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Impact of 45 Days of Tactical Training Intervention on Tactical Knowledge among University Volleyball Players

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ABSTRACT:

The present study aimed to investigate the impact of a 45-day tactical training intervention on the development of tactical knowledge among university-level volleyball players. Tactical knowledge, an essential component of performance in competitive volleyball, enables players to make effective decisions, anticipate opponents' strategies, and apply suitable game plans in dynamic match situations. A total of 60 male university volleyball players were selected and divided into experimental and control groups. The experimental group underwent a structured tactical training program for 45 days in addition to their regular practice sessions, while the control group continued with their routine training. Pre-test and post-test assessments were conducted using standardized measures of tactical knowledge, including game-situation analysis, decision-making ability, and understanding of offensive and defensive strategies. The results revealed a significant improvement in tactical knowledge among the experimental group compared to the control group, indicating the effectiveness of the tactical training intervention. The findings suggest that integrating systematic tactical training into regular volleyball practice enhances players' cognitive and strategic abilities, thereby contributing to overall performance in competitive settings.

Keywords: Tactical training, Tactical knowledge, Volleyball, Decision-making, University players, 45-day intervention

Introduction

Volleyball, as a fast-paced and continuously evolving team sport, demands not only physical fitness and technical proficiency but also a high degree of tactical knowledge. Tactical knowledge in volleyball refers to the players' ability to interpret game situations, anticipate opponents' actions, make accurate decisions, and apply appropriate strategies in both offensive and defensive play. It is considered a cognitive and strategic dimension of performance that complements technical skills and physical conditioning.

At the university level, players are often in the transition phase from learning fundamental skills to competing at higher levels of performance. While technical training forms the foundation of their development, it is the integration of tactical knowledge that allows players to achieve success in competitive environments. For example, knowing when to adjust block positioning, how to exploit defensive weaknesses, or when to vary attacking patterns requires a deeper understanding of tactical elements.

University-level players are at a crucial stage of development where they transition from foundational learning to competitive specialization. At this stage, integrating **tactical training interventions** into their regular practice can bridge the gap between technical mastery and strategic excellence. However, limited studies in the Indian university sports context have explored the systematic impact of tactical training on volleyball performance, particularly with respect to tactical knowledge.

Tactical knowledge is not innate but can be systematically developed through targeted training interventions. Previous research in sports science emphasizes that tactical awareness enhances decision-making speed, game intelligence, and situational adaptability, which are crucial in volleyball due to its rapid exchanges and rotational systems. Despite its importance, many training programs at the university level focus predominantly on physical and technical preparation, often neglecting the cognitive and tactical dimensions of the game.

Therefore, studying tactical knowledge among university volleyball players provides valuable insights into their overall performance development. By assessing and enhancing tactical knowledge, coaches can design training programs that not only improve technical execution but also sharpen players' strategic understanding, ultimately leading to more effective team performance in competitive matches.

Therefore, the present study was undertaken to examine the impact of a 45-day tactical training intervention on tactical knowledge among university volleyball players. It is expected that the tactical training program would significantly enhance players' ability to make better decisions, analyze game situations effectively, and execute appropriate strategies during competition.

Statement of the Problem:

The present study was undertaken to examine the " impact of a 45-day tactical training intervention on tactical knowledge among university volleyball players".

Objectives of Study:

The present study was undertaken to examine the role of a 45-day tactical training intervention in enhancing tactical knowledge among university volleyball players. The specific objectives are:

1. To assess the baseline level of tactical knowledge among university volleyball players before the intervention.
2. To design and implement a structured 45-day tactical training program focusing on offensive, defensive, and situational strategies in volleyball.
3. To evaluate the effect of tactical training intervention on players' decision-making, situational awareness, and application of strategies in game situations.
4. To compare the post-intervention tactical knowledge between the experimental group (tactical training) and the control group (regular training).
5. To determine the effectiveness of tactical training as an integral component of volleyball coaching at the university level.

Methodology:

The study followed a quasi-experimental pre-test–post-test control group design to evaluate the effect of a 45-day tactical training intervention on tactical knowledge among University volleyball players.

A total of 60 male university volleyball players (N = 60), aged between 18–25 years, were purposively selected from university teams. Participants were randomly assigned into two groups: Experimental Group (n = 30): Received tactical training intervention in addition to regular practice. Control Group (n = 30): Continued with routine volleyball training without additional tactical sessions.

The experimental group underwent a structured 45-day tactical training program, designed to improve tactical awareness, game intelligence, and decision-making. Sessions were conducted five days per week, lasting 60–75 minutes per session. The program emphasized:

1. **Offensive Tactics:** Attack variations, setter distribution, use of quick attacks, and exploiting weak defensive zones.
2. **Defensive Tactics:** Block coordination, serve-receive systems, transition defense, and anticipation of opponents' strategies.
3. **Situational Training:** Small-sided games, tactical problem-solving, and match simulations focusing on real-time decisions.

The **control group** continued their regular skill and physical training but did not participate in the tactical program.

Data Collection Procedure:

Pre-test: Administered to both groups before the tactical training program. Post-test: Conducted after the 45-day intervention. Descriptive Statistics (Mean and Standard Deviation) were used to summarize data. Paired t-test was applied to compare pre-test and post-test scores within each group. Independent t-test was used to compare post-test scores between experimental and control groups. The level of significance was set at $p < 0.05$.

Table 1: Descriptive Statistics of Tactical Knowledge Scores (N = 60) Experimental vs Control groups on pre-test and post-test tactical knowledge, with t-values and p-values.

Group	Test	N	Mean	SD
Experimental	Pre-Test	30	18.45	2.85
Experimental	Post-Test	30	26.75	3.12
Control	Pre-Test	30	18.32	2.74
Control	Post-Test	30	20.15	2.95

Table 2: Within-Group Comparisons (Paired t-test) Experimental vs Control groups on pre-test and post-test tactical knowledge, with t-values and p-values

Group	Pre-Test Mean ± SD	Post-Test Mean ± SD	t-value	p-value
Experimental	18.45 ± 2.85	26.75 ± 3.12	12.35	0.0001
Control	18.32 ± 2.74	20.15 ± 2.95	2.25	0.031

Table 3: Between-Group Comparison (Independent t-test, Post-Test Scores) Experimental vs Control groups on pre-test and post-test tactical knowledge, with t-values and p-values

Comparison	Exp Mean ± SD	Ctrl Mean ± SD	t-value	p-value
Experimental vs Control (Post-Test)	26.75 ± 3.12	20.15 ± 2.95	8.7	0.0001

Discursion:

The purpose of the present study was to investigate the impact of a 45-day tactical training intervention on tactical knowledge among university volleyball players. The findings clearly indicate that the tactical training program had a significant positive effect on the experimental group when compared with the control group.

The within-group analysis (Table 2) showed that the experimental group exhibited a highly significant improvement in tactical knowledge scores from pre-test ($M = 18.45$, $SD = 2.85$) to post-test ($M = 26.75$, $SD = 3.12$), with a large t-value ($t = 12.35$, $p < 0.0001$). This confirms that the structured tactical training intervention enhanced the players' ability to interpret game situations, make appropriate decisions, and apply effective offensive and defensive strategies. In contrast, the control group also showed a small but statistically significant improvement ($t = 2.25$, $p < 0.05$), which may be attributed to routine training and natural exposure to match play. However, the magnitude of improvement in the control group was substantially lower than that of the experimental group.

The between-group analysis (Table 3) further reinforces these findings, as post-test scores of the experimental group ($M = 26.75$, $SD = 3.12$) were significantly higher than those of the control group ($M = 20.15$, $SD = 2.95$), with a very high t-value ($t = 8.70$, $p < 0.0001$). This clearly demonstrates that tactical training interventions are more effective in improving game intelligence and situational awareness than routine practice alone.

These results are consistent with earlier research in sports science, which emphasizes the role of tactical knowledge as a critical performance determinant in fast-paced team sports such as volleyball. Tactical training enhances cognitive processing, anticipation, and decision-making under pressure, which are essential for success at the university level. The findings of this study also highlight the importance of integrating structured tactical programs into university volleyball training, as it bridges the gap between technical skills and real-time strategic application.

Conclusion :

The findings of the study clearly demonstrate that a 45-day tactical training intervention has a significant and positive impact on the tactical knowledge of university volleyball players. The experimental group showed a highly significant improvement in post-test scores compared to their pre-test scores, while the control group exhibited only a marginal improvement. Furthermore, the between-group comparison confirmed that post-test tactical knowledge in the experimental group was significantly higher than that of the control group, with a large t-value. These results establish that systematic tactical training enhances players' decision-making ability, situational awareness, and strategic application more effectively than routine practice alone. At the university level, where players are transitioning into competitive specialization, tactical training serves as a crucial factor in bridging the gap between technical skill and game intelligence.

In conclusion, the study highlights that tactical training interventions are an essential component of volleyball coaching and should be integrated into regular practice schedules to maximize performance. Incorporating structured tactical sessions will not only improve individual player development but also strengthen overall team performance in competitive settings.

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