FIRST THINGS FIRST - RESEARCH

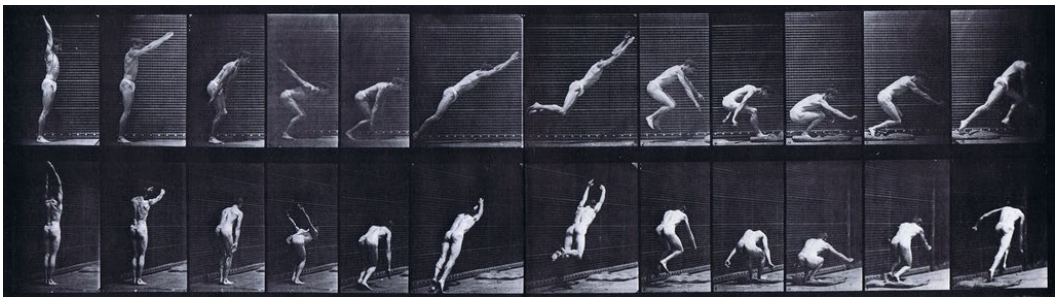
Before we try and animate our character, we need to understand the movement we're trying to create. Careful research is essential for all animators, but especially for beginners or when animating something new. Base your research first in real life / live action examples, not animation, make sure you understand the physics and the subtleties of the performance you're trying to create.

AND WHERE CAN I FIND THESE REFERENCES?

For our jump movement, you can find examples...

• Online. There's a lot of good live action jump references online, but you'll find most of them are jumps forward, and we'll be doing something a bit simpler, an "in place" jump. But the basic motion and poses are very similar!

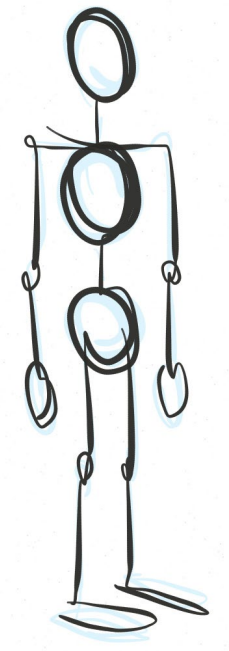
• In books like Edwaerd Muybridge's "The Human Figure In Motion", which is still helpful after all these years!



• In your own body! Just get up out of your chair and jump! Pay attention to what your body does first, then second, and so on.

Once you really understand the movement realistically, then you may want to see how an animator would approach it through videos or drawings online or in books, but always start with the real thing!

THUMBNAILING IT



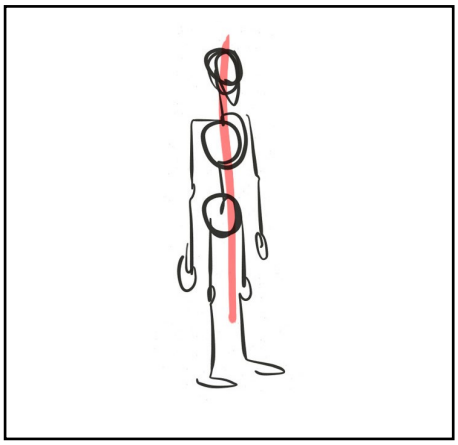
After we've analyzed the motion, we need to break down the "key" poses we'll need to create the animation. It's a good idea to use simple thumbnail sketches to work out your poses ahead of time. Even if you aren't great at drawing, practice sketching simple thumbnail figures to help plan your animations.

• A simple figure like this is all you need, just a step or two above a stick figure.
• Detail is not important, but the proportions are, although they don't have to be precise.
• If your figure is a humanoid, make sure it has a head, neck, chest, pelvis, shoulders, elbows, knees, hands, and feet all indicated simply in the sketches.
• Remember that humans are usually around 6 heads high, waist roughly in the middle, and the fingertips reach to about mid-thigh
• If your figure is not a humanoid or is extremely abstracted, work up a simple sketch of that figure that just includes the main movable parts
• For a more detailed run down on how to do these kinds of planning/thumbnail drawings check out the aptly named book "Simplified Drawing for Planning Animation" by Wayne Gilbert.

FINDING THE KEYS

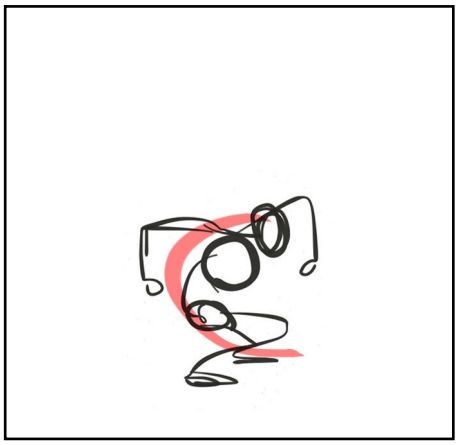
Let's talk about the poses for a jump with a full humanoid before we think about the poses for our silly Squash character so we can really understand what's happening, and how to think about finding the key poses for a motion you're trying to create.

POSE 1



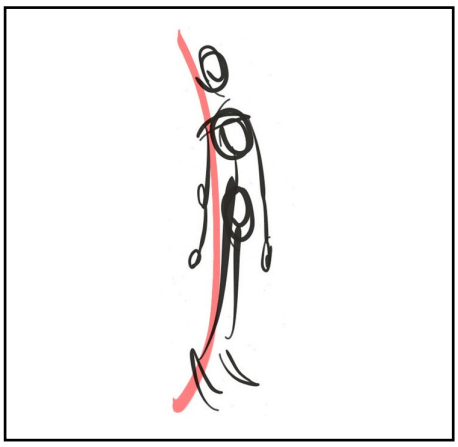
We'll be starting with our character in its "neutral" pose, so we can start there. This wouldn't have to be the default "neutral" pose, but in our case this will work fine.

POSE 2



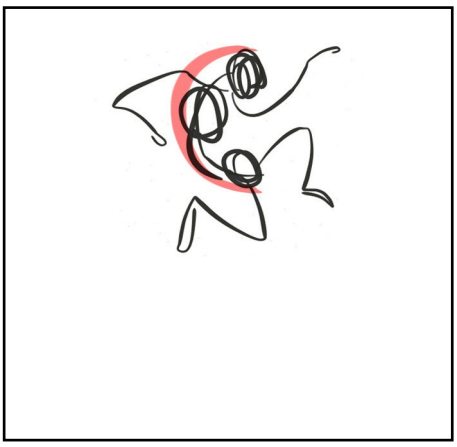
We want to consider our animation principles right away, so remember we need to **anticipate** our action. Since the character is jumping **up** we have to anticipate by having him/her crouch **down.** We want the head down, shoulders up, torso bent forward, and the legs as bent as possible. Notice the **lines of action** we're building the poses on (in red).

POSE 3



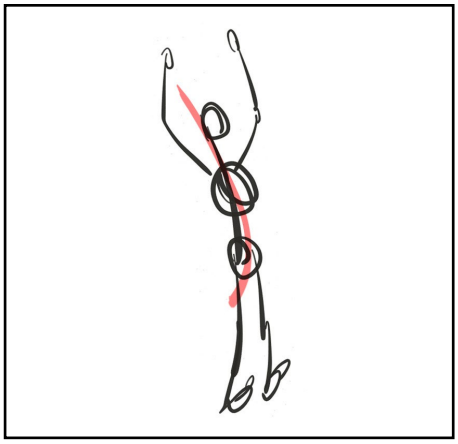
Now the character needs to jump up, but he/she cannot simply rise off the ground. Something has to propel his/her weight off the ground. So in this pose the feet, or at least the toes, **must be making contact with the ground.** The legs and torso straighten up and even bend back a bit to push the character off the ground and upward . The arms can "push" down, or perhaps swing up to help the motion.

POSE 4



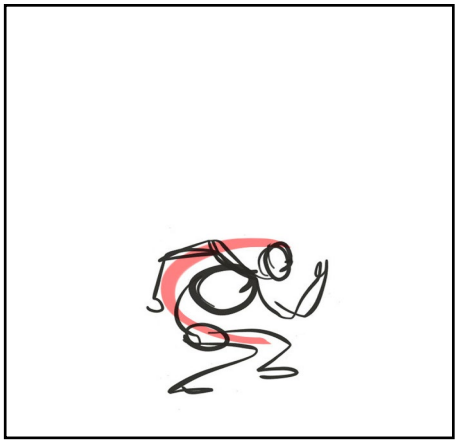
Now we can pose our character suspended in the air, the legs and arms maybe "floating" a bit. The torso can curl back forward and the tension reverses.

POSE 5



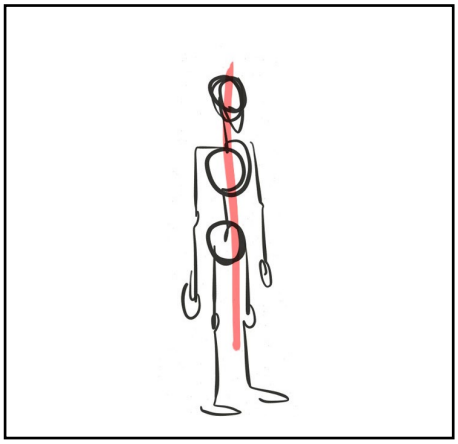
Everything that goes up in earth's gravity, must come down. But since our character is a sentient being who doesn't want to hurt him/her self, the character won't simply fall to the ground in a heap. The character's legs and body will straighten to "catch" his/her weight coming down. Usually, a human will land heel first with toes up, but not in every case . This pose can have the feet in contact with the ground, or very nearly in contact.

POSE 6



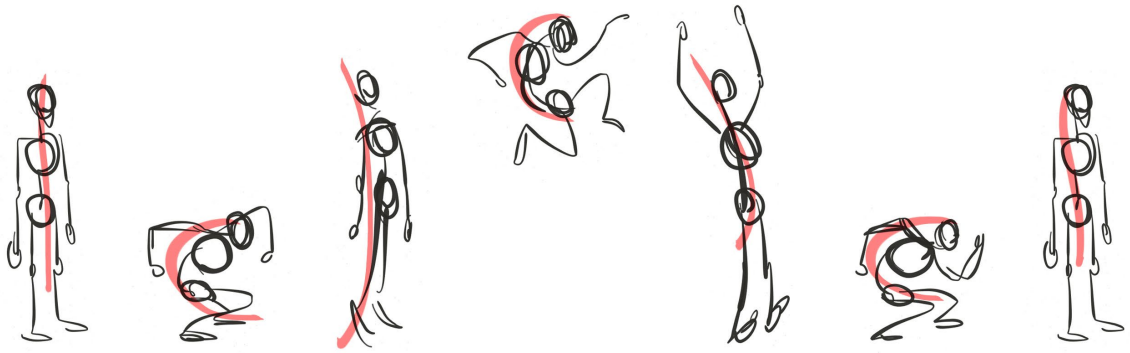
As the character's weight is taken by the body as it lands, it compresses into something very similar to the anticipation pose. This pose may be a bit more or less extreme than the anticipation depending on the motion. It's good to make this pose a bit different than the anticipation pose to keep it feeling organic. Notice the line of action has reversed again.

POSE 7

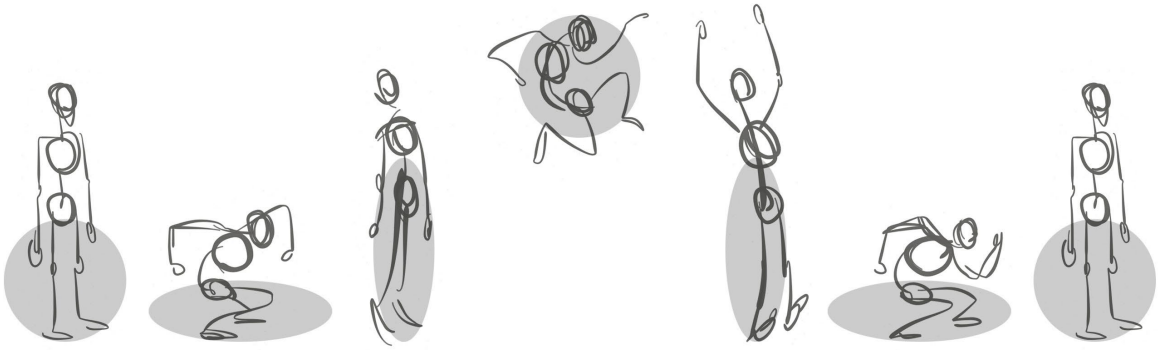


- Now the character can "settle" back into it's neutral position, completing the movement.

If we lay this all out, our thumbnail sequence looks like this...

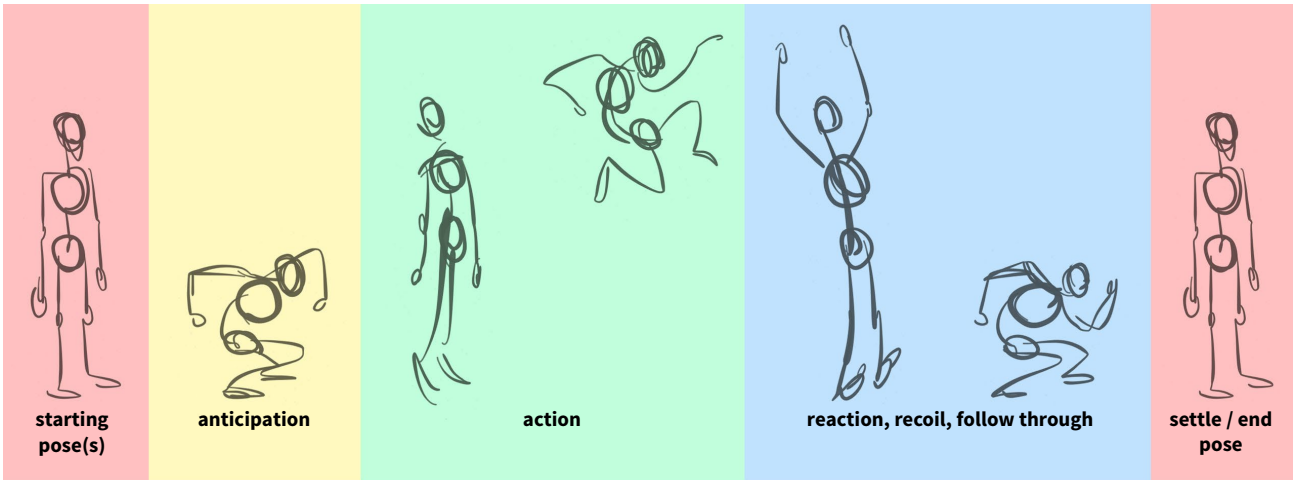


Note again the reversing lines of action as the torso bends back and forth creating a “springy” effect with a strong feeling of the forces at work on the figure. Also note that the poses for this jump are very similar to a bouncing ball with squash and stretch, and that our figure has the feeling of squashing and stretching just through posing, and not actual deformation.



BIG IDEA - THE STRUCTURE OF MOTION

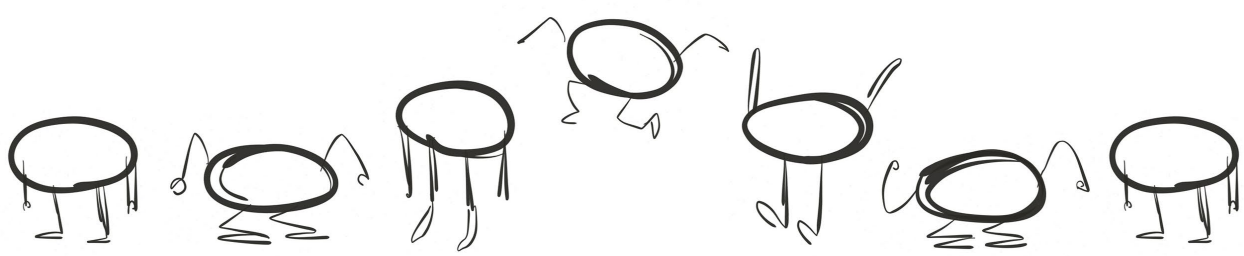
Before we move on to Squash’s jump keys, it’s a good time to introduce a Big Idea in character animation. These jumping keys are a great example of a basic structure that underlays most human and animal movements, we see this pattern again and again with variation...



Note that any of these basic parts can have one or more poses. To create complex sequences of movement, you can “link” these structures together, so that for example the end pose of one motion could be the anticipation of the next, etc.

BACK TO SQUASH

So now we have a pretty good understanding of the poses needed to create our jump. Since Squash is so simple, we might thumbnail out his poses this way.



Without a torso, we can just rotate Squashes head/body a bit to give the same feeling of the torso bending. The rest of the poses are pretty similar, just a bit more simplified. When planning animation this way, make sure you know enough about the puppet's rig to know what the character can do and not do easily.

When we translate these poses to the actual puppets, we might get something like this...

Pose 1

Pose 2

Pose 3

Pose 4

Pose 5

Pose 6

Pose 7