



COSI ON WHEELS THE INCREDIBLE HUMAN MACHINE Program Description

The **Incredible Human Machine** is designed to enhance students' ability to make decisions that will improve their long term well-being. The program consists of a 45 minute interactive assembly followed by exciting hands-on activities that engage the students and encourage the development of Science Process Skills.

During the assembly, the following concepts and more will be explored:

- Examining the importance of the nervous system
- Exploring how food fuels the human body
- Cardio vs. Strength Training Exercise

The hands-on activities are presented in 30-45 minute sessions with each session accommodating 62 or fewer students. Hands-on activity session times are scheduled by your school's COSI On Wheels coordinator. Students will have the opportunity to take a close look at tissues and cells that make up the human body and discover that exercise is anything that gets the body moving (a.k.a. play). In the hands-on sessions students interact informally with the activities, spending as little or as much time as they like at each station. While many students will try all of the activities, some may choose to have a more in-depth experience with only a few.

To prepare you and your students for **Incredible Human Machine**, we suggest familiarizing yourselves with the Hands-On Activities descriptions and vocabulary list provided. Also, for extension activities go to <http://www.cosi.org/educators/outreach/cow> and click on 'Extension Activities' under **Incredible Human Machine**.

NOTE: *Students should be reminded to never eat or drink any of their experiments, even when experimenting with food items.*

THE INCREDIBLE HUMAN MACHINE HANDS-ON ACTIVITIES

Brain Games:	Exploring the limits of their processing power, students will interact with a series of illusions designed to trick their minds!
Build a Meal:	Choosing healthy components from the five food groups, students will find what it means to design their own “well-balanced” plates.
Extreme Humans:	Students will calculate and record their body measurements compared to the most “extreme” humans who have ever lived.
The Great Heartrate Race:	After learning how to find and measure their pulse, students engage in cardiovascular activity to find their active heart rate.
Humans Are Gross:	Using tools from the “body shop,” students will explore the “gross” statistics behind their snot, spit, blood, organ sizes, and more.
Just Dance*:	Students will explore how cardiovascular exercise can take many forms – including dance and play! – using interactive games.
Mr. Bones:	Students will assemble a life-sized puzzle of the human skeletal system while learning how our 206 bones give us our structure.
Sticks and Stones:	Using real X-rays, students will compare healthy and broken bones, learn how to read X-ray images, and tell stories of their own.
Sugars and Fats:	Sorting vials and sugar and vials of fat, students will explore how common foods contain surprising amounts of these nutrients.
Take A Closer Look:	Using a high-powered handheld microscope, students will explore the textures and functions of the human body’s surface structures.

* The *Just Dance* activity is done at the start of each hands-on session with students together as a large group before they begin their hands-on station explorations.

THE INCREDIBLE HUMAN MACHINE VOCABULARY

CARBOHYDRATE: Nutrients that range from simple sugars to complex dietary fibers; primary energy source for the body.

CARDIOVASCULAR TRAINING: Exercise that increases your heart rate.

CIRCULATORY SYSTEM: The bodily system of blood, vessels, and heart concerned with the circulation of the blood throughout the body.

DIGESTIVE SYSTEM: The bodily system that breaks food down to the simple nutrient forms that can be taken in and used by the body.

FATS: Nutrients that are a major class of energy-rich food, and helps maintain healthy body cells. Fats also, store energy for the body.

MUSCULAR SYSTEM: The bodily system that is composed of skeletal, smooth, and cardiac muscle tissue, which allows the movement of the body.

NEURONS: A specialized, impulse-conducting cell that passes messages from the brain through the nerves, and then to the rest of the body.

NERVOUS SYSTEM: The bodily system consisting of the brain, spinal cord, and nerves that regulates the body's responses to internal and external stimuli.

NUTRIENTS: The post-digestive form of food that provides nourishment to the body.

PROTEIN: Nutrients that help build and repair muscles and help the cells in our bodies function properly.

RESISTANCE TRAINING: Physical training that contracts the muscles as hard as they will contract over and over to strengthen/develop the muscles (associated with weights).

RESPIRATORY SYSTEM: The bodily system by which oxygen is taken into the body and an exchange of oxygen and carbon dioxide takes place.

VITAMINS & MINERALS: Nutrients, such as calcium, iron, vitamin A, magnesium, vitamin C, potassium, or sodium, that are essential to the functioning of the human body and are obtained from foods.

SCIENCE PROCESS SKILLS

On the day of the program students will have the opportunity to participate in a variety of hands-on activities. The activities are intended to create a fun and stimulating environment which encourages the development of Science Process Skills. The skills include:

OBSERVING: Using the senses and/or appropriate tools to gather information. Observing may also include the skills of: **Measuring, Comparing, and Classifying.**

INFERRING: Making preliminary conclusions by assessing what is already known. Inferences are what you reason to be true, but have not observed or tested.

QUESTIONING: Raising questions about objects, events, or phenomena. This includes recognizing and asking *investigable* questions, often beginning with phrases like 'What causes,' 'How does' or 'What makes.'

HYPOTHESIZING: Offering a possible explanation or testable statement. A hypothesis can be a good reference point for further investigation.

PREDICTING: Using ideas or evidence to foretell the outcome of a specific future event. Often involves an action and a reaction or an if/then statement.

PLANNING: Designing one's own investigation using procedures to obtain reliable data. *Planning is not always formal.*

INVESTIGATING: Carrying out a planned experiment based on your hypothesis. Investigation uses many of the previously stated Process Skills.

INTERPRETING: Drawing conclusions by assessing the data. Finding patterns or other meaning in the data.

COMMUNICATING: Expressing observations, ideas, conclusions, or models by talking, writing, drawing, etc.

RELATING & APPLYING: Relating makes parallels to similar concepts, and applying uses the knowledge gained to help solve a challenge.