

# CERTIFICATE

## OF APPRECIATION | No : 008056/UN38.I/DL/2018

is presented to

Kunjung Ashadi

*as Paper Presenter*

*entitled*

Comparison of Knowledge and Hydration Awareness on Adolescents  
Soccer Athletes

in Mathematics, Informatics, Science, and  
Education International Conference (MISEIC) 2018  
with theme :

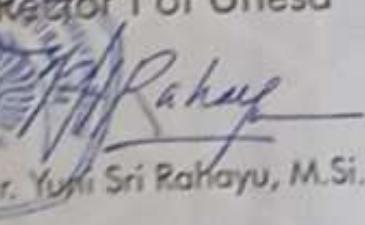
"Emerging Trends of Research in Mathematics,  
Informatics, Science, and Education"

at Best Western Papilio Hotel,  
Jl. Jendral Ahmad Yani no. 176-178,  
Surabaya 60235, Indonesia  
on July 21<sup>st</sup>, 2018

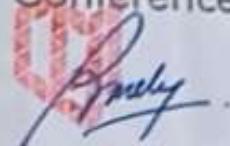


Vice Rector I of Unesa

Dr.sc.agr. Yuni Sri Rahayu, M.Si.



Conference Chair



Rachmawati Ekawati, M.Sc., Ph.D.

Indexed by:

Scopus

Clarivate  
Analytics

DOAJ

Published in:

IOPscience

ATLANTIS  
PRESS

Part of **SPRINGER NATURE**

[PROCEEDINGS](#) | [JOURNALS](#) | [BOOKS](#)

---

Search

Series: [Advances in Intelligent Systems Research](#)

# Proceedings of the Mathematics, Informatics, Science, and Education International Conference (MISEIC 2018)

---

## PREFACE

---

Mathematics, Informatics, Science, and Education International Conference (MISEIC) 2018 is the second conference of MISEIC held by Universitas Negeri Surabaya (Unesa), Indonesia this year. The conference held in Best Western Papilio Hotel on 21 July 2018. This conference reflect the commitment of Unesa about the research activities.

This international conference aims to bridge the scientists, education experts and practitioners, and students in the scientific forum through sharing ideas and issues about theoretical and practical knowledge in mathematics, informatics, science and STEM education. STEM education have been a central issues that become research trending topics nowadays especially for researchers of Mathematics, Informatics and Science Education. The theme of MISEIC 2018 is "Emerging Trends of Research in Mathematics, Informatics, Sciences, and Education".

This conference has attracted attention from educational practitioners' community. There are 299 review and research-based papers submitted and presented in this conference. The paper have a wide range topics such as Pure and Applied Mathematics; Physics, Chemistry, Biology, Science and Technology; Computer Science. Out of the submitted papers, 66 papers were selected to be published by Atlantis Press. The selection was based on the rigid and rigorous review of papers by two referees who focus on content

format and language used. We hope that the papers can give valuable knowledge and insight for readers on those variety of topics.

## Atlantis Press

Atlantis Press – now part of Springer Nature – is a professional publisher of scientific, technical & medical (STM) proceedings, journals and books. We offer world-class services, fast turnaround times and personalised communication. The proceedings and journals on our platform are Open Access and generate millions of downloads every month.

For more information, please contact us at: [contact@atlantis-press.com](mailto:contact@atlantis-press.com)

- ▶ PROCEEDINGS
- ▶ JOURNALS
- ▶ BOOKS
- ▶ POLICIES
- ▶ MANAGE COOKIES/DO NOT SELL MY INFO
- ▶ ABOUT
- ▶ NEWS
- ▶ CONTACT
- ▶ SEARCH

---

[Home](#) [Privacy Policy](#) [Terms of use](#) [!\[\]\(e474458956c9a37fbf9586ddb60a7fa1\_img.jpg\)](#) [!\[\]\(4d1d3f2547aeece54bb6babd23f4121b\_img.jpg\)](#) [!\[\]\(ec45aa71601db5755c5e2662ad427708\_img.jpg\)](#)

Copyright © 2006-2022 Atlantis Press – now part of Springer Nature



Part of **SPRINGER NATURE**

[PROCEEDINGS](#) | [JOURNALS](#) | [BOOKS](#)

---

Search

Series: **Advances in Intelligent Systems Research**

# **Proceedings of the Mathematics, Informatics, Science, and Education International Conference (MISEIC 2018)**

---

## **ORGANIZERS**

---

### **Editor**

**Rooselyna Ekawati, M. Si., Ph. D.**

Universitas Negeri Surabaya

### **Co-Editor**

**Dr. Eng. Asep Bayu Dani Nandiyanto S.T., M.Eng.**

Universitas Pendidikan Indonesia

**M. Jakfar, M.Si.**

Universitas Negeri Surabaya

**Setya Chendra Wibawa, S.Pd., M.T.**

Universitas Negeri Surabaya

### **Technical Program Committee**

**Shofan Fiangga, M.Sc.**

Universitas Negeri Surabaya

**Aris Rudi Purnomo, M.Sc.**

Universitas Negeri Surabaya

**Atlantis Press**

Atlantis Press – now part of Springer Nature – is a professional publisher of scientific, technical & medical (STM) proceedings, journals and books. We offer world-class services, fast turnaround times and personalised communication. The proceedings and journals on our platform are Open Access and generate millions of downloads every month.

For more information, please contact us at: [contact@atlantis-press.com](mailto:contact@atlantis-press.com)

- ▶ PROCEEDINGS
- ▶ JOURNALS
- ▶ BOOKS
- ▶ POLICIES
- ▶ MANAGE COOKIES/DO NOT SELL MY INFO
- ▶ ABOUT
- ▶ NEWS
- ▶ CONTACT
- ▶ SEARCH

---

[Home](#) [Privacy Policy](#) [Terms of use](#)   

Copyright © 2006-2022 Atlantis Press – now part of Springer Nature

Part of **SPRINGER NATURE**

[PROCEEDINGS](#) | [JOURNALS](#) | [BOOKS](#)

---

Search

Series: [Advances in Intelligent Systems Research](#)

# Proceedings of the Mathematics, Informatics, Science, and Education International Conference (MISEIC 2018)

---

## AUTHORS

---

[208](#) authors

### **A P, Wibawa**

Development Factors of Small Medium Software-Enterprises

### **AR, Arista Nur Jannah**

Students' Argumentation for Solving Geometry in Junior High School

### **Abidin, Choirul**

The Effect of Think-Pair-Share Learning with Contextual Approach on Junior High School Students' Mathematics Problem Solving Ability

### **Admawati, Harsi**

The Effect of STEM Project-Based Learning on Students' Scientific Attitude based on Social Constructivism Theory

### **Agung, Lukito**

Problem Solving Ability: A case study in Postgraduate Mathematics Student

### **Agustini, Rudiana**

Profile of Scientific Literacy Skills in Junior High School One Roof

### **Ahzan, Sukainil**

Developing Moodle in Problem-Based Learning to Improve Student Comprehension on the Concepts of Wave

### **Aindra, Alifah Diantebes**

The Use of Design Pattern on Informatics Engineering Students Thesis

**Aisyah, Fifin**

Developing Student's Activity with Wisanggeni Puppet Context to Enhance Students' Understanding of Addition and Subtraction Thousands Number

**Aliffianto, Agung**

Validity and Effectiveness of Physics Learning Package based on Guided-Inquiry to Improve Science Process Skills of Senior High School Student

**Aliyah, H**

Students' Metacognitive Thinking Process in Solving Covalent Bonding Problem Based on Academic Ability Level

**Amin, Siti Maghfirrotun**

The Effect of Think-Pair-Share Learning with Contextual Approach on Junior High School Students' Mathematics Problem Solving Ability

**Amin, Siti Maghfirrotun**

Students' Spatial Reasoning in Solving Geometrical Problems Based on Personality Types

**Aminah, S**

Properties of Anti-Adjacency Matrix of Cyclic Directed Windmill Graph  $K_{(4,n)}$

**Amirudin, Mochammad**

Students' Proof Schemes for Disproving Mathematical Proposition

**Anggraeni, Melindawati Kusuma**

Geometric Transformation in Surakarta Batik Patterns

**Anjariyah, Deka**

Critical Thinking Skill of High-Performance Mathematics Teacher in Solving Mathematical Problem

**Annisa, Diina Itsna**

Idea Generation on Social Media Based Brainstorming Session

**Arbowo, Bagas Widyo**

Developing Student's Activity with Wisanggeni Puppet Context to Enhance Students' Understanding of Addition and Subtraction Thousands Number

**Arifin, Mulyati**

Teacher Training Scaffolding Type to Improve Teacher's Ability in Developing Guided Inquiry Practical Worksheet

**Arofah, Dewi Nur**

The Effectiveness of Learning Physics Based on Multi Representation Integrated Guided Inquiry to Train Students' Science Literacy

**Arwanto, Arwanto**

The Exploration of Mathematical Intuition and Its Role in Solving Mathematical Problem

**Ashadi, Kunjung**

Comparison of Knowledge and Hydration Awareness on Adolescent Soccer Athletes

**Aziz, Suidah Nur Aini**

Problem Solving Behaviors of Grade Seven Students Focusing on Negative Integers

**Azizah, Utiya**

Designing of Basic Chemistry Course to Support Learning Curriculum With Green Chemistry Insight

**Budayasa, I Ketut**

The Exploration of Mathematical Intuition and Its Role in Solving Mathematical Problem

**Budayasa, I Ketut**

Reflective Abstraction of Junior High School Students in Reconstructing The Factorization Concept

**Budiarto, Mega Teguh**

The Open-Ended Problem Based Mathematics Learning to Increase Students' Creativity on Fraction for Third Grade Elementary School

**Budiarto, Mega Teguh**

The Exploration of Mathematical Intuition and Its Role in Solving Mathematical Problem

**Budiarto, Mega Teguh**

The Relational Thinking Process of Secondary School Student with High Mathematical Ability in Solving Mathematics Problem

**Budiarto, Mega Teguh**

Using the Schema Owned in Solving Problems through Assimilation and Accommodation

**Budiyono, Budiyono**

Mathematical Literacy Problem and Use of Intuition

**Damopolii, Insar**

Designing Teaching Material Oriented Towards Inquiry-Based Learning in Biology

**Dasari, D**

The Improvement of Mathematical Connection Ability and Habits of Students' Mind with Missouri Mathematics Project and Discovery Learning

**Deta, Utama Alan**

Conducting A Real-Time Instrument System for Observing Biogas Digester's Temperature and Humidity

**Dewi, Ika Nurani**

The Study of Local Wisdom of Ethnic SasakS In Development of Biology Instructional Learning Program (P3Bio) Based on 21st Century Skills

**Doa, Hamsa**

Improvement of Student Creative Thinking Skills Through Implementation of OrDeP2E Learning Model with Contextual Approach

**Efendi, Ismail**

The Study of Local Wisdom of Ethnic SasakS In Development of Biology Instructional Learning Program (P3Bio) Based on 21st Century Skills

**Ekawati, Rooselyna**

Developing learning materials supporting teachers' understanding on mathematics problem-solving knowledge for teaching

**Ekawati, Rooselyna**

Reflective Abstraction of Junior High School Students in Reconstructing The Factorization Concept

**Ekawati, Rooselyna**

Problem Solving Behaviors of Grade Seven Students Focusing on Negative Integers

**Ekawati, Rooselyna**

Reasoning Behaviors of Mathematics Difficulties Students in Solving Multiplication Integers

**Ekawati, Rooselyna**

Digital Addiction in Indonesian Adolescent

**Erman, Erman**

Students' Metacognitive Thinking Process in Solving Covalent Bonding Problem Based on Academic Ability Level

**Erman, Erman**

The Development of Learning Material Using Learning Cycle 7E with Socio-scientific Issues Context in Rate of Reaction to Improve Student's Argumentation Skills in Senior High School

**Fachri, Rangga Lutfi**

Comparison of Knowledge and Hydration Awareness on Adolescent Soccer Athletes

**Faridah, Ririn**

Developing Higher Order Thinking Skill (HOTS) Mathematic Problem Using That Quiz Application

**Fatimah, S**

The Improvement of Mathematical Connection Ability and Habits of Students' Mind with Missouri Mathematics Project and Discovery Learning

**Fiangga, Shofan**

The Characteristics of Digital Assessment Bloom for Indonesian Junior High School

**Fuad, Yusuf**

Students' Proof Schemes for Disproving Mathematical Proposition

**Fuad, Yusuf**

Justification Strategies of The 7th Grade Students in Understanding Triangles' Concepts

**Fuad, Yusuf**

Problem Solving Behaviors of Grade Seven Students Focusing on Negative Integers

**Fuad, Yusuf**

Students' Reasoning Behavior on Generalization of Figural Pattern

**Fuad, Yusuf**

Reasoning Behaviors of Mathematics Difficulties Students in Solving Multiplication Integers

**Gummah, Syifaul**

Developing Moodle in Problem-Based Learning to Improve Student Comprehension on the Concepts of Wave

**Gunawan, Gunawan**

Developing Moodle in Problem-Based Learning to Improve Student Comprehension on the Concepts of Wave

**Hariyanto, Agus****Comparison of Knowledge and Hydration Awareness on Adolescent Soccer Athlete****Hartanto, R**

Student interaction with Open Journal System based on ISO 9241-110

**Hartono, Sugi**

Developing learning materials supporting teachers' understanding on mathematics problem-solving knowledge for teaching

**Herayanti, Lovy**

Developing Moodle in Problem-Based Learning to Improve Student Comprehension on the Concepts of Wave

**Hidayah, Rusly**

Guided Inquiry Model To Promote Science Process Skill Students on Acid-Base

**Hidayat, Thamrin**

Improvement of Student Creative Thinking Skills Through Implementation of OrDeP2E Learning Model with Contextual Approach

**Imah, Elly Matul**

Barcode Recognition Using Principal Component Analysis and Support Vector Machine

**Indah, Nur**

The Open-Ended Problem Based Mathematics Learning to Increase Students' Creativity on Fraction for Third Grade Elementary School

**Indana, Sifak**

Profile of Scientific Literacy Skills in Junior High School One Roof

**Indina, Mulyastuti**

Learn Physics Using Interactive Demonstration to Reduce The Students' Misconceptions on Mechanical Wave

**Indriati, Diari**

Mathematical Literacy Problem and Use of Intuition

**Indriyanti, Nurma Yunita**

Chemistry for Beginners: What Makes Good and Bad Impression

**Jailani, Jailani**

## **Mathematics Teachers' Pedagogical Competence: How is the Attitude of the Mathematics Teachers in Teaching?**

### **Jatmiko, Budi**

Improvement of Student Creative Thinking Skills Through Implementation of OrDeP2E Learning Model with Contextual Approach

### **Jauhariyah, Mukhayyarotin Niswati Rodliyatul**

Learn Physics Using Interactive Demonstration to Reduce The Students' Misconceptions on Mechanical Wave

### **Jumadi, Jumadi**

The Effect of STEM Project-Based Learning on Students' Scientific Attitude based on Social Constructivism Theory

### **Juniati, Dwi**

Mathematical Justification Ability: Students' Divergent and Convergent Process in Justifying Quadrilateral

### **Juniati, Dwi**

Critical Thinking Skill of High-Performance Mathematics Teacher in Solving Mathematical Problem

### **Juniati, Dwi**

Students' Argumentation for Solving Geometry in Junior High School

### **Kandowangko, Novri Youla**

Designing Teaching Material Oriented Towards Inquiry-Based Learning in Biology

### **Kartowagiran, Badrun**

The Characteristics of Digital Assessment Bloom for Indonesian Junior High School

### **Khabibah, Siti**

Problem Solving Ability: A case study in Postgraduate Mathematics Student

### **Khairunnisa, Elvi**

Graceful Labelling of Corona Product of Aster Flower Graph

### **Kohar, Ahmad Wahidul**

Developing learning materials supporting teachers' understanding on mathematics problem-solving knowledge for teaching

### **Kuntjoro, Sunu**

## Metacognitive Strategies to Train Creative Thinking Skills in Creating Media for Learning

### **Kusuma, Donny Ardhi**

Comparison of Knowledge and Hydration Awareness on Adolescent Soccer Athletes

### **Kusuma, I Dewa Made**

Comparison of Knowledge and Hydration Awareness on Adolescent Soccer Athletes

### **Kusumarasdyati, Kusumarasdyati**

Challenges of Teaching Statistics to EFL Undergraduates: Action Research

### **L, Aidha Aprilia P**

Developing Student's Activity with Wisanggeni Puppet Context to Enhance Students' Understanding of Addition and Subtraction Thousands Number

### **Lailiy, Nurul**

Guided Inquiry Model To Promote Science Process Skill Students on Acid-Base

### **Lastiningsih, Netti**

Encouraging Literacy in Mathematics Teaching and Learning: Junior High School Teachers' Perspectives

### **Lestari, Lusandra Dewi**

Reducing Light Misconceptions by Using Predict-Observe-Explain Strategies

### **Lestari, Nurita Apridiana**

Conducting A Real-Time Instrument System for Observing Biogas Digester's Temperature and Humidity

### **Lukito, Agung**

The Open-Ended Problem Based Mathematics Learning to Increase Students' Creativity on Fraction for Third Grade Elementary School

### **Lutfitasari, Aprilia**

Students' Spatial Reasoning in Solving Geometrical Problems Based on Personality Types

### **Madlazim, Madlazim**

Validity and Effectiveness of Physics Learning Package based on Guided-Inquiry to Improve Science Process Skills of Senior High School Student

### **Maharani, Ratih**

Students' Creative Thinking in Posing Mathematical Problem with Different Context

**Manuharawati, Manuharawati**

Vocational Student's Strategies in Posing Mathematical Problems Assisted with Google Forms

**Manuharawati, Manuharawati**

Problem Solving Ability: A case study in Postgraduate Mathematics Student

**Mardianti, Ila**

Students' Creative Thinking Process based on the Wallas Stage in Solving Mathematical Modeling Problems

**Mardiyana, Mardiyana**

Geometric Transformation in Surakarta Batik Patterns

**Masriyah, Masriyah**

Mathematical Justification Ability: Students' Divergent and Convergent Process in Justifying Quadrilateral

**Masriyah, Masriyah**

Students' Creative Thinking Process based on the Wallas Stage in Solving Mathematical Modeling Problems

**Masriyah, Masriyah**

Students' Spatial Reasoning in Solving Geometrical Problems Based on Personality Types

**Atlantis Press**

Atlantis Press – now part of Springer Nature – is a professional publisher of scientific, technical & medical (STM) proceedings, journals and books. We offer world-class services, fast turnaround times and personalised communication. The proceedings and journals on our platform are Open Access and generate millions of downloads every month.

For more information, please contact us at: [contact@atlantis-press.com](mailto:contact@atlantis-press.com)

- ▶ JOURNALS
- ▶ BOOKS
- ▶ POLICIES
- ▶ MANAGE COOKIES/DO NOT SELL MY  
INFO

- ▶ NEWS
- ▶ CONTACT
- ▶ SEARCH

---

[Home](#) [Privacy Policy](#) [Terms of use](#)   

Copyright © 2006-2022 Atlantis Press – now part of Springer Nature

# Comparison of Knowledge and Hydration Awareness on Adolescent Soccer Athletes

Kunjung Ashadi\*, Rangga Lutfi Fachri, Gigih Siantoro, Donny Ardhi Kusuma, Agus Hariyanto, I Dewa Made Kusuma

Universitas Negeri Surabaya  
Surabaya, Indonesia

\*kunjungashadi@unesa.ac.id

**Abstract—** Abstract. Soccer is a sport type that is done for long time duration. Therefore, it is important for soccer athletes to maintain the adequacy of body fluids so that sports performance is maintained properly. The purpose of this study is to determine the level of knowledge and hydration awareness of adolescents soccer athletes. The method used in this study was quantitative descriptive. A knowledge and hydration awareness questionnaire were used as research instrument. The research subject consists of 18 boys selected by purposive sampling technique. Data were analysed using mean, standard deviation and percentage. The result data showed that the average of hydration knowledge level of 59,72 included in good category and hydration awareness level equals to 55,6 including in good category. Such phenomena was meant to be positive because with a high level of hydration knowledge and awareness, the athletes could reduce the risk of dehydration and decrease performance during exercise.

**Keywords**— Awareness; Hydration; Knowledge

## I. INTRODUCTION

The fact shows that there are many athletes who didn't recognize the importance of hydration for their physique. Athletes don't drink water since there is a myth that drink water during the exercise could make the stomach cramps, it shows the lack of knowledge and awareness of hydration [1]. Athletes education level and the knowledge of hydration influence the hydration pattern during exercise [2]. Lopez's findings gives support to the claim that giving the chance for athletes to fulfill their liquid necessities will empower them to practice securely and perform greatly [3].

It is important for athletes to maintain sufficiency of water or hydration status during exercise. In the body, the function of water are maintain the flows and tension of the blood, lubricate the joints and tissues and facilitate the digestion process and many other functions. It is so important to fulfill the body fluids well because the 70% composition of our body consists of fluids [4]. Dehydration or losing fluid in a large number in the body could cause thirst, decrease urination, damage to physical performance, the pain of muscle, increase respiration and pulse and also weakened the body. Dehydration could make hypotension, weaken the part of body and sometimes it will

cause fainting [5]. If dehydration lasts for a long time, there will be a shift of intracellular fluid out of cells, and to repair it takes a long time [6]. The body will reach its limit if 20% of water in the body is lost, it begin with the organs of the body won't work and may end in death [7].

There is a support for the claim that there was a significant change of hydration level before and after training [1]. It can be concluded that training for a long time increases the risk of dehydration [8]. Especially for the type of exercise done outdoors where exposed by sunlight directly and done in a long time duration. Soccer is one of such examples. From the fact above, it shows that soccer athletes are susceptible to dehydration if couldn't fulfill the needs of water properly. It impacts to the decrease of body performance and other negative impacts.

Therefore, it is important for athletes to always fulfill the needs of body fluids optimally, during and after training or physical activity. Individuals can fulfill the needs of the liquid properly when the two terms are satisfies, the first is a good knowledge of the importance of hydration in the sport, and the second is a good level of awareness of the needs hydration during sport. It is impossible for athletes to fulfill the needs of body fluids during exercise without having the knowledge and awareness of good hydration. The purpose of this research is to know the comparative level of knowledge and awareness of adolescent soccer athletes related sports hydration.

## II. METHOD

This research was used descriptive quantitative approach. The subjects in this study are the Hizbul Waton soccer player from Lamongan under 17 age groups consists of 18 people that chosen by purposive sampling. The main criteria of the research subject were the players who regularly join the exercises 3 times a week for the last two months. All athletes are required to give an honest answer in accordance with their hydration routine. Data was obtained by using questionnaire Likert scale to find out the level of knowledge and awareness of hydration. Data analysis techniques used mean, standard deviation, and percentage.

### III. RESULTS

The result of athletes' hydration knowledge and awareness was obtained through 15 questions consists of 8 questions about hydration knowledge and 7 questions about hydration awareness. The data were processed using Microsoft Excel 2016. Table 1 shows the results of the data.

TABLE 1. THE RESULT VALUE OF THE KNOWLEDGE OF ATHLETES ABOUT HYDRATION

The range of values (Point)	Category	Frequency	Percentage
65,7 – 80	Very Good	4	22,22
51,3 – 65,6	Good	9	50
36,9 – 51,2	Fair	5	27,77
22,5 – 36,8	Less	0	0
8 – 22,4	Poor	0	0

The data shows that the majority of athletes are in the good knowledge results category by the percentage of 50%. The percentage of fair category is more than the percentage of very good category. It shows by a comparison of the percentage of 27.77% and 22.22%. Based on the data in Table 1, it can be inferred that the adolescent soccer athletes have a good hydration level of knowledge. This is a very positive thing, because with a good hydration knowledge then expected athletes will have an awareness of good hydration also.

TABLE 2. THE RESULTS VALUE OF THE AWARENESS OF ATHLETES ABOUT HYDRATION

The range of values (Point)	Category	Frequency	Percentage
57,5 – 70	Very Good	8	44,44
44,9 – 57,4	Good	8	44,44
32,3 – 44,8	Fair	2	11,11
19,7 – 32,2	Less	0	0
7 – 19,6	Poor	0	0

Table 2 shows that most of hydration awareness result are in the good and very good category by the percentage of 44.44%. Only 11.11% in the fair category. Based on the data in Table 2, it can be inferred that the adolescent soccer athletes have a good hydration level of awareness. This is a very positive thing, because with a good hydration awareness then expected athletes will be able to maintain the adequacy of liquid, during and after exercise. The athletes could avoid the risk of dehydration and other physical disorders by fulfill the needs of body fluids.

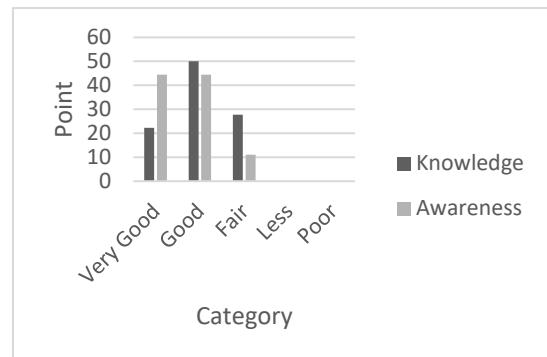


Figure 1: A Comparison of the Knowledge and Awareness of the Athletes about Hydration

Figure 1 shows that athletes have a level of knowledge and understanding of hydration tends to be good and very good. Only a few of athletes that the level of knowledge and understanding are in fair category. Based on Figure 2, it can be inferred that the teenage soccer athletes have the good level of hydration knowledge and awareness. This is a very positive thing that can be used to face the match or championship in sports achievement.

TABLE 3. A COMPARISON OF THE AVERAGE VALUE OF THE KNOWLEDGE AND AWARENESS OF THE ATHLETES ABOUT HYDRATION

Point of Hydration				
	Min	Max	Rate	Category
Knowledge	43	77	59,72 ± 10,77	Good
Awareness	40	67	55,67 ± 9,06	Good

Table 3 shows that the average athletes have higher knowledge value than awareness value of hydration. There is a difference in the value of 4.05 level of knowledge and awareness among athletes about hydration. Though it did not differ significantly, however, it shows the important fact that the level of athletes hydration awareness is slightly lower than the knowledge of the athletes.

### IV. DISCUSSION

Sport achievements is a sport activity that is competitive and tight in an effort to achieve victory through the game or competition. Due to its highly competitive then the athletes must prepare himself properly, includes physically, techniques, tactics and mental. It must be trained and kept good during the workout, race or championship through the role of the coach.

Soccer as a form of sport achievements also demand a competitive role as sports picture achievements in general. As a popular team sport and done in a long time duration, so it has a huge risk of losing body fluids during soccer activities. Moreover, it is known that many soccer done in an environment with a risk of exposure to the sun directly with the various temperature and humidity levels. Doing exercise in a hot environment and high humidity increases the risk of heat injury [9]. Heat injuries brought a negative impact to the athletes that

The authors would like to thank the Universitas Negeri Surabaya for the support of research publication..

is can lead to the occurrence of heat cramps, fainting, heat exhaustion, heat stroke up to the risk of death.

The research shows that when practising in the cold environment, the teenage soccer athletes used fluids amounted to 1.7% of the mass of the body or equivalent with the fluid deficiency of 0.5% [8]. Moreover, when the athletes trained in the outdoor environment such as in Indonesia then the risk of losing fluids will be a greater impacts against the increased risk of dehydration. The point is the athletes losing body fluids while exercising [10, 11, 12].

The term dehydration defined as water shortage. The loss of water is always accompanied by the loss of electrolyte [13]. The composition of fluid in our body is 70%, therefore, it is important to fulfill the body fluids well [4]. When the athletes losing their body fluids in certain levels, it will disturb the athletes' physical. The results showed that dehydration brought negative impact to the athletes. If athletes exercise in a dehydrated condition impacts a greater cellular and whole body stress, which in turn may elicit an enhanced training adaptation. However, this greater cellular and whole body stress includes the increase core temperature that decrease performance and attention significantly needs to be paid to hydration status and cooling strategies during competitions [14].

The previous discussion shows that athletes tend to become dehydrated during exercise [11]. This is due to the high risk of dehydration during exercise [8, 10]. The results showed that there was a significant change of hydration level before and after training. It can be concluded that training for a long time increases the risk of dehydration [1]. Therefore, attention should be given to fluid supplementation and individualization of fluid intake for each athlete [15].

The level of knowledge and education of athletes about hydration affects the hydration pattern during exercise [2]. Provide a direction to athletes about their own fluid needs will enable athletes to exercise safely and perform well [3]. Improving hydration status by ad libitum consumption of water can enhance performance in young children exercising in the heat [16]. The status of hydration can be found out through urine colour, urine specific gravity (USG) (laboratory, strip, refractometry), and osmolality [17].

The fulfilment of the needs of individual fluid associated with various factors, those are the intensity level of exercise, the duration of exercise, the level of individual sweat, temperature and moisture environment, and acclimatization level to the heat. On these grounds, we can argue that it was important for athletes to have a good knowledge about the colour of the urine, the status and importance of sufficiency of good hydration before, during, and after the exercise, the risk and disruption due to dehydration as well as ways to minimize the occurrence of dehydration of athletes.

The importance of hydration adequacy knowledge can help athletes in having high hydration levels of awareness because the most important thing is the level of awareness of the needs for hydration. The data result of this research provide a strong evidence that although athletes have a good hydration level of knowledge, it would be useless if not balanced by an awareness of good hydration. It will make athletes experiencing dehydration well before, during, and after exercise. Therefore, it

takes knowledge and a good hydration awareness so that athletes can practice optimally and safe conditions [3, 18].

## V. CONCLUSION

The level of knowledge and hydration awareness of adolescent soccer athlete has been investigated. It can be concluded that (1) the athletes have a good level of hydration knowledge. (2) the athletes also have a good level of hydration awareness. (3) though are equally good, but the level of hydration awareness of athletes is lower than its own knowledge.

## ACKNOWLEDGMENT

The authors would like to thank the Universitas Negeri Surabaya for the support of research publication.

## REFERENCES

- [1] K. Ashadi, D. N. Mirza, and G. Siantoro, "Hydration status in adolescent runners : pre and post training", *Master. Sci. Eng*, vol 296, 2018
- [2] P. J. Magee, A. M. Gallagher, and J. M. McCormack, "High prevalence of dehydration and inadequate nutritional knowledge among university and club level athletes", *International Journal of Sport Nutrition and Exercise Metabolism*, vol. 27, no. 2, pp. 158–168, 2017
- [3] R. M. Lopez, "Exercise and Hydration", *Strength and Conditioning Journal*, vol. 34, no. 4, pp 49–54, 2012
- [4] K Ashadi, *Pentingnya Hidrasi Bagi Atlet*, Surabaya: Unipress, 2015
- [5] E. Je'quier and F. Constant, "Water As an Essential Nutrient: The Physiological Basis of Hidration", *Europian Journal of Clinical Nutrition*, vol. 64, no. 2, 2009
- [6] Syaifuddin, *Anatomi Fisiologi*, Jakarta: Kedokteran EGC Unipress, 2010
- [7] Rinzler, *Nutrition for Dummis*: 4th Edition, Indiana:Wiley publishing, Inc, 2006
- [8] C. A. Williams and J. Blackwell, "Hydration status, fluid intake, and electrolyte losses in youth soccer players", *International Journal of Sports Physiology and Performance*, vol. 7, no. 4, pp 367–374, 2012
- [9] L. E. Armstrong, D. J. Casa, M. Millard-Stafford, D. S. Moran, S. W. Pyne, and W. O. Roberts, "Exertional Heat Illness during Training and Competition", *Medicine & Science in Sports & Exercise*, vol 39, no. 3, pp 556–572, 2007.
- [10] L. K. Thigpen, J. M. Green, and E. K. O'Neal, "Hydration profile and sweat loss perception of male and female division II basketball players during practice", *Journal of Strength and Conditioning Research*, vol. 28, no. 12, pp. 3425–3431, 2014
- [11] G. Arnaoutis, S. A. Kavouras, A. Angelopoulou, C. Skouliki, S. Bismikou, S. Mourtakos, and L. S. Sidossis, "Fluid Balance During Training in Elite Young Athletes of Different Sports HHS", *J. Strength Cond. Res*, vol. 29, no. 12, pp. 3447–3452, 2015
- [12] C. C. Cronin, B. L. Miller, J. D. Simpson, S. M. Boman, J. M. Green, J. A. H. Allen, and E. K. O'neal (n.d). "Natural Training Hydration Status, Sweat Rates, and Perception of Sweat Losses during CrossFit Training", *Jornal of Strength and Conditioning*, vol. 28, no.12, 2014.
- [13] Wiarto, *Fisiologi dan Olahraga*, Yogyakarta: Graha Ilmu, 2013
- [14] H. M. Logan-Sprenger, G. J. F. Heigenhauser, G. L. Jones, and L. L. Spriet, "The effect of dehydration on muscle metabolism and time trial performance during prolonged cycling in males", *Physiological Reports*, vol. 3, no. 8, pp 1–13, 2015
- [15] M. C. Webb, S. T. Salandy, and S. E. Beckford, "Monitoring hydration status pre- and post-training among university athletes using urine color and weight loss indicators", *Journal of American College Health*, vol. 64, no. 6, pp 448–455, 2016
- [16] S. A. Kavouras, G. Arnaoutis, M. Makrillo, C. Garagouni , E. Nikolaou, O. Chira, ... L. S. Sidossis, "Educational intervention on water intake improves hydration status and enhances exercise performance in athletic youth" *Scandinavian Journal of Medicine and Science in Sports*, vol. 22, no. 5, pp 684–689, 2012

[17] N. Ersoy, G. Ersoy, M. Kutlu, J. Veale, A. Pearce, S. Koehn, ... G. Cox, “Assessment of hydration status of elite young male soccer players with different methods and new approach method of substitute urine strip”, *Journal of the International Society of Sports Nutrition*, vol. 13, no. 1, p. 34, 2016

[18] N. U. R. H. Esa, H. A. B. U. Saad, C. H. Phing, and H. Karpayya, “Knowledge, attitudes and behaviours regarding hydration and hydration status of Malaysian national weight category sports athletes”, *Journal of Physical Education & Sport*, vol. 15, no. 3, pp 452–459. 2015