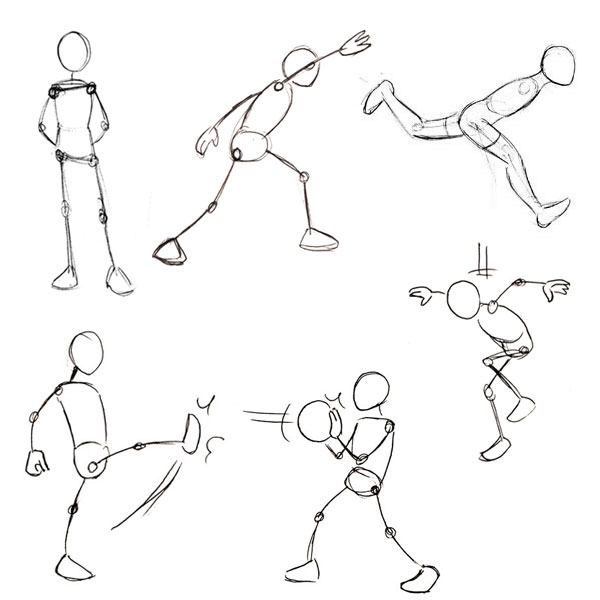
**Unit Essential Question:** *How do our bodies produce and use the energy needed to move objects?*

**Challenge**

Most of you have experienced being able to make objects move—in a variety of different ways! In the Lift-Off Task, you saw how humans could make a ball move in a game of kickball. But what makes this ball move? What is happening in our bodies that might make this movement possible?

Making objects move is such an everyday action that we rarely think twice about it! Your task is to pick an activity that involves an object in motion and explain to people who do this activity how their bodies actually make the movement of the object possible. At the end of the unit, your group will create a video or presentation that demonstrates the activity. Throughout the presentation, you will pause to describe the role of the human body in making the motion happen. As individuals, you will then create a brochure to give more detail on the science involved in your body putting an object in motion.

https://design.tutsplus.com/articles/human-anatomy-fundamentals-balance-and-movement--vector-20936

**Group Project Criteria for Success**

Your activity presentation/video should include:

* A physical demonstration of the activity
* An explanation of where the energy comes from that moves the object
  + And a recommendation for how you could change the movement of that object (e.g. make it go faster/slower or farther/faster)
* A description of the body’s nervous system pathway that results in the object’s motion
* An explanation of how different body systems interact to make the activity possible
* Quality Presentation Structure
  + Pauses throughout the physical demonstration to explain the science behind what is happening
  + Is organized logically
  + Is interesting to the audience

**Individual Project Criteria for Success**

The brochure should include:

* A diagram and description of the physical activity and object in motion
* An argument for why the motion of the object can vary: What is the relationship between kinetic energy and energy transfer? How do you know when the kinetic energy of the object changes?
  + Support the argument with relevant evidence
* A description or labeled diagram of the nervous system pathway that causes your object to move
* Cite the sources you used to predict that this is the nervous system pathway used in your activity
* An argument for how subsystems of the body interact to make the activity possible. Include:
* A description of each subsystem’s function
* An explanation and/or diagram showing how the subsystems interact
* An explanation of where the energy to move the object actually comes from in the human body. To support your explanation, include a model that shows:
  + Different cell parts (e.g. nucleus, cell membrane, and mitochondria) and their specific functions
  + How the function of the whole cell depends on relationships between these cell parts

**Brochure Peer Review Feedback**

Complete after you have a full first draft of your brochure.

|  |  |
| --- | --- |
| Brochure Owner’s Name |  |
| Brochure Reviewer’s Name |  |

**Review the following sections of the Brochure:**

* A diagram and description of the physical activity and object in motion
* Positive Comment:
* Constructive Comment:
* An argument for why the motion of the object can vary: What is the relationship between kinetic energy and energy transfer? How do you know when the kinetic energy of the object changes?
  + Support the argument with relevant evidence
* Positive Comment:
* Constructive Comment:
* A description or labeled diagram of the nervous system pathway that causes your object to move
  + Cite the sources you used to predict that this is the nervous system pathway used in your activity
* Positive Comment:
* Constructive Comment:
* An argument for how subsystems of the body interact to make the activity possible. Include:
* A description of each subsystem’s function
* An explanation and/or diagram showing how the subsystems interact
* Positive Comment:
* Constructive Comment:
* An explanation of where the energy to move the object actually comes from in the human body. To support your explanation, include a model that shows:
  + Different cell parts (e.g. nucleus, cell membrane, and mitochondria) and their specific functions
  + How the function of the whole cell depends on relationships between these cell parts
* Positive Comment:
* Constructive Comment: