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"Effect of Progressive Training Program on Technical Performance of Accuracy Spiking and Spiking Sequence Motion for Attack Skill of Volleyball Players of Chandrashekhar Agashe College of Physical Education, Pune."

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Abstract: "The purpose of the study was to develop the Spiking of attack skill to Volleyball players. The researcher was conducted. "Effect of Progressive Training Program on Technical Performance of Accuracy Spiking and Spiking Sequence Motion for Attack Skill of Volleyball Players of Chandrashekhar Agashe College of Physical Education, Pune". Population of the study were from Volleyball players of C.A.C.P.E. purposive sampling technique was used to select the subjects.12 subjects the age from of 20 to 26 were selected from Volleyball players of C.A.C.P.E. Pune. Attack skill test was used to find technical performance of accuracy Spiking and Spiking sequence motion of ability of the players. Experimental design was used for this research to find out the difference. The research was conducted in three phases the 1st phase the pre-test, the 2nd phase the training program, and the 3rd phase the post- test. Normal descriptive statistics was used to find out the rating scores. Then paired sample-test was used to find the comparison of pre and post-test. The rating score of the pre-test was high in the lower levels and low in the upper levels, and post-test showing a low in the lower levels and high in the upper levels"

Keywords: Volleyball; Physical; Motion; Spiking; Training; Program; Technical; Performance; Skill; Players.



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1. INTRODUCTION

The sport of volleyball is a game most people have played at some time in their lives, whether in the backyard, on the beach, at picnics with family and friends, or competitively with an organized team. The objective of the game is fairly simple keep the ball off the ground on your side of the court, and use up to three contacts to hit it back over the net into the opposing team's court. The team that does this the successfully will score a point. The team with the most points at the end of the game, or set. wins that particular game, and the team that wins the most sets wins the match. This sport. Originally called mintonette, was invented in 1895 in Massachusetts by William G. Morgan for businessmen at the YMCA who wanted a less strenuous sport than basketball.

Volleyball has developed into a high-powered sport and is one of the most popular team sports. It is played at all levels by millions of people all over the world. Having six players on one side of the net moving in a small court only 900 square feet (81 square meters) in size while trying to stop the opponents from hitting the ball into their court requires good physical and mental skills.

Volleyball is the ultimate team sport the players must coordinate their movements by reading, reacting, and moving as quickly as possible while the volleyball is in play. To make the sport even more complex, the ball is always in the air when it is contacted by a player beginning with the serve. Several skills are performed while the players are not even on the floor when they contact the ball, as in attacking or blocking. This makes this sport very unique in that there is virtually no time to stop and think before contacting the ball, nor can a player hold onto the ball or move while in possession of the ball.

2. Statement of the Problem

Through the Tests and measurements used for skill performance with volleyball players, the researcher seeks to know the correlation between the



performance pretest and posttest of skill; hence the problem of the research is focused on the study of the effect of Progressive drills and its relationship to perform the skill of Performance of Accuracy Spiking (Smash Blow) and Spiking Sequence Motion with volleyball players.

3. Significance of the Study

- 3.1. The study will help coaches to know the qualities required to be provided of the players in the training process.
- 3.2. The study will help professionals in volleyball to develop the foundations and important criteria to achieve integration between the process of training and its success to raise the skill level and technical in volleyball.

4. Operational Definition

4.1.Spiking

The Spiking is main offensive skill in volleyball which acquires the majority of the points in the game, and measured through their performance correctly and effectively in the training program.

4.2.Progressive drills.

The Progressive drills which are designed to improve of attack skill for Performance of Accuracy Spiking and Spiking Sequence Motion in volleyball from simple to complex method.

5. Objectives of the study

- 5.1.To measure Performance of Accuracy Spiking and Spiking Sequence Motion of Volleyball Players.
- 5.2.To design Progressive training programme for Volleyball Players.
- 5.3.To study the effect of Progressive training programme on Performance of Accuracy Spiking and Spiking Sequence Motion for Volleyball Players.



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6. Hypothesis of the study

H1: There will be significant effect of Progressive drills training programme on Performance of Accuracy Spiking and Spiking Sequence Motion for Volleyball Players.

7. Assumption

- 7.1. It is assumed that all the players for this study will follow the instructions and Directives to implementation and performance the tests required of them properly.
- 7.2. It is assumed that Management CACPE will co-operate with Researcher the approval to conduct the research on its students.
- 7.3. Players will respond to experiment positively.

8. Limitations of the study

- 8.1. There is no control of Researcher on the habit, daily routine and living style of the Participants that may affect findings of research.
- 8.2. The administrative constraints are not under control of the researcher. Socioeconomic status and environmental condition is not controlled by the researcher.

9. Delimitations of the study

- 9.1. This study is delimited to the male of volleyball players of CACPE, Pune.
- 9.2. This study is delimited to the age group of 20 to 26 years.
- 9.3. This study is delimited only to Performance of Accuracy Spiking and Spiking Sequence Motion in players.
- 9.4. The experimental period is delimited to eight weeks.

10. Reviews related to Performance Evaluation in volleyball.

Yiannis studied Evolution in men's volleyball skills and tactics as evidenced in the Athens 2004 Olympic Games. The study compares the effectiveness of the five principal skills in men's Volleyball (serve, reception, attack, block and dig)

between the Sydney 2000 and the Athens 2004 Olympic Games and examines to what extent the observed changes are connected with the implementation of the new rules in Volleyball. The findings revealed a universal tendency of the elite men's volleyball teams to enhance their defense by reducing their block and dig faults. On the contrary there was an increase of the reception faults as a result of the improvement of the service effectiveness. The above changes reflect the teams' shift of tactics to win more points from their own serve. This tactical development became more imperative after the introduction of the rally-point system, which reduced the number of points played per set, and hence the teams' opportunities of gaining the minimum two-point advantage in order to win the set. Nonetheless, the Athens gold-medalist team of Brazil showed, in addition to the above, remarkable reception effectiveness which led to an outstanding attack capability, thus reestablishing the attack as the most important skill in volleyball (**Yiannis, 2005**).

Sotiris studied Correlates of Team Performance in Volleyball. The overall performance of a Volleyball team depends on many factors, from which decisive are considered to be the execution of skills that lead immediately to winning or losing the rally. These are lost serves, aces, kill attacks, attack errors and kill-blocks. The analysis of these skills in relation to team performance, as expressed by the ratio of sets won to the total number of sets, lead to the formation of two new correlates. These are the serving efficiency ratio (SER), defined as the ratio of lost serves to aces, and the attack efficiency ratio (AER), and defined as the number of kill attacks divided by the sum of attack errors and kill-blocks. Analysis of the data collected from all the matches of the male A1 volleyball professional league of 2005-2006 in Greece proved that the two efficiency ratios were better predictors of the teams' overall performance than the five original variables. The findings lead to clear-cut definitions of norms both for the serving and attack efficiency ratio. The leading teams had a SER of around two and an AER of around three. These criteria



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are valuable tools especially for Volleyball coaches in deciding for the appropriate tactics of their teams **(Sotiris, 2009)**.

Quiroga studied the Relation between in-game role and service characteristics in elite women's volleyball. The aim of this study was to determine whether the in-game role of players (setter, outside, middle, or opposite player) in elite women's volleyball is significantly related to the characteristics of their service. The sample consisted of 1,300 service deliveries (total serves for all matches) made by players in the 8 teams participating in 2 Final 4 stages of the Indesit European Champions League. The variables recorded were in-game role of the server, service type, speed of delivery, service area, target zone, and effectiveness of delivery. Results showed a significant relation between the server's in-game role and service type ($p \leq 0.01$), service speed ($p \leq 0.01$), service area ($p \leq 0.01$), and effectiveness of delivery ($p \leq 0.001$). The most significant relation observed was with the service area, primarily because of the server having to make a quick transition to the defense zone. Setters and opposite players most commonly served from behind zone 1 (100 and 80% of serves, respectively), which they defended after serving. Similarly, middle players served most frequently from behind zone 5 (47% of serves), the zone they subsequently defended **(Quiroga, et.al. 2010)**.

Patsiaouras studied Technical Skills Leading in Winning or Losing Volleyball Matches During Beijing Olympic Games. Volleyball is included in sports where individual success of final efforts such as a successful attack or an effective block, is achieved by the harmonious collaboration of the preceded players' efforts. The purpose of this present study was to evaluate the importance of technical skills that led to the success of the national teams that took part in the Olympic Games of Beijing 2008. The sample was constituted by all the matches of the volleyball men teams that participated in the Beijing Olympic Games. Overall, 29 games were videotaped and evaluated. Collection of data included the use of the

statistical recording program Data Volley 2. The parameters that were evaluated were: a) service, b) service reception, c) attack, and d) attack blocked. The statistical treatment of data was realised through non parametric statistical analysis. The results showed that, service points, reception errors, and attacks blocked emerged as important factors that were decisive for winning or losing a match (**Patsiaouras, et.al, 2011**).

Fellingham studied the importance of attack speed in volleyball. This study sought to examine the relationship of the speed of a set in volleyball with the outcome of the attack. A total of 1777 sets of a single male university level volleyball team were photographed using high speed cameras so that the time the set was in the air could be measured with accuracy to 1/100th of a second. Data were analyzed using a logistic regression model implemented using the Bayesian paradigm. Using these methods the probability of a kill resulting from a set of a particular speed could be calculated. In general, sets that traveled a further distance had significant increases in the probability of success with a faster set. No trends were seen with sets that were delivered to hitters that were closer to the setter. Decreasing outside set time from 1.53 to 0.85 s, significantly increased probability of a kill from 0.31 to 0.58 for the team studied. The speed of the set when the attacker is not near the setter appears to be an important component in the success of the attack in male collegiate volleyball (**Fellingham, et.al, 2013**).

11. Research Methodology

11.1. Method of study

As the researcher wanted to see the effect of Progressive drills to improve Smash blow of Volleyball Players. The study was conducted by experimental method.

11.2. Design of study



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For this research the researcher has selected the one group pre-test and post-test Design.

One group pre-test post-test Design

O ₁	X	O ₂
Pre-Test	Training Program	Post-Test

11.3. Variables of the study

Skill training exercises were selected to see the effect on Smash blow of 12 Volleyball Players. It was based on the study of the literature and discussion with the experts, the following variables were selected.

11.3.1. Independent variable

Selected exercises were used as independent variables in the present study. After discussion with the experts and reviewing the available literature in this field. the following exercises listed below were selected as independent variable and they are listed below.

11.3.2. Dependent variable

The dependent variable used is the Spiking.

11.3.2.1. Skill training

- The main components to attack steps.
- The attack from the centers (4-3-2).
- The attack directly to specific signs.
- The attack by use the blockers.

11.3.2.2. Physical training

- Jump rope, Sit-ups and Pushups.
- Frog jumps, Box jumps and Squat jumps.
- Run ladder, vertical jump and rubber band jumps.
- Bench presses, front lat pull-downs, dumbbell shoulder presses.
- Leg raises, one-leg dead lifts and heel raises.

11.3.3. Confounding variables

- Intervening - interest, fatigue, different training methods, physical fitness.
- Extraneous – diet, psychology of subject, status, fitness.. etc.

11.4. Sampling technique

11.4.1. Population

All the Volleyball Players below the age of 20-26 from C.A.C.P.E. Volleyball coaching program is the population of the study (N 12).

11.4.2. Sampling method

For the selection of sample from the defined population purposive technique was used 12 students will be selected as sample

11.5. Criterion measures

The criterion measures chosen to test the hypothesis were significance effect found of the technical performance of Smash blow. Mean of the 6 trials reading were recorded as best test performance.

11.6. Tester competency

The researcher selected only standardized test. A special clinic was held before the test, for the benefit of the test administrators who assisted in conducting the test so as to acquaint them with various technicalities, such as the mode of Smash blow and the test items so that they were competent enough to administer the test effectively.

11.7. Reliability of the data

In order to ensure the reliability of the data collected, the researcher took precautionary measures to administer the test in a smooth and systematic manner. The researcher selected appropriate tools, required for conducting the test and these were used during the pre-test and post-test.



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11.7.1. Score sheets

Appropriate score sheets were duly prepared for recording the scores of each test item separately.

11.7.2. Equipments

The researcher selected the following equipment after thoroughly checking there working conditions and accuracy.

Table no.3.1

Equipments required for the test

Sr. No	Item	Quantity
1	A stopwatch, Whistles	1
2	Two Specific signs	2
3	Six Volleyballs	6
4	Volleyball court	1
5	Marking powder,	2 kg

11.7.3. Ground marking

The researcher made it a point to report at the testing place in time, prior to the scheduled time of the test, to ensure that the requisite facilities for administering the test were as per the specific technical requirement in such cases the researcher personally re-checked the measurement of the field to ascertain accuracy in measurement of performance of the subjects.

11.7.4. Selection of test

To see effect of selected exercises i.e. skill training, on accuracy Spiking (Volleyball Players must hit the ball directly to specific signs, the researcher selected Smash blow skill test as tool for measurement of a volleyball skill ability. The test was administered before and after the training to collect the data of the group. The score sheet will be shown before and after the training too.

11.8. Administration of test

All the 12 subjects were tested on pre and post training, which comprised of Smash blow skill test of volleyball. Necessary instructions were given to the subjects. The test was administered in the following manner.

11.8.1. Smash blow skill test

Smash blow skill test studied the basic skills of volleyball and how they could be measured so as to increase the standard progress and interest in player.

11.8.2. The goal of the test

Measuring accurately perform of the smash blow in the direction of the specific signs.

11.8.3. Equipments used

Volleyball court, Six balls, Two specific signs, one is placed in the corner of volleyball court, So that the signs are placed at a distance of one meter from the side line and the final line.

11.8.4. Administration

The test field is prepared to administer the skill test. The player performs the spike of center (4); the tester is passing ball to the player from the center (3).

Each player has to six attempts to perform the spike on one of the specific sign, then six other attempts to perform the spike on the other sign.

Recorded points for player of all attempts, according to the rules of the following registry.

- ✓ Four points for each hitting correct falling where the ball is on the sign.
- ✓ Three points for each the Spiking falling where the ball is on the planned area.
- ✓ Two points for each the Spiking falling where the ball is on the area (a) and (b).
- ✓ One point for each the Spiking falling where the ball is on the area (c).



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11.9. Description of the Test

Test - Spike for accuracy.

Purpose - To measure the spiking accuracy of volleyball players.

Equipments - volleyballs, field markings, score sheet.

Procedure - Player works to hit the ball from center 4 to direct the ball to specific signs in other side of court.

Scoring - The subject is given six attempts to perform the Spiking on one of the specific sign, then six other attempts to perform the Spiking on the other sign and the final test score is provided of the sum of the six attempts.

11.10. Procedure of the study

For the present study 12 Volleyball Players of CACPE, Pune. were chosen. The subjects were in single group for the dependent variable. Whole experiment was conducted in 3 phases.

11.10.1. First phase (Pre test)

In the first phase the subjects were instructed to participate in spike skill test of volleyball. By measuring the accuracy and performance of the spike at the volleyball, the data was collected.

11.10.2. Second phase (Training Phase)

After the completion of the pre- test stated above all the subjects in the group participated in the skill training program. The training program was for 6 weeks, 4 days per week. Each session consisted of three parts, first part warm up; second part the main activity and the third part the cooling down.

11.10.3. Third phase (Post-test)

Post-test was taken after the training program to find the effect of the training program on the attack skill (Spiking) of 12 volleyball players.

11.11. Description of the exercises.

- The main components to attack steps.
- The attack from the centers (4-3-2).



- The attack directly to specific signs.
- The attack by use the blockers.

11.12. Justification of the exercises.

A six week long, skill training program was designed for the 12 volleyball players of CACPE, Pune. The objective of the training program was to improve the spike skill of the volleyball player, specially the

11.13. Statistical tools and techniques

For analysis of the data researcher will be using descriptive and inferential statistics. Descriptive statistics mean median and mode will be used. And to compare the difference between pre-test and the post-test independent sample t-test will be used

12. Data Analysis & Interpretation

To see the effect of Progressive drills of 8 weeks training program on the attack Skill, Performance Accuracy Spiking and Spiking Sequence Motion for Volleyball Players of Chandrashekhar Agashe College of Physical Education, Pune, team's Volleyball players.

The data collected before and after training was computed and the final results are presented in this chapter in the form of different tables with their interpretation. In this chapter the stated problem is solved and the formulated hypothesis is tested in the investigation.

Descriptive and paired sample normal test statistical procedures were designed and used for their analysis of data. The results were thoroughly interpreted and also graphically presented.

This chapter represents a descriptive statistics of attack skill test, through conducting two types of tests related by the performance of attack skill are:-

- A. Test for Accuracy Spiking.
- B. Test for Spiking Sequence Motion.

13. Testing hypothesis



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In order to study the effect of progressive training on Attack skill for Accuracy Spiking and Spiking Sequence Motion of Volleyball players, the objective of the study was to plan and implement a progressive training program.

To test the efficacy of the training program the researcher has stated a research hypothesis.

H1: There will be a significant effect of the training program on

Attack skill for Accuracy Spiking and Spiking Sequence Motion of Volleyball players, but for the statistical purposes it is necessary to state null hypothesis.

H0: Hence as there was a significant difference on Attack skill for Accuracy Spiking (Smash Blow) and Spiking Sequence Motion after the training program the null hypothesis is rejected. And research hypothesis was accepted.

14. Discussion

From the statistical procedure it is interpreted that there is a significance difference found between the pre and post test on the experimental group. Descriptive statistics and paired sample test proves that the difference found was significant in improving performance of the experimental group. Hence it may be inferred that the 8 weeks strength training program has a significant effect on Attack skill for Accuracy Spiking and Spiking Sequence Motion of Volleyball players.

To achieve the purpose of the present study twelve players were selected from they were in one group underwent to training on Volleyball skill the experimental group was subjected to the training for three days in a week for a period of 8 weeks Volleyball skill training programme. The dependent variables namely Accuracy Spiking and Spiking Sequence Motion performance was measured by researcher.

15. Summary

The research was conducted to study the effect of progressive training on Attack skill for Accuracy Spiking and Spiking Sequence Motion of Volleyball players. 12 subjects between the age of 20-26 were selected from Chandrashekhar Agashe College of Physical Education, Pune, team's Volleyball players. The subjective of the study was to test the Accuracy Spiking and Spiking Sequence Motion of volleyball players, to design and implement training program, to test the efficacy of the training program. The study was delimited to the Volleyball players C.A.C.P.E. intermediate level of Volleyball players, only male above the age of 20, and only concerned with the Accuracy Spiking and Spiking Sequence Motion of attack skill in Volleyball. There were different limitations of the study such as the day-to-day lifestyle, the genetic differences, dietary habits and socio economic status of the players. Attack skill test was used to find the Accuracy Spiking and Spiking Sequence Motion ability of the players. Experimental design was used for this research to find out the difference. The research was conducted in three phases the 1st phase the pre-test, the 2nd phase the training program, and the 3rd phase the post-test. Normal descriptive statistics was used to find out the rating scores. Then paired sample-test was used to find the comparison of pre and post-test. To test the efficacy of the training program the researcher has stated a research hypothesis

H1: There will be a significant effect of the training program on the Accuracy Spiking and Spiking Sequence Motion of Volleyball players. The rating score of the pre-test was high in the lower levels and low in the upper levels, and post-test showing a low in the lower levels and high in the upper levels. Hence there was a significant difference of the training program in improve the performance of players on the Accuracy Spiking (Smash Blow) and Spiking Sequence Motion.



16. Conclusion

Within the limitation of the present study the following conclusion may be drawn:

Twelve Volleyball players were assessed for their accuracy spiking and spiking sequence motion. There were differences in their physical performance.

Progressive training was used to improve the accuracy spiking and spiking sequence motion of the most Volleyball players which helped to improve the performance skill.

The progressive training increased the strength and power of the players.

Descriptive statistics and paired sample test analysis showed that there was a significant difference of the progressive training program on the accuracy spiking and spiking sequence motion Volleyball players .

It is stated that within the limitations of the present study the selected exercise i.e. progressive training contributed to the achievement to improve the accuracy spiking and spiking sequence motion Volleyball players. Hence it may be concluded that the performance of selected exercise helps in the improvement of the Volleyball players.

The statistical data indicates that the effect of exercise was more significant.

It was found that there was a significance difference between the skill training in the pre and post test the performance of accuracy spiking and spiking sequence motion among Volleyball players C.A.C.P.E.

There was a significant improvement on passing and receiving performance due to effect of skill training programme among Volleyball players C.A.C.P.E .



Finally I concluded that skill training group is better than any group for improving the performance of accuracy spiking and spiking sequence motion ability.

So I recommended that physical education teachers, coaches and experts have to give importance of Volleyball skill training which helps the Volleyball players to do better performance during the competition.

17. Recommendations

Research was conducted only on Male students but it can also be conducted on female students.

The students were of 20-26 year's age but the students of other age can also taken.

Only students (college's team) of Volleyball players of C.A.C.P.E. were taken but the other college students could have been considered.

Only progressive training including own body weight, there a band exercises, light weight exercises were used. Other means and methods of progressive training can be used.

The progressive training program can also be used for improvement in other skills in Volleyball.

The progressive training can also be used for skill improvements in other sports.



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