Macrothink Institute™

Journal of Educational Issues
ISSN 2377-2263
2020, Vol. 6, No. 1

Comparison of Strength Values of Professional Footballers According to Their Positions before Football Season

Yunus Emre Bağış (Corresponding author)

Faculty of Sports Sciences, Süleyman Demirel University, Isparta, Turkey

Tel: 90-506-824-2322 E-mail: yunusbagis@sdu.edu.tr

Received: May 31, 2020 Accepted: June 26, 2020 Published: June 30, 2020

doi:10.5296/jei.v6i1.17133 URL: https://doi.org/10.5296/jei.v6i1.17133

Abstract

The purpose of the present study was to compare the strength values of professional footballers according to their positions before the football season. The study group consisted of 27 professional footballers of Şanlıurfaspor Football Club in the 2nd League of Turkey. The mean height of the Study Group was 180.92±6.18 (cm), mean body weight was 80.18±1.5 (kg), and the mean age was 26.40±4.4 (years). The inclusion criteria for the study was being volunteers, and the necessary permissions were obtained from the players, club managers and coaches. The Precor-brand device was used to measure the differences of strengths according to the positions of the footballers. "1 RM" measurements were made from shoulder press, latt pully, leg curl, leg extension, and leg press machines in the footballers. The SPSS 24.00 Program was used in the statistical analysis of the study data. The descriptive statistics were given as mean, standard deviation, and minimum and maximum values. The normality test of the data was analyzed with the Shapiro-Wilk Test. One-Way Anova Test was used to identify the differences between the players and the positions. The significance level was determined as 0.05. According to the results obtained in the study, no significant differences were detected in strength values between goalkeeper, defender, midfielder, and striker positions ($p > 0.05$). As a result, among the biomotoric properties, strength is important, and quite necessary for a footballer to perform at a high level. These values obtained from 2nd League football players are important for being taken as reference values, and it can be argued that these values obtained in the pre-season prepared the basis for the lack of qualitative differences. In future studies, data that will be obtained from different league levels and training stages will lead to research being considered differently.

Keywords: Football, Pre-season, Strength

1. Introduction

When players apply a technique, they perform with the help of a muscle system. By turning chemical energy into mechanical work, force is generated that acts on bodily action (Parpucu, 2009). When preparing training programs, strength and power-enhancing trainings are included in sports which require strength. The strength trainings being in line with the characteristics of the sports branch will play important roles in increasing the performance (Şahin, 2008).

Football involves highly violent actions and also the violence is intense and intermittent (Mohr et al., 2003; Rampin et al., 2010; Stolen et al., 2003). Players travel up to 10 km for 90 minutes in repetitive departure speeds, jumps and direction changes (Pettersan & Bren, 2019; Reilly et al., 1990; Stolen et al., 2003). The strength is an important factor during this time for the performance of players.

In football branch, there are preparation stages in and after the season. To keep the fitness of the players at a high level during the season, it is also necessary to maintain this level during the season when professional footballers have limited time for strength training. With the increase in competition, the importance of preparatory training become clear (Bangsbo et al., 2006; Hoff & Helgerud, 2004; Reilly & Gilbourne, 2003).

Maximum strength efficiency is a factor affecting strength, and the maximum increase in strength is usually in direct proportion with the development of strength. For this reason, maximum strength efficiency is an important factor potentially affecting football. It is important to maintain the strength achieved during the preparation period throughout the season (Derenne et al., 1996).

In the literature, many studies reported the importance of strength training in football. Strength is important in terms of being able to demonstrate the performance for a footballer at a high level. It is also important since it has a relation with other motoric features and applied techniques. In the light of this information, the purpose of the present study was to compare the strength values of professional footballers according to pre-season positions.

2. Method

2.1 Study Group

The Study Group had a mean height of 180.92±6.18 (cm), mean body weight was 80.18±1.5 (kg), and mean age was 26.40±4.4 (years), and consisted of players in the 2nd League of Turkey. The inclusion criteria for the study was being volunteers, and the necessary permissions were obtained from the players, club managers and coaches.

2.2 Body Weight Measurement

Body weight measurements were made bare foot with only tracksuits and t-shirts on the athletes with electronic scale with a sensitivity of 0.5 kg.

2.3 Height Measurement

The heights were measured by a metal scale, which had a 0.1 m sensitivity.

2.4 Strength Measurement

A Precor (USA)-brand device was used after 15-min warm-up to measure the differences of strength of the footballers according to the positions. 1 RM measurements were made in shoulder press, latt pully, leg curl, leg extension, leg press conditioning devices. After the players held the fitness device with appropriate seating and holding position, a pre-trial was done without weight, and after the maximum weight lifting level was determined, the weight at the maximum level was recorded.

2.5 Analysis of Data

The SPSS 24.00 Program was used in the statistical analysis of the study data. The descriptive statistics were given as mean, standard deviation, minimum, and maximum values. The normality test of the data was done with the Shapiro-Wilk Test. The One-Way Anova Test was applied to identify the differences between the athletes and the positions. The significance level was determined as 0.05.

3. Findings

As seen in Table 1, the mean height of the footballers was 180.92±6.18 (cm), mean body weight was 80.18±1.5 (kg), and the mean age was 26.40±4.4 (years).

Table 1. Physical characteristics of the footballers

Parameter	**N**	**Minimum**	**Maximum**	**Mean±SD**
Height (cm)	27	169.00	190.00	180.92±6.18
Weight (kg)		70.00	90.00	80.18±1.5
Age (years)		18.00	33.00	26.40±4.4

As seen in Table 2, no significant differences were detected between the shoulder press strength values according to the positions of the players ($p > 0.05$).

Table 2. Shoulder press measurement results of the footballers

Parameter	**Position**	**N**	**Minimum**	**Maximum**	**Mean±SD**	**f**	**p**
Shoulder Press (kg)	Goalkeeper	3	70.00	75.00	71.6±2.8	2.474	.087
	Defense	8	65.00	85.00	75.0±6.5		
	Midfield	8	70.00	85.00	80.0±5.9		
	Striker	8	65.00	85.00	72.5±6.5		

As seen in Table 3, no significant differences were detected between the latt pully strength values of the footballers according to their positions ($p > 0.05$).

Table 3. Latt pully measurement results of the footballers

Parameter	Positions	N	Minimum	Maximum	Mean±SD	f	p
Latt Pully (kg)	Goalkeeper	3	75.00	90.00	81.6±7.6	1.221	.324
	Defense	8	75.00	90.00	85.0±5.3		
	Midfield	8	75.00	90.00	83.1±5.9		
	Striker	8	70.00	85.00	79.3±6.2		

As seen in Table 4, no significant differences were detected between the leg curl strength values of the footballers according to their positions ($p > 0.05$).

Table 4. Leg curl measurement results of the footballers

Parameter	Position	N	Minimum	Maximum	Mean±SD	f	p
Leg Curl (kg)	Goalkeeper	3	60.00	95.00	81.6±18.9	1.950	.150
	Defense	8	85.00	100.00	94.3±6.7		
	Midfield	8	90.00	110.00	96.2±9.1		
	Striker	8	75.00	100.00	90.0±8.4		

As seen in Table 5, no significant differences were detected between the leg extension strength values of the footballers according to their positions ($p > 0.05$).

Table 5. Leg extension measurement results of the footballers

Parameter	Position	N	Minimum	Maximum	Mean±SD	f	p
Leg Extension (kg)	Goalkeeper	3	140.00	150.00	143.3±5.7	1.083	.376
	Defense	8	125.00	160.00	145.6±12.6		
	Midfield	8	125.00	160.00	138.7±13.5		
	Striker	8	120.00	155.00	135.0±12.2		

As seen in Table 6, no significant differences were detected between the leg press strength values of the footballers according to their positions ($p > 0.05$).

Table 6. Leg press measurement results of the footballers

Parameter	Position	N	Minimum	Maximum	Mean±SD	f	p
Leg Press (kg)	Goalkeeper	3	270.00	310.00	285.0±21.7	.333	.802
	Defense	8	270.00	320.00	295.6±16.3		
	Midfield	8	265.00	320.00	288.7±17.4		
	Striker	8	265.00	320.00	289.3±19.8		

4. Discussion

The purpose of the present study was to compare the strength values of professional footballers according to pre-season positions. The study group consisted of 27 professional footballers of Şanlıurfaspor Football Club in the 2nd League of Turkey. The mean height of the study group was 180.92±6.18 (cm), mean body weight was 80.18±1.5 (kg), and the mean age was 26.40±4.4 (year).

At the end of the study, the mean shoulder press values of the players were as follows; 71.6±2.8 (kg) in goalkeeper, 75.0±6.5 (kg) in defense, 80.0±5.9 (kg) in midfield, 72.5±6.5 (kg) in striker. The mean latt pully values were; 81.6±7.6 (kg) in goalkeeper, 85.0±5.3 (kg) in defense, 83.1±5.9 (kg) in midfield, 79.3±6.2 (kg) in striker. The mean leg curl values were; 81.6±18.9 (kg) in goalkeeper, 94.3±6.7 (kg) in defense, 96.2±9.1 (kg) in midfield, 90.0±8.4 (kg) in striker. The mean leg extension values were; 143.3±5.7 (kg), 145.6±12.6 (kg) in defense, 138.7±13.5 (kg) in midfield, 135.0±12.2 (kg) in striker. The mean leg press values were; 285.0±21.7 (kg) in goalkeeper, 295.6±16.3 (kg) in defense, 288.7±17.4 (kg) in midfield, 289.3±19.8 (kg) in striker.

According to the data obtained in the present study, no significant differences were detected between shoulder press force values according to the positions of the footballers ($p > 0.05$). There were no significant differences between the latt pully force values according to the positions of the footballers ($p > 0.05$). No significant differences were determined between the leg curl force values according to the positions of the footballers ($p > 0.05$). There were no significant differences between the leg extension force values according to the positions of the footballers ($p > 0.05$). There were no significant differences between the leg press force values according to the positions of the footballers ($p > 0.05$).

Bağış and Akın conducted a study in 2019, and found that the strength parameters of athletes, and found that the mean shoulder press value before training was 21.4±5.6 (kg), mean leg extension was 60.0±10.3 (kg), mean leg curl was 41.1±6.6 (kg), mean leg press was 68.3±8.8 (kg).

In their study conducted on strength values of team sports players in 2011, Özer and Kılınç found that the mean leg press value was 136.9±25 (kg), mean shoulder press value was 77.9±15.5 (kg), mean leg extension was 102.6±13 (kg), mean latt pully was 67.3±10 (kg), mean leg curl was 69.5±15.2 (kg).

Yıldız and Bağış (2019) conducted a study in 2019, and found that the mean pre-test total technique of the research group was 254±38.4 (kg), the average of the breakout technique was 113.8±17.7 (kg), the average of the shake technique was 140.6±20, It has been determined as (kg).

Eystein et al. (2013) conducted a study in 2013, and found that the mean leg press pre-test value was 237.2±54.8 (kg) and the mean post-test value was 276.7±57.9 (kg).

In their study conducted among footballers who played in different positions, Köklü et al. reported that there were no statistically significant differences in terms of biomotoric characteristics. Joe Dunbar and Treasure (2005) found that there were no significant differences among positions in their study conducted on English Premier League footballers.

As a result, strength, which is among biomotoric properties, is very important and quite necessary for a footballer to perform at a high level. These values obtained from 2nd League football players before the season are important in terms of being reference values, and it can be argued that these values obtained in the pre-season prepared the basis for the lack of qualitative differences. In future studies, data that will be obtained from different league levels and training stages will lead to research being considered differently.

References

Bağış, Y. E., & Akın, S. (2019). *Investigation of the effect of force training applied to volleyball players on service speed during the preparation period* (pp. 209-218). Movement and Training Sciences Book, Academician Publishing House.

Bangsbo, J., Mohr, M., & Krustrup, P. (2006). Physical and metabolic demands of training and match-play in the elite football player. *J Sports Sci, 24*(7), 665-674. https://doi.org/10.1080/02640410500482529

Derenne, C., Hetzler, R. K., Buxton, B. P., & Ho, K. W. (1996). Effects of training frequency on strength maintenance in pubescent baseball players. *Journal of Strength and Conditioning Research, 10*(1), 8-14. https://doi.org/10.1519/00124278-199602000-00002

Eystein, E., Martin, S., Espen, T., & Shaher, A. I. S. (2013). The effect of supervised strength training on young elite male soccer players' physical performance. *Serbian Journal of Sports Sciencesi, 7*(4), 173-179.

Hoff, J., & Helgerud, J. (2004). Endurance and strength training for soccer players: Physiological considerations. *Sports Med, 34*, 165-180. https://doi.org/10.2165/00007256-200434030-00003

Joe Dunbar, G. M., & Treasure, D. C. (2005). An analysis of fitness profiles as a function of playing position and playing level in three English premier league soccer clubs. *Science and Football V: The Proceedings of the Fifth World Congress on Science and Football* (pp. 155-159).

Köklü, Y., Özkan, A., Alemdaroğlu, U., & Ersöz, G. (2009). Comparison of some physical fitness and somatotype characteristics of young footballers according to their positions.

Spormetre J Phy Edu & Sports Sci, 7(2), 61-68. https://doi.org/10.1501/Sporm_0000000151

Mohr, M., Krustrup, P., & Bangsbo, J. (2011). Match performance of high-standard soccer players with special reference to development of fatigue. *J Sports Sci, 21*, 519-528. https://doi.org/10.1080/0264041031000071182

Özer, Ö., & Kılınç, F. (2011). Comparison of the strength, speed and flexibility performance of the individual and team athletes. *International Journal of Human Sciences, 9*(1), 360-371.

Parpucu, T. İ. (2009). *Investigation of the Efficacy and Reliability of Digital Hand Dynamometer in Evaluation of Wrist Environmental Muscle Strength in Healthy Individuals* (Master Thesis, Süleyman Demirel University, Institute of Health Sciences, Isparta).

Pettersen, S. A., & Brenn, T. (2019). Activity profiles by position in youth elite soccer players in official matches. *Sports Med Int Open, 3*, 19-24. https://doi.org/10.1055/a-0883-5540

Rampinini, E., Sassi, A., & Azzalin, A. (2010). Physiological determinants of YoYo intermittent recovery tests in male soccer players. *Eur J Appl Physiol, 108*, 401-409. https://doi.org/10.1007/s00421-009-1221-4

Reilly, T., & Gilbourne, D. (2003). Science and football: A review of applied research in the football codes. *J Sports Sci, 21*, 693-705. https://doi.org/10.1080/0264041031000102105

Reilly, T., Reilly, N., Secher, P., Snell, P., & Williams, C. (1990). *Physiology of sports* (pp. 328-331). London, United Kingdom: E. & F. N. Spon.

Şahin, G. (2008). *The Effects of Two Different Strength Training Programs Applied to 17-19 Age Group Elite Male Field Hockey Players on Some Physical, Physiological and Technical Properties* (Unpublished Doctoral Thesis, Gazi University, Institute of Health Sciences, Department of Physical Education and Sports, Ankara).

Stolen, T., Chamari, K., Castagna, C., & Wisloff, U. (2005). Physiology of soccer: An update. *Sports Med, 35*, 501-536. https://doi.org/10.2165/00007256-200535060-00004

Yıldız Y. E., & Bağış, Y. E. (2019). Investigation of the effects of power training applied to weightlifters in the Stars category on breakout shake and total degrees. *Journal of Sport Sciences Research, 4*(2), 205-212. https://doi.org/10.25307/jssr.590824

Copyright Disclaimer

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (http://creativecommons.org/licenses/by/3.0/).