Volume : 2 | Issue : 12 | December 2013 • ISSN No 2277 - 8179

Research Paper

A Comparative Study of Fluid Loss Among Swimmers During Different Duration Water Workouts

Management

KEYWORDS : fluid loss, swimming workouts, 22 and 32 minutes workouts, female swimmers

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 swimmers during different duration water workouts. The participants of the study were seven female swimmers with age ranging from 17 to 23 years of Sant Gadge Baba Amravati University, Amravati were selected as subjects for the study. They were given two treatments i.e. 22 minutes and 32 minutes swimming workout. 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 2ml bloods of the subjects were taken in the beginning and at the end of each treatment. The significance of the fluid loss among the group was analyzed by the paired't' test. The level of significance chosen was .o5 level. The't' value so obtained was found to have significant difference at 0.05 level of significance in the amount of body fluid loss among swimmers during different duration water Workout. Over all it was found that swimmers swim for 32 minutes loss more fluid in comparison to 22minutes water workout.

Introduction

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 an intracellular fluid. The reminder 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%is 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' ability to loss 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.

The decrease in plasma volume that accompanies dehydration may be particularly important in influencing work capacity. Blood flow to the muscles must be maintained at a high level to supply oxygen and fuel substrates (glucose and fatty acids), but a high blood flow to the skin is also necessary to transport heat to the body surface where it can be dissipated. When the environmental temperature is high and plasma volume has been decreased by sweat loss during prolonged exercise, skin blood flow is likely to be compromised. In this situation, central venous blood pressure and blood flow to the working muscle are maintained, but heat loss from the skin is reduced, causing body temperature to rise to dangerous levels and inducing premature fatigue.

During exercise sweat and water vapors from increased respiration cause a reduction in body fluid. The rate at which this occurs depends on climatic conditions, exercise intensity and individual fitness and acclimatization. This is variable from person to person.

Drinking fluid during exercise can help restore plasma volume to near pre exercise levels and prevent the adverse effects of dehydration on the muscle strength, endurance and co-ordination. Dehydration also poses a serious health risk in that it increases the risk of cramps, heat exhaustion and life threatening heat stroke. Ideally, swimmers should learn to consume adequate fluids during training so that their body weight remains constant before and after exercise.

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)

Methods

Seven female athletes with age group from 17 to 23 years, of swimming match practice group of Sant Gadge Baba Amravati University, Amravati were randomly select as subjects for the study. All subjects were given two treatments i.e. 22 min and 32min continuous swimming. The data were collected for each variable administering their respective tests. The 2ml blood of each was taken before the start of each treatment. Then the subject swam for 22 min and 32 min after a gap of 48 hours on identical days. At the end of workout again 2ml of blood was taken. In order to measure amount of body fluid loss in swimmers 'wintrobe test 'was used. For statistical analysis paired't' test was employed.

Results

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

Descriptive statistics of fluid loss among swimmers during different duration water workouts

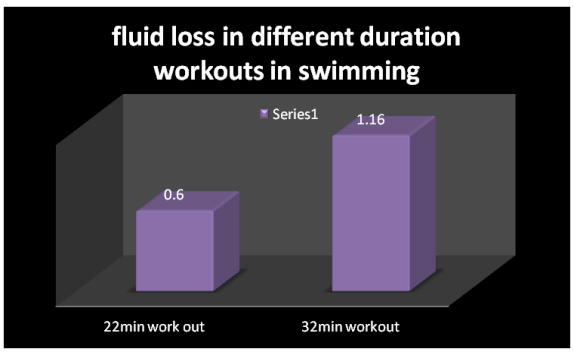
Table 1

S.NO	VARIABLES	MEAN	S.D	N
1	22min workout	0.60	0.270	7
2	32 min workouts	1.16	0.430	7

Volume : 2 | Issue : 12 | December 2013 • ISSN No 2277 - 8179

Table- 1 reveals that mean and standard deviation of fluid loss in 22min water workout is 0.60±0.270, fluid loss in 32min water workout is 1.16, ±0.430, 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 during different duration water workouts
Table 2

	Mean difference	Std.error difference	T-ratio
	0.60	0.131	4.39*

*significant at 0.05 level of confidence.

Tabulated t o.o5 (2.176)

It is evident from Table no. 2 that calculated t- value (4.39) is greater than tabulated t- value(2.136) at o.o5 level thus indicating that there is significance difference among different duration water workouts.

Paired t-tests were conducted for the means of fluid loss among athletes during land and water workouts.

Discussion

Water is main solvent of the body: it provides the medium for biochemical reactions within cells and tissues. It is essential for maintain blood volume, acid-base balance, kidney and heart function as well as the regulation of body temperature. However, in some situations where the exercise is usually longer sport drinks containing carbohydrates and electrolytes may offer an advantage. During these situations, the athlete may run low on energy and electrolytes. If he must compete in a competition that has more than one event a day or several events in just a few days, he could benefit from a sport drink that supplements his energy and electrolyte supply

It is evident from the findings that there was a significant difference in the amount of fluid lost during different durations water workouts. The final finding statement is that during 32 minutes water workouts maximum amount of fluid loss will also be high and as the volume increases amount of fluid loss also increases with a target heart rate. Sweat losses are found to be greater during the aerobic sessions than the predominantly anaerobic workouts.

On skill performance in swimming this may be attributed to the fact that intensity of efforts in both the workouts is at target heart rate so there is only difference is in the volume of workouts., leading to less amount of fluid loss in shorter workouts than the longer workouts.

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 lntake",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, munce, TA and Kenney, WL,"Sex differences in voluntary fluid intake by older adult during exercise", intfrnational 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.l,Frank,"exercise physiology"forth edition,page 18-20. | Fox. Bowers,Foss"the physiological basis of physical education and athleties"fourth edition,pag 487. | T., Morimoto, t., ltoh,"thermoregulation and body fluid osmolality"journal of basic clinical physiology pharmacology.vol 9(1998) | Aggarwal,sapna, "fluid facts for swimmers", unpublished master's project, Lakshmibai 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"internatinal journal of sports medicine.vol.27(2006) | B.Wilk and Bar ,O.,"Effect of Drink Flavor and Nacl on Voluntary Drinking anD hydrationin boys exercising in the heat."journal of applied physiology .vol 311997) | Sapana aggarwal,"fluid loss among swimmers during different duration water workouts"british journal f sports medicine vol 44(2011)