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EFFECT OF WARMING-UP FOR DIFFERENT DURATIONS ON SPRINTING PERFORMANCE OF HANDBALL PLAYERS

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ABSTRACT

The primary aim of the study was to know the effect of warm up of different durations on the sprinting performance of Handball players. Twenty male students, 16 to 20 years of age, were randomly selected from Fatehabad, Haryana as the subjects of the study. Each subject was tested for 100 meter sprinting performance after selected durations of warm-up. The time taken for 100 meter sprint was recorded to the nearest of 1/100th of a second for comparison with initial performance without warm-up. To find the difference among the means of performance for 100 meter sprinting without warm-up and with warm-up of different durations One Way ANOVA was used. The results of the study under the condition and limitations of the present experiment seems to permit that the different durations of warm-up improves the sprinting performance in comparison to the performance without warm-up.

Keywords: warm-up, sprint, handball

INTRODUCTION

The warm-up increases muscle efficiency, reduces potential for muscle pulls, improves reaction time and improves the speed of movement of muscled and ligaments. It is difficult to recommend specific intensity and duration of warm-up for every person, but most research in this area suggests an increase in body and muscle temperature of approximately one to two degrees Fahrenheit to be adequate. The duration and intensity of warm-up should be adjusted according to the environmental temperature and the amount of clothing worn. The higher the environmental temperature and the greater the amount of clothing, the sooner the desired body temperature is attained. In any case, no more than fifteen minutes should elapse. Competitive and recreational athletes typically perform warm-up and stretching activities to prepare for more strenuous exercise. These preliminary activities are used to enhance physical performance and to prevent sports-related injuries. On cold days the warm-up should not end more than ten minutes before the kick-off or activity, and on extremely cold days (freezing temperatures) the warm-up could be performed in the change room. Alternatively, in warm climates, the warm-up could be either shortened or finish up to twenty minutes before kick-off or activity Most important, at all times players should avoid significant decreases in muscle temperature as the game or activity approaches. A good indicator of optimal muscle temperature is when the player begins to sweat. The ‘‘active’’ component of a warm-up, designed to increase core temperature, blood flow, and prepare the body for exercise, has long been shown to benefit performance. There is no doubt that time spent on warming up and cooling down will improve an athlete's level of performance and accelerate the recovery process needed before training or competing again.

METHOD

Subjects: The subjects in this study were 20 male handball players whose age ranged from 16 to 20 years from Fatehabad, Haryana. The condition of training, daily activities and pattern of living may be likely to effect the performance in the project were similar to all the subjects. The subjects were sprinters and they were motivated by their concerned coaches. These 2 main factors intrinsically motivated the subjects to give their best performance.

Administration of test: All the subjects were asked to run on the cinder track using crouch start with spikes. Each subject was required to sprint 100 meters with and without warm-up of different durations on different days. The random choice of different duration of warm-up on each day had been planned in advance. During each session of experiment the subjects were informed about the duration of warm-up which was assigned at random.

The time taken to the nearest 1/100th of a second for 100 meters sprint was recorded, without and with active warm-up of different durations. The average speed of the students in the 100 meters sprint was calculated with the help of given formula:

Speed (in meters/seconds) = Distance (in meters) / time (in seconds)

Findings:

The data was collected and analyzed in order to draw a conclusion on the performance of the sprinters due to the various selected durations of warm-up. The descriptive statistics for the data is given below:

Table 1
Mean and Standard deviation of the performance in speed due to the selected durations of warm-up

	N	Mean	Std. Deviation	Std. Error
Without warm-up	20	7.78	.23	.053
10mins	20	8.02	.28	.062
15mins	20	8.18	.35	.078
Total	60	7.99	.33	.042

The mean and SD of the performance in speed due to selected durations of warm-up has been presented in Table 1. The mean scores of the performance in speed due to 15 minutes of warm-up is highest (8.18 meter/sec) and without warm-up is lowest (7.78 meter/sec)

Table 2
ANOVA for the performance in speed due to the selected durations of warm-up

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.585	2	.793	9.189	.000
Within Groups	4.917	57	.086		
Total	6.502	59			

*Significant at F0.05 (2, 57) = 3.15

Table 2 reveals that there was a significant difference among the performance in speed of the athletes due to the various selected durations of warm-up (p value <0.05). For the further comparison among the means, multiple comparison tests (i.e. least significant difference test) were employed.

Table 3
ANOVA for the performance in speed due to the selected durations of warm-up

(I) warmup	(J) warmup	Mean Difference (I-J)	Std. Error	Sig.
without	10mins	-.23	.092	0.013*
	15mins	-.39	.092	0.000*
10mins	Without	.23	.092	0.013*
	15mins	-.15	.092	0.099
15mins	Without	.39	.092	0.000*
	10mins	.15	.092	0.099

Table 3 reveals that there is a significant difference in the performance in speed due to without warm-up and other two durations of warm-up (i.e. 10 minutes and 15 minutes warm-up).

DISCUSSION OF FINDINGS

The One way ANOVA has shown significant difference between performance in 100 meters sprint without warm up and with active warm up of 10 minutes and 15 minutes. But there was no significant difference in 100 meters sprinting performance lies due to warm-up of 10 and 15 minutes duration. This lack of difference shows that warm-up is a must in sprinting activities to attain a better performance. Active warm up tends to result in improvements in short-term performance (Bishop D). The study done by Burnley and Matthew has also shown the same type of results. Many of the studies done in this particular area have shown that the performance in sprinting events significantly increases with the warm-up. There are two types of warm-up, active and passive. Many researchers has compared the effect of these two types of warm-up on sprinting performance and found that the performance increases more due to active warm-up as compared to passive warm-up. In this study active warm-up (i.e. jogging) was done by the sprinters before the 100 meter run. Most of the studies done in this area are supporting the results of this study that warm-up plays an important role in 100 meter sprint performance. This effect of active warm-up may be attributed to the increase in core temperature, better joint mobility and increase energy production in muscles. The study concludes that the 100 meters sprint performance should be preceded by an active warm-up for either 10 or 15 minutes for attaining better performance as compared to performing without warm-up.

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