

Effect of Strength and Flexibility Training Combined with Skill Practice on Performance Related Variables of Female Badminton Players

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Abstract

The purpose of the study was to determine the effect of strength and flexibility training combined with skill practice on performance related variables of female Badminton players. The subjects of the study were fifty female Badminton players who were regularly training at the S. N Badminton Academy, Rohini, Sector 24, Perch Sports Academy, Rohini, Sector 7 and Gurgaon Sports Badminton Academy, Rohini, 9 for a period of six weeks. The subjects were classified into two groups i.e. experimental group (N=25) and control group (N=25). The experimental group trained with strength and flexibility exercises combined with regular participation in the Badminton skill training sessions whereas the control group regularly participated in only Badminton skill training sessions. Application of analysis of variance followed by LSD post hoc test reveals that the Experimental group which trained with strength and flexibility exercises combined with regular skill training sessions attained significantly superior performance as compared to control group which regularly practiced skills of Badminton.

Key words: Strength, Flexibility and, Skill Practice, Female Badminton Players

Introduction

Badminton as a sport, over the years has gained tremendous popularity in both male and female categories. During late nineties and early twenties male Indian Badminton players i.e. Prakash Padukone and Pullela Gopi Chand won laurels for India by winning ALL ENGLAND BADMINTON CHAMPIONSHIP and thereafter female Badminton players i.e. Saina Nehwal and P. V. Sindhu won medals in the Olympic Games. In the recent past number of young players namely Lakshya Sen, H. S. Prannoy, Gayatri, Chirag Shetty and Satwik Sairaj have also performed well at national and international levels. Their achievements speak highly of the systematic and scientific training organized by their coaches. It is expected that the future of this sport in India is likely to be very bright and more and more female and male Badminton players are expected to win laurels for India in this sport.

In its current form, Badminton requires players to have a combination of strength, agility, endurance, and flexibility. They also need to have a fast reaction time. They need to be able to react swiftly and frequently in a certain situation. Also, when the player needs to

execute a smash, the hops play a crucial role. According to experts, we cannot achieve athletic success without a comparable improvement in our physical and motor capabilities. Research has shown that a sportsperson's performance can only advance more quickly when training for the necessary physical and motor skills is simultaneously undertaken and advanced to its highest level.

Top-tier Badminton players, according to the best coaches, have exceptional athletic ability and high levels of strength, speed, agility, flexibility, and muscular endurance. This popular sport which is performed by both males and females is characterised by high-intensity and intermittent actions and is played in following five categories:

1. Women's singles
2. Men's singles
3. Women's doubles
4. Men's doubles
5. Mixed doubles

Motor fitness and athletic performance are closely related, and if the level of competition in games and sports is to be raised, much emphasis must be put on raising the level of physical fitness of athletes. When China established a People's Republic in 1949, it approached this element of life extremely methodically by establishing physical criteria for school pupils at each stage. The results of this attention may be seen in the Olympic Games, Asian Games, and World Championships, where it is estimated that approximately 400 million youth have met the established standards.

Muscular imbalances that might force a youngster to make compensatory motions when learning new abilities can be avoided with proper muscle development. Everyone has witnessed injured persons favouring their strong (good) sides. If a child lacks the strength to handle the tennis racket as intended, a similar compensating mechanism may happen. He will overcompensate by using more muscles than are actually required in order to hold the racket. These compensatory mechanisms may lead to imbalance, which, if not fixed, is harder to fix over time.

The idea of training specificity is a key component of strength and flexibility exercises. According to this idea, a muscle must undergo specific training in order to experience the desired strength and flexibility gains. Similar to this, in order to increase isometric (static) versus isotonic (dynamic) strength, a person must follow the appropriate static or dynamic training methods. Similar to this, if flexibility is to be improved, a proper training programme must be used to ensure improvement. The chosen strength and flexibility exercises must as closely mirror the actual movement or skill as feasible if someone is aiming to improve a certain movement or talent through strength and flexibility.

Methodology

50 female Badminton players who were divided into two groups of 25 each served as the study's participants. Group A acted as the control group, whereas Group B served as the experimental group. The experimental group performed strength and flexibility exercises three times each week, on Mondays, Wednesdays, and Fridays, in addition to consistently attending all of the Academy's Badminton training sessions whereas the control group attended the practice sessions of the Academy and besides playing of Badminton and practicing skill they did not participate in any training programme of the Academy. The research scholar created the programme of flexibility and strength workouts, and it was approved by the top coaches who work at the Badminton Academies.

The variables chosen in the study were as follows:

1. Lock-hart and McPherson Wall Volley Test
2. French Long Service Test

Test researchers followed standardized statistical protocols i.e. analysis of variance (F-test) and LSD as post-hoc test to examine the data.

Findings

Table 1

Analysis of Variance (ANOVA) in case of Lock-hart McPherson Wall Volley Test with respect of Girls belonging to Experimental and Control Groups

		Sum of Squares	df	Mean Square	F
Lock-hart McPherson Test	Between Groups	389.150	3	129.717	
	Within Groups	1537.360	96	16.014	8.100*
	Total	1926.510	99		

*Significant at 0.05 level

The analysis of data in the above table clearly shows that the F value of 8.100 is statistically significant at 0.05 level of confidence with 3 and 96 degrees of freedom.

In order to ascertain the superiority of different groups in enhancing Loch-hart McPherson Wall Volley Test performance, post-hoc test i.e. Least Significant Difference (LSD) Method was followed and analysis of data pertaining to this is presented in the following table.

Table 2
Post Hoc Test (Multiple Comparisons using LSD) in the case of Loch-hart McPherson Wall Volley Test with respect to girls belonging to experimental and control groups

Dependent variable	(I)VAR 00001	(J) VAR 00001	Mean Difference (I-J)	95% Confidence Interval	
				Lower Bound	Upper Bound
Lock-hart McPherson Wall Volley Test	Experimental Pre-test	Experimental Post-test	-4.040*	-6.286	-1.793
		Control Pre-test	0.080	-2.166	2.326
		Control Post-test	1.120	-1.126	3.366
	Experimental Post-test	Experimental Pre-test	4.040*	1.793	6.286
		Control Pre-test	4.120*	1.873	6.366
		Control Post-test	5.160*	2.913	7.406
	Control Pre-test	Experimental Pre-test	-0.080	-2.326	2.166
		Experimental Post-test	-4.120*	-6.366	-1.873
		Control Post-test	1.040	-1.206	3.286
	Control Post-test	Experimental Pre-test	-1.120	-3.366	1.126
		Experimental Post-test	-5.160*	-7.406	-2.913
		Control Pre-test	-1.040	-3.286	1.206

From the above table it is clearly noticed that Lock-hart and McPherson Wall Volley Test performance of experimental group post-test in the case of girls is statistically superior to that of experimental group pre-test and control group pre and post-test performance. The analysis also reveals that experimental group pre-test performance is statistically not significant as compared to control group pre and post-test performance and also there is no statistically significant difference with respect to experimental pre-test, control group post and pre-test performance in the same variable.

Table 3
Analysis of Variance (ANOVA) in case of French Long Service Test with respect of Girls belonging to Experimental and Control Groups

		Sum of Squares	df	Mean Square	F
French Long Service Test	Between Groups	2812.430	3	937.477	
	Within Groups	1594.560	96	16.610	56.440*
	Total	4406.990	99		

*Significant at 0.05 level

The analysis of data in the above table clearly shows that the F value of 56.440 is statistically significant at 0.05 level of confidence with 3 and 96 degrees of freedom.

In order to ascertain the superiority of different groups in enhancing French Long Service Test performance, post-hoc test i.e. Least Significant Difference (LSD) Method was followed and analysis of data pertaining to this is presented in the following table.

Table 4

Post Hoc Test (Multiple Comparisons using LSD) in the case of French Long Service Test with respect to girls belonging to experimental and control groups

Dependent variable	(I)VAR 00001	(J) VAR 00001	Mean Difference (I-J)	95% Confidence Interval	
				Lower Bound	Upper Bound
French Long Service Test	Experimental Pre-test	Experimental Post-test	-3.400*	-5.688	-1.111
		Control Pre-test	8.040*	5.751	10.328
		Control Post-test	9.160*	6.871	11.448
	Experimental Post-test	Experimental Pre-test	3.400*	1.111	5.688
		Control Pre-test	11.440*	9.151	13.728
		Control Post-test	12.560*	10.271	14.848
	Control Pre-test	Experimental Pre-test	-8.040*	-10.328	-5.751
		Experimental Post-test	-11.440*	-13.728	-9.151
		Control Post-test	1.120	-1.168	3.408
	Control Post-test	Experimental Pre-test	-9.160*	-11.448	-6.871
		Experimental Post-test	-12.560*	-14.848	-10.271
		Control Pre-test	-1.120	-3.408	1.168

From the above table it is clearly noticed that French Long Service Test performance of experimental group post-test in the case of girls is statistically superior to that of experimental group pre-test and control group pre and post-test performance. The analysis also reveals that experimental group pre-test performance is statistically significant as compared to control group pre and post-test performance and on the other hand there is no statistically significant difference with respect to control group post and pre-test performance in the same variable.

Discussion Of Findings

The analysis of data using Analysis of Variance shows that the improvement of the experimental group is significantly better as compared to the control group in both the variables namely Lock-hart and McPherson Wall Volley Test as well as French Long Service Test. It is a known fact the regular practice of skills of any sport combined with systematic and scientific training involving strength and flexibility exercises might have enhanced the strength and flexibility of the muscles that contribute to good performance in the sport of Badminton and that could be the reason for the experimental group to attain significantly improved performance in both the selected variables. The experimental group not only regularly practiced the skills of the sport but also participated in a scientifically developed programme of strength and flexibility development in those muscles that have direct

relevance to the sport of Badminton. That could be the reason for the experimental group to achieve significantly better performance in both the selected variables relevant to the sport of Badminton. The reason why the experimental group showed significantly superior performance in both the selected variables as compared to control group could be attributed to the reason mentioned above.

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