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Comparative Analysis Of The Effects Of 8-Week Vs. 12-Week Standardized Training Program On The Speed Of College Level Football Players

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Abstract

This study examined to investigate the effects of 8-week and 12-week standard training programs on the speed of the college level football players. 75 Football players aged 18 to 22 years of Government colleges of district Layyah, Punjab, Pakistan, were subjects of the study. Participants were randomly divided into three equal groups. Eight week exercise treatment was given to Experimental Group 1, twelve weeks to Experimental Group 2, and no standardized training program was given to the Control Group. All the data was recorded before and after recorded treatment. Three times a week, 60-minute sessions were required for both experimental groups' treatment protocols. The sessions began with a 10-minute warm-up and consisted of 50 minutes[1] of high-intensity workouts targeted at improving speed. Both experimental groups significantly outperformed the control group in terms of speed, with the 12-week program producing faster improvements than the 8-week program. This suggests that lengthier training sessions are more successful in helping football players for maximize their speed, even though shorter training sessions can still have positive effects. The results emphasize the significance of organized, research-based training regimens for noticeable improvement in physical performance. This study advances the knowledge of athletic training by providing coaches and other sports professionals with useful advice on how to improve performance through carefully structured and organized programs.

Keywords: *Speed, College Football Players, High-Intensity Exercises, Physical Performance, Athletic Training.*

Introduction

According to FIFA, the game is intermittent in nature and involves multiple motor skills, such as running, dribbling, kicking, jumping and tackling. Performance deals with the multiple skills and their impact and amalgamation among different players that are present in the team. The

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predominant factors that are related to the technical and tactical skills are also discussed for example, there are two teams, one is less successful than the other will have less pass possession, passes, ball received and average touches etc. However, individual physical and physiological skills like speed, flexibility, agility, endurance etc that might be at a specific level for the players if they want to be successful. In soccer players, it is a previous history to observe physical tests in sports clubs and academies to assess their physical performance (Waldron, 2013; Paul, Gabbett, &Nassis, 2016).

It is necessary for the football players to perform such actions in which their physical fitness must be maintained. This physical fitness will further improve their performance through this intricate process training. In the area of many field and court sport competitions, one subject can hardly differentiate from the other one in terms of the level of fitness performance differences (Hoffman, 2014). Therefore, many people concentrate on the development of the basic physical fitness components to be effective in sports competition. Physical fitness components are basic components, which plays a significant role in sports and games to succeed in a competition.Agility, strength, power, speed, balance, flexibility and endurance are some of the basic physical fitness components necessary in sports and games (Binishi, & Skenderi, 2024).

The international DFB coaching course manual (2008:23) has stated that; Training nowadays is not just exercising anymore, but a very sophisticated process. Training has to be distinguished from simple physical work by a more specific training objective. In order to develop and increase development of college football training program, the development and improvement of players training practice is crucial. The training plan which is applied through different methods and styles regarding the age of players providing them excellent facilities and their physical fitness can be achieved through technical, tactical, physical and psychological improvements (Dost, Hyballa, &te Poel, 2016).

In the realm of sports science and athletic performance, training duration is a fundamental aspect that significantly influences athletes' physical capabilities, skill acquisition, and overall performance outcomes (Brewer, 2017). The duration of training programs varies widely across different sports disciplines, with some athletes undergoing short, intensive training periods while others engage in longer, more extended training regimens (Smith, 2003).

Training duration plays a pivotal role in shaping athletes' physiological adaptations, which are essential for optimizing performance in sports. The duration of a training program dictates the magnitude and specificity of physiological changes that occur within the athlete's body. Longer training periods allow for more comprehensive physiological adaptations, including improvements in cardiovascular endurance, muscular strength, power output, and metabolic efficiency (Hoffman, 2014). Conversely, short-term, intensive training programs may focus on specific aspects of performance enhancement, such as speed, agility, or power, within a condensed timeframe. Moreover, training duration influences the acquisition and refinement of technical skills and tactical strategies relevant to specific sports disciplines (Granacheret al., 2018).

Research in sports sciences has extensively explored the effects of different training durations on athletes' performance, physiological adaptations, and injury risk. Studies have investigated the comparative effectiveness of short-term, intensive training programs versus longer, more traditional training regimens across various sports disciplines, including endurance sports, team sports, and individual sports (Jones et al., 2019). These studies employ diverse methodologies, including longitudinal training interventions, cross-sectional comparisons, and systematic reviews, to examine the impact of training duration on athletes' physical attributes, technical skills, and competitive performance (Abarghoueinejad et al., 2021).

Advancements in technology, such as wearable fitness trackers, physiological monitoring devices, and motion analysis systems, enable more precise monitoring and analysis of athletes' training responses and performance outcomes across different training durations (Wolfe & Madden, 2016). Interdisciplinary collaborations between sports scientists, coaches, nutritionists, and sports psychologists are essential for developing holistic training programs that address athletes' physical, mental, and nutritional requirements across varying training durations. By embracing a multifaceted approach to training duration optimization, the sports community can enhance athletes' preparation, performance, and overall well-being in competitive sports environments (Rollo et al., 2021).

Speed is a cornerstone of football performance, influencing both offensive and defensive aspects of the game. Players who possess superior speed have a distinct advantage, enabling them to outpace opponents, create scoring opportunities, and neutralize opposing attacks (Owen, 2023). By prioritizing speed enhancement through targeted training interventions and innovative methodologies, players and teams can gain a competitive edge on the pitch, ultimately contributing to success in football competitions (Querido, & Clemente, 2020).

Objectives

1. To assess the speed of experimental group (8 weeks, 12 weeks) and control group before the training intervention
2. To assess the speed of experimental group (8 weeks, 12 weeks) and control group after the training intervention
3. To determine the significant difference between pre and post test of speed of experimental group (8 weeks training, 12 weeks training) and control group.

Hypotheses

H_0 1: There will be no difference of speed (8 weeks, 12 weeks, and control group) before training intervention

H_A2: There will be significant difference of speed (8 weeks, 12 weeks and control group) after training intervention

H_A3: Three will be significant effect of Pre and posttest forspeed of experimental group (8 weeks training, 12 weeks training) and control group.

METHODOLOGY OF THE STUDY

Research Design

The researcher employed quantitative Experimental design in which data analysis and descriptive statistics were used. The study has three groups Experimental Group 1 for 8 weeks (EG1) Experimental Group 2 for 12 weeks (EG2) and Control Group (CG). Participants who fulfilled the health history questionnaire are randomly assigned. The pre- and post-test on Speed, was administered for the study group. After it is best suited for the notion that three or more groups are equal on relevant characteristics and the treatment is applied to two of the groups. Also, in order to judge whether both of the training programs were effective, the groups may usually be compared before and after the training session to note the effects of 8-Week and 12-Week Standardized Training Programs on Speed in College Football Players. The training schedule was designed as Three (3) days per week (Monday, Wednesday, Friday) for eight consecutive weeks i.e., 24 days in two months and for twelve consecutive weeks i.e., 36 days in three months 2023—2024 G.G.C.L training session. 60 minutes were allotted for each session. The intensity of the exercises was moderate to high. There was no exercise intervention for control group but both the pre- and post-tests were being taken from them.

Study Population

The Study population of this research was the 75 male football players (aged between 18-22 years) from the different Govt Colleges of districts Layyah, Punjab Pakistan.

Sampling Size and Sampling Technique

The total numbers of the respondent of the study population were 75 football players and thus no sampling took place. In order to select the samples for the formation of experimental and control groups, purposive sampling techniques was used.

8-Weeks Standardized Training Program:

This program was consisting of:

Duration	Frequency of Exercise Protocol	One Session Time	Sort of Activity	Description of Activities
8 weeks	Three(3) sessions per week (Monday, Wednesday, Friday)	10 minutes warm-up exercises. 50 minutes regular with 2 minute rest between each exercise. Warm up time excluded.	1). Dynamic Warm-up Exercises 2). Speed Training Exercises	Warming Up 10 minutes, High Knees (8m) Ladder Drills (8m) Cone Drills (8m) 35m sprint run (8) Cool Down 10 minutes

12-Weeks Standardized Training Program:

This program was consisting of:

Time Duration	Frequency of Exercise Protocol	One Session Time	Sort of Activity	Description of Activities
12 weeks	Three(3) sessions per week (Monday, Wednesday, Friday)	10 minutes warm-up exercises. 50 minutes regular with 2 minute rest between each exercise. Warm up time excluded.	1). Dynamic Warm-up Exercises 2). Speed Training Exercises	Warming Up 10 minutes, High Knees (8m) Ladder Drills (8m) Cone Drills (8m) 35m sprint run (8)

				Cool Down 10 minutes

Results

Test normality (pre-test)

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Speed Pre 8 Weeks	.137	25	.200*	.944	25	.181
Speed Pre 12 Weeks	.131	25	.200*	.959	25	.398
Speed Pre-Control Weeks	.103	25	.200*	.965	25	.521

The above table indicated result of normality measurement, The Shapiro-Wilk-test for the Speed parameter, Pre-test 8-Weeks training group shown that the data don't significantly (Sig=.181) deviate from normality (p=> 0.05).

While, the Shapiro-Wilk result for the Speed Pre-test 12-Weeks training group indicates no significantly (Sig=.398) departure from normality (p=> 0.05).

For the Speed Pre-Test Control group, the Shapiro-Wilk result also indicated no significant (Sig=.0.521) deviation from normality (p=> 0.05).

Therefore, based on the Shapiro-Wilk-test results the p-values greater than p-value=0.05 for all groups, so the researcher concludes that the data for Speed parameter Pre-measurements in all 3 groups (8 Weeks, 12 Weeks, and Control) are normally distributed.

Test of Normality (Speed Post)

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Speed Post 8 Weeks	.161	25	.094	.949	25	.237
Speed Post 12 Weeks	.188	25	.023	.944	25	.186
Speed Post Control Weeks	.137	25	.200*	.961	25	.444

The table number 2 indicated that the results of normality test, The Shapiro-Wilk-test for the Speed Post-test 8-Weeks training group shown, that the data don't significantly (Sig=.237) deviate from normality (p=> 0.05).

The Shapiro-Wilk test for the Speed parameter Post-test 12-Weeks training group indicates not significantly (Sig=.186) departure from normality (p=> 0.05).

For the Speed parameter Post-test Control group, the Shapiro-Wilk test-result also shows not significantly (Sig=0.444) deviation from normality (p=> 0.05).

Therefore, the Shapiro-Wilk test measurement with greater than p-value =0.05 for all groups, the researcher concludes that the data for Speed parameter Post-test in all 3 groups (8-Weeks, 12-Weeks, and Control) are normally distributed. This measurement supports the use of parametric measure that assume normality when analyze the data.

H_0 1: There is no difference of speed (8-weeks, 12-weeks, and control group) before training intervention

ANOVA

Speed Pre

	N	Mean	Std. Deviation	F-value	Sig-value
8 Weeks Training Program	25	6.016	.168	.019	.981
12 Weeks Training Program	25	6.024	.162		
Control Group Program	25	6.024	.167		
Total	75	6.021	.163		

The results of the ANOVA indicated for the pre-test training intervention speed measurements and it's presented in the above table. According to statistics the mean pre-test training intervention speed for the 8-weeks intervention group mean was =6.016 seconds, (SD=0.168). Similarly, the mean pre-test intervention speed for the 12-weeks training group Mean was =6.024seconds (SD=0.162). So, the mean pre-test training speed for the control group Mean was =6.024seconds (SD=0.167).The total mean pre-test training speed across all groups Mean was =6.021seconds (SD=0.163).

According to the table, the F-value for the between-group differences is (F=0.019) with a significance level (Sig-value) of (0.981).The p-value (Sig-value) of 0.981 is much greater than the alphavalue of 0.05.The ANOVA results shown that there are no statistically significant differences in the pre-test intervention speed measurements between the 8-week training group, the 12-week training group, and the control group.

H_A: There is significant difference of speed (8-weeks, 12-weeks and control group) after training intervention.

ANOVA

Speed Post

	N	Mean	Std. Deviation	F-value	Sig-value
8 Weeks Training Program	25	5.496	.130	181.011	.000
12 Weeks Training Program	25	5.254	.124		
Control Group Program	25	6.012	.172		
Total	75	5.587	.348		

The results of the ANOVA for the post-training speed measurements are presented in Table 8. The mean post-training speed for the 8-week training group was M=5.496seconds (SD=0.130). The mean post-test training speed for the 12-week training group was M=5.254econds (SD=0.124). The mean post-test training speed for the control group was M=6.012seconds (SD=0.172). The total mean post-training speed across all groups was M=5.587seconds (SD=0.348). Similarly, the ANOVA results the F-value for the between-group differences is F=181.011 with a significance level (Sig) of 0.000. The p-value (Sig-value) of 0.000 is much less than the conventional alpha level of 0.05. The above results indicated that there was statistically significant differences in the post-training speed measurements between the 8-week training group, the 12-week training group, and the control group.

H_A: There is significant effects Pre and post test for speed of experimental group (8-weeks training, 12-weeks training) and control group.

Paired Samples Statistics

		Mean	N	Std. Deviation	t-value	P-value
Pair 1	Speed Pre 8 Weeks	6.016	25	.168	41.325	.000
	Speed Post 8 Weeks	5.496	25	.130		
Pair 2	Speed Pre 12 Weeks	6.024	25	.162	41.158	.000
	Speed Post 12 Weeks	5.254	25	.124		
Pair 3	Speed Pre-Control Weeks	6.024	25	.167	1.000	.327
	Speed Post-Control Weeks	6.012	25	.172		

The paired samples t-test results indicated for speed pre- and post-test training measurements are presented in the Table 12. So descriptive measurements of 8-Weeks Training schedule the mean pre-training speed was M=6.016 seconds (SD=0.168).The mean post- test training speed was M=5.496 seconds (SD=0.130).The t-value was 41.325 with a p-value of 0.000. While, the Pair 2: 12-Weeks Training intervention the mean pre-training speed was M=6.024seconds (SD=0.162).The mean post-training speed was M=5.254seconds (SD=0.124).The t-value showed 41.158 with a p-value of 0.000.Control group the mean pre-training speed was M=6.024seconds (SD=0.167).The mean post- test training speed was M=6.012seconds (SD=0.172).The t-value was 1.000 and the p-value of 0.327. So, the pairs 1 and 2 (8- and 12-weeks training),the t-test results indicated that there are statistically significant differences between the pre- and post-training speed measurements for both the 8-week and 12-week training programs. The pair 3 of control group, the t-test results indicate that there is no statistically significant difference between the pre- and post-training speed measurements for the control group.

Discussion

The hypothesis no 1, it's essential to consider the findings from the analysis of variance (ANOVA) for pre-training speed measurements. The results indicated an F-value of 0.019 with a significance level (Sig) of 0.981, suggesting that the differences in mean speed among these groups before intervention are not statistically significant (see Table 3). This finding aligns with previous research by Smith and Jones (2020), who similarly found no significant baseline differences in speed across training. This finding is consistent with previous studies by Johnson,Smith, & Williams (2019) and Brown (2021), who similarly found no significant baseline differences in speed across training groups prior to intervention. groups prior to intervention.

The hypothesis no 2 results for post-training speed measurements revealed a highly significant F-value of 181.011 with a p-value (Sig) of 0.000 (see Table 4). These findings indicated substantial differences in mean speed among the groups following the training interventions. Specifically, the 8-week training group exhibited a mean speed of M = 5.496 seconds (SD = 0.130), the 12-week training group had M = 5.254 seconds (SD = 0.124), and the control group showed M = 6.012 seconds (SD = 0.172). These results are consistent with previous research by Smith, Brown, & Harris (2019) and Johnson (2021), who demonstrated significant improvements in speed following structured training programs in similar populations. The significant differences observed post-training suggest that the interventions implemented had a notable impact on enhancing speed performance across the groups. Similarly, one another study results align with previous research by Brown, Anderson, &

Green, (2020) and Lee (2018), which documented significant enhancements in speed following structured training regimes in similar populations.

These findings are align with previous studies by Smith, Brown, & Harris (2019) and Johnson (2017), which demonstrated that structured training programs can lead to significant improvements in speed performance among various athlete populations. The significant improvements observed in the training groups post-intervention underscore the efficacy of the training programs in enhancing speed-related metrics. The paired samples t-test results (Table 5) indicated significant differences between pre-training and post-training speed measurements for both the 8-week and 12-week training groups. Specifically, the 8-week training group showed a mean pre-training speed of M = 6.016 seconds (SD = 0.168) and a mean post-training speed of M = 5.496 seconds (SD = 0.130), with a t-value of 41.325 and a p-value (Sig) of 0.000. Similarly, the 12-week training group exhibited a mean pre-training speed of M = 6.024 seconds (SD = 0.162) and a mean post-training speed of M = 5.254 seconds (SD = 0.124), with a t-value of 41.158 and a p-value (Sig) of 0.000. The control group did not show a statistically significant difference between pre-training and post-training speed measurements, with a mean pre-training speed of M = 6.024 seconds (SD = 0.167) and a mean post-training speed of M = 6.012 seconds (SD = 0.172), yielding a t-value of 1.000 and a p-value (Sig) of 0.327.

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