# Effects of Small-Sided Game on Offensive Effectiveness Using Tactical Periodization in Youth Football Player

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Abstract: The purpose of this study is to investigate the effects of small-sided games on offensive effectiveness using tactical periodization in youth football training. A pre and post control group design with two-group used with a sample of 64 football players from Kuala Lumpur. They were divided into an experimental group (n = 32) and a control group (n = 32). Over six weeks, the experimental group was given a small-sided game training using tactical periodization intervention. In contrast, the control group was given a traditional training program specific to football intervention. The sample performs offensive actions in 4 vs 4 SSGs. All participants played four minutes in both situations, and the field size was 30 m x 40m. The system of Tactical Assessment in Football (FUT-SAT) used for data collection and analyses. Analysis of Covariance (ANCOVA) was used to investigate the effects of small-sided games on offensive effectiveness using tactical periodization by controlling for covariates (preoffensive scores). Data were analyzed using SPSS for Windows®, version 20.0. Results indicated that there was a significant effect of intervention on the offensive aspect between experimental group and control group after intervention, F(1, 61) = 451.103, MSE = .958, p =.000, partial  $n^2 = 88$  by controlling for covariate effect (pre-offensive score). These findings can help coach in better selecting the type of SSG drills according to the purpose of the training session, concerning players' tactical development. Future research should consider different youth levels to ascertain whether such behaviour are similar in players of different ages and sports level.

Keywords: Small sided game, tactical periodization, offensive, youth football training, football training program

# 1. Introduction

Football is a game that involves movement, and every action taken by the player on the field is to accomplish the objective of the game itself (winning) according to the football law of the game (Tamboer, 2016). The features or structure of the game during the 90-minute match were formed, but both teams cannot have a ball possession at the same time. These features divided into two main categories which are offensive and defensive (Kempe, Vogelbein, Memmert, & Nopp, 2014). When one team has ball possession, it is the offensive team, while the other without the ball is the defensive team (Tamboer, 2016). There are four main moments in football, which are ball possession (BP), ball possession opposition (BPO), transition ball possession (TBP) and transition ball possession opposition (TBPO) (Bahri & Amiq, 2019; Berger, 2017; Konefał et al., 2018). When either team has the ball possession (Mota, Thiengo, Gimenes, & Bradley, 2016) and aim to score goals and to achieve the goal of winning the football game, that is called offensive. Over the years, coaching method has reached a mature stage. In football, teams aim to achieve two significant aims: Scoring goals and prevent the opposing team from doing so. Comprehensive work based on two goals that is scoring goals and performance variable that can ascertain the success of the team. But also, it was the battle of two different tactical approaches to succeed: possession play vs direct play (Kempe et al., 2014). Regardless of the tactical approach, one cannot merely ignore the principle of the offensive which is width, support, mobility, penetration, and creativity (González-Víllora, Serra-Olivares, Pastor-Vicedo, & da Costa, 2015)Every coach has their style of play (direct play, ball possession-based (Juego de posicion), counter-offensive, wing play, and so forth). Coaches need to know what tactical skills they need when planning training sessions and need to gain knowledge of the latest training sessions to maximize their players' potential while benefiting their entire team (Raiola & D'isanto, 2016).

In each training session, the tactical, technical, and fitness aspects should be trained in the context of football. This remains an open problem in the area. In order to allow these things to be trained in football and not trained separately (isolated training), several words were used, i.e. football tactical training, football technical training, football fitness training, football recovery training along with others in football coaching (Verheijen, 2014). By using these terms, coaches will train their players in the context of football and can avoid isolation training where these aspects can be combined and executed concurrently (Tamboer, 2016).

If the coach wants to improve the offensive aspect of football, then football should be the main context in training. This difficulty has repeatedly been encountered in this research area. Football fitness develops by playing football (Verheijen, 2014) rather than a coach doing isolated training. The physical fitness, technical, tactical, and psychological aspects can also be improved by practicing small-sided games (Clemente, Martins, et al., 2014) in a training periodization planned by a coach.

Recent years have seen growing interest in the use of small-sided games (SSGs) as a means of training team sports such as football. It is proposed that the use of SSGs as training tasks allows players to be exposed to similar sub-contexts encountered during competitive full-sided matches and thus encourages player development of the technical, physical and tactical

capabilities of players needed in full-sided games (Dellal et al., 2012; Travassos, Vilar, Araújo, & McGarry, 2014)

A considerable body of research has been conducted in exploring the use of the smallsided game. A coach can use either traditional periodization approach (Bompa & Buzzichelli, 2015; Bompa & Haff, 2016) or block periodization when designing a small-sided football training game (Issurin, 2016). Block periodization, also known as tactical periodization. Smallsided games using tactical periodization is how the problem can be tackled. Tactical periodization plays a vital role in coaching football regardless of the level and age category (Delgado-Bordonau & Mendez-Villanueva, 2012).

Given the foregoing, the purpose of this study is to investigate the effects of small-sided games on offensive effectiveness using tactical periodization in youth football training. Small-sided games using tactical periodization would be an ideal way to tackle this issue. Knowledge of this matter would give support to the decisions of coaches as they seek to better intervene in practice to target specific players and team tactical performances.

# 2. Method

A pre and post control group design with two-group was used and divided into an experimental group (n = 32) and a control group (n = 32). Over six weeks, the experimental group was given a small-sided game training using tactical periodization intervention. In contrast, the control group was given a traditional training program specific to football intervention.

#### 3. Participant

Participants were 64 youth football players from under-16 (U16) football teams with at least three years of experience in structured sports (including football or other types of game) in Kuala Lumpur. The players belonged to two different teams competing at a district level. All players performed three training sessions per week (90 min) and played a friendly match during the weekend with durations of 50 minutes, respectively. Participants were randomly allocated into two groups (experimental and control) of U16 players who participated in the differential-learning training program within six weeks. They are randomly divided using stratified random sampling method. Goalkeepers (Gk) were not involved in the study. Parents, coaches, and the school were fully informed of the aims and procedures of the study and signed informed consent forms for children's participation. All participants were notified that they could withdraw from the study at any time.

#### 4. Procedure

All participants took part in a familiarization session one week before the testing sessions. Afterwards, each group performed two testing sessions, one for the pretest and another for the posttest. Before each testing session, there was a standardized 15-min warm-up based on ball possession games and passing games. Individual and collective game behaviour were assessed during a 4 vs 4 without GK and played on an artificial-turf pitch measuring  $30m \times 40$  m (length  $\times$  width) using mini-goals. The SSG protocol was composed of two bouts of 4 min interspersed

with 2 min of passive recovery. The head coach divided the players into two balanced teams, and the players played each SSG according to their usual playing position role. With the official rules of the game, all SSG were performed as much as possible, except for the offside rule which was not applied. Several balls were placed around the field to ensure replacement as fast as possible. Coach intervention was minimised, so no feedback during the game was allowed.

# 5. Instrument

We used the System of Tactical Assessment in Football (FUT-SAT) (Costa, Garganta, Greco, Mesquita, & Seabra, 2010; Costa, Garganta, Greco, Mesquita, & Maia, 2011) which enables the assessment of offensive actions performed by players with and without ball possession. Such evaluation based on tactical principles of football with five offensive principles - (i) width, (ii) support, (iii) mobility (iv) penetration, and (v) creativity (Costa et al., 2011).

# 6. Results

For statistical procedures, we utilized the software SPSS (Statistical Package for Social Sciences) for Windows® version 20.0. Covariance analysis (ANCOVA) was used to determine differences in the effect on post-offensive scores of an intervention by controlling for covariates (preoffensive scores) (Ahmad Hashim, 2014). If the ANCOVA analysis shows significant results, pairwise comparison and estimated margin means will be used to determine specific differences between groups for offensive aspects. Preliminary analysis to evaluate the homogeneity of the assumption of slopes needs to be tested first before performing the ANCOVA analysis. This test was carried out to determine the relationship between the covariate (pre-offensive scores) and the independent variables used in the study (experimental and control groups) as factors. If the results of the ANCOVA statistical analysis are not significant, then further ANCOVA analysis can be performed. Table 1 shows the results of the statistical analysis of interactions between the two groups with pre-offensive scores (Group \* Pre-Offensive Score), F(1, 60) = .513, p = .477, p>.05, not significant. Based on this finding, ANCOVA analysis can be continued.

#### Table 1

Interaction between two groups intervention with pre offensive score based on ANCOVA analysis.

Test of Between-Subjects Effects							
Dependent Variable: Post Offensive Score							
Source	Type III Sum	df	Mean Square	F	Sig.		
	of Squares						
Corrected Model	432.518 <sup>a</sup>	3	144.173	149.352	.000		
Intercept	326.008	1	326.008	337.719	.000		
Group	4.701	1	4.701	4.870	.031		
Pre offensive Score	1.414	1	1.414	1.465	.231		
Group * Post Offensive Score	.495	1	.495	.513	.477		

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57.919 60 .96	5

Total	15558.000	64		
Corrected Total	490.437	63		
a. R Squared = .882 (	Adjusted R Squar	red = .876)		

The descriptive analysis in table 2 shows that the values of Levene's Test of Equality of Error Variance<sup>a</sup>, F (1, 62) = .190, p> .05, were not significant. Thus the assumption of homogeneity of variance for ANCOVA can be fulfilled. The primary purpose of the covariate is to determine the relationship between the covariate (pre-offensive score) and the dependent variable (post-offensive score) by controlling for factors (experimental and control groups).

# Table 2

Error

Lavene's Test of Equality of Error Variances<sup>a</sup>

# Levene's Test of Equality of Error Variances<sup>a</sup>

Dependent Variable:Post Offensive ScoreFdf1df2

1.759162.190Tests the null hypothesis that the error<br/>variance of the dependent variable is

Sig.

equal across groups.

a. Design: Intercept +

Pre Offensive Score + Group

Table 3Test of Between-Subjects EffectsDependent Variable: Post Offensive Score

Dependent v	unuole. 1 ost	Onen						
Source	Type III	df	Mean	F	Sig.	Partial	Noncent	Observed
	Sum of		Square			Eta	Parameter	Power <sup>b</sup>
	Squares					Squared		
Corrected	432.023 <sup>a</sup>	2	216.011	225.571	.000	.881	451.142	1.000
Model								
Intercept	327.330	1	327.330	341.816	.000	.849	341.816	1.000
Pre	1.460	1	1.460	1.525	.222	.024	1.525	.229
Offensive								
Score								
Group	431.986	1	431.986	451.103	.000	.881	451.103	1.000
Error	58.415	61	.958					
Total	15558.000	64						

Corrected 490.437 63 Total

a. R Squared = .881 (Adjusted R Squared = .877) b. Computed using alpha = .05

The analysis results of Table 3 also showed significant interaction effects, F (1, 61) = 1.525, MSE = .958, p = .222, p> .05, partial n2 = .024 between covariate scores (pre-offensive scores) with post-offensive scores by control independent variables (experimental group and control group). The analysis showed that the covariate only contributed 2.4% of the variance in the post-offensive score. This finding indicates that the pre-offensive score gives a small contribution to the offensive aspect, and its effect is not significant.

ANCOVA analysis revealed that there was a significant main effect of independent variable (experimental and control group), F (1, 61) = 451.103, MSE = .958, p = .000, partial  $n^2$  = 88 by controlling for covariate effect (pre-offensive score). The analysis showed that there was a significant difference in mean post-offensive scores between the experimental and control groups by controlling for pre-offensive scores after intervention. About 88% of the variance can be explained by the small-sided game intervention group using tactical periodization on the achievement of the offensive score by controlling the impact of the pre-offensive score.

Based on estimated marginal means, it was reported that the experimental group achieved an offensive aspect score ( $M = 17.95^{a}$ ), higher than the control group ( $M = 12.74^{a}$ ) in the post-test, as shown in table 4. The analysis showed that the mean difference in post-offensive scores was significant.

Table 4Estimated Marginal Means

			95% Confidence Interval		
Group	Mean	Std. Error	Lower Bound	Upper Bound	
Experimental	17.948 <sup>a</sup>	.173	17.601	18.294	
Control	12.740 <sup>a</sup>	.173	12.393	13.086	

Group Dependent Variable: Post Offensive Score

a. Covariates appearing in the model are evaluated at the following values: Pre Offensive Score = 8.3281

The findings of this analysis indicate that there was a significant effect of an intervention on the offensive aspect between the experimental group and the control group after intervention. Small sided game using tactical periodization is a factor that causes an increase in offensive aspect scores. This result addresses the research question of whether there is a

significant difference in the offensive aspect between the experimental group and the control group after the intervention of the small-sided game using tactical periodization.

# 7. Discussion

The purpose of this study is to investigate the effects of small-sided games on offensive effectiveness using tactical periodization in youth football training. Findings imply that tactical periodization is useful to coach youth players on offensive efficiency. As this data was collected, this showed a small-sided training program that was implemented to the experimental group was helpful and had a significant impact on improving the player's ability to perform well in the offensive. A key strength of the research lies within the fact that in football the most crucial aspect is that players can absorb the idea of a style of play by their coach/or teacher as quickly and effectively as possible (Fernandez-Navarro, Fradua, Zubillaga, Ford, & McRobert, 2016; Kempe et al., 2014). The faster the player understands the idea, the easier it will be to prepare the next training session for the coach/or teacher and player spend on the training session they are going through in which they get proper training. Therefore, the game of football itself should be the starting point (Delgado-Bordonau & Mendez-Villanueva, 2012) to coach the football team.

Small-sided games can enhance a team's ability to play as a team where players can quickly adapt technical skills and tactical needs to real-game situations, exploit space, identify possible conditions and optimize the role of each player in the team (Folgado, Duarte, Marques, & Sampaio, 2015). Offensive effectiveness is reflected in the differences in the treatment style of the experimental group that received small-sided game intervention using tactical periodization in this study.Coach/or teacher can use small-sided game-based training methods to achieve their learning objectives (Clemente et al., 2014; Clemente et al., 2020) where this small-sided game training method enhances the overall offensive aspect, giving it a greater focus on width, delay and concentration (Praça, Folgado, de Andrade, & Greco, 2016; Praça et al., 2017).

To help the player to predict what will happen in the situation, they encounter while playing and then respond to a particular game situation; the player must be continuously involved in an active and ongoing learning process in the context of their training (Gonçalves, Figueira, Vitor, & Sampaio, 2014). This situation will only be experienced by players when small-sided games are often played by coach/or teacher during their training sessions.By identifies the styles of play that include offensive aspects such as support, width, mobility, penetration, and creativity (Hewitt, Greenham, & Norton, 2016) it can give high impact to the training session and help coaches, teachers, and Sports Science practitioners to clearly understand on how a team needs to do to win a match and to emphasize the offensive aspect in the opposing team's area and able to create goal opportunity rather than dominate possession on their playing area (Hughes & Lovell, 2019). A strength of this study was the use of the small-sided game using tactical periodization. In the tactical periodization, aspects of physical fitness, tactics, technical and psychological are also trained simultaneously, and it begins from the first day of the pre-season phase during the training period. The amount of component focus in each of these aspects is approximately the same throughout the season. Small-sided game allows players to quickly absorb the idea of coach/or teacher style of play (Delgado-Bordonau & Mendez-Villanueva, 2012). Tactical periodization is a contrast to traditional periodization, where every aspect of the training is following the specified steps.

Findings within this study can aid coaches in the sense that the utilization of small-sided games (Clemente & Sarmento, 2020) using tactical periodization (Issurin, 2016; Mallo, 2012; Verheijen, 2014) to improve offensive effectiveness in tactical performance of the team. Coaching is to train what should be taught. (Najib Razak & Ahmad Hashim, 2017).

#### **Practical Implication**

Small-sided games on offensive effectiveness using tactical periodization theoretically should provide further benefits to coach/or teacher as their sources of knowledge. Running around the pitch only teach players how to run a pitch. So if coach wants to improve football, so football is the context. The most important thing is the coach style of play. The quick your player can adapt the coach style of play, the better training coaches can give to the players. These findings can help coach in better selecting the type of SSG drills according to the purpose of the training session, concerning players' tactical development. Future research should consider different youth levels to ascertain whether such behaviours are similar in players of different ages and sports level.

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