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EFFECT OF PUSHUP AND 50METER DASH ON THE SERVICE SKILLS OF FEMALE VOLLEYBALL PLAYERS; THE CASE OF NNAMDI AZIKIWE UNIVERSITY STUDENTS

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ABSTRACT

The study determines the effect of push up and 50m dash on the service skills of female volleyball athletes in Nnamdi Azikiwe University, Awka. Two research questions guided the study and pretest and posttest were used to ascertain the effectiveness of the variables. The study adopted the quasi-experimental research design. The population of the study was 20 female students in 300 and 400 levels from department of Human Kinetics and Sport Science in Nnamdi Azikiwe University Awka, Anambra State. The population of this study is made up of 20 female athletes; no sample was used for this study because the population was too small. The instruments for data collection were a weighing scale of Goonja communications and Electronics scales Co. Made in Delhi India, Performance Assessment Tool will include a structured checklist or rubric to assess the service skills of the female volleyball athletes. Data were generated by obtaining the accuracy, power, technique, and consistency of serves of the female players which was done on pre-test and post-test experiment in order to get the accurate data needed for the research. The data obtained were analyzed using mean and standard deviation for the research questions. The findings of the study revealed that the female volleyball athletes in Nnamdi Azikiwe University, Awka exposed to push-up and 50m dash training on hand strength service skills had better hand strength service skills and their standard deviation showed homogeneity of responses than their counterparts in the control group.

Key words: Push-ups, 50m dash, Service skills, Female volleyball player

Introduction

Volleyball is a popular and highly competitive sport in Nigeria, with a growing number of young female athletes participating at various levels of the game. Successful performance in volleyball requires a combination of technical skills, physical fitness, and tactical knowledge. Among the fundamental skills in volleyball, serving is a critical aspect that can significantly impact the outcome of a match. Service skills, in particular, are crucial as they initiate every rally and can exert pressure on the opposing team. The effectiveness of a serve is determined not only by the player's technique but also by their physical fitness levels Ojo & Oladipo (2019). Physical fitness plays an essential role in a volleyball athlete's ability to perform at their best. While traditional volleyball drills and exercises are essential for skill development, athletes in Nigeria are increasingly incorporating other training methods to enhance their overall performance. Two such training methods are push-up exercises and short-distance sprints like the 50m dash. These activities are believed to improve upper body strength and speed, respectively, both of which could have a direct or indirect impact on a player's serving ability (Ojo, 2020).

Students play volleyball optimally. A player must know and practice the basic techniques in this game. Some of the basic techniques include passing the ball, smashing the ball, blocking the ball, and servicing the ball. These four basic techniques must be mastered well; there are two basic techniques of passing the ball in volleyball, namely upper passing and lower passing. Good passing mastery will help a feeder provide good ball feed according to certain agreed codes (Destriana, 2018). Students can produce good and correct over passes in addition to routine training must be supported by good physical training to support the muscle strength needed in passing volleyball according to Switri & Yusfi, (2020). Volleyball is closely related to an-aerobes movements. Movement characters in volleyball require physical conditions, including speed, strength,

explosive power, flexibility, agility and endurance. The tests that trigger movement in volleyball include various push- ups which aim to determine the strength and endurance of the hand muscles. One of the most difficult basic techniques for students to do is passing over, and over passing in the opinion of Yusfi, H. (2020) passing over is a pass that is carried out when the ball is at shoulder level or higher.

Volleyball is a dynamic sport that requires a combination of physical fitness, technical skills, and tactical understanding. Service skills, a fundamental aspect of volleyball, play a crucial role in the success of a team. The service is the initial action in each point, and its effectiveness can determine the flow of the game. It involves a combination of strength, accuracy, and speed (Suchomel, 2016). As female volleyball athletes in Nigeria strive for excellence, there is a growing interest in optimizing their physical fitness and skills. Among the various components of physical fitness, two elements, push-ups and sprinting (50m dash), have been of particular interest due to their potential influence on athletic performance. These exercises are known to enhance upper body strength, core stability, and sprinting speed, all of which are crucial in the sport of volleyball. By understanding the effect of push-ups and 50m dash on service skills, coaches, and trainers can develop more targeted training programs, enhancing the athletes' service accuracy, speed, and power. This research aims to bridge this gap by examining the impact of these exercises on the service skills of female volleyball athletes at Nnamdi Azikiwe University, contributing to the ongoing efforts to optimize their training and performance.

Research Questions

- What is the effect of push-up training on service skills of female volleyball athletes in Nnamdi Azikiwe University, Awka?

- What is the effect of 50m dash on service skills of female volleyball athletes in Nnamdi Azikiwe University, Awka?

Methods

Research Design

The study adopted quasi-experimental design, because it's not feasible to randomly assign athletes to groups (which can be challenging in a university sports setting). The study will select a group of female volleyball athletes who voluntarily participate in the training and a comparable group who do not participate. The population of this study was made up of female volleyball athletes from Nnamdi Azikiwe University, Awka. The population is made up of twenty (20) female athlete but fifteen (15) volunteered to participate in this study. No sample was used for this study because the population was too small. The volunteered athletes are those who are actively engaged in volleyball training and competition at various levels within the university. The population represents a diverse group of individuals with varying skill levels and backgrounds, all contributing to the rich sports culture of the university.

Instrument for Data Collection

The Instrument for data collection was Performance Assessment and Surveys. Performance Assessment Tool will include a structured checklist or rubric to assess the service skills of the female volleyball athletes. It should cover aspects like accuracy, power, technique, and consistency of serves. The surveys inquired about their training experience, self-assessment of their service skills, and any perceived benefits or challenges they encountered during the training regimen.

Description of Instrument for Data Collection

Push ups

Possible equipment required: floor mat, audio tape, stopwatch, and chair.

The objective of this test is to examine the athlete's push up ability. Explain the test procedures to the participants. Prepare forms and record basic information such as age, height, body weight, gender and test conditions.

Table 1: Perform a standard warm-up.

Category	**Minimum Ratio (Seconds)**
Excellent	Below 30 seconds
Above Average	30 – 4- seconds

Procedure: A standard push-up begins with the hands and toes touching the floor, the body and legs in a straight line, feet slightly apart, the arms at shoulder-width apart, extended and at a right angle to the body. Keeping the back and knees straight, the participant lowers the body to a predetermined point, to touch the ground or some other object, or until there is a 90-degree angle at the elbows, then returns back to the starting position with the arms extended. This action is repeated without rest, and the test continues until exhaustion, or until they can do no more in rhythm or have reached the target number of push-ups. For this study the target number of push-ups will be 10.

Scoring: Record the number of correctly completed push-ups.

50 Meter Dash

Possible equipment required: measuring tape, straight-leveled surface (not slippery) for 50-meter race, stop watch and a whistle. The objective of this test is to evaluate the development of the athlete's ability to effectively and efficiently accelerate from a standing start to maximum speed. Three trials were given to the athletes and out of these, the best time was recorded.

Procedure: The test involves running a single maximum sprint over 50 meters, with the time recorded. A thorough warm up would be given, including some practice starts and accelerations. Start from a stationary position, with one foot in front of the other. The front foot must be on or behind the starting line. This starting position should be held for 2 seconds prior to starting, and no rocking movements are allowed. Once the subjects are ready and motionless, the starter gives the instruction "Set" then "Go". The researcher should provide hints for maximizing speed (such as keeping low, driving hard with the arms and legs) and encourage them to continue running hard through the finish line. The researcher starts the stopwatch immediately the subjects take off. The subjects sprint to the marked end of the line as quickly as possible. The researcher stops the stopwatch when the subjects finish. The assistant records the time. The subjects rest fully and repeat three times.

Table 2: 50 Meter Dash Scoring

Excellent	Above Average	Average	Below Average	Poor
5.00 sec	7.50 sec	8.00 sec	9.50 sec	10.50 sec

Scoring: This is taken from the recorded time in seconds each athlete used in completing the race, the best time of three trials was recorded to the nearest 2 decimal places.

Assigning Athletes to Groups

They were fifteen (15) athletes for the study which was divided into five (5) for hand strength treatment group, five (5) for athlete speed treatment group and five (5) for control group. The treatments groups were introduced to ten (10) push-ups, a sprint of 50m dash with time recorded to be part of training session practice. This training practice of the treatment group will run for three weeks after which a post-test will be conducted. The control groups are not part of the training session for the validity of the study.

Training of Athlete

The training session lasted for three (3) weeks. Two times per week, the days used for the training session were Mondays and Thursdays. The time for the training was 4:00pm – 4:45pm (45 minutes) in the evening of Mondays and 4:00pm – 4:45pm (45 minutes) in the evening of Thursdays. There was ten (10) minutes warm-up, twenty-five (25) minutes physical fitness exercises such as push-up and 50m dash, and ten (10) minutes cooling down exercises. A leader

was appointed by the researcher in each group during the training session from those who had the best performance. The researcher demonstrated for the group to see as well as practice it well.

Method of Data Collection

Pretest Assessment: Prior to the start of the training regimen, pretest was conducted to evaluate the athletes' baseline service skills. This will involve having each athlete perform a series of service actions, which will be assessed using the performance assessment tool.

Training Intervention: Implement the training regimen, including push-up exercises and the 50m dash, over a specified period. Ensure that all participants in the experimental group follow the prescribed training program.

Post-test Assessment: After the training intervention is completed, post-test was conducted to evaluate any changes in the athletes' service skills. Using the same performance assessment tool, assess the accuracy, power, technique, and consistency of serves.

Data from Surveys: Administer surveys to gather qualitative data on the athletes' experiences during the training program. This may include questions about their perception of skill improvement, physical challenges, and any other feedback that can provide insights into their experiences.

Method of Data Analysis

The data obtained were analyzed using mean and standard deviation to answer the research questions.

Results

Research Question 1: What is the effect of push-up training on service skills of female volleyball athletes in Nnamdi Azikiwe University, Awka?

Table 3: Pre-test and Post-test Mean ratings of push-up training on service skills of female volleyball athletes and those in the Control Group in Nnamdi Azikiwe University, Awka.

Source of Variation	N	Pretest $\overline{X}$	SD	Posttest $\overline{X}$	SD	$\overline{\overline{X}}$ Difference
Push-up Hand Strength Training Service Skills	5	59.77	14.02	95.26	3.87	35.49
Control Group	5	64.00	11.72	68.21	11.89	4.21

Table 3 reveals the pre-test and post-test mean push-up training on hand strength service skills of female volleyball athletes to be 59.77 and 95.26 with a gained mean of 35.49 and SD of 3.87, while those in the control group had 64.00, 68.21, 4.21and 11.89 as mean pre-test, post-test, gained mean and SD scores respectively. Both the post-test mean scores and gained mean scores of female volleyball athletes in Nnamdi Azikiwe University, Awka were greater than that of those exposed to control group.

Research Question 2: What is the effect of 50meter dash on service skills training of female volleyball athletes in Nnamdi Azikiwe University, Awka?

Table 4: Pre-test and Post-test Mean ratings of 50 meter dash on service skills training of female volleyball athletes and those in the Control Group in Nnamdi Azikiwe University, Awka.

Source of Variation	N	Pretest $\overline{X}$	SD	Posttest $\overline{X}$	SD	$\overline{\overline{X}}$ Difference
50m Dash Speed Service Skill Training	5	62.77	13.24	95.69	4.14	32.92
Control Group	5	65.36	11.60	69.58	12.06	4.22

In Table 4, the analysis shows the pre-test and post-test of female volleyball athletes mean scores of 62.77 and 95.69 exposed to 50m dash speed service skill training. Their gained mean score was 32.92 and SD of 4.14. On the other hand, female volleyball athletes in the control group had 65.36, 69.58, 4.22 and 12.06 as their pre-test, post-test, gained mean and SD scores respectively.

Discussion

Female volleyball athletes exposed to push-up training on hand strength service skills had better hand strength service skills. The standard deviation showed homogeneity of responses compared to the control group.

The observed improvement in hand strength service skills among the athletes exposed to push-up training suggests the effectiveness of this specific training modality. Push-ups are known to engage various upper body muscles, and the positive outcome indicates the potential for targeted strength development. This was in line with Ebben, & Petushek, (2020) the push-up has the added benefit of training for core stability which is essential in developing strength and power for volleyball. Along with building general upper-body strength and core stability, the push-up develops scapula stabilizer muscles of the shoulder. Training the muscles around the scapula is necessary for preventing common volleyball player shoulder injuries from developing.

The homogeneity of responses, as indicated by the standard deviation, underscores the consistency of the positive effect across the group. This suggests that the push-up training had a uniform impact on hand strength service skills among the participants. Uzor, Iwuoha, Ujuagu, & Offodile (2020) also examined the effect upper body plyometric on serving skills of female volleyball players. Two research questions guided the study. The study revealed that upper body plyometric training had an effect on the serving skill of female volleyball players. The study concluded that the serving skill of female university volleyball players will be greatly improved with the consistent use of

plyometric training and recommended that coaches include lower and upper body plyometric training in the training sessions and competitions for optimal performance.

Female volleyball athletes exposed to 50m dash speed service skills training had better speed service skill. The standard deviation showed homogeneity of responses compared to the control group.

The finding that athletes exposed to 50m dash speed service skills training demonstrated better speed in executing service skills highlights the positive impact of speed-focused training on specific volleyball skills. This is in line with Fajrin, Kusnanik, & Wijono (2018) assert that the 50m dash provides valuable insights into an athlete's starting speed, explosiveness, and ability to maintain maximum velocity for a brief duration. Similar to Finding 1, the homogeneity of responses indicates a consistent positive effect across the group subjected to speed training. This consistency is crucial for coaches seeking reliable improvements in athletes' performance. Coaches can strategically integrate speed-focused training into overall training programs, recognizing the potential for such training to translate into improved performance during service skills in volleyball matches.

In summary, both findings suggest that targeted training interventions can positively influence specific skills in female volleyball athletes. The consistency of responses and practical applications provide valuable insights for coaches, trainers, and researchers in the field of sports science and athlete development.

Conclusions

The findings of this study highlight the positive impact of targeted training interventions on the performance of female volleyball athletes at Nnamdi Azikiwe University, Awka. The implementation of push-up training for hand strength service skills and 50m dash speed service

skills training demonstrated significant improvements in the respective skills assessed. The homogeneity of responses, as indicated by the standard deviations, suggests a consistent and positive trend among the athletes exposed to these training interventions. These results contribute valuable insights into the realm of sports training for female volleyball athletes, emphasizing the importance of tailored interventions to enhance specific skills critical to performance. The success of the interventions underscores the potential for strategic and focused training programs to yield tangible benefits in the context of volleyball skill development.

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