



## ASSESSMENT OF KNOWLEDGE AND HYDRATION AWARENESS AMONG SWIMMERS.

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### ABSTRACT

Hydration plays an important role in performance of the swimmers. Swimmers are in water hence many times they don't realize the need of water but they have massive energy expenditure and need proper intake of water and nutritional fluid to remain hydrated (Raphl Teller, 2011). The study was conducted to check the knowledge of hydration among the swimmers. Responses were collected from the swimmers of various age group who are the professional swimmers and participate in the State, National and International swimming competitions regularly. A self-administered questionnaire was shared among the swimmers to collect the responses. Based on those responses the awareness of water consumption and nutritional fluid was analysed. It was observed that the swimmers lack the knowledge of hydration they rely on coaches, media, internet to get hydration knowledge which is not sufficient. The amount of water consumption during a day was studied in which it was found that only 10% swimmers in the age group of 19 years and above consume the right amount of water (3-4 litre) as recommended by Institute of Medicine (Joe Buchanan, 2017). It was also observed that few swimmers consume excess water in a day (>5 litre) due to which the sodium present in the blood may get diluted. It was also observed that 50% swimmer of various age group never consumed nutritional fluid during the training and many swimmers face the dehydration symptoms like tiredness, fatigue, muscle pain and cramps.

**Keywords:** Hydration, Swimmers, Water, Nutritional Fluid

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## 1. INTRODUCTION:

Swimming is a high endurance sport which include pool swimming and open water swimming. The duration and practice for both is different. Swimming requires developing a high aerobic and anaerobic capacity for strength and technical efficiency. Because of massive energy expenditure proper water consumption is very much essential to re-build, recovery and inhibit the performance. Apart from nutrition and dietary intake a swimmer always needs to intake sufficient water to stay hydrated. (E Jéquier and F Constant, 2009) The dehydration during pool swimming is lower than the open water swimming, but still a swimmer has to intake 2-3 litres of water in a day to stay hydrated. The Institute of Medicine has recommended 3.7 litres of water a day for men age 19-30, and 2.7 litres of water a day for women age 19-30. A common thumb rule that is often stated for remaining hydrated is to take one's body weight, divide it by two, and drink that much water in ounces.(Joe Buchanan, 2017)

The swimmers are in water hence they do not realize that they are still sweating losing fluid and as they are surrounded by water the brain is tricked as per the surrounding environment and does not signal mouth and throat to be thirsty. (Swimmo.inc)

It has been observed that intensive and long-distance swimming requires lot of fluid intake and need additional hydration, water is not sufficient to rehydrate the body. (Raphl Teller, 2011) Hence in training apart from water intake the swimmers need to be provided with replenish electrolytes, power energy drink to maintain the body fluid balance and avoid the dehydration. The swimmer during the competition day is provided with more electrolytes and sports drinks to stay hydrated (Archive team, 2011). A 2% loss in body weight due to water loss leads to dehydration a condition that can reduce strength by 2 percent, power by 3 percent and endurance in athletes by 10 percent. According to the National Academy of Sports Medicine, dehydration can affect cognition, coordination, response time, tracking, short-term memory, attention, focus and fatigue. (Orlando Health,2020)

Maintaining the proper hydration is very much essential for a swimmer. Hydration helps to optimize carbohydrate and ensures best performance during competitions (Andrea Boldt, 2020). Drinking water before and after the training regulates the body temperature, delivers nutrients and oxygen to body cell and removes waste from the body. The proper fluid balance in body improves circulation, regulates body temperature and promotes proper digestion and absorption of nutrients, supplies nutrients and oxygen to body cells. There are various symptoms of dehydration commonly observed in the swimmers, reduce in energy or apathy, infrequent urination or dark urine, sudden decline in strength and co- ordination. Apart from this the dehydration also affects the muscles and joints which leads to cramps, cartilage wear and friction in the joints. (Rob S Williams,2019)

## 2. METHOD

A self-administered questionnaire was prepared to assess the level of hydration knowledge and drinking habits of swimmers. Various swimming club were approached which were affiliated with Thane District Swimming association (TDSA) and Swimming Federation of India (SFI) in Thane region and professional swimmers were analysed who participate in the State, National and International swimming competitions regularly. The participants for this study were of various ages groups and signed consent was obtained from both the participants and their parent/legal guardian.

### 2.1 Procedures

A self-administered questionnaire was prepared based on the various questions which consisted of hydration knowledge and was utilized to assess the level of hydration knowledge,

drinking habits of swimmers. Various swimming club were approached in Thane region and swimmers who are the professional swimmers and participate in the State, National and International swimming competition regularly were analysed.

**2.2 Data analysis**

The analysis was carried out through a Statistical Package of Social Sciences (SPSS). Descriptive statistics- Frequencies, percentages, measures of variability were computed, cross tab were used to show the relationship between variables and finally the data was concluded.

**3. RESULTS:**

The data was analysed by circulating the self-assessed questioner and the observation were noted based on the responses provided by the swimmers. Among the total swimmers 76% were the male participants and 24% were the female participants of the various age group. The age groups and participation as per the age group are mentioned in the Table1.

**TABLE 1  
PROFILE OF POPULATION**

	Classification	Frequency	Percentage (%)
sex	female	6	24
	male	19	76
Age range	Under 8	3	12
	9-12	5	20
	13 - 15	3	12
	16 -18	4	16
	19 and above	10	40

**3.1 Nutritional Knowledge:**

It was observed that knowledge of hydration is gained in various ways by the swimmers. 44% swimmers get knowledge of hydration from Coaches. 32% get knowledge of hydration from parents/relatives/friends, 16% get knowledge of hydration from Media /Internet/Websites/ Articles and only 8% get knowledge of hydration from professional consultant.

**3.2 Amount of water consumed during a day:**

The amount of water consumed by the swimmers throughout the day differs as per the age group hence the consumption of water is calculated as per the age groups. Details mentioned in Table 2. It was observed that in the age group of 19 years and above 70% swimmers consumed 2-3 litres of water in a day, in 16-18 years age group 50% swimmers consumed 3- 4 litres of water, in 9-12 years 60% consumed 2-3 litres of water, in under 8 years 66.70% consumed 1-2 litres of water. While in the age group of 16-18 years 33.30% swimmers were found consuming more than 5 litres of water in a day.

**TABLE 2  
AMOUNT OF WATER CONSUMED BY THE SWIMMERS DURING A DAY.**

Amount of water consumed in Litre (L)	Age					Total
	Under 8 Years	9 to 12 years	13 to 15 years	16 to 18 Years	19 years and above	
1-2 L	66.70%	40.00%	0.00%	25.00%	0.00%	20.00%
2-3 L	33.30%	60.00%	0.00%	50.00%	70.00%	52.00%
3-4 L	0.00%	0.00%	33.30%	0.00%	10.00%	8.00%
4-5 L	0.00%	0.00%	33.30%	0.00%	10.00%	8.00%
More than 5 L	0.00%	0.00%	33.30%	25.00%	10.00%	12.00%

**3.3 Amount of water consumed during the training:**

The swimmers have 3-4 hours of training session during a day and the amount of water consumed during the training is described in Table 3. In all the age groups more than 50% swimmers consumed 500 ml of water, except in the age group of 9-12 years 60% swimmer consumed 250 ml of water which is very less than the recommended consumption of water during the training.

**TABLE 3**  
**AMOUNT OF WATER CONSUMED BY THE SWIMMERS DURING TRAINING.**

Amount of water consumed during the training. (ml/L)	Age					Total
	Under 8 Years	9 to 12 years	13 to 15 years	16 to 18 Years	19 years and above	
250 ml	33.30%	60.00%	0.00%	0.00%	10.00%	20.00%
500 ml	66.70%	0.00%	0.00%	75.00%	50.00%	40.00%
500-1000 ml	0.00%	40.00%	66.70%	0.00%	30.00%	28.00%
More than 1 litre	0.00%	0.00%	33.30%	25.00%	10.00%	12.00%

**3.4 Nutritional fluid consumed during the training:**

As per the details mentioned in Table 3, It was observed that more than 50% of swimmers in the various age group never consumed any nutritional fluid except the age group of 13-15 years in which 66.70% swimmers consumed nutritional fluid.

**TABLE 4**  
**NUTRITIONAL FLUID CONSUMED BY THE SWIMMERS DURING TRAINING SESSION**

Nutritional Fluid consumed during training session	Age					Total
	Under 8 Years	9 to 12 years	13 to 15 Years	16 to 18 Years	19 years and above	
Always	33.30%	0.00%	66.70%	0.00%	10.00%	16.00%
Mostofthetimes	0.00%	0.00%	0.00%	50.00%	0.00%	8.00%
Never	66.70%	40.00%	0.00%	50.00%	50.00%	44.00%
Sometimes	0.00%	60.00%	33.30%	0.00%	40.00%	32.00%

**3.5 Tiredness fatigue and muscular cramps observed after training:**

It was observed that most of the swimmers felt tired, fatigue and also had muscular cramps sometimes after training, 60% swimmers of age group 19 years and above,50% swimmers of age group 16-18 years, 66.70% swimmers of age group 13-15 years and 60% swimmers of age group 9-12 years sometimes feel muscle pain and cramps after the training. The observations are mentioned in the table 5 and 6.

**TABLE 5**  
**TIREDNESS AND FATIGUE OBSERVED BY SWIMMERS AFTER TRAINING SESSION.**

Feel tired or fatigue after training session	Age					Total
	Under 8 Years	9 to 12 years	13 to 15 Years	16 to 18 Years	19 years and above	
Always	0.00%	0.00%	0.00%	0.00%	10.00%	4.00%
Most of the times	0.00%	20.00%	0.00%	25.00%	10.00%	12.00%
Never	66.70%	0.00%	33.30%	0.00%	0.00%	12.00%
Sometimes	33.30%	80.00%	66.70%	75.00%	80.00%	72.00%

**TABLE 6**  
**FREQUENT MUSCLE PAIN/ CRAMPS OBSERVED BY THE SWIMMERS AFTER TRAINING SESSION.**

Frequent muscle pain/cramps after the training session	Age					Total
	Under 8 Years	9 to 12 years	13 to 15 years	16 to 18 Years	19 years and above	
Most of the times	0.00%	20.00%	0.00%	25.00%	0.00%	8.00%
Never	66.70%	20.00%	66.70%	25.00%	40.00%	40.00%
Sometimes	33.30%	60.00%	33.30%	50.00%	60.00%	52.00%

#### 4. DISCUSSION

In this study it was observed that swimmers gain the knowledge of hydration from parents, friends, media, internet, 44% swimmers gain knowledge of hydration from coach and only 8% approach the professional nutritional consultant. After observing the water consumption during day and during training it was found that the swimmers have insufficient knowledge about hydration. As hydration is very important for swimmers to maintain the body fluid balance the observations indicates that the swimmer should follow proper hydration consumption. The Institute of Medicine recommend that the adult swimmers aged 19 years and above need to consume 3-4 litres of water during the day but only 10% swimmers of age group 19 years and above consume 3-4 litres of water. Drinking excess water is also not good for the swimmers as per Orlando Health (2020) after drinking excess water the sodium that is naturally found in the blood gets diluted. Sodium is an electrolyte, which helps to maintain blood pressure and helps nerves, muscles and body tissues to work correctly. In 19 years and above 10% swimmers and in 16-18 years age group 33.30% swimmers consume more than 5 litres of water, which was observed as an excessive water consumption during a day. During training 500- 1litre amount is recommended for swimmers of all age group as per the Orlando Health (2020). It was observed that in age group of 9-12 years 60 % swimmers consumed only 250 ml of water during the training, which was less than the recommended water consumption.

The swimmers need to be hydrated during training; hence consumption of nutritional fluid is very much essential. Nutritional fluid helps to balance the electrolyte contents in the body and keeps body hydrated for longer durations. During training 50% swimmers of age group 19 years and above and 16-18 years never consumed any nutritional fluid/energy drink. Due to low or never consumption of nutritional fluid the swimmers may lose the electrolytes and face the dehydration symptoms like tiredness, fatigue, muscle pain and cramps. 25% swimmers in age group of 16-18 years most of the time face muscle pain and cramps and 60% swimmers of 19 years and above face the muscular pain and cramps sometimes. This frequent muscle pain and cramp is observed due to lack of electrolytes (sodium, potassium, magnesium, calcium, and chloride) in body which supports the normal muscle contraction. The consumption of nutritional fluids helps the body to replenish the electrolytes.

#### 5. CONCLUSION:

The swimmers strive hard to perform the best at competitive level and they undergo tremendous pressure for best performance hence they should be always supported and guided with the proper knowledge of hydration and intake of water. The proper hydration plays a crucial role in the swimmer's performance hence apart from water they should also regularly consume nutritional fluids and juices. It will help swimmers to balance the electrolyte and avoid muscle pain, cramps during and after training and tiredness and fatigue after the training session.

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