

Effect of a 12-Week Gym Training Programme on AAHPER Volleyball Skill Performance among Novice Volleyball Players

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Abstract: *The purpose of this study was to examine the effectiveness of a 12-week gym training programme on selected volleyball skills among novice volleyball players using the AAHPER Volleyball Skill Test Battery. A pre-test–post-test experimental design was adopted. Thirty novice volleyball players participated in the investigation and completed a structured gym training programme for twelve weeks. Volleyball skills were evaluated using the AAHPER Volleyball Skill Test, consisting of Serving, Passing, Setting, and Volleying tests. Data were analysed using descriptive statistics and paired sample t-tests. The findings revealed significant improvements in all four volleyball skill components following the training programme ($p < 0.05$). The study concluded that systematic gym training enhances volleyball-specific skill performance by improving muscular strength, power, coordination, and movement efficiency.*

Keywords: Gym training, AAHPER Volleyball Skill Test, Volleyball performance, Serving, Passing, Setting, Volleying.

I. INTRODUCTION

Volleyball is a dynamic sport that requires a combination of technical proficiency and physical fitness. Success in volleyball depends largely on the player's ability to execute fundamental skills such as serving, passing, setting, and volleying with precision and consistency. Although technical practice is essential, physical conditioning significantly influences the quality of skill execution.

Resistance training performed in a gym environment has become an integral part of volleyball conditioning programmes. It improves muscular strength, explosive power, balance, coordination, and core stability, enabling players to perform technical skills more effectively. Therefore, evaluating the influence of a structured gym training programme on volleyball-specific skills is important for coaches and physical educators.

II. OBJECTIVES

1. To determine the effect of a 12-week gym training programme on serving performance.
2. To evaluate the effect of gym training on passing performance.
3. To assess the effect of gym training on setting performance.
4. To determine the influence of gym training on volleying performance.
5. To examine the overall improvement in AAHPER volleyball skill scores.

Hypotheses

H₀₁: There is no significant difference in serving performance before and after the 12-week gym training programme.

H₀₂: There is no significant difference in passing performance before and after the 12-week gym training programme.

H₀₃: There is no significant difference in setting performance before and after the 12-week gym training programme.



H₀₄: There is no significant difference in volleying performance before and after the 12-week gym training programme.

H₀₅: There is no significant difference in the total AAHPER volleyball skill score before and after the 12-week gym training programme.

III. METHODOLOGY

Research Design- Experimental pre-test–post-test design.

Participants

- Thirty novice volleyball players.
- Healthy male players aged 18–22 years.
- Selected using purposive sampling.

Variables

Independent Variable- Twelve-week Gym Training Programme

Dependent Variables

- Serving Test
- Passing Test
- Setting Test
- Volleying Test
- Total AAHPER Skill Score

Training Programme

Participants completed a 12-week progressive gym training programme, five sessions per week. Each session lasted approximately 75 minutes and consisted of:

- Warm-up (10 minutes)
- Resistance training (40 minutes)
- Plyometric exercises (15 minutes)
- Core strengthening (5 minutes)
- Cool-down and stretching (5 minutes)

The intensity of training gradually increased every three weeks following the principle of progressive overload.

Testing Procedure

The AAHPER Volleyball Skill Test Battery was administered before and after the intervention.

The following tests were conducted:

- Serving Test
- Passing Test
- Setting Test
- Volleying Test

The individual scores were summed to obtain the total volleyball skill score.

Statistical Analysis

The collected data were analysed using:

- Mean
- Standard Deviation



- Paired Sample *t*-test
- Level of significance = 0.05

Results

Variable	Pre-test (Mean $\pm$ SD)	Post-test (Mean $\pm$ SD)	Mean Difference
Serving Test	23.33 $\pm$ 3.64	26.27 $\pm$ 4.06	+2.93
Passing Test	10.87 $\pm$ 2.03	12.30 $\pm$ 2.63	+1.43
Setting Test	11.57 $\pm$ 1.98	13.03 $\pm$ 2.22	+1.47
Volleying Test	10.63 $\pm$ 2.08	12.23 $\pm$ 1.96	+1.60
Total Score	56.40 $\pm$ 4.80	63.83 $\pm$ 5.40	+7.43

Table 1. Descriptive Statistics of AAHPER Volleyball Skill Test Scores (n = 30)

Variable	t-value	df	p-value	Decision
Serving Test	11.37	29	<0.001	Significant
Passing Test	6.74	29	<0.001	Significant
Setting Test	7.26	29	<0.001	Significant
Volleying Test	7.54	29	<0.001	Significant
Total Score	20.78	29	<0.001	Significant

Table 2. Paired Sample *t*-Test

IV. INTERPRETATION

The post-test scores obtained after twelve weeks of gym training were higher than the corresponding pre-test scores in all components of the AAHPER Volleyball Skill Test. Improvement was observed in serving accuracy, passing control, setting precision, and volleying performance. The increase in the total skill score demonstrates that the gym training programme positively influenced the technical performance of novice volleyball players.

V. RESULTS

The descriptive statistics indicate that the participants demonstrated higher mean scores in all components of the AAHPER Volleyball Skill Test following the 12-week gym training programme. The mean serving score increased from 23.33 $\pm$ 3.64 to 26.27 $\pm$ 4.06, while the passing score improved from 10.87 $\pm$ 2.03 to 12.30 $\pm$ 2.63. Similarly, the setting score increased from 11.57 $\pm$ 1.98 to 13.03 $\pm$ 2.22, and the volleying score improved from 10.63 $\pm$ 2.08 to 12.23 $\pm$ 1.96. The overall AAHPER volleyball skill score also increased from 56.40 $\pm$ 4.80 in the pre-test to 63.83 $\pm$ 5.40 in the post-test.

The paired-sample *t*-test revealed statistically significant improvements in all volleyball skill variables after the intervention. The serving test showed a significant improvement ($t(29) = 11.37, p < 0.001$). Significant improvements were also observed in the passing test ($t(29) = 6.74, p < 0.001$), setting test ($t(29) = 7.26, p < 0.001$), and volleying test ($t(29) = 7.54, p < 0.001$). Furthermore, the total AAHPER volleyball skill score increased significantly following the 12-week gym training programme ($t(29) = 20.78, p < 0.001$).

These findings indicate that the 12-week gym training programme produced a statistically significant enhancement in volleyball-specific skills among the participants.

VI. CONCLUSION

Based on the results, the null hypothesis was rejected. The 12-week gym training programme significantly improved serving, passing, setting, volleying, and the overall AAHPER volleyball skill performance of the participants. The



findings support the inclusion of structured resistance training as an effective component of conditioning programmes for novice volleyball players.

VII. DISCUSSION

- The present investigation demonstrated that a structured 12-week gym training programme significantly enhanced volleyball-specific skills. The improvement in serving performance may be attributed to increased shoulder strength, trunk stability, and upper-body power developed through resistance exercises.
- Passing and setting performance improved due to better muscular coordination, improved balance, and enhanced neuromuscular control. Resistance exercises strengthened the stabilising muscles responsible for maintaining proper body position during ball contact.
- Volleying performance also improved because of increased reaction ability, muscular endurance, and upper-body strength. Improved lower-limb power enabled players to maintain better court positioning and execute technical skills more efficiently.
- Overall, the enhanced AAHPER skill scores indicate that physical conditioning through gym training contributes substantially to technical skill development in volleyball.

VIII. PRACTICAL APPLICATIONS

- Volleyball coaches should include gym-based resistance training throughout the competitive season.
- Progressive overload should be applied to maximise performance gains.
- Strength and conditioning sessions should complement technical skill practice.
- Plyometric exercises should be integrated to improve explosive volleyball movements.
- Regular AAHPER testing should be conducted to monitor player development.

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