BIOBUS

Water Striders!

SCIENCE TOPICS: water, cohesion, adhesion, surface tension, engineering

BACKGROUND: Every raindrop is made up of over 1,500,000,000,000,000,000,000 tiny **water molecules**. Why do all of these molecules come together to form a raindrop? It's because of water's **cohesive properties**. There are strong forces between each tiny water molecule which allow each molecule to attract to one another.

Next, on a rainy day have you ever seen how raindrops stick to a leaf? Why is that? This is because of water's **adhesive properties**. The same strong forces that allow water molecules to stick to one another also allow water to stick to molecules of different things.

Finally, take a look at the picture below. How is that Water Strider "walking" on water? Think back to cohesion. Water molecules have strong forces between each other that keep them stuck together, right? Those strong forces are even stronger at the top of a body of water. This is the water's **surface tension**. The surface of the water is stronger than below the surface. Because the surface is stronger, it supports the weight of the water bug.

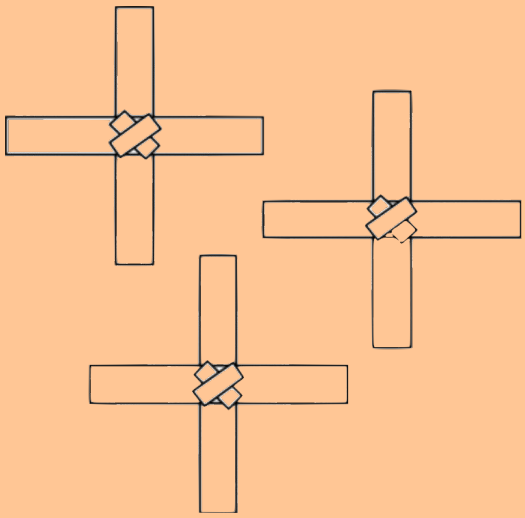
Now, you will build your own DIY Water Strider to see adhesion, cohesion, and surface tension in action.

YOU WILL NEED...

1. cardboard (or a similar material)
2. tape (Duct/Scotch is preferred)
3. 1 tub/container
4. water
5. scissors
6. pennies (optional)
7. sponge (optional, tissue paper or cloth "wad" can substitute)
8. stopwatch

PROCEDURE

1. Set up your basin/container and fill it at least 2 to 3 inches deep with water.
2. Cut out an even number of cardboard strips of approximately ½ by 3 inches.
3. Using tape, create three "X's"with the cardboard strips provided as shown below. (Curl up the ends of each "leg.")



4. Set one water strider aside.
5. Tape pennies to the end of all four legs of water strider #2.
6. Attach sponges to the legs of water strider #3.
7. Place each strider into your basin and see which floats the longest. Which can you blow around the "pond," and why is this the case?
8. Record observations/measurements below.

PREDICTIONS/HYPOTHESES

	Will it float?	Why?	How long will it float for?	Why?
1				
2 - Pennies				
3 - Sponge				

EXPERIMENTAL RESULTS/OBSERVATIONS

	Did the strider float? (yes/no)	For how long did it float? (seconds)	Moved with "wind"? (yes/no)	Additional Observations
1				
2 - Pennies				
3 - Sponge				

"Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less."
-Marie Curie

QUESTIONS TO CONSIDER

Did any of your water bugs float longer or better? Why did this happen? _____

_____

_____

What factors influence the time it stayed afloat? _____

_____

_____

Where did you see cohesion, adhesion, and surface tension in action? How and why did they affect your results? _____

_____

_____

Where else have you observed cohesion, adhesion, or surface tension in real life?

_____

_____

_____

How would you improve/change the procedure or materials if you were to do this experiment again? Why? _____

_____

_____

WE HOPE YOU HAD FUN!