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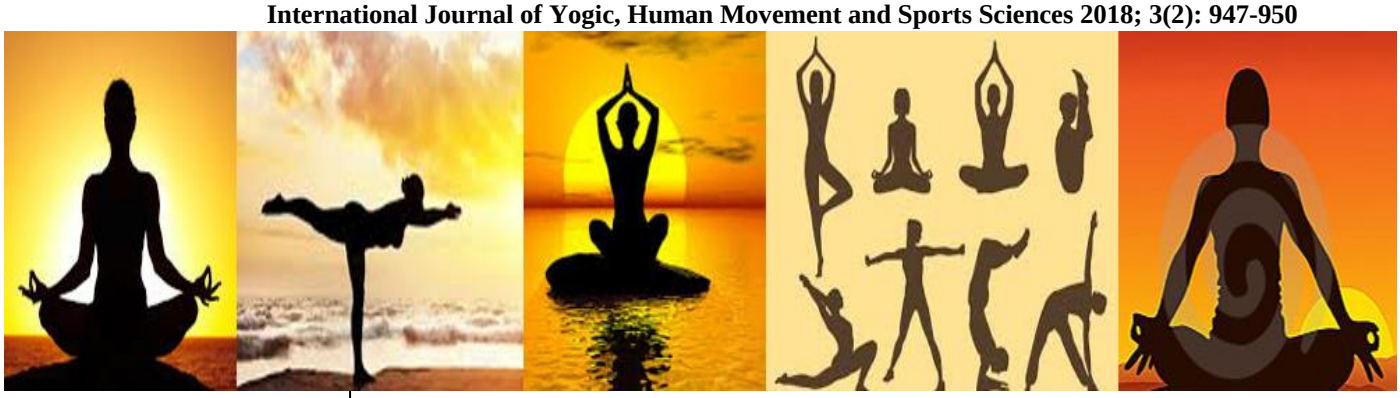

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Effects of 6-week strength training on badminton player of under the age group of 14 years

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Abstract
This pilot study investigated the effects of 6-week Strength training on badminton players under the age group of 14 years. Twenty badminton players from sports authority of India, Bangalore whose ages ranged from 13 to 14 years included in the study. The subjects were randomly divided in to two groups of 10 subjects in each: 1) Training group I (Strength training) and a controlled group the training groups performed 4 days a week for 6 consecutive weeks. Strength training were assessed using a 30 meter sprint test, vertical jump test and respectively, and skill tests assessed using anaerobic field test and short service test, and game performance assessed through the coach rated basis. All of the subjects performed the test before and after the training program. Data were analysed using a depended mean value and in-depended mean value. A confidence level of .05 was considered significant. The results presented that Strength training and game performance significantly improved in the training group. Significant not found in controlled group. There were also statistically significant differences between the 2 groups after training program. The training group had higher Strength compare to controlled group. This study provides support that 6-week Strength training can be effective training program to improve Strength in badminton players.

Keywords: Strength, training, male badminton players

Introduction
Badminton sport is characterized variety of actions of short duration and high intensity coupled with a short resting time. The number of different shots used during a game can vary a lot by allowing numerous tactical choices. This sport has requiring a specific preparation in terms of patience, control and motor actions. Coordinative factors such as reaction time, foot stepping and balances are essential motor characteristics in this sportDuring game, rally start with a service and a control service often dictated who will be won the rally. The three most popular strokes are the smash, the clear and the drop, however, Ming *et al* showed that stroke repartition with more clears, lobs and net shots. After reviewed research literature concerning the relationship of various factors with the badminton game performance, the investigator interested to study the coordinative ability and technique efficiency in relation to badminton game performance. It is one of the fastest game no one can easily get into the game to higher position. Continuous back and forth bends improve spine strength, side changes of legs is too beneficial for toes, heels and thighs. Warm and cool strength, side changes of legs is too beneficial for toes and thighs. Warm and cool down of game makes your body breath from each part, sweating and breathing improves blood circulation. There is no evidence of having research studies on this game hence this study.

The Statement of the problem
The purpose of the study is to find out the **"**Effects of 6week Strength Training on Badminton players of under the age group of 14 years" with the help of selected fitness programme or training, skill test and game performance.
Hypothesis-1 (STG) It was hypothesized that Strength training group would significantly improve the performance variables of strength, upper body strength, leg explosive power and skill performance of short service ability, long service ability, fore hand clear ability, back hand clear ability, hand movement and wrist movement ability, From baseline to post test of sports authority of India, Bangalore badminton players in order to test above hypothesis the

collected data were analysed by using dependent 't' test between the pre and post-test mean on performance variables and skill performance of male badminton players.

The Significance of the study

The study has wide application both in Badminton Players Physical fitness testing program.

The study may help to know the ability of Badminton player.

The study may help to compare the performance of badminton players of different age group in training period.

The study also reveals the changes in performance in relation to the strength and physical fitness level.

The study may help the badminton coaching plan for specific training models to train obtain better performance.

Methodology

The study will be conducted on experimental basis on the badminton player to know their level and performance and skill through 6 weeks designed training, through pre-test and post-test method.In this chapter the procedure adopted for the selection of subjects, selection of variables, tester reliability, instrument reliability, training schedule, reliability of data, test administration and statistical technique for the analysing the data has been described.

Selection of Subjects

The purpose of the study was to find out the effects of six weeks' strength training, agility training on selected variables and parameters among the badminton players. 30 players/ children were selected as subjected who playing for ranking badminton tournaments of under the age group of 12 years who training in Sports Authority of India training centres in Bangalore Karnataka. The selected subjects were divided in to two groups of 10 subjects in each groups. Group one acted as experimental group I (strength training) group two acted as controlled group. Group one underwent Strength training, group three underwent routine physical exercise for six weeks.

Selection of variables

The research scholar reviewed the various scientific literatures pertaining to the strength training on selected variables from books, journals, periodicals and research papers.

For this study the following variables were chosen

- Strength
- Skills
- Game performance

The experimental group underwent training for six weeks. The data was collected before and after the training period for analysis. A pilot study was carried out to assess the initial capacity of the subjects in order to fix the training load. For this purpose, 20 students were selected and divided into two groups strength training, and controlled group. The intensity of the training was decided according to the age group of the players. The method for strength training consist of calculating the quality or state of being physically strong of the badminton players. Basedon the response of the subjects in the pilot study, the training for the experimental group were constructed, however the individual difference was not considered, while constructing the training programmes the basic principles of training (progression, overload and specificity) were followed.

Selection of tests

Based on the availability of the instruments feasibility and also based on the review, the selected variables were tested by using standardized test items and the following test items were selected for the study.

Table 1: Tests selection

S. No	Variables	Test Items
1.	30 MTR Sprint test	Stop Watch, Measurement Tape
2.	Vertical jump test	Chalk powder. measurement Tape
3.	Short service test	Chalk, 6MTR Rope, Tape
4.	4 Point anaerobic field test	Cones, Tape, stopwatch
5.	Game performance	Coach rated (For 10 point)

Orientation to the subjects

Before the collection of data, the subjects were oriented about the purpose of the study. The researcher gave instruction to the subject about the experimental and testing methods and out the efforts required and testing methods and procedures, so that there was no confusion about the efforts required on their part. In order to get full co-operation from the subjects, they were oriented as follows. The method of performing the test items were explained and demonstrated to the subjects. The method of strength, agility, skills variables, game performance were explained to the subjects, to ensure proper understanding and effective cooperation, so as to obtain reliable data from the tests.

Experimental design

The study was formulated as true random group design, consisting of a pre-test and post-test. The twenty subject were randomly assigned to two equal group of 10 badminton player in theage group of 12 years. The group were designed to as strength training, and control group respectively. pre-test data was collected for all the 20 subjects on selected variables. Strength training was given to strength training group for five days in a week for six weeks and controlled group left on their own. The post-tests were conducted on the dependent variables after a period of six weeks of strength training.

Table 2: Shows Training Schedule for Group- I (Strength Training group U-14)

Day	Morning Session	Evening Session
Monday	Strength training	Match And Stretching exercises
Tuesday	Strength training	Badminton Skill practice and Stretching exercises
Wednesday	Strength training	Match And Stretching exercises
Thursday	Strength training	Match And Stretching exercises
Friday	Strength training	Badminton Skill practice and Stretching exercises
Saturday	Match	Recreational Game (Basketball)
Sunday	Rest	

Criterion Measures

By glancing the literature and in consulting with professional experts the following measures were applied to collect data on the selected criterion and predicator variables.

Table 3: Shows criterion

S. No	Variables	Test	Criterion
1	Strength	1. 30 MTR Sprint Test	Acceleration, Speed and Reaction
		2. Vertical Jump Test	Lower limb power, Thigh muscles, calf muscles power, explosive Strength and solder reach
2.	Skill	3. French Short service	Directing a shuttle towards a particular area of opposite court, to determine the effects of changing the distance through, which serve must pass on scores made. Wrist power and for arm power.
		4. 4 point anaerobic field test	To find the For hand smash, back hand smash, receive the net drop, Net smash, striking ability
3	Game performance	5. The performance of badminton game was measured by coaches rated scale.	Badminton techniques ability(short service ability, long service ability, fore hand clear ability, back hand clear ability, hand movement and wrist movement ability), or Badminton game performance of the players was measured out of ten points by a panel of three qualified coaches during actual competition and the average of three scores was considered as game performance of the badminton players

Game performance or playing ability

The criterion measure of overall playing ability was measured by a panel of experts consisting three persons. They were outstanding players at state level in the game of Badminton and have been serving as renowned & qualified coaches for about a decade. The experts were asked to make a subjective assessment of the overall playing ability of the players using the 10point scale which consist of all factors. The average rating of the three experts on the overall playing ability was considered as the score of subjects. To see the degree of agreement between the three qualified coaches, rank order correlation was used in this study. The results revealed high correlation, which means that there was a close agreement in rating between the coaches. The guidelines for rating was provided by the investigator.

Table 4: Shows Significance of mean gains / losses between pre and post-test of Strength Training group (STG) on selected performance variables and skill performance on Badminton players of age group of 14 years

Variables	Pre Test Mean± Sd	Post Test Mean± Sd	M.D	Std. Error Mean	'T'-Value	df	sig
Performance Variables							
30M sprint speed in seconds	8.09±0.47	5.31±0.50	2.78	.08	33.67	9	.000
Vertical Jump explosive strength in Centimetre	25.50±4.40	43.300±5.12	17.8	1.24	14.29	9	.000
Skill Performance Variables							
Anaerobic Field Test (in seconds)	12.08±.40	8.93±.68	3.92	0.18	16.96	9	.000
Short service test (in points)	5.80±1.47	13.50±1.26	7.7	.36	21.00	9	.000
Game Performance Test							
Game performance	2.90±.87	7.20±.78	4.3	.213	20.146	9	.000

*Significant at 0.05 level, Table value-2.262

Table-4 shows the mean value from pre to post-test in the performance and skill performance variables were: 2.785 secand 17.80 Centimetre's (Strength), 3.92sec and 7.7points (Skill performance), 4.3(Game performance) Overall playing ability test. Badminton game performance of the players was measured out of ten points by a panel of three qualified coaches during actual competition and the average of three scores was considered as game performance of the badminton players.

Table also shows the obtained 't' values of pre to post-test mean differences on performance, skill performance and game performance variables were: 33.67 sec 14.29 Centimetres (strength), 16.96sec, 21.00 in points (Skill performance), 20.14 coach rated points (Game performance) Overall playing ability test.

The obtained 't' values were tested at 0.05 level of significance. Since the calculated 't' values were greater than the table 't' value at **0.05** level for degrees of freedom **9**. null hypothesis was rejected at **0.05** levels of significance and formulated research hypothesis was accepted. Thus it was concluded that six weeks of strength training program showed significant improvement in strength, skills and overall playing ability (Game performance), as the study the above remark can be given at 95% confidence.

Table 5: Shows significance of mean gains / losses between pre and post-test of controlled group on selected performance variables and skill performance on badminton players of the age group of 14 years

Variables	Pre Test Mean± SD	Post Test Mean± SD	M.D	Std. Error Mean	't'-value	Df	Sig
Performance Variables							
30M sprint speed in seconds	8.19±0.64	7.978±0.70	.22	.10	2.12	9	.063
Vertical Jump explosive strength in Centimetre	24.10±4.84	24.60±3.949	-.50	.42	-1.16	9	.273
Skill Performance Variables							
Anaerobic Field Test (in seconds)	12.17±.51	12.11±.88	.063	.200	0.31	9	.761
Short service test (in points)	5.40±0.84	5.90±1.44	-.50	.619	-.808	9	.440
Game Performance Test							
Game performance	2.70±.82	2.100±.73	-.40	.30	-1.30	9	.223

* Significant at 0.05 level, Table value-2.262

Table-5 shows the mean value from pre to post-test in the performance and skill performance variables were: 0.22secand 0.50Centimetre's (Strength), .063sec and -0.50points (Skill performance), 0.40(Game performance) Overall playing ability test. Badminton game performance of the players was measured out of ten points by a panel of three qualified coaches during actual competition and the average of three scores was considered as game performance of the badminton players.

Table also shows the obtained 't' values of pre to post-test mean differences on performance, skill performance and game performance variables were: 2.125sec-1.168Centimetres (strength), 0.314 sec, -0.808 in points (Skill performance), -1.309 coach rated points (Game performance) Overall playing ability test.

The obtained 't' values were tested at 0.05 level of significance. Since the calculated 't' values were lesser than the table 't' value at 0.05 level for degrees of freedom 9. null hypothesis was rejected at 0.05 levels of significance and formulated research hypothesis was accepted. Thus it was concluded that six weeks of controlled group program showed no significant improvement in strength training, skills and overall playing ability (Game performance), as the study the above remark can be given at 95% confidence.

Result

After 6 weeks of training the training group showed significance improvement in the variables while those in the controlled group unchanged. When comparing post-test result between the training group and the controlled group, it was found that strength training group, and game performance in the training group were significantly greater than those in the controlled group.

Discussion

The purpose of this study was to demonstrate the effects of short term strength training on badminton player of age group of under-14 years of badminton players of Sports authority of India, Bangalore. The result in this study showed that 6 weeks of Strength training could significantly improve the game performance in the badminton players. These findings support several previous studies which have suggested that strength training can enhance badminton playing ability.

Suggestions

1. The proposed Strength training program should be a part of the physical preparation for badminton players because of its significant effectiveness in improving the skill of the Badminton players.
2. The present study was a pilot study so significant differences in leg muscle power were found and quick movement of Forward, lateral and backward movement were found. A research should include more volunteers which may result in a better sample and possibly a significant difference in game performance between the training groups and controlled group.
3. Future study will be conducted in the same area on different samples in terms of age and gender to see if the strength training group program will be effective in these group as well.

References

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