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“Hydration. Fundamentals at different stages of life” handbook
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Madrid, España

Available in: http://www.redalyc.org/articulo.oa?id=30924334012
Water is an essential element for life, it is the single largest nutrient in the human body, it is involved in most of the
body reactions, nearly all the major systems of the body depend on water to work properly; nevertheless, the recom-
mendations regarding its intake are based on assumptions and vary from country to country.

Being well hydrated is related to an adequate health and wellbeing; however, it is easier to find information in the
literature on issues related to dehydration, than to find information on hydration.

This book consists of 11 chapters divided into two sections; the first one is about general information of water and
hydration, and the second is about the basics of hydration at the different stages of life.

Chapter 1 is an overview of the characteristics of the water molecule and its functions in the body, which are count-
less. It also refers to some of the mechanisms to maintain water homeostasis in the body.

Chapter 2 deals with the sources of hydration which include different kinds of beverages, foods and also macronu-
trient oxidation. It is important to have knowledge of all sources of hydration and their characteristics to generate
specific intake recommendations.

On Chapter 3 the recommendations for a healthy nutrition and hydration are addressed. Although there are daily
suggested intakes and guidelines for water and food consumption, the requirements present a wide variability and
depend on each individual’s own characteristics. In fact, there is no consensus about the suggested water intakes
which are based more on assumptions than on scientific evidence and are variable between countries.

Chapter 4 is about the consequences of an inadequate hydration, both dehydration and over hydration. Children and
elderly, pregnant and lactating women, patients admitted to the Emergency Room and people who perform physical
activity (amateur, professional and elite athletes) are most at risk of hydration disorders.

In Chapter 5, some of the methods for assessing hydration status are reviewed. It is very important to know how to
evaluate patients clinically and through laboratory test, to know how to interpret the findings and generate effective
and correct therapeutic actions.

Regarding the different stages of life, Chapter 6 is about the importance of hydration in childhood and adolescence.
Children are often more vulnerable to fluid and electrolyte imbalances as between 60 and 80 % of their body weight
is water, which explains their high needs per day. Children have different thermoregulation systems and their swea-
ting rates are lower than those of adults so they are more vulnerable to dehydration.

Chapter 7, deals with hydration in adulthood. Under normal conditions, the restoration of fluid and electrolyte ba-
lance in adults is easily achieved due to the neural, endocrine and renal mechanisms. However, certain situations
like extremes in climate and humidity can increase fluid losses. So it’s important to understand hydration needs and
always maintain proper fluid and electrolyte intakes.

In Chapter 8 the importance of hydration in pregnancy and lactation is mentioned. During pregnancy, the accretion
of body water is essential for foetal development; during lactation the volume of milk produced by the woman pro-
vides the new born with the amount of energy, nutrients and water required for proper growth and development. So
these two physiological states are associated with the increase in water requirements.

In Chapter 9 the hydration of the elderly and how aging is associated with several changes that affect the water
balance is addressed, these changes include the decline of lean body mass (sarcopenia), the decline of the feeling
of thirst and a decreased renal ability to concentrate urine, among others; this makes dehydration one of the most
common disorders in the elderly.
Chapter 10 is about the importance of adequate hydration status in athletes and people who perform physical activity. Special sport drinks and strategies to maintain a good hydration status in individuals who exercise to avoid water losses which are related to a decline in physical performance are described.

The last chapter of the book is about myths in relation to water and hydration, here a group of preconceived ideas about this issues are enlisted and discussed.

Thus, in a clear, accurate and entertaining manner, the most important aspects of hydration are covered from the physiological standpoint. The intention of this book is to be useful in the daily health care practice as well as becoming a reference text on this subject.

Key words: water, hydration, population groups.

DOI:10.3305/nh.2015.32.sup2.10268