# The Balancing Act: Aarav Garg

#### Question:

Will it help a person to balance with a balancing stick if there are weights on the edge of the stick or if the weights are in the center of the stick

FIGURE 2: Weights in the center of balancing stick.

FIGURE 1: Weights on the edge of balancing stick.

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#### Background Research and Hypothesis:

The background research suggests that greater angular momentum makes it difficult to balance. It also suggest that when the weights are on the edge of the stick, it causes a greater angular momentum.

According to the background research conducted, the weights would rotate the stick, causing the stick to wobble, much like a see-saw. The research mathematically justifies this:

If momentum is equal to the velocity(movement divided by time) times mass, then the weights will add mass, which will result in greater momentum. If they are in the center, the mass on the ends of the stick will be close to 0, which will result in none or very little angular momentum.

FIGURE 3: The effects of having the weights on the edge of the stick, as suggested by the research

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FIGURE 3: The effects of having the weights in the center of the stick, as suggested by the research

I think that this is true, and that the weights in the center of a stick will help the stick balance better.

#### Experiment:

The experiment carried out had two weights(identical plastic bags with two IKEA products inside them) tied to a curtain rod. I then held the curtain rod in my hand, the weights on the edge, and walked across the balance beam(a bench). I did this again, with the weights in the center of the curtain rod. It was much easier to balance the stick the second time.

This experiment prove that if the weights are in the center of the stick, it will help balance the stick better.

#### Sources:

<https://khanacademy.com>

<https://simple.wikipedia.com>

My Amazing Father and Mother!!!