

People have used advances in science and math to make sports safer for athletes. Science, technology, engineering and math are known as STEM – and STEM has a big impact on every sport that's played.

## THE BIOLOGY OF SOCCER



**G**ood nutrition and hydration can separate winners from losers on the soccer field.

The athlete that plays a sport is key to the game. Like the balls, shoes and clothing, the athlete needs to prepare and care for his or her body to get the best possible performance.

Exercise and diet are important parts of keeping one's body in good shape. Drinking plenty of water to keep hydrated is essential.

**Hydration:** the addition of water; the replacement of body fluids

About what percentage of your body is made up of water?

$$13 + 13 + 4 + 30 + 5 + 5 = \_ \%$$

**Water is the main ingredient of most parts of the human body.**

### The Thirsty Games

During a game, a soccer player can lose 2 to 3 quarts of body fluid through sweat – enough to fill a 2-liter soda bottle, or 8 cups.

**Athlete Tip:** Don't wait until you are thirsty to drink some water. Grab a sip every time you pass the water fountain.

### Mouth and Nose

The saliva in your mouth and mucus in your nose are made up of water.

### Skin

The sweat that keeps you cool on hot days or when you exercise is made up of water.

### Stomach

The fluids in your stomach are made up of water and help your body digest food.

### Joints

The liquid around your joints helps them move smoothly.

### Eyes

The tears in your eyes are made of water.

**Dehydration Holds You Back:** During the 2006 World Cup, British soccer star David Beckham blamed his poor performance on dehydration, or a lack of water. All it takes is 1-percent dehydration for performance to suffer, and from there, it just gets worse.

### Blood

The blood that moves nutrients around your body and takes waste out of your body is mostly made up of water.

For instance, one study found that an athlete with 5-percent dehydration averaged a 30-percent decline in performance!

