Study of Hydration Level Pre and Post Workout of Under 16 Football and Basketball Players from Pune City

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ABSTRACT

The main purpose of this study was to measure hydration level of football and basketball players from Pune city. Football and basketball players were selected randomly from Sunrise Sports Club. Weighing machine was used two measure pre weight and post weight of basketball and football players during their regular training sessions. Pre & Post weight of each individual was taken continuously for five days and intake of fluids during training sessions was also measured. From the raw scores descriptive analysis i.e. frequency was done. Players with 2% of hydration loss are considered dehydrated and the same was used for the current study. From the analysis it is clear that very few players were found with 2% or more hydration loss and were found to be dehydrated. Weather and environment conditions, duration of training session, level of training, etc. should be monitored and further studies are recommended.

Keywords : hydration, dehydration, pre weight, Post weight.

Introduction

Physical education is to develop physically literate individuals who have the knowledge, skills and confidence to enjoy a lifetime of healthful physical activity. Physical education (PE) is a key setting for children to engage in health-enhancing physical activity (PA). Physical Education encourages psychomotor learning by using a play and movement exploration setting to promote health and physical fitness. Physical Education improves the learning aptitude of the students. Improves cardiovascular endurance, muscular strength, flexibility, mobility, and body consumption. Improves

power, agility, reaction, time, balance, speed and coordination by use of all senses. Hydration is also important in physical education classes, as students engage in physical activity that can lead to dehydration. Teachers should encourage students to drink water regularly during class and provide opportunities for breaks to allow students to hydrate. It is important to educate students on the signs and symptoms of dehydration, such as thirst, dry mouth, fatigue, and dizziness, and encourage them to seek medical attention if necessary. Proper hydration can help students perform better in physical education classes and maintain overall health and well-being. Water is essential in physical education classes as it helps to keep students hydrated during physical activity. Dehydration can lead to fatigue, muscle cramps, and even heat exhaustion, which can be dangerous. Therefore, teachers should encourage students to drink water before, during, and after physical activity. It is recommended that students drink at least eight ounces of water every 15-20 minutes during physical activity. Teachers can provide water bottles or cups for students to use during class or encourage them to bring their own. It is also important to ensure that there is access to clean drinking water nearby. In addition to providing water, teachers should educate students on the importance of hydration and the signs of dehydration. Encouraging students to listen to their bodies and take breaks when necessary is also important. By promoting proper hydration, teachers can help students perform better in physical education classes and maintain good health overall. (Kohl, 2013)

Physical activity results in the loss of body fluids and electrolytes through sweating, which are essential for regulating body temperature. A 2% weight loss during exercise can impair performance and impair aerobic, cognitive, and mental performance. Therefore, adequate fluid intake during exercise is highly recommended. Pre-exercise hydration ensures euhydration and water balance to ensure the goal of fluid and electrolyte loss later. Therefore, the consumption of carbohydrate-electrolyte drinks (sports drinks) especially during exercise is better than the consumption of water to ensure fluid and electrolyte replacement. Alternatives to commercial sports drinks are cow's milk or drinks containing cow's milk proteins, especially whey proteins, which have shown positive results in the post-exercise hydration process. (Pegoretti, 2015)

Participation in sports such as football, and physical activity in general, have been associated with a series of physical, psychological, social, and health benefits among youth, particularly adolescents. Soccer performance depends on many physical aspects functions including endurance, strength, power and athletic ability. Dehydration can damage durability, especially when dehydration is combined with heat stress. Although Some people may be more or less susceptible to dehydration the level needed to impair performance is about a 2% increase in body weight. (Laitano, 2014)

When you play hard basketball on the court, your body loses fluids from sweating. You need to replenish those fluids with water or a sports drink, or you risk dehydration. It's important to recognize the signs of dehydration, because it can hurt your performance and even send you to the hospital if it's ignored for too long. (Gavon, 2013)

Hydration in sports refers to the process of maintaining adequate fluid levels in the body during physical activity. It is essential for athletes to maintain proper hydration to ensure optimal performance and reduce the risk of dehydration, heat exhaustion, and other related health issues. Adequate hydration helps regulate body temperature, transport nutrients and oxygen to the muscles, and remove waste products from the body. Athletes are encouraged to drink water and electrolyte-rich fluids before, during, and after exercise to maintain proper hydration levels.

Dehydration is a condition that occurs when the body loses more water than it takes in, leading to an imbalance of fluids and electrolytes. It can cause symptoms such as thirst, dry mouth, fatigue, headache, dizziness, and confusion. Severe dehydration can be life-threatening and require immediate medical attention. Dehydration can occur due to various reasons such as excessive sweating, vomiting, diarrhea, fever, or not drinking enough fluids.

Causes of dehydration (Dehydration: Causes & Symptoms, n.d.)

- Sweating, Inadequate water intake, Hot and humid conditions, Intense physical activity, Illness, Medications, Alcohol consumption

Recently, we have learned that even mild dehydration—1-2% fluid loss—can impair cognitive performance. This amount of fluid loss is equivalent to about 1.5 to 3 pounds of weight loss for a 150-pound person, which can occur through normal daily activity. Since many people experience fatigue later as their exercise time approaches, it can be important for exercisers to talk to their clients. Mild dehydration can cause cognitive problems, including poor concentration, increased reaction time and short-term memory impairment, as well as mood and anxiety. Water intake affects cognitive performance in adults, and adequate daily water intake is important to maintain optimal cognitive function. (Riebl & Davy, 2013)

Consuming water before, during, and after physical activity helps to prevent dehydration and maintain proper bodily functions such as digestion, circulation, and muscle function. Additionally, water helps to lubricate joints and prevent injuries. Therefore, it is important to stay hydrated by drinking water regularly when playing sports like football and basketball. It is recommended that individuals maintain a hydration level of at least 2% or more during physical activity. This can be achieved by drinking water before, during, and after exercise, as well as consuming electrolyte-

rich fluids such as sports drinks. It is important to listen to your body and drink fluids when you feel thirsty, as thirst is a sign of dehydration. Additionally, monitoring the color of your urine can also indicate hydration levels, with clear or light-colored urine indicating adequate hydration and dark-colored urine indicating dehydration. Normally an adult needs 2.5 litre or eight glass of water everyday to stay healthy. Those who are active in sports and other physical activity should drink enough water to replace the water they lose through sweating or physical activity. (Singh, N. P. 2022)

How to stay Hydrated while playing sports in hot conditions

- Drink plenty of water, Choose sports drinks, Avoid sugary drinks, Wear lightweight and breathable clothing, Take breaks, Use sunscreen, Eat hydrating foods, Monitor your urine color, Acclimate yourself to the heat, Know the signs of dehydration

Both competitive and recreational exercisers may drink before, during and/or after exercise. The reasons why they drink can be very different, for example to minimize dehydration, to provide substrate or to refresh the mouth. However, while it is common to eat solid food before and after exercise, it is much less common to eat solid food during exercise, except perhaps for ultra-endurance training. The decision whether or not to eat and/or drink during exercise is made depending on whether the exerciser wishes to do so for comfort, hydration or substrate consumption. If substrate intake is the primary goal, solid food can be as effective as liquid "food" if both are equally well tolerated. A relatively concentrated drink can provide a significant amount of carbohydrates. However, if hydration is the goal, it is unlikely that solid food will provide the desired amount of water. Therefore, drinks play an important role in the diet of exercisers, as they must pay attention to their hydration. (Shirreffs, 2009)

To find the reasons behind drop in performance due to hydration level the researcher has decided to conduct this Research. This study will help us to know the hydration level of football and basketball players. It will help us to identify that if the player is at what level of hydration.

Method

The current study is a survey method where the researcher performed a survey to check hydration level status of football and basketball players. Pre and post workout weight was measured and noted for 5 days for further analysis. The data collection was done football and basketball players from Sunrise Sports Club, Pune City.

Sample & Sampling Technique : In this research researcher selected convenience sampling technique for selection of samples to check hydration level status of Football and Basketball Players in Pune city. For the current study 28 Football and 39 basketball players were chosen. Multiple measurements from the selected sample were taken and were further analyzed.

Data collection tool : Weighing machine was used by the researcher for collection of pre weight and post weight. The amount of water consumed by players during the training session was noted with the help of measured bottles.

Analysis and Discussion : In this present study data was collected through Weighing machine tool and every players pre and post weight was measured and noted for further analysis. Frequency and Chi-Square analysis was done and presented below.

Table 1 : *Summary of Frequency Analysis of Dehydration Level of Football and Basketball Players*

Category	Frequency		Percentage	
	Football	**Basketball**	**Football**	**Basketball**
-1.01 and less (Overhydrated)	0	6	0%	4.31%
-1 to -0.01 (Partially Overhydrated)	0	23	0%	16.54%
0.00 to 1 (Normal)	59	95	55.66%	68.34%
1.01 to 2 (Partially dehydrated)	43	13	40.56%	9.35%
2 and more (Dehydrated)	4	2	3.77%	1.43%
Total	**106**	**139**	**100%**	**100%**

From the table 1 it is found that out of 106 frequency of Football players 0 players i.e 0% players are found between -0.01 to -1.01% and less than that of hydration level respectively which means they are overhydrated. 59 Football players out of 106 frequency of Football players i.e 55.66% are found between 0.00 to 1% which means they are Normal. 43 football players out of 106 frequency of football player that is 40.56% are found between 1.01 to 2% which means they are partially dehydrated. 4 football players out of 106 frequency of football player that is 3.77% are found more than 2% which means they are dehydrated.

From the table 1 it is found that out of 139 frequency of Basketball players 6 and 23 players i.e 4.31% and 16.54% players are found between -0.01 to -1.01% and less than that of hydration level respectively which means they are overhydrated. 95 Basketball players out of 139 frequency of Basketball players i.e. 68.34% are found between 0.00 to 1% which means they are Normal. 13 players out of 139 frequency of Basketball players that is 9.35% are found between 1.01 to 2% which means they are partially dehydrated. 2 Basketball players out of 139 frequency of football players that is 1.43% are found more than 2% which means they are dehydrated.

Table 2 : *Chi-Square Analysis of Dehydration Level of Basketball and Football players*

Dehydration level	Football	Basketball
Chi-Square	27.660	203.504
Df	76	87
Asymp. Sig.	1.000	.000

From table 2 it is found that chi square value of football is 27.660 at 76 degrees of freedom and the asymptotic significance value or P value is 1.00 which is greater than 0.05 significance level, so it is concluded that there is no significant difference between dehydration level of pre weight and post weight of football players. The chi square value of basketball is 203.504 at 87 degrees of freedom and the asymptotic significance value or P value is 0.00, so it is concluded that there is a significant difference between dehydration level of pre weight and post weight of basketball players.

Conclusion

It is concluded that 3.77% out of 100% that is 4 Football players and 1.43% out of 100% that is 2 Basketball Players are above 2% of hydration level which is very less. Which means very less players of Sunrise Sports club football and basketball players are dehydrated from Pune city.

Discussion

Different previous researches have shown that dehydration in excess of 2% of body weight consistently impairs aerobic exercise performance (Montain, 2008). Fluid loss equivalent to >2% of body mass leads to dehydration (Burke, 2019). When exercising in a hot environment, dehydration by 2% of body mass impairs exercise performance and increases the possibility of suffering from heat injury (Shirreffs,

2005). As Recent studies also suggests that mild dehydration (e.g., 1–2% body mass loss) can also lead to decrease in sports performance (Ganio, Armstrong, 2018).

Recommendations

It is recommended that research can be done by including more samples and more sports. A detailed study considering weather and environment conditions, duration of training session, level of training, etc. should be monitored and further studies are recommended. Regularity of training and student attendance has been an issue and needs to be controlled while conducting further studies.

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