

Main functions of water in human body



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- Body temperature regulation
- Key role in nutrients, vitamins and minerals transportation to the cells
- Digestion supporting
- Medium for different biochemical and metabolic reactions
- Removing waste products like toxins from the body
- Necessary for proper muscles work

What is Dehydration?

- Represents the excessive loss of body water



Causes of Dehydration



- Excessive sweating
- Vomiting
- Diarrhea
- Inadequate water intake
- Excessive urination

Signs of Dehydration

- Increased thirst
- Dry mouth
- Dry skin
- Sunken eyes
- Low urine output



Water and Sports



DEHYDRATION IN BOXING

And its side effects

Why boxers dehydrate ?

- To lose weight rapidly to get into a lower weight class.



- Boxers are extreme athletes, and water is their lifeline.
- The right amount of water is needed before and after exercise to regulate body temperature, lubricate the joints and for the transportation of nutrients in the body to provide vital energy.
- We're born with a detection system for dehydration called as thirst.
- As little as 2% loss of hydration will affect performance in the boxing ring,

- Where every pound before weigh-in counts, athletes regularly adjust their weight by putting their bodies into severe states of dehydration.
- Due to the pressure to make weight the boxers are among the highest risk athletes to suffer from the deleterious and possibly fatal effects of dehydration

- In Olympic weight-class sports the official weigh-in is typically held 6–24 h before competition for both the amateur and professional fighters.
- This allows most athletes to use aggressive weight-cut practices to lose weight and enter competition in a lower weight class, followed by fast weight regain during the hours before competition

- Gary Russell Jr.'s desperate final attempt to make weight-in left him severely dehydrated, unconscious and ultimately disqualified from the Beijing Olympic Boxing competition.
- Russell collapsed in the early morning.
- He used a vinyl sauna jacket to help him lose fluids.
- Doctors later told him that his body temperature had soared to 105 degrees.

- “I was willing to put my life on the line to make this happen,” Russell told.

- Pushed to the extreme: it's common practice for boxers to severely dehydrate before weighing in, losing as much as 15% of their body weight.
- Daniel Cormier, captain of the US wrestling team at the 2008 Olympic Games, was forced to pull out of the competition when his kidneys shut down hours after he made weight.

- A 2016 study of post-fight examinations in Edmonton, Canada between 2000 and 2013 concluded that 10% of all boxers and 8% of all mixed martial artists sustained a concussion during their fights
- The story of how Mary Kom lost two kilos of weight in just four hours ahead of being weighed in for her final at Silesian Open in Poland to match her weight category and went on to win gold back in 2018.

- Ricky hatton loses about 40 lbs for evry fight
- Four fight in year
- So lost around 150 lbs in year
- More than his body weight.

Is it good for Boxers ?

- Yes
- No
- Different opinions

Pros

- Boxers aims to bend rules to fight smaller people
- Can gain 10-20 lbs between weigh-in to fight.
- *Salido weighs 11lbs more then Lomachenko in Mexico and showed up heavy for fight.

Effects of Dehydration on the Boxer

- Decreased alertness
- Decreased concentration
- Headache
- Slow reaction time
- Increased tiredness or fatigue
- Impaired exercise performance
- Heat cramps



Effects on brain



- In 3 kg loss of sweat associated with reduction of 30% liquid brain.
- In dehydration, brain is more liable to vibrate
- Shaking of dehydrated brain cause more damage
- Leads to concussion injury in boxers

- Mild dehydration is 2% loss of water
- leads to a decrease in ventricular volume
- Impair cognitive performance,
- Poor motor coordination.
- *Severe dehydration results in an increase in ventricular volume.
- As the ventricles swell, they apply increased pressure to the cells lining the outer layers of the brain.
- Damage to those cells can result in subdural haemorrhage or concussion injury
- Occur when the ventricles are enlarged.
- These symptoms are extremely relevant to combat sport athletes

- If a boxer is dehydrated as little as 2% of his body weight, that's 4lbs in a 200lbs boxer-
- decrease performance by 5%.
- If dehydrated by more than 5%, or 10lbs in a 200lbs
- Performance will decrease by as much as 30%.
- Performance decline is due to perceived fatigue and a quicker rise of body temperature, but the majority is due to a decreased cardiac output



- Dehydration is primarily cautioned against for its links to high blood pressure and kidney failure
- Rise in blood pressure is due to increase in viscosity of blood.
- **Dehydration** may **cause** a reduction in blood volume
- Decreased skin blood flow
- Decreased sweat rate,

- Decreased heat dissipation
- Increased core temperature and an increased rate of glycogen use.

**REDUCED
PAIN
TOLERANCE**



- This is perhaps because dehydration increases brain levels of cortisol, which is directly involved in pain sensitivity.
- The breakdown of glycogen during exercise leads to an intracellular increase of acids principally lactic acid.

Loss of electrolytes

- Heat illness is a major concern, especially during the summer months when boxers are training under intense heat levels.
- In many cases time between weigh in and first contest is usually too short for fluid and electrolytes balance to re-established in muscles & liver glycogen.

- Loss of electrolytes – Na, K, Mg
- Loss of glycogen stores.
- Sweating, comprised of the fluid in the body, is meant to cool the body down during exercise or rigorous activity.
- Since so much water is expelled during training, dehydration can cause the body to not be able to cool itself properly
- There will be rise in core temp.

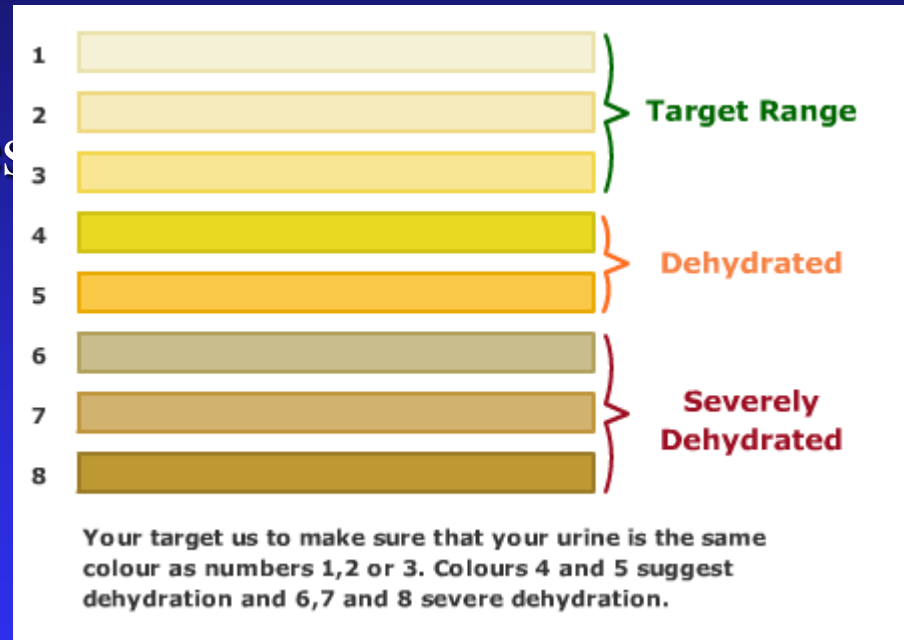
- This will leads to-
- Heat Cramps
- Heat exhaustion
- Heat stroke
- Body temp can rise to as high as 104* F
- Irregular and fast heart beat
- Fatigue
- Lethargy
- Nausea & vomiting

Tests for Dehydration

- Tenting of the skin
(the skin remains elevated after being pulled up and released)



- Check urine color
- Darker urine indicates more dehydration



How to Prevent Dehydration in Boxing

- Education and discipline
- Drink plenty of water
- Avoid rapid weight loss
- Monitor your weight – pre and post training
- Don't let weight down by 1% per week
- Never aim to weigh less 3-5% of you hydrated weight.



■ Avoid

- ◆ Saunas

- ◆ Only water is lost

- ◆ Diuretics (water pills)

- ◆ Water and electrolytes are lost

- ◆ Sweat suits

- ◆ Water, electrolytes and glycogen is also depleted

- ◆ Laxatives

How to treat dehydration

- Replenish with oral fluids
- Drink
- Fluid replacement with intravenous fluids (only in severe cases)
- Stop fluid loss



Best Drinks for Hydration

- Water.
- Milk.
- Fruit juice.
- Watermelon.
- Sports **drinks**.
- Teas.
- Coconut water.
- Milk alternatives like soy, coconut and almond.

- Why Do You Need Electrolytes?
- Electrolytes help regulate body fluids. They're an essential part of sports and exercise performance because they aide muscle and nerve functions.
- Some of the benefits of recovering with electrolytes include:

- Retain the fluid you consume
- Support nerve and muscle function
- Prevent the symptoms of dehydration
- Replenish key minerals like sodium and potassium

Most high endurance athletes prefer chicken broth or tomato juice.

Whatever the choice, solid meal/snack or hydration fluid, pay attention to the product labels and sodium content.

Below is a list of high *Sodium fluids*,

Solution	Sodium Level
Gatorade Thirst Quencher	465 mg/L (Milligrams/Liter)
Pedialyte	1035 mg/L
WHO Cholera Diarrhea Solution	1725 mg/L
V8 Vegetable Juice	2000 mg/L
Campbell's Tomato Juice	2833 mg/L
Normal Saline IV solution	3542 mg/L
Swanson Chicken Broth (960 mg per Cup)	4000 mg/L
Sodium in Ocean water	13,700 mg/L

- The bottom line is this:
- when it comes to training and fighting,
- Nothing is more important than staying
|
■ Hydrated.

■ Thanks for being lovely
audience

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