

Periodic Research

Comprative Study of Fluid Lost Among Water Polo Players During Different Duration Workouts



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Abstract

The purpose of this study was to compare fluid lost among water polo players during different duration work out. For the purpose of this investigation 15 male Intervarsity water polo players with age ranging between 18 to 28 years of Sant Gadge Baba Amravati University, Amravati were randomly selected as subjects for the study. 2 ml blood sample of each subject were taken before the start of water workout. Then the subjects was to play for a duration of 28 minutes with maximum efforts. At the end of 28 minutes match, again a blood sample of 2 ml taken. After taking the blood sample, the each sample was tested for percentage of plasma content in blood by pathologist and the data was collected. Same procedure was adopted for duration of 32 minutes. 't' test was employed to analyze the data. Result revealed that there was significance difference found in fluid loss (Plasma), after 28 minutes and after 32 minutes at 0.05 level of confidence

Keyword: Fluid Loss, Plasma, Water Polo

Introduction

Water polo is an exciting and highly competitive sport which is fast and furious from start to finish. Water polo is one of the toughest, most physically demanding sports, and is both a contact sport and one which demands that players tread water constantly during play.

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 vapour 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.

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heat loss from the skin is reduced, causing body temperature to rise to dangerous levels and inducing premature fatigue.¹

Objective of the Study

The purpose of the study is to find out fluid lost among water polo players during different duration workouts.

Methodology

Subjects

15 male Intersarsity water polo players with age ranging between 18 to 28 years of Sant Gadge Baba Amravati University, Amravati were randomly selected as subjects for the study.

Variable

The following variables were selected for the purpose of the study.

Fluid lost

- 28 minutes of match.
- 32 minutes of match.

Collection of Data

The data were collected on the selected subjects by administering the appropriate tests. 2 ml blood sample of each subject were taken before the start of water workout. Then the subjects was asked to play for a duration of 28 minutes with maximum efforts. At the end of 28 minutes match, again a blood sample of 2 ml taken. After taking the blood sample, the each sample was tested for percentage of plasma content in blood by pathologist and the data was collected. Same procedure was adopted for duration of 32 minutes.

Data Analysis

To compare the amount of fluid loss among the water polo players of different duration workout of Sant Gadge Baba Amravati University student's t-test was used.

Findings

Table No. -1
Mean Difference between After 28 Minutes and After 32 Minutes of Water Workout of Water Polo Players.

	Mean	Standard Deviation	Mean Difference	Standard Error	t-ratio
After 28 Minutes	0.59	0.267	0.58	0.131	4.39*
After 32 Minutes	1.17	0.435			

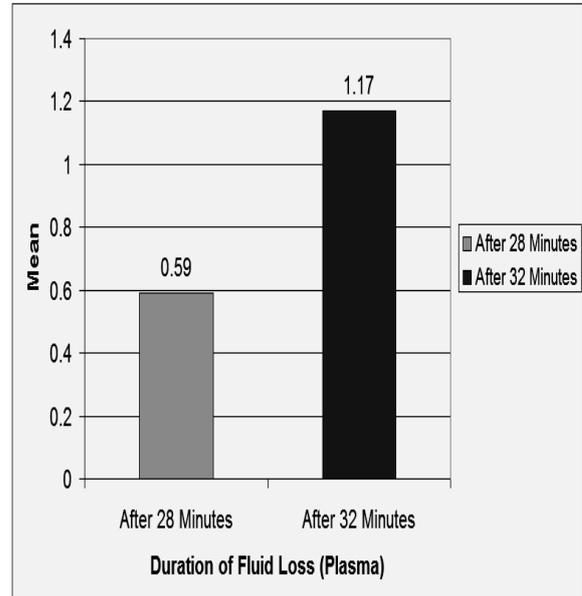
* Significant at 0.05 level of confidence.

Tabulated t 0.05 (28) = 2.05

The above table reveals that, the mean of after 28 minutes fluid loss (Plasma) is 0.59 and mean of after 32 minutes fluid loss (Plasma) is 1.17 and mean difference is 0.58. The standard deviation of after 28 minutes fluid loss is 0.267 and after 32 minutes fluid loss is 0.435. Standard error is found to be 0.131. After statistical analysis t - ratio is found to

be 4.39 which is greater than the tabulated t 0.05 (28) = 2.05. Hence there is significance difference found in fluid loss (Plasma), after 28 minutes and after 32 minutes which is shown in figure no. 1.

Graphical Representation of Mean Value of Fluid Lose after 28 minutes and 32 minutes Workout.



Discussion of Findings

From the table no. 1 t - ratio is found to be 4.39 which is greater than the tabulated t 0.05 (28) = 2.05. Hence there is significance difference found in fluid loss (Plasma), after 28 minutes and after 32 minutes because when a person exercise, 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 body water bank is lost via sweating to enable evaporation cooling. Some electrolytes are also lost through sweat in addition, the volume of the water polo players blood also decreases. This is because the watery part of the blood i.e. plasma, becomes thicker and causes 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 player's ability work hard.

Conclusion

Within the limitation of present study this conclusion may be drawn:

In relation to amount of body fluid loss significant difference was found between 28 minutes, 32 minutes water polo match.

References

1. Robert Reber and Donald Layman, "Keeping Fluid Levels Up : A Guide to High School Athletes" (Pubs Plus University of Illinois, 1997), p.1
2. Robert Reber and Donald Layman, "Keeping Fluid Levels Up: A Guide to High School Athletes". (Pubs Plus University of Illinois, 1997), p 1-4
3. Gleeson M, "Fluid and Micronutrient Intake: Needs for Physical activity", *British journal of Therapy and Rehabilitation*, Vol. 4: p 252-259.
4. Robert Reber and Donald Layman, "Keeping Fluid Levels Up: A Guide to High School Athletes". (Pubs Plus University of Illinois, 1997), p 5-6
5. Sapna Agarwal, "Fluid Facts for Swimmers", (Unpublished Master's Project, Lakshmi Bai National Institute of Physical Education, Gwalior. 2008)
6. Houghton Mifflin, "The American Heritage Medical Dictionary", (New Ed; 2007-2004).
7. Elsevier, Mosby's Medical Dictionary, (New Ed; 2009)
8. Lion A, Bosser G. (2010), "Exercise and dehydration: A possible role of inner ear in balance control disorder", National Institute for Health and Medical Research (INSERM), UMR 954, Faculty of Medicine, 54505 Vandoeuvre-lès-Nancy, France.