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# **Relationships of the Student-Athletes' Hydration Awareness, Perspectives & Practices with the Outcome of Competition**

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**Abstract**---The study's primary concern is to understand the level of awareness, perspectives, and practices on fluid hydration among student-athletes in Pasig city in relation to their outcome of competition. Looking to the athletes' awareness, perspectives, and practices about hydration would help coaches and trainers identify areas to be given importance in their training program, so that, their athletes will be able to achieve a high level of performance during competition. A survey encompassing questions about demographics, sports performance and awareness, perspectives, and practices pertaining to proper hydration was given to the athletes during team practices and meetings. A total of 184 student-athletes participated in the study. The majority of the athletes' respondents are male and currently, in grade 12, most of them were sports achievers, 64 or 34.8% were gold medalists, 39 or 21.2% were silver medalists, and 36 or 19.6% were bronze medalists. There was a positive correlation between the outcome of competition and the stage of awareness  $r(182)=.182$ ,  $p=.014$ , there was a positive correlation between the outcome of competition and the stage of perspectives  $r(182)=.276$ ,  $p=.001$  and the relationships between the outcome of competition and level of practices also positive correlated  $r(182)=.23$ ,  $p=.002$ . The awareness, perspectives and practices regarding hydration also positively correlated. The higher level of awareness, perspectives and

practices will contribute to better performance in competition from the results of this study. The results of current findings identify significant areas of education for athletes with regard to hydration.

**Keywords**---student-athletes, awareness, perspective, practices, hydration status, outcome of competition.

## Introduction

Nourishing optimal levels of hydration is essential for human beings to function well (Whitney, Rolfes, Crowe, Cameron-Smith, & Walsh, 2011). Water comprises a huge part of our body weight (an average of 60%), with a distribution in the intracellular and extracellular parts (Zhang et al., 2019). As such, fluid balance maintenance and being well hydrated are vital to athletes' performance and thermoregulation (Meyer, Volterman, Timmons, & Wilk, 2011). Moreover, the evaporation of sweat from the skin's surface facilitates the body in regulating core temperature. If there is insufficient evaporation of sweat from the skin's surface, the core temperature will increase abruptly (Casa et al., 2000). Hence, dehydration or heat illness becomes a threat for athletes.

In spite of the frequently known importance of water or fluid in our bodies, many athletes do not seriously consider the effects of hydration during and after athletic performance. Athletes commonly consume insufficient fluid and electrolytes just prior to, or during training and competition (Ayotte & Corcoran, 2018). Additionally, all of the evidence to support proper hydration, athletes continue to participate in training or competition in a dehydrated state. Previous study reported that 87% of athletes participating in an international competition for the sport of volleyball, basketball and touch football were in a dehydrated state (Baron, Courbebaisse, Lepicard, & Friedlander, 2014).

Additionally, previous study reported that 33.1% of the athletes they surveyed could not correctly answer 80% of the questions they were asked about general hydration awareness, including simple questions on American College of Sports Medicine (ACSM) position statements on hydration (Lawrence W. Judge et al., 2021). The statement set out include following hydration protocols, making drinks readily available, and making sure fluid replacement tries to match fluid loss through sweat and urine (Casa et al., 2000). However, athletes who aware the benefits of hydration on athletic performance were more likely to consume adequate fluid before dehydration occurs (Serretti et al., 1999).

One possible element that may influence fluid intake is awareness about hydration. Several studies have examined hydration awareness in specialized samples, such as in dietitians (Douglas et al., 2014) and in the context of sport (Chia, Mukherjee, Huang, Cheng, & Viru, 2015; L. W. Judge et al., 2016). Comprehension awareness of hydration in athletes is certainly important, as hydration is a key factor in sport performance (L. W. Judge et al., 2016); the amount of fluid a person needs shifts during exercise, especially in the heat. These aspects may contribute to why studies examining hydration awareness tend to focus on specific practices (e.g., consumption of sports drinks) or areas of

information (e.g., hydration specific to exercise and/or performance) that are primary for athletes.

Beyond awareness, psychological characteristics also to be expected influence hydration practices. With that, the perspectives which people hold toward hydration could either assist or hamper the commitment in fluid consumption. A quantitative measure of hydration perspectives for general population use (beyond those assessing specific perspectives in athletes or physicians (Douglas et al., 2015; Moore, Travis, Stone, & Lee, 2019) would be valuable for examining the links between awareness, perspectives and practices, and the outcome of competition to understanding how awareness, perspectives and practices of hydration contribute to the outcome of competition.

From the literature search, there is scarcity of studies on the relationships of athletes' Awareness, Perspective & Practices regarding hydration and the outcome of competition. With that, understanding the Awareness, Perspective & Practices of student-athletes regarding hydration plays a crucial role in the management of dehydration status among student-athletes during training and competition.

The main objective of current study is to find out the relationships among student-athletes' Awareness, Perspective & Practices about their own hydration which was measured using a survey and the outcome of competition, the findings would help coaches and trainers identify areas to be given importance in and belief in misinformation about hydration are possible reasons for the lack of proper hydration (Shaheen, Alqahtani, Assiri, Alkhodair, & Hussein, 2018).

## **Methods**

In this research process, the researcher gathered the necessary data and variables essential to the study. Data collected was specified in the awareness, perspectives and practices on fluid hydration and its relationship to the outcome of competition among student-athletes in Pasig City, Philippines.

## **Participants**

The participants of the study comprised of one hundred eighty-four (184) student-athletes in Pasig city. The division of Pasig city senior high schools is divided by two clusters, cluster I with five (5) senior high schools, while there were six (6) senior high schools in cluster II. Moreover, the researcher utilized the simple random sampling. Out of the 341 number of athletes in the 11 senior high schools in Pasig city, based on the list of athletes given by the coaches, the researcher used the simple random sampling to come up with the total respondents of 184.

## **Instrument**

The study was designed to measure the level of awareness, perspectives and practices of student-athletes in Pasig city regarding hydration and its relationship to outcome in that competition. Questionnaire on awareness, perspectives, and practices used were based on the awareness, perspectives, and Practices

Regarding Hydration and Fluid Replacement of Collegiate Athletes (Nichols, Jonnalagadda, Rosenbloom, & Trinkaus, 2005) with minor modifications. One question concerning alcohol consumption was removed from the original survey, also, the researcher did not use the item/question about “ethnic group” in the first part of the survey, for it is not relevant to the present study.

The survey has two parts. The first part has 6 questions regarding demographic information of the participants and the outcome of the competition. The second part of the survey assessed the athlete’s awareness, perspectives, and practices on fluid hydration of the student-athletes during training and competition. Each section of the survey asked the same questions with different wording. The questions were in the same order in each section. The awareness section contained 17 questions rated on a 5-point Likert scale (much aware to not aware); perspectives section contained 17 questions rated on a 5-point Likert scale (strongly agree to strongly disagree); and the practices section contained 16 questions on a 5-point Likert scale (always to never).

In addition, permission to use the survey was obtained from the researchers who designed the survey.

Cronbach’s alpha was used to measure how well each section of the survey measured its respective latent construct (i.e. awareness, perspectives, practices). A score of 0.70 is viewed as strong, which means that it does a good job of measuring its respective latent construct. The study from which the survey was modified had very strong Cronbach’s alpha scores, 0.94, 0.92, and 0.96 for awareness, perspectives, and practices, respectively.

## **Procedures**

To collect the data needed, the researcher asked permissions to conduct surveys to the school’s division of Pasig city. The researcher visited the different public senior high schools in Pasig city where the scheduled trainings are happening. Also, the researcher negotiated to other coaches around Pasig city prior to data gathering, to inform them about the procedure and gather the list of their athletes. The researcher also informed athletes about the study and provided letter of consent to their coaches and parents as well, signed informed consent was obtained from all participants. Ethical approval was obtained from the Ethics Committee for Research Involving Human Subjects from PUP, Philippines.

## **Statistical analysis**

IBM SPSS Statistics version 25 was used. The socio-demographic background of the respondents was presented in percentages for the categorical data, and mean with standard deviation (SD) for the continuous data. The Pearson product-moment correlation to determine the correlation between awareness, perspectives, and practices regarding hydration and the outcome of competition. The statistical significance was set at  $p < 0.05$ .

## Results

Table 1  
Gender of participants

| Gender | Frequency | Percentage |
|--------|-----------|------------|
| Male   | 111       | 60.3       |
| Female | 73        | 39.7       |

Table 1 presents the gender of participants in this study. This study dominates by male student-athletes.

Table 2  
Outcome of the competition

| Competition Outcome | Frequency | Percentage |
|---------------------|-----------|------------|
| Gold Medalist       | 64        | 34.8       |
| Silver Medalist     | 39        | 21.2       |
| Bronze Medalist     | 36        | 19.6       |
| MVP                 | 1         | 0.5        |
| Mythical Five/Six   | 5         | 2.7        |
| Special Award       | 5         | 2.7        |
| Participant         | 34        | 18.5       |

Table 2 reflects the outcome of competition of the participants. As gleaned in the table, most of the athlete participants in this study were sports achievers. In particular, 64 or 34.8% of the participants were gold medalist (champion); 39 or 21.2% were silver medalist (1st runner up); and 36 or 19.6% of the athletes were bronze medalist (2nd runner up). On the other hand, 34 or 18.5% were just a participant during the sport events/competitions which means that they have not received any award.

Table 3  
Mean and SD scores of awareness, perspectives and practices

| Variable     | N   | Mean | SD   |
|--------------|-----|------|------|
| Awareness    | 184 | 3.84 | 0.58 |
| Perspectives | 184 | 3.82 | 0.38 |
| Practices    | 184 | 3.17 | 0.57 |

As shown in table 3, the highest scores rated by the student-athletes on the awareness ( $M=3.84\pm0.58$ ) related to hydration, follow by perspectives of hydration ( $M=3.82\pm0.38$ ) and the least was practices ( $M=3.17\pm0.57$ ) on the hydration in this study.

To find out is there any significance relationships between awareness, perspectives and practices on hydration in student-athletes and the outcome of competition. A Pearson product-moment correlation coefficient was computed to assess the relationships between variables.

As shown in table 4, there was a positive correlation between the outcome of competition and the stage of awareness  $r(182)=.182, p=.014$ . The results of this study revealed that there was a positive correlation between the outcome of competition and the stage of perspectives  $r(182)=.276, p=.001$  and the relationships between the outcome of competition and level of practices also positive correlated  $r(182)=.23, p=.002$ . The results of this study found that there was a positive correlation between level of awareness and stage of perspectives  $r(1182)=.498, p=.001$ , level of awareness also positively correlated with stage of practices  $r(182)=.311, p=.001$ , and the stage of perspectives on hydration revealed a positive correlation with the stage of practices  $r(182)=.377, p=.001$ .

Table 4  
Correlations of variables in this study

| Variables                      | M    | SD   | 1     | 2     | 3     | 4     |
|--------------------------------|------|------|-------|-------|-------|-------|
| 1. Outcome of Competition      | 2.95 | 2.22 | -     | .18*  | .28** | .23** |
| 2. Mean Scores of Awareness    | 3.84 | 0.58 | .18*  | -     | .50** | .31** |
| 3. Mean Scores of Perspectives | 3.82 | 0.38 | .28** | .50** | -     | .38** |
| 4. Mean Scores of Practices    | 3.17 | 0.57 | .23** | .32** | .38** | -     |

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

## Discussion

### Awareness on hydration

Results of current study as expected that the student-athletes performed well on the survey regarding their awareness on hydration, with a mean score of  $3.84 \pm 0.58$ . This stipulates this group of student-athletes have a good awareness or knowledge about proper hydration, a strong belief in that facts, and that they use it as a guide to stay hydrated. It has been well documented and reported that dehydration can lead to a decrease in performance (Von Duvillard, Braun, Markofski, Beneke, & Leithäuser, 2004), so it is not surprising that athletes training and competing at a high level would have good awareness about hydration knowledge.

There are several possible explanations for the results of this study, First, perhaps due majority of the participants in this survey were top three winners in the competition. The high awareness scores and practiced good habits in regards to hydration reflect good performers in their sport in competition. Even though this group of student-athletes appear to be very high awareness level about hydration, but it cannot be proven that their awareness results in adequate rehydration in between training sessions. For this reason, it is important to

continue to educate student-athletes about hydration and to ensure that they have access to proper fluids to maintain hydration.

Research has shown that although student-athletes understand the importance of rehydration, they may lack the awareness needed to maintain hydration (Lawrence W. Judge et al., 2021). This may impact performance and set the stage for potential adverse medical conditions during vigorous physical activity. Enhanced awareness can improve perspectives and practices, as indicated by the significant and positive correlations identified in this study and previous research (Sedek, Mohamad, & Mohd-Kasim, 2015). Awareness alone is not enough; proper information on application of such awareness is important as well but do not always put that awareness into practice.

### **Perspectives on hydration**

Overall the athletes did well on the perspectives section of the survey. The mean score was  $3.82 \pm 0.38$ . Similar to awareness, the concept of perspectives has multiple meanings to researchers. Historically, the literature reveals two separate frameworks in which perspectives is defined: practices and cognitive (Chowdhury & Salam, 2015)

More contemporary psychologists have further expanded the understanding and definition of perspectives (Chowdhury & Salam, 2015) to include three components: cognitive, affective, and conative. The cognitive component is a belief or idea associated with a particular psychological object. The affective component represents the individual's evaluation of the psychological object as well as the emotion associated with that object. And the conative or practices component represents the overt action or predisposition toward action directed toward that object. Although formal definitions of perspectives vary, most contemporary theorists agree that the characteristic attribute of perspectives is its evaluative (pro-con, positive-negative) dimension (Chowdhury & Salam, 2015).

### **Practices on hydration**

The practices section of the survey asks whether or not athletes follow certain hydration methods. The practices score should be a direct reflection of how well student-athletes re-hydrate themselves. The mean practices score for the study was  $3.17 \pm 0.57$ . The practices scores are the most significant scores because, if answered honestly, they are a direct reflection of how well athletes re-hydrate themselves.

The findings of this study demonstrate that, when student-athletes have sufficient hydration awareness, their awareness will correspond to their practices  $r(182)=.311$ ,  $p=.001$ . The findings emphasize the significance of regular monitoring of athletes' fluid consumption practices to prevent practices that may have a negative effect on their performance and health. Appropriate hydration practices should be highlighted, while athletes should be warned about negative hydration practices and the outcomes of these practices.

Perspectives, perceptions of self-efficacy, norms, motivations and other forces exert stronger influences on practices than awareness. For hydration, awareness is likely important to some degree, as fluid intake needs change based on context (e.g., in the heat, after exercise) and there are plenty of common misconceptions about hydration (e.g., that thirst is an early indicator). However, for those who want to improve hydration practices, awareness is not enough to change practices, and may not even exert a significant influence on perspectives.

Hence, the perspectives and practices of the student-athletes towards hydration suggested should be parallel. In interpreting the positive relationship, the increasing practices means a greater awareness the athletes have in relation to hydration.

This study suggests that the awareness and practices regarding hydration should be parallel to ensure the practice of hydrating is fully observed and maintained during training and competition. The findings of this study quantify the need in improving the student-athletes' awareness, perspectives and practices with regards to hydration.

Despite these limitations, the findings of this study emphasize the importance of ongoing education regarding hydration among student-athletes. Athletic coaches, trainers, and sports nutritionists not only have to counsel student-athletes about proper fluid replacement, but also to create an environment that will encourage positive perspectives and practices in order for student-athletes to put their awareness into practice.

Alternatively, as some have previously indicated, perspectives can also be aligned with practices, indicating that practices can inform perspectives, and perspectives are influential in attention (Schmidt et al., 2010). Thus, perspectives can impact what an individual perceives and therefore impacts awareness gains. Furthermore, awareness—or perspectives, for that matter—is not necessarily a strong predictor of practices alone (Schmidt et al., 2010). Taking all these arguments into account, one may conclude that the relationship between these three dimensions - awareness, perspectives, and practices is and prudent to conduct research of this sort from the perspective that these three dimensions can and do interact dynamic and sometimes reciprocal.

Also, previous research has shown that awareness instruction alone is a poor agent for influencing changes in practices (Valente et al., 2014). Successful outcomes of interventions in education and performance improvement involve more than awareness gains. Further, perspectives are typically heightened immediately following an intervention but often dissipate over time, negatively influencing the future likelihood of performing a particular practice. As a result, research suggests that interventions and their evaluation should involve all three domains.

## **Conclusion**

This study evaluated the level of awareness, perspectives, and practices of student-athletes in Pasig city in relation with their outcome of completion. The



mean scores for awareness, perspectives and practices were significantly positive correlated. It means this student-athletes good awareness, good perspectives and practices of hydration status. The outcome of the competition indicates that knowing the effects of dehydration to athletic performance can open the mind of athletes to maintain proper hydration and that readily available fluids during practices is very important for most athletes. Positive correlation between the outcome of competition, awareness, perspectives and practices revealed the importance of awareness, perspectives and practices on hydration during competition. This finding suggests that we as coaches, trainers, mentors, and parents as well should find ways to continuously educate our students-athletes about fluid hydration, the world is constantly changing so as the importance of hydration, not just in sports but also in the aspect of health and medicine.

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