses:

SPSS software version 20 for Windows (SPSS Inc., Chicago, IL, USA) was used to conduct statistical analyses. The mean ± standard deviation (SD) of the data was displayed. One-way analysis of variance (ANOVA), independent-sample t-tests, and paired-sample t-tests were the statistical tests used. $P < 0.05$ was established as the threshold for statistical significance.

4. Results:

Table 2: Results of the differences in aerobic tests between the pre-test and post-test for the small-sided games group.

Statistical Variables	Pre-Test		Post-Test		(Tc) Calculated Value	Probability Value (SIG)
	Mean	± SD	Mean	± SD		
VMA Test	15.75	0.876	17.95	0.801	7.866-	0
VO^2 Max Test	55.18	3.044	62.82	2.806	-8.081	0
Significance Level (α = 0.05)		Degrees of Freedom = 7		Confidence Level (95%)		

The results of the differences between the pre-test and post-test for the small-sided games group, in terms of aerobic capacities represented by maximal aerobic speed (VMA) and maximal oxygen consumption (VO^2 max), as illustrated in the table above, indicate statistically significant differences. The calculated (Tc) values for both tests fell within the range (-8.081; -7.866), which are statistically significant since the probability value (SIG) is less than the significance level (Sig = (0.000) < 0.05).

Thus, statistically significant differences were observed in favor of the post-test. The researcher notes that the use of small-sided games improved the level of the aerobic capacities under study. These differences are attributed to the practical methodology applied in the small-sided games training program. The mean values for both measurements differ within the statistical confidence level (95%) and are statistically significant according to the paired-sample t-test. These statistical differences are not random but are directly related to the training program implemented by the researcher on the study sample.

Table 3: Results of the Differences in Aerobic Tests Between Pre-Test and Post-Test for the Hoof Technical Circuit Group.

Statistical Variables	Pre-Test		Post-Test		(Tc) Calculated Value	Probability Value (SIG)
	Mean	± SD	Mean	± SD		
VMA Test	15.48	1.275	17.55	0.655	-7.002	0
VO^2 Max Test	54.2	4.464	61.42	2.329	-7.002	0
Significance Level (α = 0.05)		Degrees of Freedom = 7		Confidence Level (95%)		

The results of the differences between the pre-test and post-test for the Hoof technical circuit group, in terms of aerobic capacities represented by (VMA) and (VO^2 max), as shown in the table above, indicate statistically significant differences. The calculated (Tc) value for both tests was -7.002, which is statistically significant since the probability value (SIG) is less than the significance level (Sig = (0.005) < 0.05).

Therefore, there are statistically significant differences in favor of the post-test. The researcher notes that relying on the Hoof technical circuit has improved the aerobic capacities under study. These differences are attributed to the practical methodology applied in the circuit training program, specifically through the Hoof technical circuit. The mean values for both measurements differ within the statistical confidence level (95%) and are statistically significant according to the paired-sample t-test. These statistical differences are not due to chance but are directly linked to the training program implemented by the researcher on the study sample.

Table 4: Results of Post-Test Differences in Aerobic Tests Between the Small-Sided Games Group and the Hoof Technical Circuit Group.

Statistical Variables	Small-Sided Games		Hoof Technical Circuit Group		(Tc) Calculated Value	Probability Value (SIG)
	Mean	± SD	Mean	± SD		
VMA Test	17.95	0.801	17.55	0.655	1.086	0.296
VO^2 Max Test	62.82	2.806	61.42	2.329	1.086	0.296
Significance Level (α = 0.05)		Degrees of Freedom = 14		Confidence Level (95%)		

According to the aforementioned findings, which contrast the variations between the circuit training group, represented by the Hoof technical circuit, and the small-sided games training group in the post-test of all aerobic capacity tests, including (VO2 max) and (VMA), no statistically significant differences were observed between the two methods in improving the aerobic capacities under study. The probability value for both tests was greater than the significance level (Sig = (0.296) > 0.05), which does not indicate statistical significance.

Accordingly, the researcher notes that there are no substantial differences between the two methods in enhancing aerobic capacities. This is attributed to various practical factors that did not yield significant differences between the two groups' mean values. Furthermore, the lack of statistical significance between the groups is likely related to the reference values of the statistical variables for each group and the cumulative characteristics of each training method and approach applied to both groups.

In this context, the researcher indicates that all values obtained from the post-tests of aerobic capacities for a sample size of (n = 16) serve as a fundamental basis for post-test comparisons aimed at determining the effect size between the two groups and identifying which method was more effective in improving aerobic capacities compared to the other. The researcher establishes significance levels to assess the alignment of these results with hypotheses that enable informed decision-making based on the variations in physical capacity values between the small-sided games training group and the circuit training group represented by the Hoof technical circuit.

5. Discussion:

The statistical analysis of the raw results for aerobic capacities in the small-sided games group, obtained through the VAMEVAL test to measure (VMA) and (VO^2 max), indicated significant differences between the pre-test and post-test. Consequently, statistically significant differences were observed.

The calculated (Tc) value for the VMA test was -7.866, while for the VO^2 max test, it was -8.081. These values are statistically significant, as the corresponding probability values were less than the significance level (Sig = (0.000) < 0.05). Therefore, statistically significant differences were identified in favor of the post-test.

Based on the aforementioned results, we can confirm that the integrated physical training program based on ball exercises, specifically the "small-sided games (4 vs. 4)" proposed in the training program, effectively improved the aerobic capacities of soccer players. The researcher believes that the improvement observed in the post-test reflects the players' adaptation to the training load.

In this context, (Dellal A. , 2013) emphasized that consistent training leads to positive functional changes in the respiratory system. These changes enhance the flexibility of the chest muscles, increasing their ability to expand, which in turn boosts the volume of inhaled air. This facilitates an increase in oxygen exchange between the blood and alveoli, resulting in more efficient breathing.

Several studies, including those by (Billat, 2017), (Little, 2006), (Rampinini, 2007), and (Köklü Y. , 2012), have reported significant improvements in maximal oxygen consumption (VO^2 max) and maximal aerobic speed (VMA) after relatively short training periods (6 to 8 weeks) using small-sided games. This finding is supported by (Köklü Y. S., 2015) , who demonstrated that small-sided games (3 vs. 3) and (4 vs. 4) are more effective in improving players' aerobic capacities and in developing the cardiovascular system compared to smaller formats such as (2 vs. 2), which primarily enhance anaerobic capacities.

Additionally, findings from (Berdejo-del-Fresno, 2015) indicate that small-sided games can improve players' aerobic capacities. In their study, a training program based on small-sided games was implemented over six consecutive weeks, with two sessions per week. The results revealed that small-sided games had a substantial impact, leading to significant increases in VO^2 max among the players.

On the other hand, the statistical analysis of the raw results for aerobic capacities in the Hoof technical circuit group, the results of the VAMEVAL test, which measures (VO2 max) and (VMA), showed a significant difference between the pre-test and post-test. As a result, statistically significant variations were noted.

The calculated (Tc) value for both the VMA test and the VO^2 max test was -7.002, and these values are statistically significant since the probability values were less than the significance level (Sig = (0.000) < 0.05). Therefore, we confirm the presence of statistically significant differences in favor of the post-test.

In light of the aforementioned results, we confirm that the training program based on the circuit training method, represented by the Hoof technical circuit, effectively improved the aerobic capacities of soccer players, specifically maximal aerobic speed (VMA) and maximal oxygen consumption (VO^2 max). The researcher attributes the improvement observed in the post-test to the players' adaptation to the training load, which aligns with findings from numerous studies that utilized the Hoof circuit to evaluate aerobic fitness. These studies have demonstrated significant correlations between the maximum distance covered in the circuit within a 10-minute time frame and VO^2 max (r = 0.68), alongside a notable improvement in aerobic performance (a 9.6% increase in circuit performance). This aligns with the results of the current study, where six weeks of training, with two sessions per week, resulted in respiratory system enhancement, increased oxygen uptake, and subsequent improvement in aerobic capacities.

(Hoff, 2002), when proposing the circuit used in this study, described the protocol as a potential training method for improving VO^2 max while maintaining the motor skills required during soccer gameplay, making it highly applicable for practical use.

Thus, we acknowledge a potential correlation between the distance covered in the Hoof test and the parameters of maximal oxygen uptake (VO2 max), anaerobic threshold, and anaerobic fitness in soccer players. The study revealed that the distance covered during the Hoof test positively correlates with maximal oxygen consumption (VO^2 max).

The researcher attributes the positive development in aerobic capacities, as measured by the VAMEVAL test, to the training approach implemented in the Hoof circuit. The performance in the Hoof circuit was strongly correlated with VO2 max. Moreover, the incorporation of the ball in the form of dribbling served as a significant motivational factor, encouraging players to persist through the circuit.

Thus, we conclude that there is a strong correlation between maximal oxygen consumption (VO2 max) and performance in the Hoof circuit. The improvement in VO2 max observed in the current study positively influenced the increased distance covered in the Hoof test for both groups in the post-test. This conclusion aligns with findings by (Chamari, 2005), which demonstrated a positive relationship between VO2 max and performance in the Hoof circuit, where improvements in VO2 max directly translated to enhanced test performance through an increase in the distance covered.

6. Conclusion:

The results of this study demonstrated that both the small-sided games method (4 vs. 4) and the circuit training method (Hoof) were effective in improving the aerobic capacities of soccer players, with no statistically significant differences observed between them. This indicates that coaches can utilize either method or combine them within a training program to achieve improvements in aerobic fitness.

However, it is recommended to conduct further studies with larger samples, over longer durations, and at different stages of the sports season. Future research should also consider modifying the parameters of small-sided games (field dimensions, number of players, exercise duration, recovery periods, coach encouragement, and rule changes) to validate these findings and evaluate the impact of other variables, such as age, skill level, and different age groups.

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