CENTER OF ATTENTION

Handstand Workshop

(Center of Mass Symbol)

INTRODUCTION

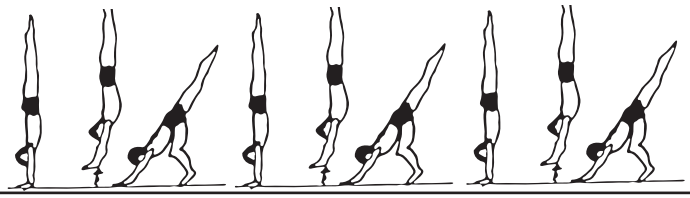
Center of mass (or center of gravity) is usually taught in physics, but can be helpful to know in sports and other activities involving balancing. The center of mass is basically the balance point. In physics, it's usually used to do calculations on boxes, but the same concept can be used to find the balance point in our bodies through measurements and quick calculations.

Why Handstands?

Handstands are just a starting point. Handstands are a position where we can really feel when we are off balance, which means our center of mass is not in line with the contact point (our hands). It's also easy for other people to see whether the handstand is balanced since the body position is a straight line.

OBJECTIVE

Locate the center of mass on your body for a handstand. Try out some handstands and see what happens when you focus on the center!



STEP ONE

Place stickers according to the estimated values below: Reminder: Don't forget about the lower leg! (not shown in photo).

VALUES

Estimated

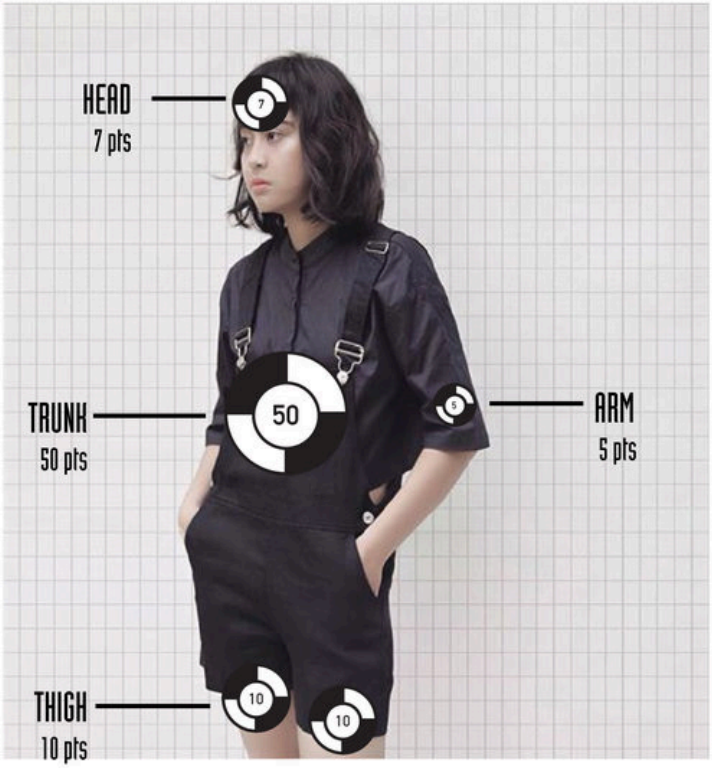
Trunk - 50 pts
Thigh - 10 pts
Lower leg and foot - 5 pts
Arm and hand - 5 pts

Official

Trunk – 50.80%
Thigh – 9.88%
Head – 7.30%
Lower leg – 4.65%
Upper arm – 2.7%
Forearm – 1.60%
Foot – 1.45%
Hand – 0.66%

Where do these numbers come from?

The human body has a general weight distribution, but will vary a little from person to person. This is a general approximation using percentages.



STEP TWO

You can average the center for all the sticker points to be more accurate, or for a quick shortcut you can find where the most weight is concentrated.

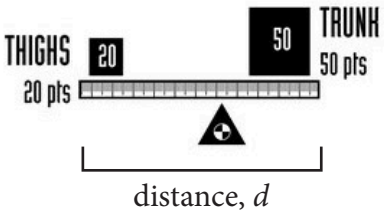
THE MATH

Distance

The largest weight distribution is between the trunk and thighs, so the center of mass should fall between those two points.

Calculate

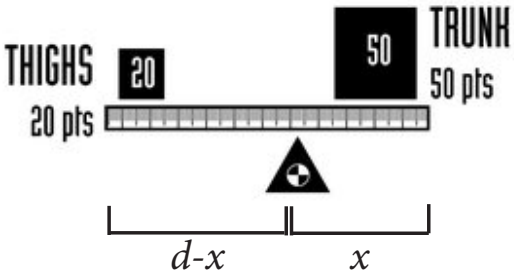
To find the exact point, the easiest analogy is to think of it as if it were a scale, and to find the balance point.



distance, *d*

Start by measuring the distance, d on your body.
The equation to locate the center point is not too difficult to derive. The center of mass (C.O.M.) is the balance point between the torso and thighs, and we are looking for its location (the point of the triangle in the diagram).

distance measurement, *d* =



Finding the balance point is like balancing a scale.
When weights are balanced on a scale, we know we can balance out the sides using distance of the fulcrum, even if the weights have different values. We can say the distance from the torso to the C.O.M. is called *x (left).* In this case, the equation is:

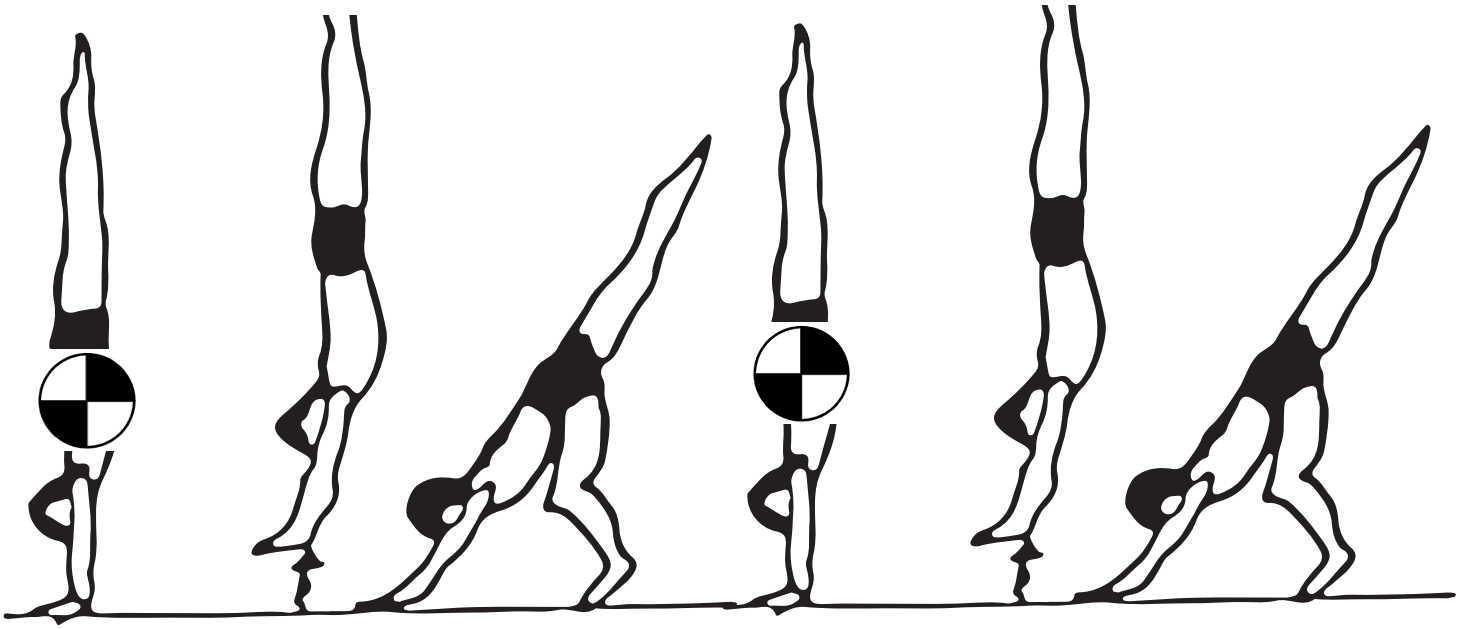
20 (d-x) = 50 (x)

Solve for *x*:

x = _____
(the distance of C.O.M. from torso)

STEP THREE

Place your center of mass sticker at location *x* on your body. (You may want to take two stickers, one for the front view, and one for the side view).



STEP FOUR

Handstands and photos! Take some time to practice handstands. Once you feel ready, we have an instant camera set up so you can see your alignment. After you've gotten your photo, you can decorate it with the C.O.M. stickers and alignment stickers provided!

Note: Film is limited, so please limit it to one handstand photo per person to make sure there is enough for everyone.

STEP OPTIONAL

Tag and share your photos on social media!

Use #handstandsquad

Tag @breakaway_nyc on insta

What did you think?
Questions or comments?
Email acameron2@sva.edu