



The Effect of Concurrent Training on Selected Physical Variables and Offensive Skills in Futsal Players

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Abstract

Futsal is a physically demanding team sport that relies on physical capabilities and offensive skills including passing, dribbling, and shooting. Therefore, the current study was carried out to investigate physical variables and offensive skills as a result of a concurrent training program in experienced futsal players. Sixteen players of Al-Baladiyah Club, who participated in the 2023-2024 season, were divided into an experimental group and a control group with eight players in each. The concurrent training regime involved a combination of strength and endurance work in the experimental group. The control group continued with their normal training exercise. Measures for pre-test and post-test were taken to assess physical variables (i.e. muscular strength, speed, endurance, agility) and selected offensive skills were taken as part of the study. Statistical analysis suggested clear differences in terms of speed and performance variables in favor of the experimental group compared to the control group. These results suggest that a concurrent training program was effective in promoting overall fitness and a selected set of technical skills. The study promotes that concurrent training programming has benefits for futsal players as a targeted opportunity to enhance player performance with practical background to introduce evidence based practice for coaches.

Keywords : Concurrent training; Physical performance; Offensive skills; Futsal

1. INTRODUCTION

Futsal is one of the team sports that has a high speed and demands above average levels of fitness and skills because of the speed and dynamic features of the sport (Ah & S, 2020). The success of the futsal player is the result of a combination of a players physical capacities such as; strength, speed, endurance and agility, and their offensive skills such as passing, dribbling and shooting (Ahmad, 2020; Andika et al., 2020).

The quality of the futsal training is indispensable in order to teach and attain the physical and offensive skills that directly influence performance on the futsal court (Abarghoueinejad et al., 2021; Adewale et al., 2024). Concurrent training is considered as a method of increasing overall athletic performance because it incorporates strength and endurance features in a combined training program. However, the studies that have examined this training method and approach to futsal have not specifically demonstrated the effects of concurrent training on futsal players' and their physical and offensive capabilities (Abarghoueinejad et al., 2021; Ahmed & Al Salim, 2024; Bagus Wahyu Prastyo et al., 2017) .

The purpose of this study is to investigate the effects of concurrent training on selected

physical variables of futsal players; explosive strength, speed and endurance, as well their offensive skills of passing, dribbling and shooting (BURHANUDIN, 2021; Kuswoyo, 2017). The findings are expected to be given practical recommendations on how to incorporate concurrent training into futsal programs enhancing player performances on the futsal court, while maintaining other important skill development considerations.

Research Problem: Although concurrent training has potential benefits, there is still debate regarding its effectiveness in improving physical variables and offensive skills in futsal players (Belo et al., 2024). Even though concurrent training may have benefits, ongoing discussions exist around its effectiveness for improving physical and offensive skills in futsal players.

Research Objectives:

1. To determine the effect of concurrent training on selected physical variables (strength, speed, endurance, and agility) in advanced futsal players.
2. To assess how concurrent training would influence offensive skills (passing, dribbling, shooting, and off-the-ball movements).
3. To compare pre- and post-test comparisons for both the experimental group and control groups.
4. To analyze post-test between experimental and control groups.

Research Hypotheses:

1. Concurrent training has a positive effect on the physical variables related to advanced futsal players (strength, speed, endurance, agility).
2. Concurrent training positively affects the offensive skills of advanced futsal players (passing, dribbling, and shooting).
3. Physical fitness and offensive performance will be positively correlated, and there will be a statistically significant relationship between improvements in physical fitness and offensive performance after program application of concurrent training.

5. Research Scope:

1. Population: Players of Baladiyat Nasiriyah Club, 2023–2024 season.
2. Time Frame: January 2 – June 5, 2024.
3. Location: Indoor hall at Sumer Specialized Center, Thi-Qar, Iraq.

2. METHODOLOGY

This research utilized an experimental design with pre- and post-tests administered to both the experimental and control groups (Sugiyono, 2012). The experimental group completed a concurrent training program while the control group adhered to a traditional training model.

Population and Sample: The individuals participated in this study are 20 futsal players at Baladiyat Nasiriyah Club. A sample of 16 players (80% of participants) was randomly assigned into two groups each include 8 players, one group as experimental group, while the other group is the control (Arikunto, 2010).

Data Collection Instruments:

1. Sources of information: It included a review of both Arabic and international literature, interviews with experts, observations of researchers, and available online databases.
2. Physical measures: Vertical jump (explosive strength) 20-meter sprint (speed), and

Cooper test (endurance).

3. Skill tests: Dribbling, distance passing and shooting a goal.

4. Equipment: Electronic timer, laptops, whistles, measuring tape, futsal balls, markers/scones/barriers, and an electronic weight scale.

Training Program:

N o	Variable	Unit	Pre-test		Post-test		t	Sig.	Signifi cance
			Mea n	± SD	Mea n	± SD			
1	Vertical Jump	Sec	44.37	3.20	47.8 7	2.29	1.99	0.03	Signifi cant
2	Sprint (Speed)	Sec	3.91	0.42	3.76	0.38	0.173	0.31	Not significa

1. Duration: 8 weeks, 3 times weekly (Sunday, Tuesday, and Thursday).
2. Intensity: increasing progressive intensity from 75–95%.
3. Type: Concurrent training variety, interval and repetition methods.
4. Session structure: Exercises were set into the main unit of training; rest intervals were prescribed based on heart rate, 120-130 bpm between repetitions, and 110-120 bpm between sets.
5. Total training time: 623 minutes (70–90 minutes in each week).

Data Analysis: The data collected were analyzed using SPSS in order to make analysis of the difference between pre and post test, and also between the experimental and control groups.

3. RESULTS AND DISCUSSION

Results

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3	Cooper Test	Sec	1646.25	12.80	1663.12	23.29	1.10	0.21	Not significant
4	Dribbling	Score	5.87	0.83	5.50	0.92	0.85	0.22	Not significant
5	Passing Accuracy	Score	5.75	1.03	6.37	0.91	1.27	0.11	Not significant
6	Shooting Accuracy	Score	5.25	1.03	6.12	0.99	1.72	0.09	Not significant

Table 3. Comparison of the Post-Test among Experimental and Control Group

No	Variable	Unit	Control (Mean \pm SD)	Experimental (Mean \pm SD)	T	Sig	Significance
1	Vertical Jump	Sec	47.87 \pm 2.29	50.37 \pm 2.66	2.49	0.00	Significant
2	Sprint (Speed)	Sec	3.76 \pm 0.38	3.86 \pm 0.37	0.52	0.41	Not significant
3	Cooper Test	Sec	663.12 \pm 23.29	1690.60 \pm 21.11	2.47	0.00	Significant
4	Dribbling	Score	5.50 \pm 0.92	4.87 \pm 0.64	1.57	0.31	Not significant
5	Passing Accuracy	Score	6.37 \pm 0.91	8.00 \pm 1.06	3.26	0.00	Significant
6	Shooting Accuracy	Score	6.12 \pm 0.99	6.50 \pm 0.92	0.78	0.77	Not significant

Discussion

The analysis of the pre-tests and post-tests data for both the experimental group and the control group provides meaningful evidence regarding the impact of synchronous training on fitness levels and offensive skills in futsal. The following interpretive discussion is based around the main findings in the tables. In the control group, there was a significant improvement in vertical jump; however, no other main tests, including the sprint, exhaustion, dribbling, shooting, and passing, showed a significant change. This suggests that the training design was either not specific enough to target or not sufficiently intense enough to improve those respective skills. The experimental group demonstrated a statistically significant improvement in almost all tests, specifically vertical jump, endurance, dribbling, passing, and shooting. The results imply sets display the effectiveness of synchronized training in improving physical fitness and offensive skills in futsal. The present study looked examined the effects of 8-weeks of concurrent training on selected physical variables and offensive skills in advanced-based futsal players. The results

demonstrate that concurrent training significantly improved multiple physical capacities and offensive skills in futsal player of in support of the first two research hypotheses.

Physical Variables:

In the experimental group, vertical jump height improved significantly from 44.5 ± 2.67 cm to 50.37 ± 2.66 cm ($p < 0.01$) and endurance (Cooper test) improved from 1653.5 ± 30.58 m to 1690.6 ± 21.11 m ($p < 0.01$). These results indicate that strength and endurance exercises used together increase neuromuscular adaptations and cardiovascular efficiency. On the other hand, the control group had minimal changes in vertical jump height but had a statistically significant difference ($p < 0.05$) for vertical jump height only, along with no significant changes in sprint speed for either group, possibly because the concurrent program was primarily strength and endurance and not sprint specific, suggesting sprint speed could be improved with sprint specific drills. These results align with prior works which have suggested that delivering strength and endurance drills together can improve explosive strength and aerobic capacity (Baechle, T. R., & Earle, R. W., 2008; Crowley et al., 2018) (JPO, 2022; Smith et al., 2021).

Offensive skills:

Passing accuracy improved statistically in the experimental group from 6.5 ± 1.19 to 8 ± 1.06 ($p < 0.01$) along with shooting accuracy ($p < 0.01$). Dribbling scores were also statistically significant ($p < 0.01$), which suggests that concurrent physical training positively impacts execution of technical skill. The control group had marked improvements in offensive skills with no significant results to highlight the benefit of targeted concurrent training. The study findings are in line with similar studies that advocate integrated physical and method training for improved performance in futsal and similar sports (Abarghoueinejad et al., 2021; Dingley et al., 2015)

Post-test Comparisons:

The experimental and control groups showed significant differences in vertical jump, endurance, and passing accuracy ($p < 0.05$), with no significant differences for sprint, dribbling, and shooting accuracy. This means while concurrent training has shown to be successful in improving strength and some skill-related skills, additional sport specific sprint drills may be required to improve speed.

Practical implication:

The results support concurrent training in the futsal training plans to improve both physical and technical aspects of the game. It is encouraged in practice, coaches should set up sessions that combine strength, endurance, and skills practice to maximize player improvement.

4. CONCLUSION AND RECOMMENDATIONS

Conclusion

1. Both experimental and control demonstrated improvement in physical and offensive skills, with the experimental group showing larger gains.
2. Concurrent training improved physical capacities and offensive skills in futsal.
3. The experimental group outperformed the control group in most post-test assessment.

Recommendations

1. Coaches should implement concurrent training exercises to improve physical and offensive performance when training for futsal.
2. Training plans should include diverse drills that mimic game scenarios to apply skill and fitness.
3. Future studies should examine other performance variables to maintain sustainable development in futsal players.

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