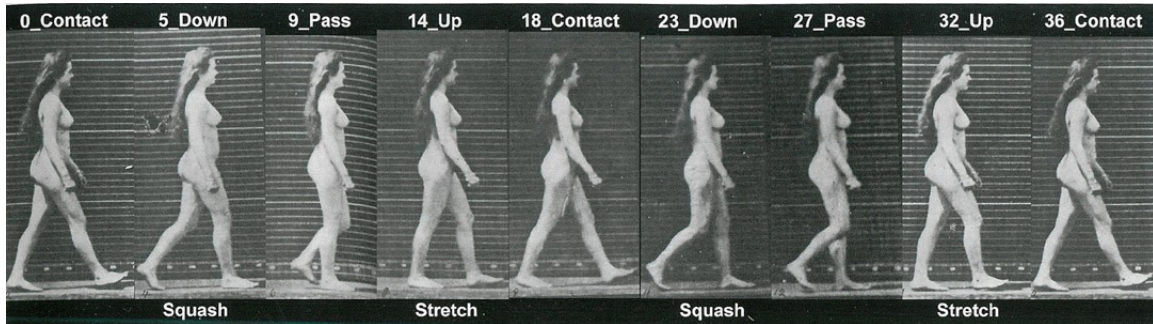


# WALKIN'



Eadweard Muybridge Human Locomotion

## Definitions

Keys - keyframes that tell the story of a shot

Breakdowns – keyframes that tell story of action

Inbetweens – fill in and help define timing

Fps – frames per second

Inertia – resistance of an object to change in its state of motion

- 1) Set units
- 2) In Time Config set frames to 24 fps
- 3) Go to create->systems->biped and draw a 5-6 foot biped

## Tips for animating on a biped:

- 1) Use autokey to create keyframes on a biped. Set Key does not work
- 2) Do not use Bip01 Pelvis for animation. Freeze it is probably the best thing to do with it. Use Bip01 for all motions involving the hips. It will give you the most “realism” for hip movements and for all movements depending on the hips. All movement starts in the hips
- 3) Remember, all the basics apply squash and stretch, anticipation, arcs, overlapping action, follow through, etc.

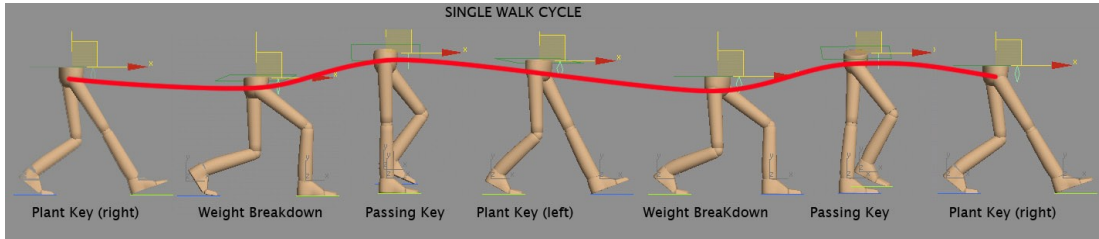
- 4) All movement in the body comes from some joint or combination of joints rotating. Even though we use Inverse Kinematics, we must respect this. Also, we must respect all the connecting tissue at the joints so extremities should not be too loose or floppy.
- 5) Foot anchors. They are in the motion rollout under keyframing tools. Turn these on when you pose the first pose, Once you have the pose, you should turn them off. The feet will be in IK mode for the rest of the keys.

Now we build the walk cycle

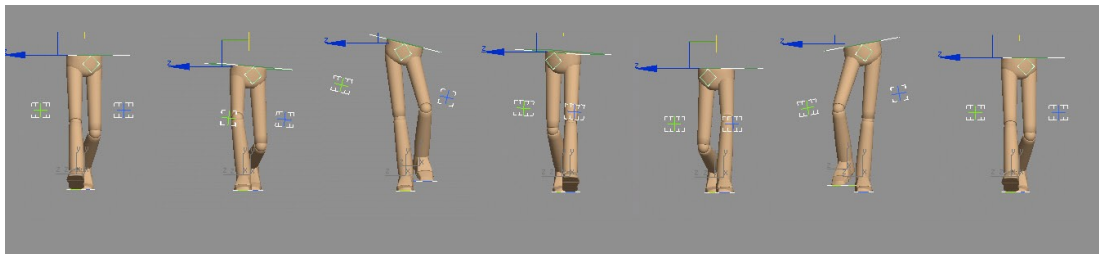
The cycle for a medium speed walk is 24-32 frames per cycle , which is 2 steps

- 1) First we establish the key “drawings” These are the “planted” where the front foot has just been planted. The weight is evenly distributed between the feet and the hips are almost at their lowest point. There are three of these in a walk cycle. First is with one foot forward, opposite hand forward Second, is a mirror of the first, with other foot forward and The opposite hand from that. Third, is a copy of the first key. So, there will be a key like this at frame 1, 12, and 24 at 24 fps
- 2) Next, we put in the breakdowns. These are passing keys. And the unplanted foot is passing the planted foot.
- 3) Notice the hips rise and fall from the key to the breakdown and back to the key.

See the figures from the side, below:



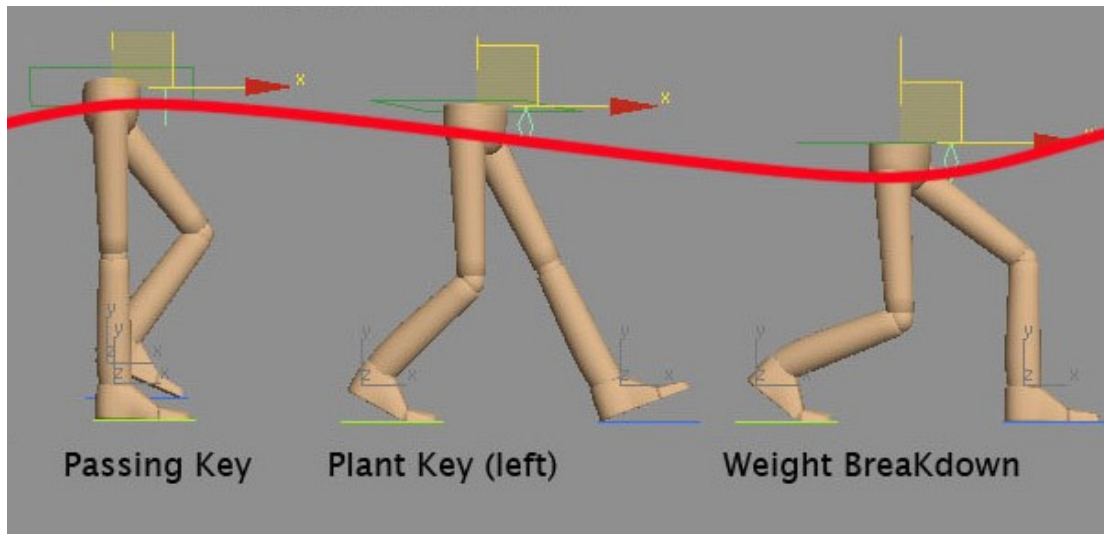
Here are the same keys from the front:



Please note the rotation of the hips during the walk. Rotation of the hips affects the spine. This adds life to the body. Also, the hips move over the supporting foot on the breakdowns and centered between the feet on the keys. I have angled the knees outward on the breakdowns. If you don't do this, the feet and legs move in a plane and look robotic. This makes the character feel more natural.

While these are the basic key poses of the walk, there are other important breakdown poses in the animation.

After the the lead foot is planted, the body continues to travel downwards due to its inertia. What changes this is the force of the planted against this downward momentum. Eventually, the body stops traveling down and moves upward into the next step. This downward motion and compression is the follow through of the last step and at the bottom of the compression becomes the anticipation for the next step.



Notice that as the character's weight is transferred to the planted foot, that it goes flat on the ground