

# The Effect Of Diverse Warm-Up Durations On The Selected Proficiency Of Volleyball

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## Abstract

The main goal of the study was to investigate the influence of diverse warm-up durations on the effectiveness of certain skills in volleyball. For the purpose of this study 40 male volleyball players of North Bengal University team, age was ranging from 18 to 25 were selected as subject. Durations of warming up were restricted to 10 minutes, 20 minutes, 30 minutes and volleyball sills were restricted to Serving, Passing and Setting. To measure volleyball serving ability Russell-Lange's Serving test was used and score was recorded in numbers. Passing and Setting ability was measured by AAHPER Volleyball test and score was recorded in numbers. To determine the effect of diverse warm-up durations on the selected proficiency of volleyball. One-way analysis of variance (ANOVA) statistical technique was employed independently for each selected variable, while the obtained F-ratio was found to be significant due to diverse durations of warming up then Least Significant Difference (LSD) post hoc test was computed to assess the paired mean difference in the selected variables. The level of significance was set at 0.05 level for the hypothesis.

The findings of statistical analysis revealed that there was significant mean difference on Serving, Passing and Setting performance of volleyball players due to selected diverse duration of warm-up.

It also observed that best performance was shown by the players on the both skills after 30 minutes of warming up while compared with other duration of warming up or without warming up.

**Key Word:** Warm-up, Duration of Warm-up, Serving, Passing and Setting the ball,

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Date of Submission: 04-08-2024

Date of Acceptance: 14-08-2024

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## I. Introduction

The inclusion of warm-up exercises is paramount in any sports or fitness training program. Recognizing the importance of a well-structured warm-up routine is crucial for preventing sports injuries. A proper warm-up consists of several essential components that must all function cohesively to prepare the individual for optimal sports performance and reduce the risk of injury during physical activity.

It is crucial to begin by analyzing the ideal utilization of warm-ups by understanding the reasoning behind their necessity. Essentially, the purpose of a warm-up is to prime the athlete both mentally and physically for physical activity or competition. A properly structured warm-up can elevate muscle temperature, core temperature, and blood circulation while also breaking temporary connective tissue bonds.

Warming up refers to the initial activities and exercises that athletes perform to prepare themselves physically and mentally before a training session or a game. It offers both physiological and psychological benefits to the athletes. By engaging in a warm-up routine, athletes are able to reach a state where they feel fully prepared to start the activity. The general goal of warming up is to prepare the muscles, enhance joint mobility, strengthen ligaments, and sharpen mental alertness to optimize the body's performance.

Research shows that engaging in a general warm-up can lead to a significant increase in muscle and blood temperature, ultimately enhancing the functional capacity of organs and the mobility of joints. Additionally, warming up can aid in the prevention of muscle soreness and reduce the risk of injury. Furthermore, it serves to protect the heart from chaemic changes that may occur during sudden strenuous exercise (John Humphreys & Ron Holman, 1985).

Donna Maemiller (1974), has referred some doubt about the value of warm-up exercises in endurance or stamina, demanding games and sports in order to raise the level of organic function. Many spend too much energy that is needed for actual sports. If cooling down is not done occurs and physiological function will not return to where they were without warming-up.

According to Arpad Csandi (1963), proper warm-up, intensifies the rate of respiration, more oxygen enters the blood, which at the same time will result in a greater blood supply to the organs of locomotion and leg muscles are supplied with blood more easily. Chances of muscle injuries, sprains or raptures as the consequence of rapid, unexpected movements can be avoided.

Time to time research has been proved that warm-up has significant effect on performance and also different intensity level of warming up has different effect on performance level. It is expected that different duration of warming up will have significant effect on performance. Therefore, research scholar was interested to undertake the study stated as “The Effect of Diverse Warm-up Durations on the Selected Proficiency of Volleyball”

**Significance of the study**

- i. The study's findings could offer important information for coaches, physical education teachers, and players about the influence of diverse warm-up durations on skill performance.
- ii. The findings of this study could be beneficial for coaches and physical education teachers in determining the suitable duration for volleyball player warm-ups, ultimately leading to enhanced performance and decreased player injury risks.

**Hypothesis**

The hypothesis posited the existence of a substantial discrepancy in the performance of specific skills among Volleyball players as a result of varying warm-up durations.

**II. Methodology**

A total of 40 male Volleyball players from the North Bengal University team, aged between 18 and 25 years, were chosen as the subjects for the study. The warm-up time was set at 10, 20 or 30 minutes, with a focus on volleyball skills such as serving, passing, and setting the ball. To measure volleyball serving ability Russell-Lange’s Serving test was used and score was recorded in numbers. Passing and Setting ability was measured by AAHPER Volleyball test and score was recorded in numbers.

**III. Result And Discussion**

To determine the effect of diverse warm-up durations on the selected proficiency of volleyball One Way Analysis of Variance (ANOVA) statistical technique was employed independently for each selected variable, while the obtained F-ratio was found to be significant due to diverse durations of warming-up then Least Significant Difference (LSD) post hoc test was computed to assess the paired mean difference in the selected variables. The level of significance was set at 0.05 level for testing the hypothesis.

**Table -1  
Summary of One Way Analysis of Variance for the Data on Serving, Passing and Setting Skill item of Volleyball Players after Without Warm-up and Selected Duration of Warm-up**

Variables	Source of Variation	SS	df	MS	F-ratio	P-value
Serving	Between group	75.05	3	25.02	2.70*	
	Within group	1447.35	156	9.28		
Passing	Between group	24.65	3	8.22	3.35*	
	Within group	382.85	156	2.45		
Setting	Between group	24.369	3	8.12	2.99*	
	Within group	423.63	156	2.72		

\*Significant at 0.05 level

Tabulated  $F_{0.05(3, 156)} = 2.674$

The findings of table-1 reveal that there are significant differences in the Volleyball skills performance of Servicing, Passing and Setting after without warm-up, 10 minutes, 20 minutes and 30 minutes of warming up as the obtained F-value of 2.70, 3.35 and 2.99 respectively are higher than the tabulated F-value of 2.674 at 0.05 level for 3/156 degrees of freedom. As the obtained F-ratio was found to be significant therefore to determine the paired mean difference among the skill performance after three different durations of warming up Least Significant Difference (LSD) post hoc test was employed separately for both the variables and it has been shown in table-2.

**Table -2  
Paired Mean Difference for the Data on Serving, Passing and Setting of Volleyball Players without Warm-up and after Three Different Duration of Warming-up**

Variables	Means of selected Skill Items				M.D	C.D
	Without Warm-up	After 10 min. Warm-up	After 20 min. Warm-up	After 30 min. Warm-up		
Serving	37.75	38.375			.625	
	37.75		38.625		.875	
	37.75			39.65	1.9*	

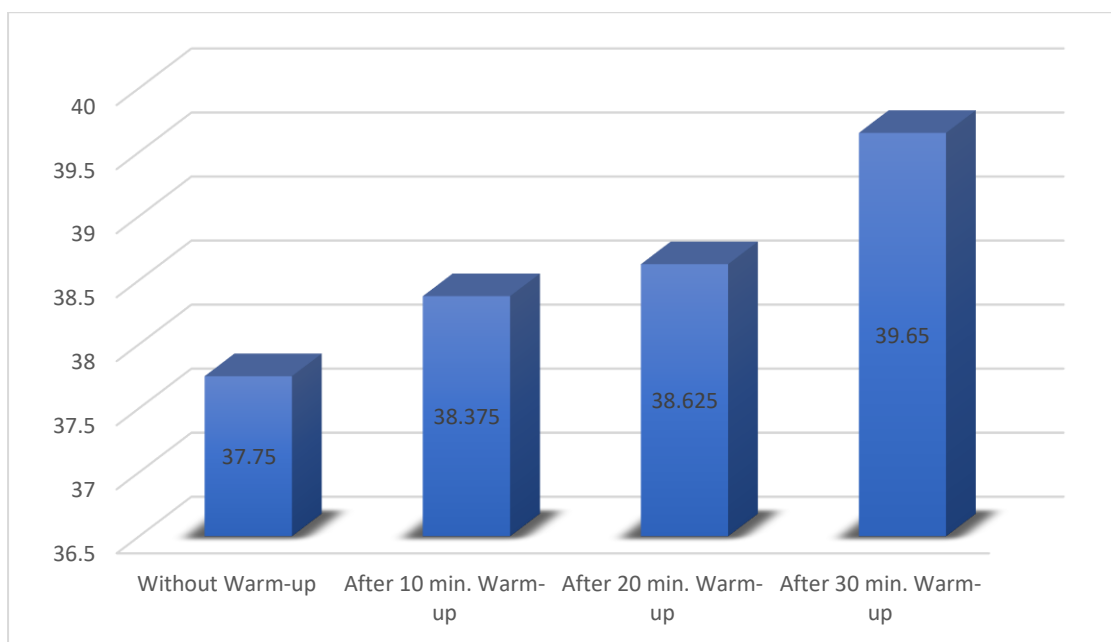
		38.375	38.625		.25	1.349
		38.375		39.65	1.275	
Passing			38.625	39.65	1.025	.694
	13.1	13.425			.325	
	13.1		13.85		.75*	
	13.1			14.125	1.025*	
		13.425	13.85		.425	
		13.425		14.125	.7*	
Setting			13.85	14.125	.275	.730
	12.875	13.025			.15	
	12.875		13.45		.575	
	12.875			13.875	1*	
		13.025	13.45		.425	
		13.025		13.875	.85*	
		13.45	13.875	.425		

Significant at 0.05 level

It is evident from the findings of Table-2 that there is a significant mean difference for data on Serving in between without warm-up v/s after 30 minutes warm-up (MD=1.9) as the obtained mean difference values are greater than the critical value of 1.349 at 0.05 level, but no significant mean difference was found in between without warm-up v/s after 10 minutes warm-up(MD= 0.625), between without warm-up v/s after 20 minutes warm-up(MD= 0.875), 10 minutes v/s 20 minutes warm-up(MD= 0.25), 10 minutes v/s 30 minutes warm-up(MD= 1.275), 20 minutes v/s 30 minutes warm-up(MD= 1.025), the difference of mean has been shown in Figure 1

The findings of Table-2 also indicate that there is significant mean difference in the performances of passing in between without warm-up v/s 20 minutes warm-up (MD= .75), without warm-up v/s 30 minutes warm-up (MD= 1.025), 10 minutes v/s 30 minutes warm-up (MD= 0.7), as the obtained mean difference are higher than the critical value of .694 at 0.05 level. But there is no significant mean difference in between without warm-up v/s 10 minutes warm-up (MD= 0.325), 10 minutes v/s 20 minutes warm-up (MD= 0.425), 20 minutes v/s 30 minutes warm-up (MD= 0.275) as the obtained mean difference are less than the critical difference value of .694 at 0.05 level the difference of mean has been shown in Figure 2

The findings of Table-2 also reveal that there is significant mean difference in the performance of Setting without warm-up v/s 30 minutes warm-up (MD= 1.00), 10 minutes v/s 30 minutes warm-up (MD= 0.85), as the obtained mean difference are higher than the critical value of .730 at 0.05 level. But there is no significant mean difference in between without warm-up v/s 10 minutes warm-up (MD= 0.15), without warm-up v/s 20 minutes warm-up (MD= 0.575), 10 minutes v/s 20 minutes warm-up (MD= 0.425), 20 minutes v/s 30 minutes warm-up (MD= 0.425) as the obtained mean difference are less than the critical difference value of .730 at 0.05 level the difference of mean has been shown in Figure 3



The paired mean difference in Serving skill among volleyball players before and after a designated warm-up duration is depicted in Figure 1.

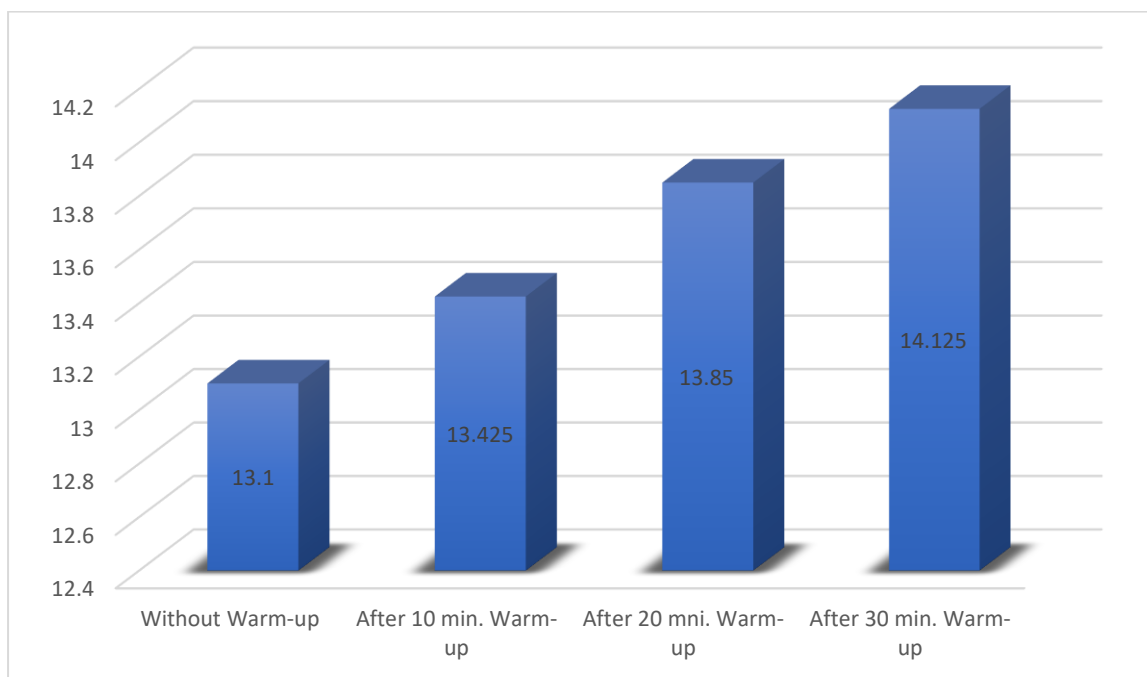
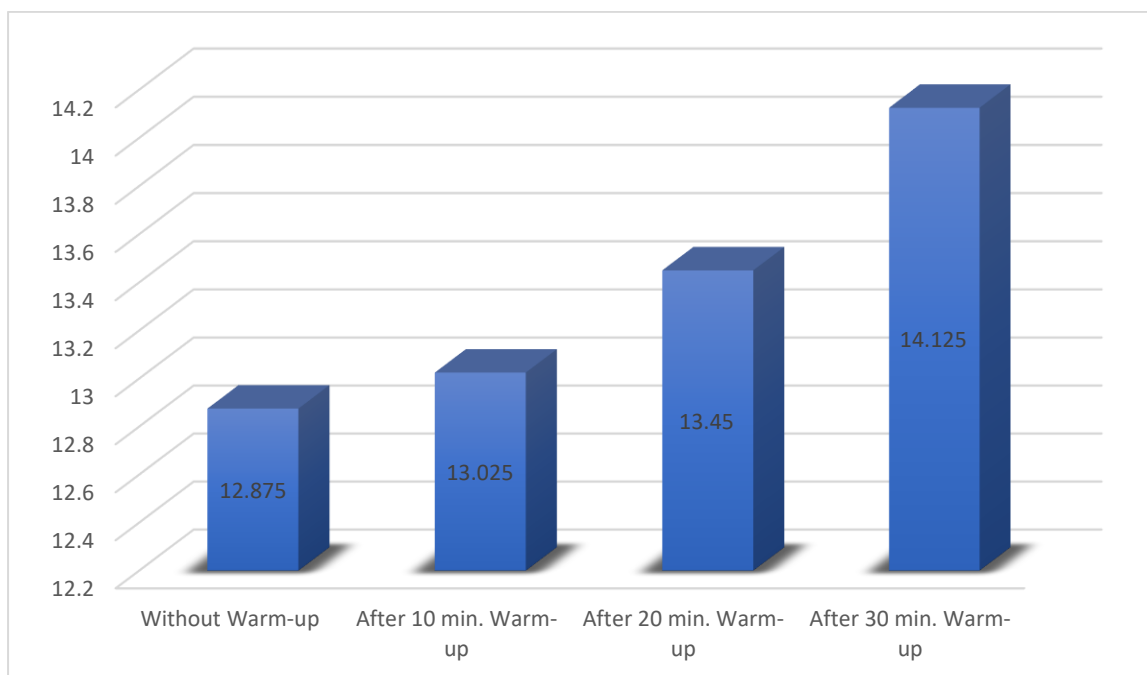


Figure 2 displays the paired mean difference in passing skill of volleyball players before and after a chosen warm-up timeframe.



Paired mean difference in Setting skill of volleyball players before and after a specific warm-up period is illustrated in Figure 3

#### IV. Discussion

Findings of Table-1 and Table-2 revealed that there was significant difference in the mean performance on Serving, Passing and Setting of Volleyball players before and after specific warm-up period and it was also observed that the best performance was shown the skills on Serving, Passing and Setting after 30 minutes of warm-up and it was followed by 20 minutes warm-up. Least performance was shown by the subjects before and after 10 minutes of warm-up. The outcome could be attributed to improvements in reaction time, movement speed, muscle excitability, and joint mobility, all of which contribute to a player's ability to swiftly change direction and move their body at high speeds. Short-term, high-intensity warm-up exercises are believed to stimulate the neuromuscular system more effectively than other warm-up protocols. This stimulation enables quick conversion

of muscle strength into power by activating the lengthening-shortening cycle, which has a direct impact on jumping performance. To perform Passing and Setting it require finer control over the neuromuscular system, joint mobility, flexibility, balance, coordination and speed which might have developed at optimum level after 30 minutes of warm-up. It may be because as a result of warm-up the local temperature in the muscles increases which in turn increases the muscle reaction time, muscle speed and muscle excitability and also decreased the duration of action patented in the muscle and also supplies oxygenated blood to muscle fibres by which they activate the muscle fibres which helps them to execute explosive strength of legs.

### **V. Conclusion**

- i. Significant mean difference observed in the performance on Serving, Passing and Setting of volleyball players after 20 minutes and 30 minutes of warm-up.
- ii. After a 30-minute warm-up, the volleyball players displayed superior performance in Serving, Passing, and Setting skills followed by 20 minutes warm-up. The players demonstrated a lackluster performance both before and after a 10-minute warm-up.

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