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BODY TEMPERATURE AND BODY MASS ANALYSIS IN FEMALE HANDBALL PLAYERS BEFORE AND AFTER THE MATCH

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ABSTRACT

The present study was conducted with an aim to find out the changes caused by a handball match on body temperature and body mass of players. The participants of the study were fourteen female handball players with age ranging from 18 to 24 years. The data was collected during the match between Bhiwani and Yamuna Nagar in 43rd Haryana State Senior Handball Championship (Women) held at Navdeep Stadium, Narwana (Jind). The body temperature and body mass of the subjects was taken before and after the match. Standard techniques and procedures were followed while administrating the test and collecting the data. To compare between the pre and post data "paired t test" was employed. 't' value was found to be significant for body mass and temperature before and after the match. The results revealed that there was a significant difference in body mass and oral temperature before and after the match.

Keywords: temperature, body mass, handball.

INTRODUCTION

Competitive sports performance of the sportsmen depends upon physical fitness, technique based upon scientific principles, scientific training programmer, diet etc. but the various environmental conditions like heat, cold, altitude and humidity also have a tremendous influence on the performance of the sportsmen. The average normal body temperature is generally considered to be 37 ^{0}C when measured orally. When excessive heat is produced in the body by strenuous exercise, the body temperature can rise. The ability to sense and regulate body temperature is a key feature of human survival. A deviation of ± 3.5°C from the resting temperature of 37°C can result in physiological impairments and fatality. When the exercise is performed under comfortable environmental conditions, the only problem is the elimination of excess heat of the metabolism. It appears that the rise in body temperature in exercise is the result of a "resetting" of the hypothalamic "thermostat" at a higher level just as in clinical fever. Since, most of the excess heat is produced in the active muscles, their temperature is certainly greater than that of the whole body, as reflected in the oral temperature. The heat storage causes a rise in tissue temperature, with a concomitant rise in deep body temperature. There is little evidence of mental performance impairment through such a rise in deep body temperature. In addition, heat exhaustion may range from mild fatigue to complete collapse, dependent on exercise level and extant environmental conditions. Such fatigue from hyperthermia may be an additional physiological factor which limits performance efficiency. With an aim to inquire about the changes in body mass and temperature, this study has been conducted.

METHODS

Fourteen female handball players were purposively selected age ranging 18 to 24 years. Team members (playing) of Bhiwani and Yamuna Nagar were selected as subjects for the study. The mass and oral temperature (Hicks Thermometer India Ltd.) each subject was taken before the start of the handball match and again after the match to assess the amount of fluid mass (due to fluid loss) and rise in temperature during the handball match, thermometer for temperature and body weighing method for sweat loss was used (AIS Nutrition Department). The data was analyzed using the SPSS version 17 for paired't' test. For this study level of significance was set at 0.05.

RESULTS

The collected data was analyzed in order to draw a conclusion regarding body fluids and temperature before and after match. The descriptive statistics for the data is presented in table 1.

TABLE-1

DESCRIPTIVE STATISTICS OF HANDBALL PLAYERS ON BODY TEMPERATURE AND BODY MASS

N	Variables	Mean		Standard deviation	
		Pre-data	Post-data	pre-data	Post-data
14	Body temperature	36.7	38.1	0.40	0.55
14	Body Mass	64.2	62.6	6.66	6.93

Table- 1 reveals that mean and standard deviation of body temperature for pre data was 36.7 $\pm$ 0.40, and for post data was 38.1 $\pm$ 0.55 and for body mass mean and standard deviation for pre data was 6402 $\pm$ 6.66, and for post data was 62.6 $\pm$ 6.93 respectively.

TABLE 2

COMPARISON OF MEAN DIFFERENCE OF BODY TEMPERATURE BETWEEN PRE AND POST DATA AMONG HANDBALL PLAYERS

df	Mean difference	Std.error	t	p-value
9	-1.4	.56	-8.69	0.000

It is evident from Table no. 2 that obtained p- value (0.000) is lesser than 0.05 thus indicating that there was significant difference in body temperature of handball players before and after the match.

TABLE 3

COMPARISON OF MEAN DIFFERENCE OF BODY MASS BETWEEN PRE AND POST DATA AMONG HANDBALL PLAYERS

df	Mean difference	Std.error	t	p-value
9	1.6	.49	12.36	0.000

It is evident from Table no. 3 that obtained p- value (0.000) is lesser than 0.05, thus, indicating that there was a significant difference in body mass of handball players before and after the match.

DISCUSSION AND CONCLUSION

The analysis of data reveals that there was a significant difference in body temperature and body mass of handball players before and after the game. Although, skin temperature would have increased during the early part of the game, after the game it came down to the same level as before the game. It may be due to the sweating which cooled down the surface temperature of the body. The skin temperatures are more related to the ambient temperature. Similar findings have been shown by saltine and Gagge.

Maron, Wagner and Horvath have shown increase in core temperature in their study which was conducted on marathon runners. The analysis of the data collected body mass clearly reveals that the players lost significant amount of sweat/body fluid, which is related to increase in body temperature during muscular work. Under such conditions blood vessels of the skin dilates and more blood is directed to the periphery.

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