

SIX WEEKS CORE TRAINING ON AGILITY, SPEED AND ABDOMINAL STRENGTH OF FOOTBALL PLAYERS

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Abstract

The objective of the study was to see the effect of core training on agility, speed and abdominal strength of male football players. **Methodology:** 20 male football players were selected who have played football for at least 3 years and have represented there school for Subroto Mukherjee football tournament, the age of the players were 18-24. For the purpose of the study the selected variables speed (50-m dash), agility (hexagonal agility), and abdominal strength (sit-up test) were tested before and after the six weeks of core training. For the statistical analysis of the end result of experimental and control group the analysis of covariance (ANCOVA) was employed at .05 level of significance. **Result;** the post-test result of the study shows that there exist a significant difference between experimental and control group on speed, agility and abdominal strength as there resulted p values are 0.004, 0.023 and 0.02 which is smaller than 0.05 and also from. **Conclusion;** the effect of 6 week core training have found significant difference on speed, agility and abdominal strength of male football players.

Key words: core training, speed, agility, abdominal strength, experimental group, control group.

Introduction: By far, the most watched and played ball game in the world is football, commonly known as soccer. In football, any body part other than the hands and arms is used to move the ball into the goal of the other team. A very important fitness component in football is anaerobic fitness, which means running speed and particularly repeat sprint ability. Players also need good agility, strength, power, physique and balance. It was my personal interest to choose core training and see if core training can help players gain anaerobic fitness, according to my personal experience having a big belly and weak core hinder us from performing (decrease in speed and agility). The area named “core” includes the abdominals in the front part side of the body, that is, hypochondrium and hypogastrium muscles; oblique right to hypogastrium muscles, and the muscle groups from the waists to neck that help the skeleton have a correct posture. Although the muscles in the back and upper hip are also part of the core, they are typically only thought of as being part of the abdominal muscles. Core is the group of muscles that stabilizes and controls the pelvis and spines (and therefore influences the legs and upper body (Elson, 2018). Core training refers to the training of the above abdominal and lumbar regions. Core training has been studied by many researchers and is considered to be very important for player’s performances, motoric capabilities, balance development, prevention of injuries and rehabilitation. Because the muscles

in the core region are located in the center of the body, they play an active role in the majority of body movements.

Speed is the ability to move all or parts of the body in one direction as quickly as possible. Speed is very important skill that is needed by all the football players. So this study was done in order to investigate the effect of core training on speed, agility and abdominal strength on male football player. As there were many similar studies done before this study, they suggest that correlation of core training and agility and speed is a controversial study as some suggest that core training on speed and agility shows significant result as done by some researcher. Dr. Vigneshwaran, G. (2017), Afyon, Y. A. (2014) & Mendes, B. (2016), Taskin, C. (2016), Yapici, A. (2016) and Kabadayi, M. et al. (2021) they studied the effect of core training on male football player, female football player, young soccer players and football referee respectively and they found out that implementation of core training results to significant improvement in speed of the male football player, female football player and referee respectively. There are also some research study which suggest that core training doesn't improve speed like a study done by Doğanay, M. et al., (2020) & O., & Zorba, E. (2018) the study suggest that implementation of core training does not leads to significant improvement on speed.

Agility is the ability to accelerate, decelerate, stabilize, and quickly change directions with proper posture and this is very much important for football players as they have to fake the opponent and make the opponent impossible to read their body movement. Similarly like the speed there were conflict that the core training improve agility of male football players like the study done by Taskin, C. (2016) & Afyon, Y. A. (2014), & Doğanay, M. et al., (2020) & Kabadayi, M. et al. (2021), studied on the effect of core training on young football players & football referee and the result suggest that implementation of core training results to significant improvement on agility. And some suggest study suggest that it does not improve agility like the study done Mendes, B (2016) this study set out to investigate the physiological effects of core strength training on football players. According to the repeated measurement ANOVA results in this study, the researcher discovered that only the 10 m sprint and 20 m speed demonstrated a significant difference between the weeks. There was no noteworthy result in terms of agility. Aslan, A. K. et al. (2018) 8-week core training regimen on young football players' balance and functional performance. The results of the study showed that after an 8-week period, the agility performance of both the training and control groups improved. This research suggests that young soccer players' agility may not be improved by core training. Abdominal strength is very important for posture, stability and movement. As posture, stability and movement matters in football this study was done to see the effect of core training on abdominal strength of male football player.

As there were conflict regarding the effect of core training on speed and agility of football players this study was conducted in order to find the truth and to see the effect of core training on abdominal strength of male football players.

Methodology: For this study 20 male football players were selected who have played football for at least 3 years and have represented their school for Subroto Mukherjee football tournament,

the age of the players were 18-24. For the purpose of the study the selected variables speed (50-m dash), agility (hexagonal agility), and abdominal strength (sit-up test) were tested before and after the six weeks of core training. For the statistical analysis of the end result of experimental and control group the analysis of covariance (ANCOVA) was employed at .05 level of significance.

Design of the Study: Design of the study is experimental design that is before-and-after with control group i.e. pre-test and post-test will be taken before and after the training.

Result:

Table No 1: Descriptive Statistic for Selected Variables

Variable	Group	N	Mean	Std. Deviation
Speed	Experimental Group	10	6.34	0.65
	Control Group	10	6.52	0.6
	Total	20	6.43	0.62
Agility	Experimental Group	10	15.96	1.35
	Control Group	10	16.39	1.24
	Total	20	16.18	1.28
Abdominal Strength	Experimental Group	10	38.3	5.21
	Control Group	10	35.9	5.74
	Total	20	37.1	5.48

Descriptive statistic of speed shows mean and standard deviation of experimental and control group as 6.34 ± 0.65 , 6.52 ± 0.6 respectively, and that of agility as 15.96 ± 1.35 and 16.39 ± 1.24 , and that of abdominal strength as 38.3 ± 5.21 and 35.9 ± 5.74 .

Table No 3: Tests of Between Subjects Effects on Selected Variables

Variable	Source	Sum of Squares	df	Mean Square	F	Sig.
Speed	Pre_Speed	6.98	1	6.98	818.21	0.000
	Group	0.1	1	0.1	11.34	0.004
	Error	0.14	17	0.01		
	Total	833.22	20			
	Corrected Total	7.22	19			
Agility	Pre_Agility	30.69	1	30.69	1551.3	0.000
	Group	0.12	1	0.12	6.25	0.023
	Error	0.34	17	0.02		
	Total	5264.41	20			
	Corrected Total	31.15	19			
Abdominal Strength	Pre_Abdominal_Strength	555.65	1	555.65	905.02	0.000

Group	3.72	1	3.72	6.05	0.020
Error	10.44	17	0.61		
Total	28098	20			
Corrected Total	569.8	19			

Test of between subjects effects on speed, agility and abdominal strength shows significant result as its values are 0.004, 0.023 and 0.02 which is smaller than 0.05.

Table No 2: Estimated Mean Value of Experimental and Control Group of Selected Variables

Variable	Group	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Speed	Experimental Group	6.357 ^a	0.03	6.3	6.42
	Control Group	6.496 ^a	0.03	6.43	6.56
Agility	Experimental Group	6.357 ^a	0.03	6.3	6.42
	Control Group	6.496 ^a	0.03	6.43	6.56
Abdominal Strength	Experimental Group	37.536 ^a	0.25	37.01	38.06
	Control Group	36.664 ^a	0.25	36.14	37.19

Lower bound and upper bound Value of experimental and control group on speed (6.3, 6.42 & 6.43, 6.56), agility(6.3, 6.42 & 6.43 & 6.56) and that of abdominal strength is (37.01, 38.06 & 36.14 & 37.19)

Table No 4: Pair-Wise Comparison of Experimental and Control Group of Selected Variables

Variable	(I) Group		Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
						Lower Bound	Upper Bound
Speed	Experimental Group	Control Group	-.139 [*]	0.041	0.004	-0.23	-0.05
	Control Group	Experimental Group	.139 [*]	0.041	0.004	0.05	0.23
Agility	Experimental Group	Control Group	-.158 [*]	0.06	0.023	-0.29	-0.02
	Control Group	Experimental Group	.158 [*]	0.06	0.023	0.02	0.29
Abdominal Strength	Experimental Group	Control Group	.872 [*]	0.354	0.02	0.12	1.62
	Control Group	Experimental Group	-.872 [*]	0.354	0.02	-1.62	-0.12

Pair-Wise Comparison of Experimental and Control Group of speed, agility and abdominal strength shows significant result as there values are 0.004, 0.023, and 0.02 respectively which is lower than 0.05.

Table No 5: Univariate Value of Selected Variables

Variable	Sum of Squares		df	Mean Square	F	Sig.	Partial Eta Squared
Speed	Contrast	0.1	1	0.097	11.34	0.004	0.4
	Error	0.14	17	0.009			
Agility	Contrast	0.12	1	0.12	6.25	0.02	0.27
	Error	0.34	17	0.02			
Abdominal Strength	Contrast	3.72	1	3.72	6.05	0.025	0.26
	Error	10.44	17	0.61			

The post result of experimental group on speed, agility and abdominal strength shows significant result of its calculated value found is 0.004, 0.02, and 0.025 which is smaller than 0.05. And also from f value it can be stated the result is significant as its value found is 11.34, 6.25 and 6.05 which is greater than tabulated value of (4.451).

Figure: Mean Comparison Chart for Experimental and Control Group on Selected Variables

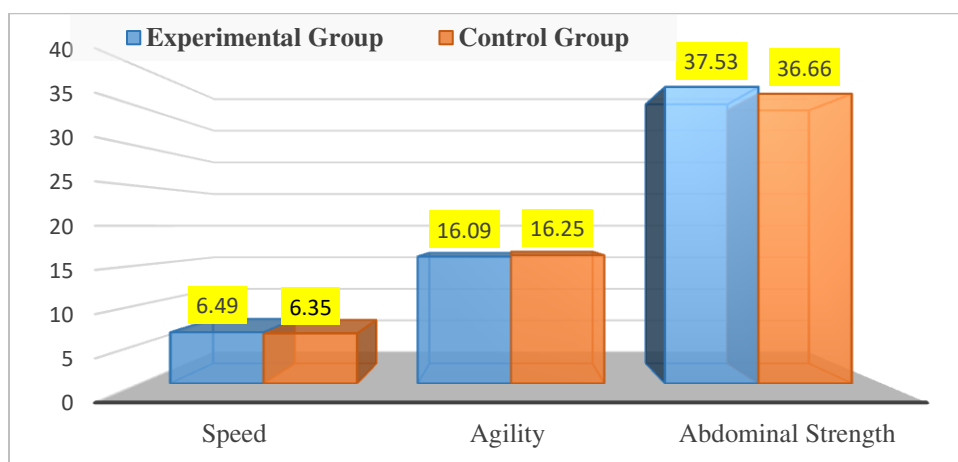


Figure shows the mean comparison of experimental and control group of speed, agility and abdominal strength.

Discussion of finding

Speed: Afyon, Y. A., Mulazimoglu, O., & Boyaci, A. (2017), Afyon, Y. A. (2014), Mossa, M. E. (2022), & Dr. Vigneshwaran, G. (2017) studied on soccer players on core training and result suggested that, implementing core training on soccer player results to significant improvement on speed. Kabadayi, M. et al. (2021) studied on football referee on core training and results suggest that implementing core training on soccer referee results to significant improvement on speed. Yildirim, Y. (2022) studied on wrestlers on core training and the results suggest that implementing 8 weeks of core training on wrestling training results to significant improvement on speed. Venkatesan, K., & Gnanavel, N. S. (2022) studied on kabddi players on combine effect of core training and speed training and the results suggest that the twelve weeks of core and speed training on kabddi players results to significant improvement in speed. Bora, H., & Dağlıoğlu, Ö. (2022) studied on core training on volleyball player and the result suggest that implementing 6 weeks of core training on volleyball player results to significant improvement in speed. Ramachandran, S. et al. (2018) studied on core stability training on male cricket players and the result suggest that implementing 6 weeks core training results to significant improvement on speed. Mengyao, C., & Seung-Soo, B. (2022) studied on core strengthening training on tennis players and the result suggest that core strengthening training results to significant improvement in speed. Taskin, C. (2016), Boyacı, A., & Afyon, Y. A. (2017) studied on football players on core training and result suggested that implementing 12 weeks of core training on football player results to significant improvement on speed. Niewolna, N., & Zwierko, T. (2015) studied on core stability and functional exercise on female football player and the result suggest that two years of core stability program results to significant improvement in speed. As the above research suggest that implementing core training on athlete's results to significant improvement in speed and also in my current study I found that implementing 6 weeks of core training leads to significant result in speed so it can be concluded that implementation of 6 weeks of core training is good enough is to bring significant difference on speed.

Agility: Ramachandran, S. et al. (2018) studied on core stability training on male cricket players and the result suggest that implementing 6 weeks core training results to significant improvement agility. Venkatesan, K., & Gnanavel, N. S. (2022) studied on kabddi players on combine effect of core training and speed training and the results suggest that the twelve weeks of core and speed training on kabddi players results to significant improvement in agility. Rahnama, N. et al. (2016) studied on core stabilization muscle training on skaters and the result suggest that the 8 weeks of core stabilization training results to significant improvement in agility. Sighamoney, R et al. (2018) studied on core strengthening training on badminton players and the result suggest that implementing 4 weeks of core strengthening training results to significant improvement in agility. Bashir, S. F. et al. (2019) studied on core training on junior tennis players and the result suggest that implementing 5 weeks of core training results to significant improvement on agility. Zhang, M. (2019) studied on core training on students with disability and the result suggest that implementing core training result to significant improvement on agility. Dikici, S., & Eroğlu, H. (2020) studied on core training on secondary school students and the result suggest that implementing 8 weeks of core training results to significant improvement on agility. Doğanay, M. et al. (2020) studied on core training on U19 male football players and the result suggest that

implementing 8 weeks of core training results to significant improvement on agility. Savla, H. N. et al. (2020) studied on the core training on badminton players and the result suggest that implementing core training results to significant improvement on agility. Boz, H. K. (2020) studied on core training on volleyball player and the result suggest that implementing core training results to significant improvement on agility. Atli, A (2021) studied on core training on football players and the result suggest that implementing 6 weeks of core training results to significant improvement in agility. Kabaday, M. et al. (2021) studied on core training on football referee and the result suggest that implementing 8 weeks of core training results to significant improvement in agility. Werasirirat, P. et al. (2022) studied on core training on short distance runner and the result suggest that implementing 4 weeks of core training results to significant improvement in agility. Mossa, M. E. (2022) studied on soccer players on core training and result suggested that, implementing core training on soccer player for twice a week for three month results to significant improvement on agility. Yildirim, Y. (2022) studied on wrestlers on core training and the results suggest that implementing 8 weeks of core training on wrestling training results to significant improvement on agility. Yılmaz, N. (2022) studied on core training on preadolescent and adolescent children, who do basic basketball training and the result suggest that implementing 4 weeks of core training on basketball training results to significant improvement in agility. Sun, M. (2023) studied on core strength training on volleyball player and the result suggest that implementing 12 weeks of core training results to significant improvement in agility. Çakir, M., & Ergin, E. (2022) studied on core training on female volleyball player and the result suggest that 8 weeks of core training results to significant improvement in agility. Dinç, N., & Ergin, E. (2019) studied on core training on athletes and result suggest that implementing 8 weeks of core training results to significant improvement in agility. Khatoon, M., & Thiyagarajan, S. (2021) studied on core strengthening training on badminton players and the result suggest that implementing 6 weeks of core strengthening training results to significant improvement in agility. As the above research suggest that implementing core training on athlete's results to significant improvement in agility and also in my current study I found that implementing 6 weeks of core training leads to significant result in agility. So it can be concluded that implementation of 6 weeks of core training is good enough is to bring significant difference on agility.

Abdominal strength: Niewolna, N., & Zwierko, T. (2015) studied on core stability and functional exercise on female football player and the result suggest that two years of core stability program results to significant improvement in abdominal strength. Rajkumar, G., & Rajkumar, N. C. J. (2022) studied on core training on male football player and the result suggest that implementing core training results to significant in abdominal strength. Boyaci, A., & Tutar, M. (2018) studied on quad-core training on young football player and the result suggest that implementing 10 weeks of core training results to significant improvement in abdominal strength. As the above research suggest that implementing core training on athlete's results to significant improvement in abdominal strength and also in my current study I found that implementing 6 weeks of core training leads to significant result in abdominal strength. So it can

be concluded that implementation of 6 weeks of core training is good enough is to bring significant difference on abdominal strength.

Conclusion: the effect of 6 week core training have found significant difference on speed, agility and abdominal strength of male football players. And it is recommended that future researcher may be undertaken by making variation in the approach so that the finding may become more authentic.

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