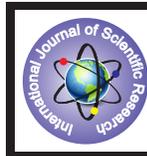


A Comparative Study on Fluid Loss Among Male Swimmers During Land and Water Workouts



Management

KEYWORDS : fluid loss, different environment, male swimmers, swimming and running

Mr. Pankaj Pandey

Assistant professor, Amity university uttarpradesh

Mr. Manoj Sahu

Assistant professor, I-3 block, LG-floor, ASPESS, Amity university uttarpradesh, NOIDA-201301

ABSTRACT

The aim of the study was to investigate the patterns of fluid loss among athletes during land and water workouts. The participants of the study were seven male swimmers with age ranging from 17 to 23 years, of swimming match practice group of Lakshmbai national university of physical education, Gwalior were selected as subjects for the study. They were given two same treatments i.e. 12 minutes swimming and 12 minutes running on land. The treatments were given on two separate days with gap of 48 hours under identical conditions. The temperature remained between 25-30°C for all experiments. The body weight of the subjects was taken in the beginning and at the end of each treatment. The significance of the fluid loss among the group was analyzed by the independent 't' test. The level of significance chosen was .05 level. The 'p' value so obtained was found to have significant difference at 0.05 level of significance in the amount of body fluid loss among athletes during land and water Workouts ($p < 0.05$). over all it was found that athlete loss more fluid at land in comparison of water workout.

Introduction

Water thought of as a nutrient because it has no caloric value. Yet its importance in maintaining life is second only to oxygen's. Water is a basic requirement for all life. Without it, life can not make existence. Even when water is limited, living organisms suffer. For young athletes insufficient water means they can not do their best.

Water constitutes about 60% of a typical young man's and 80% of a typical young woman's total body weight. It has been estimated that we can survive losses of up to 40% of our body weight in fat carbohydrates, and protein. But a water loss adjusts two percent of the body hunt performance. Five percent loss can cause heat exhaustion. A seven percent to 12 percent loss can result in heat stroke and death.

Approximately two third of the water in our bodies is contained in our cells and is referred to as intracellular fluid. The remainder is outside the cells, referred to as the extracellular fluid includes the interstitial fluid surrounding the cell the blood plasma, lymph and some other fluid.

Under normal resting condition, our body water content is relatively constant. our water output is equal our water intake. About 60% of daily water intake is obtained fluid we drink and about 30% is from the food we consume. the remaining 10% produce in our cell during metabolism

Water output or water loss occurs from four sources, evaporation from the skin, evaporation from the respiratory track, excretion from the kidneys, excretion from the large intestine.

Human skin is permeable to water. water diffuses to the skin's surface where it evaporates into the environment. in addition the gasses we breathe are constantly being humidified by water as they pass through our respiratory tracks. These two types of water loss occurs without our sensing them, thus they are termed insensible water loss accelerate during exercise. Human body's ability to lose the heat generated during exercise depends primarily on the formation and evaporation of sweat. As yours body temperature increases, sweating increases in effort to prevent over heating.

During high intensity workouts under environmental heat stress, sweating and respiratory evaporation can cause rapid losses as much as 2 to 3 L of water per hour. (William D. mcardle, 2001)

If there is a need to ensure adequate replacement before exercise is repeated the next day, extra fluids should be taken and additional salt might usefully be added to the food. the other major electrolytes lost in sweat, particularly potassium, magnesium,

and calcium, are presented in abundance in fruit juices. Mineral supplements containing these are not usually necessary.

A volume equivalent to at least 1.5 times the sweat loss has to be consumed to ensure complete rehydration which is achieved in a six hour recovery period after exercise. the amount of fluid lost as sweating during exercise can be easily estimated from the change in body weight that occurs during the exercise period. Each kilogram of weight lost equivalent to about one liters of sweat loss. (Gleeson m, 1997)

The purpose of the study is to compare the amount of fluid loss among athletes during land and water workout. To see whether they loss more fluid at land or in water workouts.

Methods

Seven male athletes with age group from 17 to 23 years, Of swimming match practice group of Lakshmbai national university of physical education, Gwalior were randomly select as subjects for the study. All subjects were given two treatments i.e. 12 min continuous swimming and 12 min continuous running. The data were collected for each variable administering their respective tests. The weight of each was taken before the start of each treatment. A initial work out was given to reach the target heart rate in each on land and water. Then the subject swam and run for 12 min with heart rate between 130 to 150 beat per min. at the end of workout again weight was taken. To asses the amount of fluid loss during each of treatment on land and water; body weighing method was used. The difference between the weight of a subject before and after the treatment was considered as fluid loss in this method (AIS Nutrition Department). the analysis of data was realized using the statistical program SPSS v 17. for statistical analysis independent 't' test was employed.

Results

The data were collected and analyzed in order to draw a conclusion on the fluid loss among athletes during water and land workouts, and the scores are given bellow.

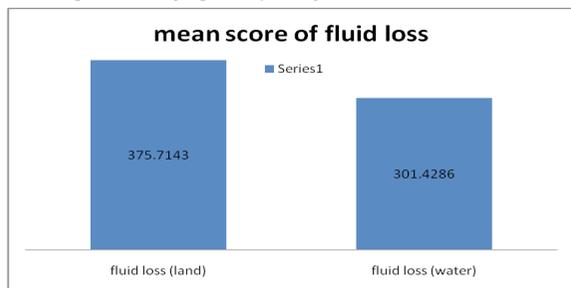
Descriptive statistics of athletes during land and water workouts

Table 1

S.NO	VARIABLES	MEAN	S.D	N
1	Fluid loss(water)	375.7143	72.76839	7
2	Fluid loss(land)	301.4286	71.74691	7

Table- 1 reveals that mean and standard deviation of fluid loss in water workout is 375.7143 ±72.76839, fluid loss in land workout is 301.4286, ±71.74691, respectively.

The mean scores of fluid loss in water and fluid loss on land has been represented graphically in figure no 1.



Comparison of mean difference of fluid loss in water or on land among athletes

Table 2

Df	Mean difference	Std.error difference	T	Significance
6	74.28571	23.58946	3.149	0.020

It is evident from Table no. 2 that obtained p- value (0.020) is less than 0.05 thus indicating that there is significance difference among athletes during land and water workouts.

Paired t-tests were conducted for the means of fluid loss among athletes during land and water workouts. Results have been shown in Table -2 that obtained p- value (0.020) is less than 0.05. Thus indicating that there is significance difference among athletes during land and water workouts.

Discussion

The purpose of this study was to determine the comparative effect of fluid loss among athletes during land and water workouts. It is evident that there was significance difference of mean fluid loss among athletes during land and water workouts. The mean fluid loss at land workout was significantly higher than fluid loss in water workout. It might be due to when a person exercises, total metabolism is typically increased to 5-15 times the resting rate. Approximately 70-90% of this energy is released as heat, which needs to be dissipated to achieve body heat balance. In hot climates a substantial volume of the body water bank is lost via sweating to enable evaporation cooling. Some electrolytes are also lost through sweat. In addition, the volume of the swimmers blood also decreases. This is because the heart to work harder to circulate the blood, oxygen and other nutrients. By replacing both fluid and electrolyte losses one can avoid the effects of dehydration. Dehydration impairs performance and reduces athlete's ability to work hard. Whenever we perform exercises or workouts inside the water, the cooling effect of water help in the regulation of body temperature, which help in minimizing the sweat loss from the athlete's body. During high intensity workouts under environmental heat stress, sweating and respiratory evaporation can cause rapid losses as much as 2 to 3 L of water per hour. (William D.mcardle, 2001)

The result of the study are similar to the finding of (maughanRJ,Leiper JB, Shirreffes SM (1997)

REFERENCE

Evans , Gethin H, shirreffs, susan M. and maughan, Ronald j, "acute effect of Ingeting glucose solution on | blood and plasma volume,"british journal of nutrition Cambridge university press,(2008). | | D, passé et al, "voluntary dehydration in runners despite favorable conditions for fluid Intake",international journal of sports nutrition and exercise metabolism, vol. 17(2004) | Brown, a. rivera et.al, "exercise tolerance in a hot and humid climate in heat- acclimatize girls and woman", international journal of sports medicine,vol.27 (2006) | 4.LB, Baker, muncce, TA and Kenney, WL, "Sex differences in voluntary fluid intake by older adult during exercise", inftrnational journal of sports medicine, vol.27(2006) | Wilmore,H.Jack, Costill,L.David, "physiology of sport and exercise"third edition,page 308-315,425-432. | D, William.Mcardle,Katch,I, Frank, "exercise physiology" forth edition,page 18-20. | Fox. Bowers,Foss "the physiological basis of physical education and athletics"fourth edition, pag 487. | T, Morimoto, t, Itoh, "thermoregulation and body fluid osmolality" journal of basic clinical physiology pharmacology,vol 9(1998) | Aggarwal,sapna, "fluid facts for swimmers", unpublished master's project, Lakshmbai national university of physical education, Gwalior | SM,Shirreffs "symposium on performance, exercise and health hydration,fluids and performance" proc nutrition soc, vol.1(2008) | Brown,A,Riveera et al, "Exercise Tolerance in Hot and Humid Climate in Heat-Acclimatized Girls and Woman" international journal of sports medicine,vol.27(2006) | B.Wilk and Bar ,O, "Effect of Drink Flavor and Nacl on Voluntary Drinking anD hydration in boys exercising in the heat." journal of applied physiology .vol 31(1997)