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## I Workshop Internacional: Estudios Avanzados en Hidratación

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Hydration

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Cátedra Internacional  
de Estudios Avanzados  
en Hidratación

# Presentación de la Cátedra Internacional de Estudios Avanzados en Hidratación

**Lluís Serra Majem**

**Director de la CIEAH**  
**Director del Instituto de Investigaciones**  
**Biomédicas y Sanitarias**  
**Universidad de Las Palmas de Gran Canaria**

# Introducing the European Hydration Institute (EHI) (2010-2016)

The only independent european foundation focussing solely on  
the health and well being impact of human hydration



# What the EHI is:

- An **independent, not for profit foundation** established in 2010 to focus on **human hydration** and its effects on **health, wellness and performance**
- Four founding partners:



- Main funding partner has been The Coca-Cola Company. Other partners have contributed in kind, providing resources and expertise.
- Millions have been invested in research and communication activities aimed at increasing knowledge and understanding of the impact of hydration on health and wellness



# EHI Governance and Operation

- Governed by a **Board of Trustees** who are either Science Advisory Board (SAB) members or individuals working for founding partners.
- Deloitte provides legal guidance to the EHI and acts as secretary to the BoT, ensuring independence and governance rules are adhered to.
- On a day to day basis the EHI is run by a Managing Director who reports to the BoT and ensures that an annual plan is developed for approval by the BoT, and then implemented. Based in UK.
- Small team of staff and agencies deliver activities from a virtual office network.

# Ensuring Scientific Independence

- The EHI works with **independent scientists and experts in the field of hydration** including members of its **Science Advisory Board**. The SAB approves all EHI scientific materials and advises on scientific affairs.



- Engages with a range of stakeholders to provide **evidence-based information** and to promote good hydration practices e.g.



# EHI Mission & Vision

## MISSION

To **advance knowledge and understanding** of all matters relating to **human hydration** and its effect on **health, wellness and performance**



## VISION

A one stop shop for hydration knowledge and understanding

Sharing  
Knowledge

Advancing  
Science

# Our Target Audience



**Primary: Professional**

**Secondary: Public**



european hydration  
institute

# Sharing Knowledge

- Promoting the importance of hydration behaviours and **providing information** to help develop greater awareness and understanding.
- **Facilitating the sharing of information opinions and knowledge** about hydration among scientists and healthcare professionals.
- In excess of 4000 registered users of the EHI website



# Populations at particular risk of dehydration:

- Elderly
- Children
- Certain occupations, such as athletes and the military
- Recreationally active people
- Gastrointestinal disease sufferers





**Advancing Science:**  
EHI Funded Scientific  
Study topics  
€1.5M invested since  
2011



# Recent Publications from EHI Funded Studies

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Contents lists available at ScienceDirect

Physiology & Behavior

journal homepage: [www.elsevier.com/locate/phb](http://www.elsevier.com/locate/phb)

ELSEVIER

SPRINGER

## Mild hypohydration increases the frequency of driver errors during a prolonged, monotonous driving task

Philip Watson <sup>a,\*</sup>, Andrew Whittle <sup>a</sup>, Stephen A. Mean <sup>b</sup>, Louise A. Reyner <sup>a,b</sup>, Ronald J. Maughan <sup>c</sup>

<sup>a</sup> School of Sport, Exercise and Health Sciences, Loughborough University, Loughborough LE11 3UE, United Kingdom

<sup>b</sup> Department of Psychology, Loughborough University, Loughborough LE11 3UE, United Kingdom

<sup>c</sup> Department of Human Nutrition, Loughborough University, Loughborough LE11 3UE, United Kingdom

### HIGHLIGHTS

- Mild hypohydration has been shown to cause cognitive impairments and altered mood.
- This study examined how mild hypohydration may affect a driver's cognitive function and driving errors.
- Error incidence increased over time, but was not affected by mild hypohydration.
- Error type analysis revealed that the proportion of errors related to driver inattention was more apparent during dehydrated conditions.
- Drivers' education programmes should also encourage appropriate hydration practices.

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### ABSTRACT

The aim of the present study was to examine the effects of mild hypohydration on performance during a prolonged, monotonous driving task. Ten healthy males (mean age = 22 ± 4 years) were allocated to consume a volume of fluid to meet individual sweat losses or to drink a volume of fluid equivalent to their sweat losses (dehydrated condition). During the experiment, drivers sat behind a steering wheel. Drivers errors, including instances of lane drifting or lane breaking, EECI and seat belt use, were recorded throughout the task.

Pre-task body water (% of body mass) was 63.8% and urine and sweat osmolality ( $\mu\text{Osm/L}$ ) were 315 ± 0.51. There was a progressive decrease in body water (% of body mass) from pre-task to post-task (44.9 ± 4.1%,  $P < .001$ ;  $\Delta = 18.7 \pm 0.51\%$ ). Urine and sweat osmolality were measured throughout the task (44.4 ± 9.1,  $P = .005$ ;  $\Delta = 5.6 \pm 0.81\%$ ).

Concurrent with the reduction in body water, there was a significant increase in error incidence over time during driving (a  $F(1,10)$  analysis of variance showed that the interaction between time and condition was significant,  $F(1,10) = 10.37$ ,  $P = .005$ ). The proportion of errors related to driver inattention was more apparent during dehydrated conditions compared to hydrated conditions (a  $F(1,10)$  analysis of variance showed that the interaction between time and condition was significant,  $F(1,10) = 10.37$ ,  $P = .005$ ).

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### Introduction

Under normal conditions, an individual's total body water (TBW) fluctuates throughout the day as overall plasma volume is generally maintained through a series of integrated factors which control intake, excretion and retention of water. The primary regulator of body water balance normally acts to limit excursions in TBW to no more

than 1–2% of body mass [1]. Nevertheless, there are many environmental situations that can alter the balance between intake, excretion and heat loss/balance, diversity, or to reflect rapid changes in body water balance. These factors include the progressive reduction in sweat rate, the reduction in urine output, the reduction in blood volume and an increase in plasma osmolality, which are all associated with the onset of dehydration [2,3].

Populations at particular risk of hypohydration are the very young, those engaged in professions where fluid homeostasis is regularly

\* Corresponding author. Tel.: +44 116 325 4922.  
E-mail address: philip.watson@lboro.ac.uk.

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# Driving study *Physiology & Behaviour* April '15

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## Hydration in obese and non-obese children

*European Journal of Clinical Nutrition*, October '15

# HANDS ON Study

## *Clinical Nutrition*

### July '15

ASIN

## A randomized trial to assess the potential of different beverages to affect hydration status: development of a beverage hydration index<sup>1</sup>

Ronald J. Maughan,<sup>2</sup> Paul C. Williams,<sup>3</sup> Philip AA Conner,<sup>4</sup> Neil P. Webb,<sup>5</sup> Helen J. Oliver,<sup>6</sup> Alberto Delrio,<sup>7</sup> Daniel J. Doherty,<sup>8</sup> and Michael G. Gourlay<sup>9</sup>

<sup>2</sup>Nuffield Institute for Health Research, University of Sheffield, Sheffield, United Kingdom; <sup>3</sup>Sport, Health and Exercise Sciences, Bangor University, Bangor, United Kingdom; and <sup>4</sup>School of Sport, Stirling, Stirling, United Kingdom

### ABSTRACT

The identification of beverages that promote longer term fluid retention and maintenance of fluid balance is of critical and practical importance in situations in which the intake of water and other fluids is frequently insufficient to meet requirements. The post-ingestion diuretic response is likely to be influenced by several beverage characteristics, including the volume ingested, sugar content, electrolyte content, and the presence of diuretic agents.

Objectives. To examine the effect of different volumes of commonly consumed drinks on urine output and fluid balance when ingested in amounts that are likely to influence the post-ingestion hydration index (BHI), i.e., the volume of urine produced after drinking expressed relative to a standard amount (salt) with each drink.

Design. Each subject consumed a range of commonly available beverages over a period of 30 min. Urine output was then collected for 2 h. The BHI was calculated as the ratio of the volume of urine to the volume of fluid ingested.

Setting. Design, analysis, and interpretation of data were conducted at the University of Stirling, Stirling, United Kingdom.

Subjects. Ten healthy volunteers aged 20 to 34 years who did not smoke or drink alcohol regularly and had no history of kidney disease or diabetes.

Intervention. Total urine output was recorded over 2 h for each of the salt-water control (1357 ± 339 g) and an oral rehydration solution (ORS) (1357 ± 339 g) and for each of the following volumes: 267 g ( $P < .0001$ ) and 534 g ( $P = .0001$  g) of water.

Cumulative urine output was recorded at 0, 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165, 180, 195, 210, 225, 240, 255, 270, 285, 295, 310, 325, 340, 355, 370, 385, 400, 415, 430, 445, 460, 475, 490, 505, 520, 535, 550, 565, 580, 595, 610, 625, 640, 655, 670, 685, 700, 715, 730, 745, 760, 775, 790, 805, 820, 835, 850, 865, 880, 895, 910, 925, 940, 955, 970, 985, 1000, 1015, 1030, 1045, 1060, 1075, 1090, 1105, 1120, 1135, 1150, 1165, 1180, 1195, 1210, 1225, 1240, 1255, 1270, 1285, 1300, 1315, 1330, 1345, 1360, 1375, 1390, 1405, 1420, 1435, 1450, 1465, 1480, 1495, 1510, 1525, 1540, 1555, 1570, 1585, 1600, 1615, 1630, 1645, 1660, 1675, 1690, 1705, 1720, 1735, 1750, 1765, 1780, 1795, 1810, 1825, 1840, 1855, 1870, 1885, 1900, 1915, 1930, 1945, 1960, 1975, 1990, 2005, 2020, 2035, 2050, 2065, 2080, 2095, 2110, 2125, 2140, 2155, 2170, 2185, 2195, 2210, 2225, 2240, 2255, 2270, 2285, 2295, 2310, 2325, 2340, 2355, 2370, 2385, 2395, 2410, 2425, 2440, 2455, 2470, 2485, 2495, 2510, 2525, 2540, 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## Development of a hydration index: *American Journal of Clinical Nutrition*, January '16

# HOOP study *Age and Ageing* August '15

The image shows the cover of the journal 'NUTRITION REVIEWS'. The title is written in large, bold, blue serif capital letters at the top. Below the title is a reproduction of a painting by Vincent van Gogh, specifically 'Three Drinkers' (1887). The painting depicts three men in 19th-century attire (top hats and jackets) gathered around a table, engaged in a toast with glasses of beer. A fourth figure, a woman, is visible in the background. The scene is set outdoors with a landscape in the distance.

# Expert Conference Proceedings August '15

 **nutrients** 

*Article*

## Water Intake and Hydration Indices in Healthy European Adults: The European Hydration Research Study (EHRS)

Olga Miltzou<sup>1</sup>, Afafy Athanasiou<sup>1</sup>, Alex Perz<sup>2</sup>, Marlene Husemann<sup>3</sup>, Kristin Dennerlik<sup>2</sup>, Jim M. Wiles<sup>4</sup>, Ana Rodriguez<sup>5</sup>, Juan Ortega<sup>5</sup>, Valentin E. Fernandez-Rodriguez<sup>6</sup> and Matia Kapokoulaki<sup>1</sup>

<sup>1</sup> Unit of Human Nutrition, Department of Food Science and Human Nutrition, Agricultural University of Athens, 11855 Athens, Greece; <sup>2</sup> Institute of Hygiene and Public Health, University of Zurich (UZH), Universitaetstrasse 16, 8057 Zurich, Switzerland; <sup>3</sup> Institute of Biochemistry, German Sport University, Cologne 5093, Germany; <sup>4</sup> Institute of Hygiene and Public Health (IMM), University of Cologne, Cologne 5093, Germany; <sup>5</sup> Klinikum Ingolstadt, Lehrstuhl für Ernährung und Ernährungsmedizin, Ingolstadt 85057, Germany; <sup>6</sup> Exercise Physiology Lab at Leibniz Institute for Psychology Information (Leibniz-ZEI), Berlin 10117, Germany; <sup>7</sup> Department of Nutrition and Dietetics, Aristotle University of Thessaloniki, Volvilia, Thermi, Thessaloniki 54124, Greece; <sup>8</sup> Department of Nutrition and Dietetics, Aristotle University of Thessaloniki, Volvilia, Thermi, Thessaloniki 54124, Greece

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**Abstract:** Hydration status is linked with health, nutrition, and performance. We evaluated hydration status, water intake, and urine output for seven consecutive days in healthy adults. Volunteers living in Germany, France, Spain, Italy, and the UK (n = 12 per country, 60% male), aged 18–60 years (mean age 27.5 ± 10.1 years), were asked to record their water intake from all sources (drinking water and drinks) and urination. Hydration status was measured in urine samples collected over 24 h for seven days. Water intake was measured by 24-h recall. Urine output was measured by 24-h collection. Mean daily water intake was 2.75 ± 1.01 L, water from beverages 2.10 ± 0.91 L, water from food 0.65 ± 0.29 L. Urine parameters were: 24 h volume 1.65 ± 0.76 L, 24 h osmolality 221 ± 21 mMol/kg (mg/L), 24 h specific gravity 1.005 ± 0.001, 24 h urine color 1.4 ± 0.4, 24 h urine pH 6.2 ± 0.2. Mean urine osmolality 72.4 ± 24.6 mOsm, urine color chart 4.2 ± 1.4. Predictors for urine osmolality were age, country, gender, and BMI. Blood indices were haemoglobin concentration 14.7 ± 1.7 g/dL, haematocrit 43%, and serum creatinine 0.8 ± 0.2 mg/dL. Mean plasma total osmolality was 293 ± 10 mOsm/kg (mg/L) than in winter (2.6 ± 0.6 mg/L) ( $p < 0.05$ ). Water intake was associated negatively with urine specific gravity, urine color, and urine sodium and potassium concentrations ( $p < 0.01$ ). Applying urine osmolar gap analysis, 60% of the subjects were moderately dehydrated and 20% hyperhydrated or dehydrated. Most participants were overhydrated on a substantial number of days (40%) deviated from a normal hydration level.

**Keywords:** hydration status; water intake; hydration indices; urine; blood; seasonality; country

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### 1. Introduction

The evaluation of hydration status in the general population in free-living and/or under special conditions such as in disease or in the work environment is of unequivocal importance for public health. The World Health Organization (WHO) has defined dehydration as a state of fluid loss [1] and disease [2].

Hydration status affects the balance between water intake and loss. Water intake includes, approximately, 20% contribution of water from solid foods and 80% contribution of water from beverages and drinking water [4–6]. It follows that water intake, although mostly driven by thirst,

# The European Hydration Research Study (EHRS): *Nutrients March '16*

# EHI Student Grants Awards Scheme

€5000 Awards to support graduate student research  
into human hydration



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**Effect of hypohydration on appetite and voluntary food intake**

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european hydration  
institute

19 y 20 de enero · 2017

Salón de Actos de la Facultad  
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Universidad de Las Palmas de Gran Canaria

## I Workshop Internacional: Estudios Avanzados en Hidratación

1<sup>st</sup> International Workshop:  
Advanced Studies on  
Hydration



[www.cieah.ulpgc.es](http://www.cieah.ulpgc.es)

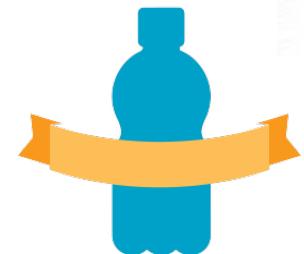


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- **La Cátedra Internacional de Estudios Avanzados en Hidratación (CIEAH)** nace en octubre de 2016 y se desarrolla a partir del legado del European Hydration Institute.
- La CIEAH surge bajo el amparo del **Instituto Universitario de Investigaciones Biomédicas y Sanitarias (IUIBIS)**, de la **Universidad de Las Palmas de Gran Canaria**.
- Cuenta con el apoyo y la gestión de la **Fundación Canaria Parque Científico Tecnológico** de La Universidad de Las Palmas de Gran Canaria.
- Pretende **desarrollar y promover proyectos** de investigación sobre hidratación humana y estilos de vida saludable.

# Objetivos:

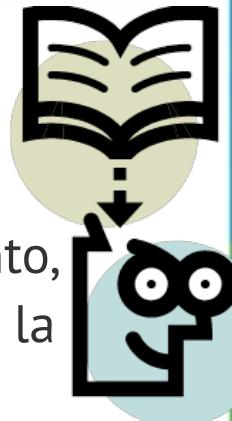
- Promover la **investigación científica** para entender mejor el papel de la hidratación sobre la salud, el bienestar y el rendimiento físico y cognitivo.
- **Elaborar informes y realizar estudios técnicos** relacionados con la actividad profesional vinculada a la hidratación en el marco de la promoción de estilos de vida saludables.
- Organizar y celebrar **actividades formativas** destinadas a la actualización profesional tales como cursos, seminarios, jornadas o ciclos de conferencias en el campo de la hidratación.

# Objetivos:

- Apoyar la publicación de monografías y trabajos técnicos sobre los temas objeto de estudio por la cátedra.
- Facilitar el intercambio de información, opiniones y conocimiento sobre hidratación entre científicos, profesionales de la salud y también entre el público en general con el fin de ayudarles a llevar un estilo de vida saludable, preferentemente en España y América Latina.



# Objetivos:



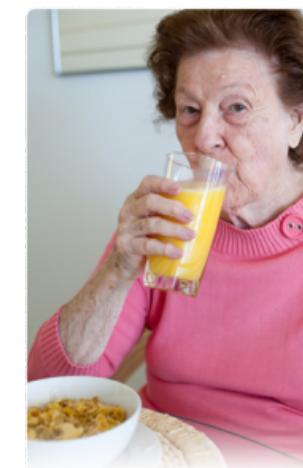
- **Realizar investigación sociológica** para entender el conocimiento, la actitud y el comportamiento del consumidor en torno a la hidratación.
- **Desarrollar herramientas** de interés para mejorar la investigación y elaboración, de recomendaciones en torno a la hidratación.
- **Colaborar con otras instituciones** para avanzar en la investigación acerca de la hidratación y en el conocimiento aplicado con el fin de ayudar y apoyar a los profesionales de la salud y a las poblaciones de riesgo.



# Objetivos:



➤ **Promover la importancia de mantener un nivel adecuado de hidratación** y proporciona información para mejorar la concienciación y el conocimiento acerca de buenas prácticas en hidratación, especialmente en aquellas personas con riesgo de no estar hidratadas de forma adecuada (existen necesidades específicas de hidratación durante el **embarazo, el periodo de lactancia, el ejercicio físico y durante la infancia y para las personas mayores**).



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### Instituciones:





## La importancia de la hidratación



Una buena hidratación es esencial  
para la salud y el bienestar

leer más

## Cátedra Internacional de Estudios Avanzados en Hidratación (CIEAH)

La Cátedra Internacional de Estudios Avanzados en Hidratación (CIEAH) nace en octubre de 2016 y se desarrolla a partir del legado del European Hydration Institute, recientemente disuelto. La CIEAH surge bajo el amparo del Instituto Universitario de Investigaciones Biomédicas y Sanitarias (IUIBIS), de la Universidad de Las Palmas de Gran Canaria y pretende desarrollar y promover proyectos de investigación sobre hidratación humana y estilos de vida saludable. Esta cátedra cuenta con el apoyo y la gestión de la Fundación Canaria Parque Científico Tecnológico de La Universidad de Las Palmas de Gran Canaria.



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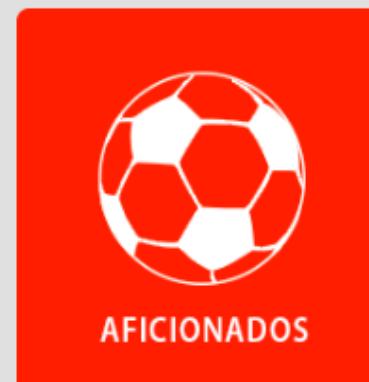
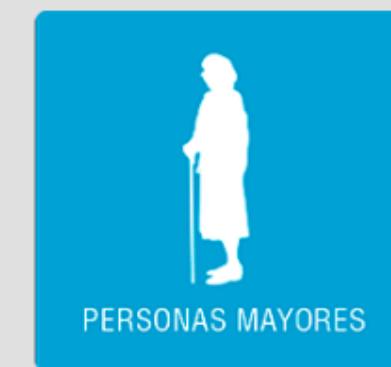
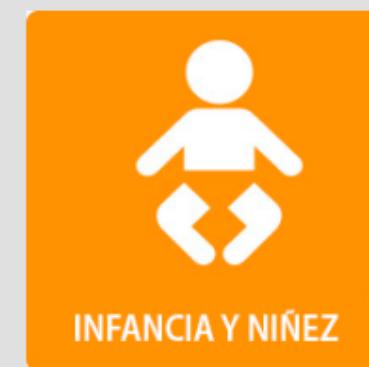
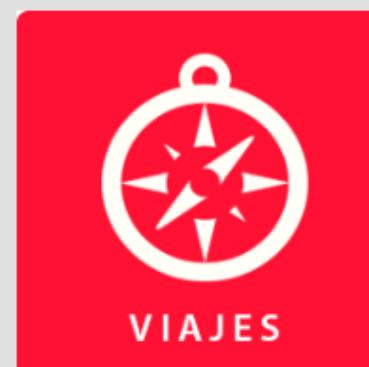


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## HYDRATION & TÚ:

Toda la información esencial que necesita saber sobre la hidratación y cómo puede afectar a su salud, bienestar y rendimiento.



## Noticias



### Número Especial de Nutrients

Hábitos de consumo de bebidas a nivel mundial: asociación entre la ingesta total de agua y energía consumida. La ingesta de líquidos y el estado de hidratación ha sido escasamente evaluado en los estudios epidemiológicos. Esto obstaculiza los intentos de evaluar [...]

The image shows a Facebook post from the 'Cátedra Internacional de Estudios Avanzados en Hidratación - CIEAH' page. The post features a logo of three overlapping colored drops (blue, red, green) and includes the text: 'Cátedra Internacional de Estudios Avanzados en Hidratación - CIEAH' and '12 January at 15:45'. Below the post, there is a summary of an event: 'I WORKSHOP INTERNACIONAL DE ESTUDIOS AVANZADOS EN HIDRATACIÓN.' followed by a list of details: '- Las Palmas de Gran Canaria,  
- 19 y 20 de Enero de 2017.  
- Salón de Actos de la Facultad de Ciencias de la Salud (ULPGC). ... See more'.

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Cátedra Internacional  
de Estudios Avanzados  
en Hidratación

## CONTACTO

📍 Paseo Blas Cabrera Felipe "Físico" (s/n)  
Las Palmas de Gran Canaria 35016  
✉️ secretaria.cieah@ulpgc.es

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## INTERNATIONAL CHAIR FOR ADVANCED STUDIES ON HYDRATION

### Futuro...Principales retos a abordar

- Sesión Extraordinaria en la RANM. Presentación de la Cátedra de Hidratación. (Madrid, 20 de Abril, 2017)
- Tratado de Hidratación  
Bases fisiológicas y recomendaciones específicas para un adecuado estado de hidratación
- Symposium de Hidratación en el Trabajo. Hidratación y salud en el entorno laboral. Congreso Mundial de Nutrición (IUNS). Buenos Aires, Octubre de 2017
- III Congreso Internacional de Hidratación. Palacio Euskalduna, (Bilbao, Mayo, 2018)
- Actividades divulgativas en el marco de la Nutrición Comunitaria
- Revisiones sistemáticas e investigación sobre temas de Hidratación, Sostenibilidad y Salud.
- Horizon 2020. Ayudas Doctorado Internacional de Hidratación



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# Muchas gracias..!

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