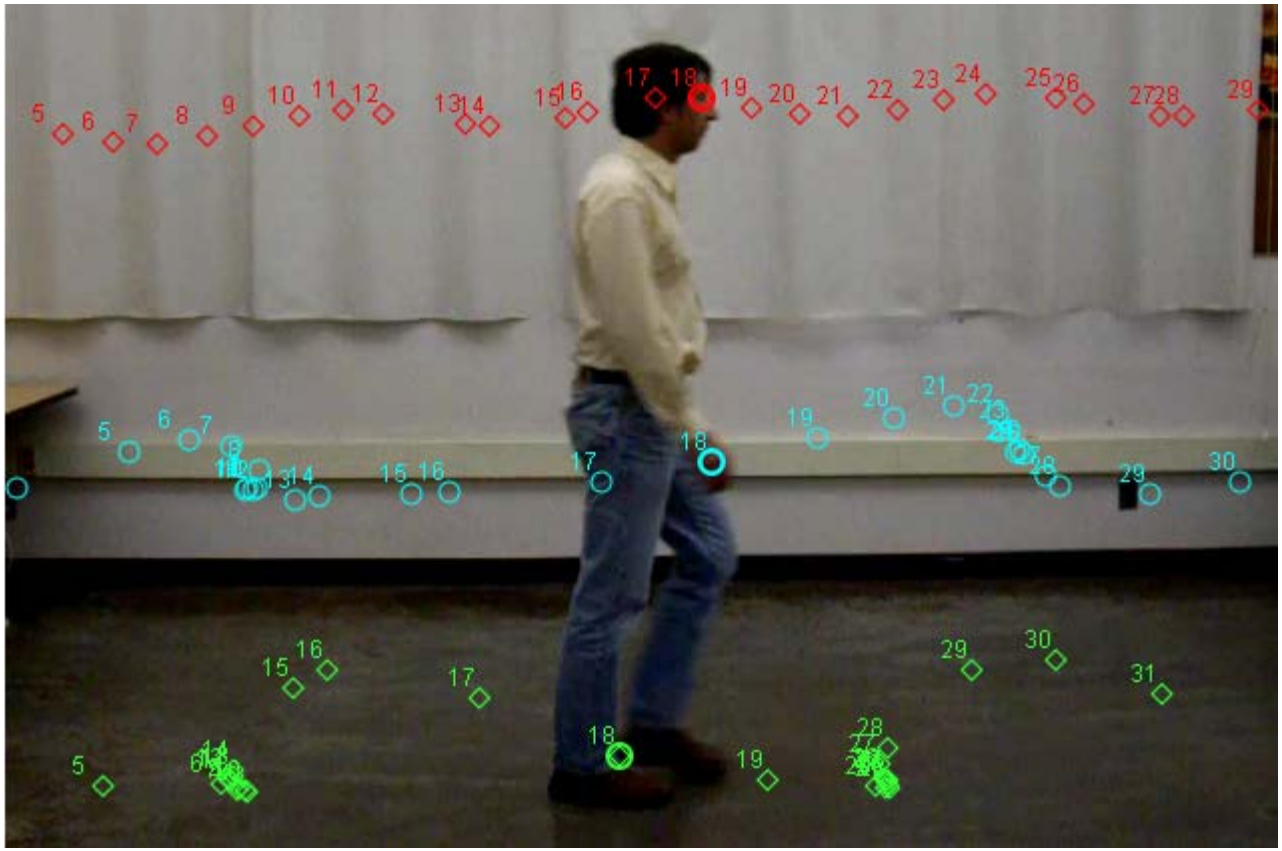
Timing and Spacing in Walks

Video Analysis



Let's do some video analysis using *Tracker*.

www.cabrillo.edu/~dbrown/tracker/

Video Analysis

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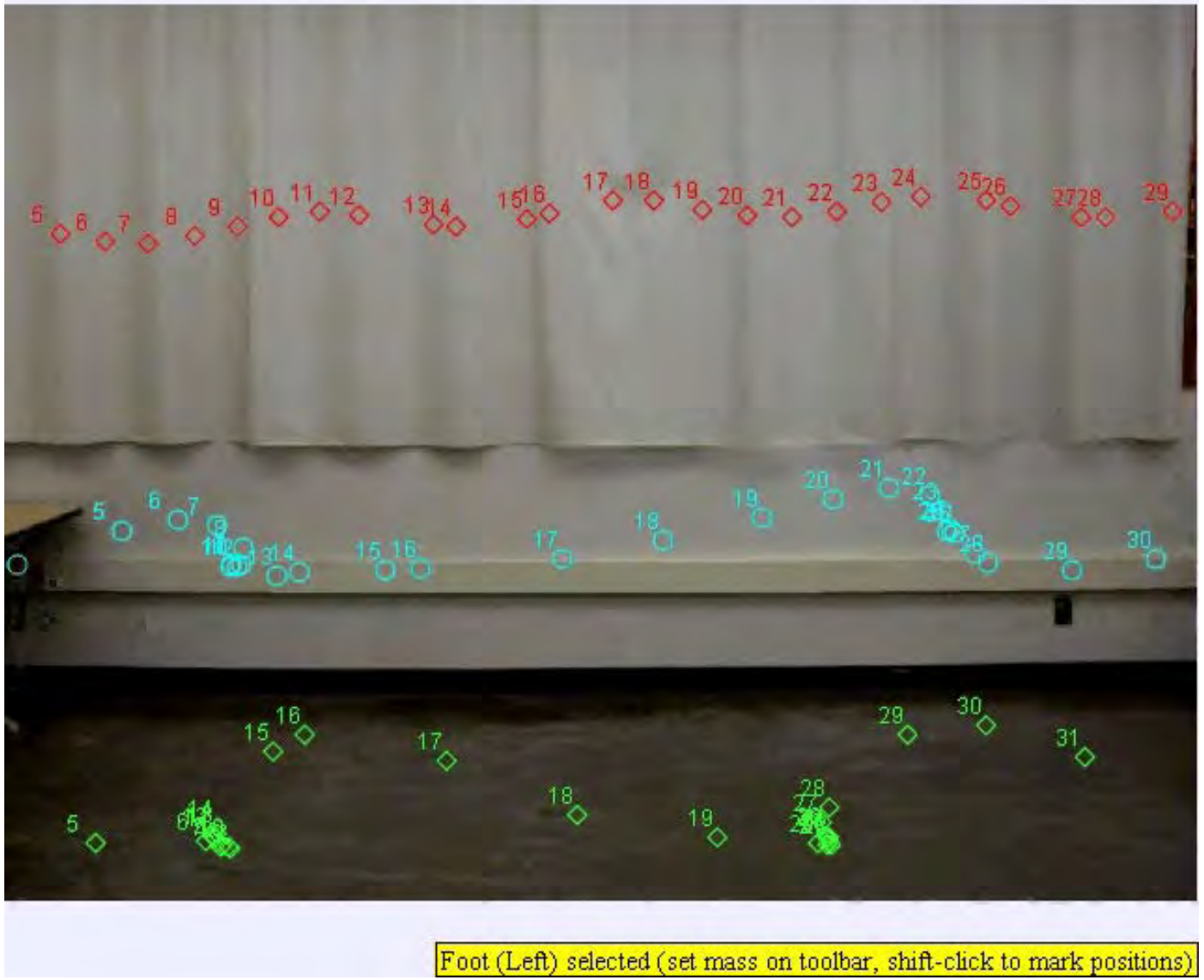
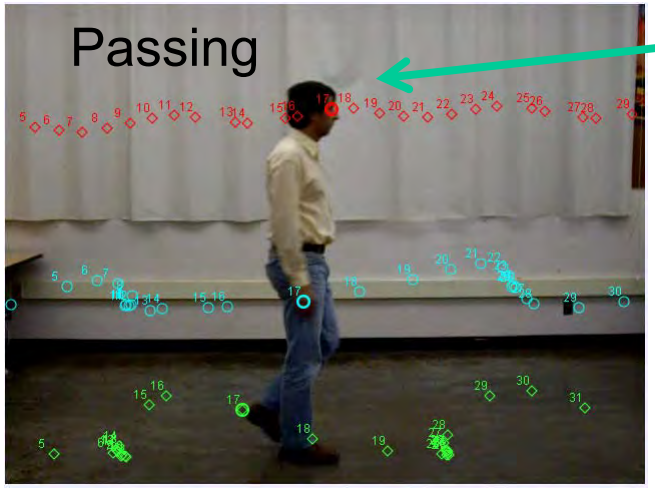
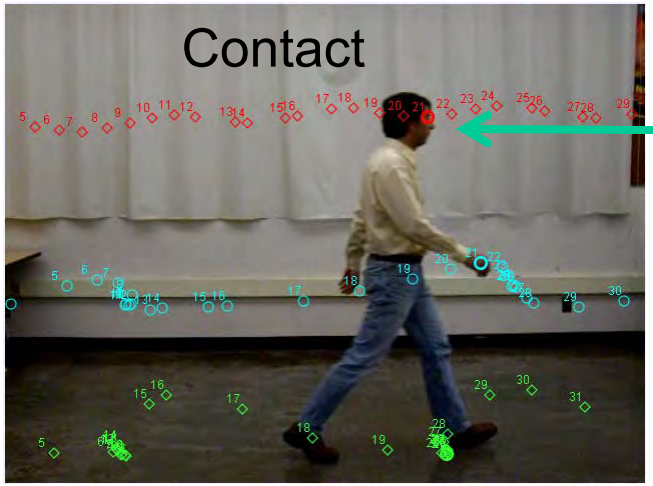
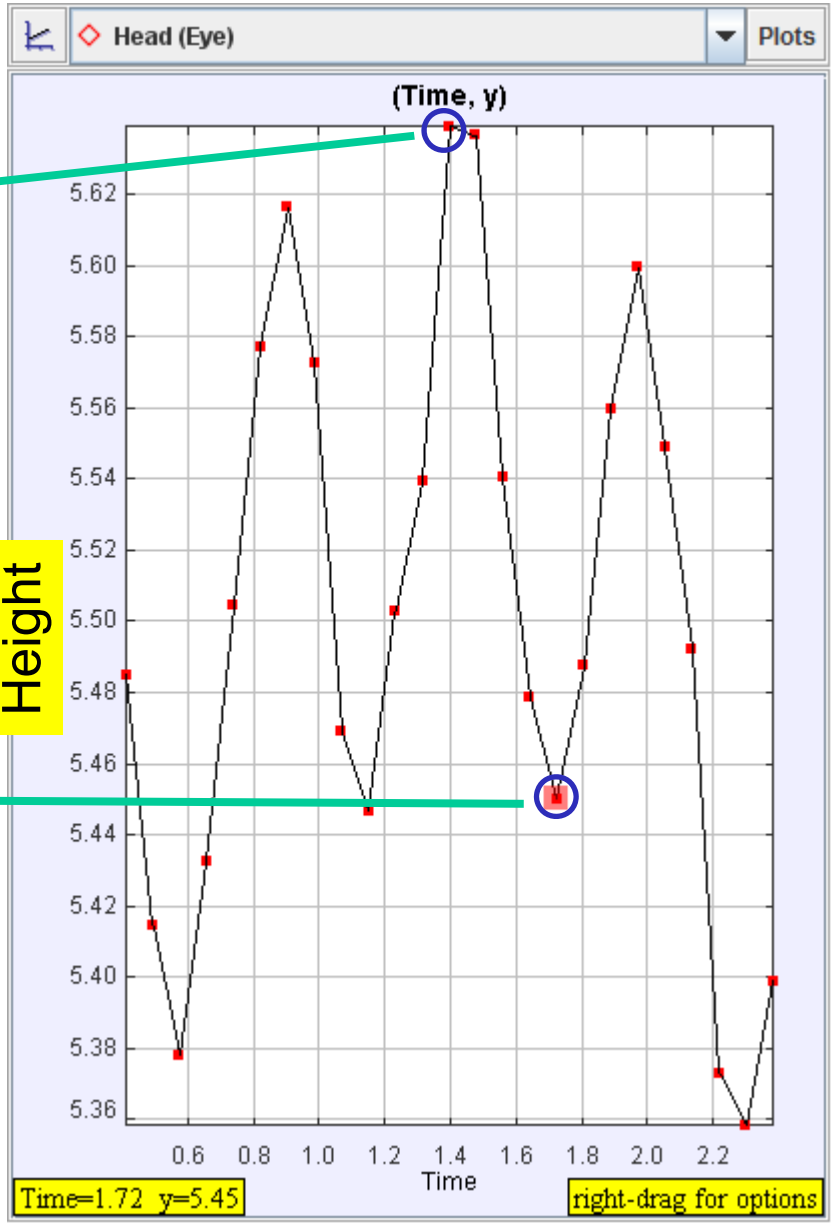


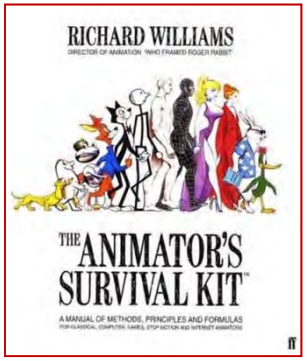
Head Position

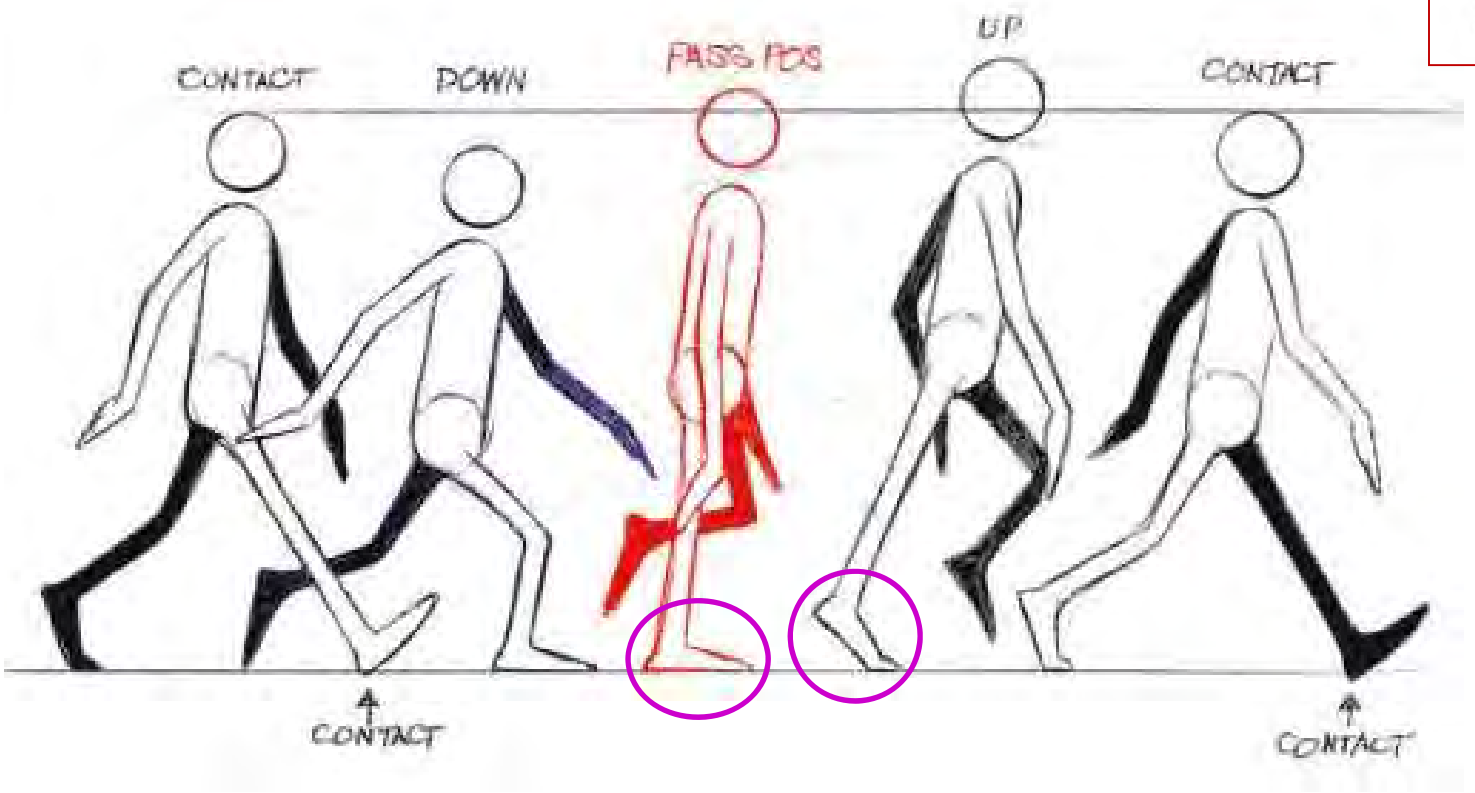






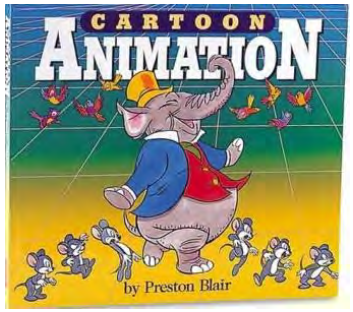
Richard Williams' Walk





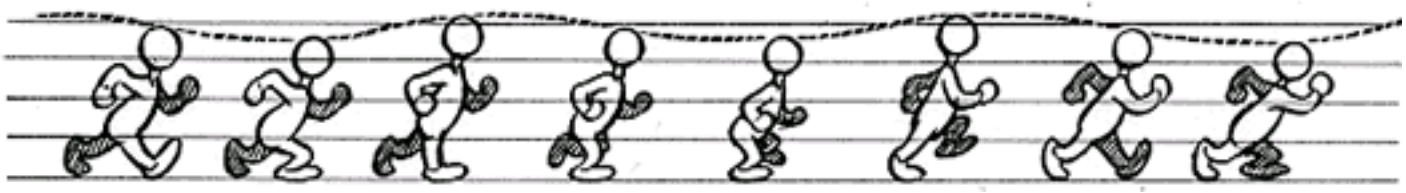
Williams puts the "up" position just after the passing position, which happens if the heel rises in a quick walk.

Preston Blair's Walk



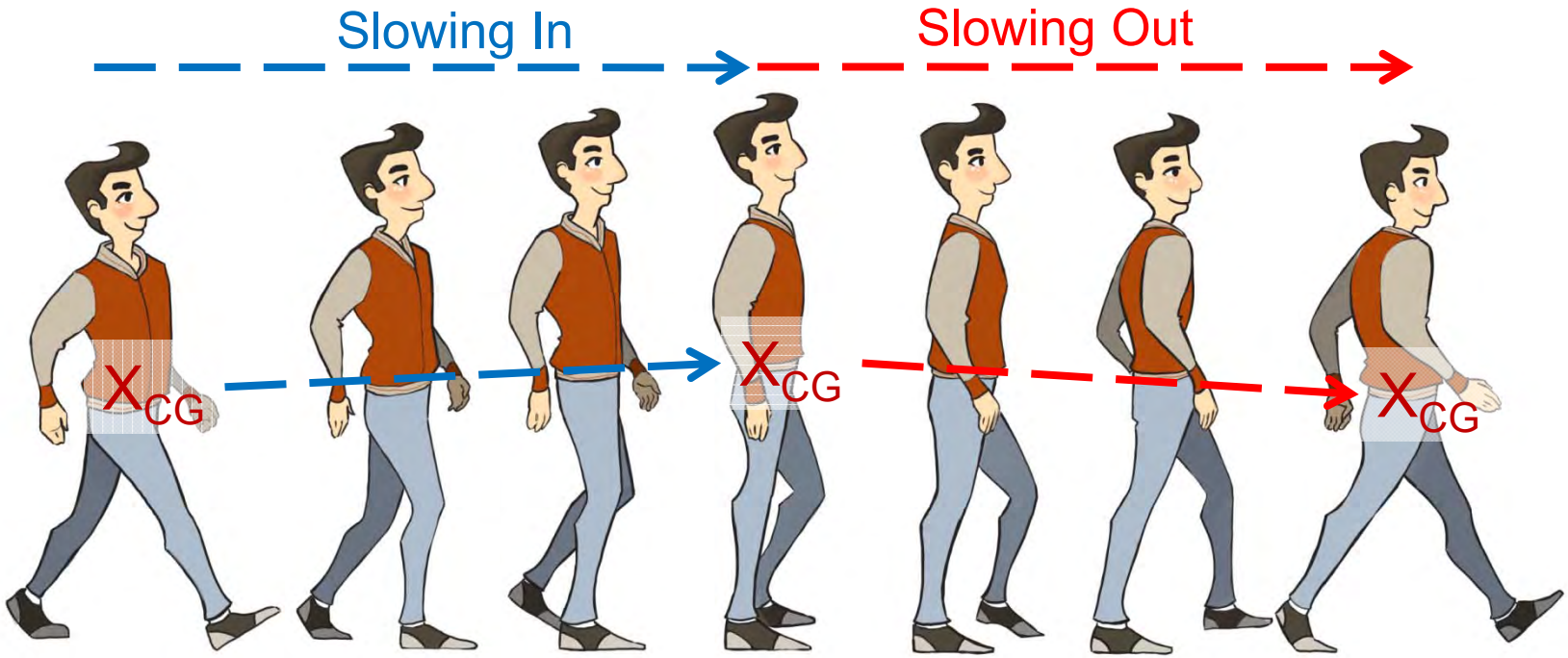
Preston Blair makes the passing position the tallest point in his basic walk cycle.

But in walks with attitude, he mixes it up.



Richard Williams also does this in many cases.

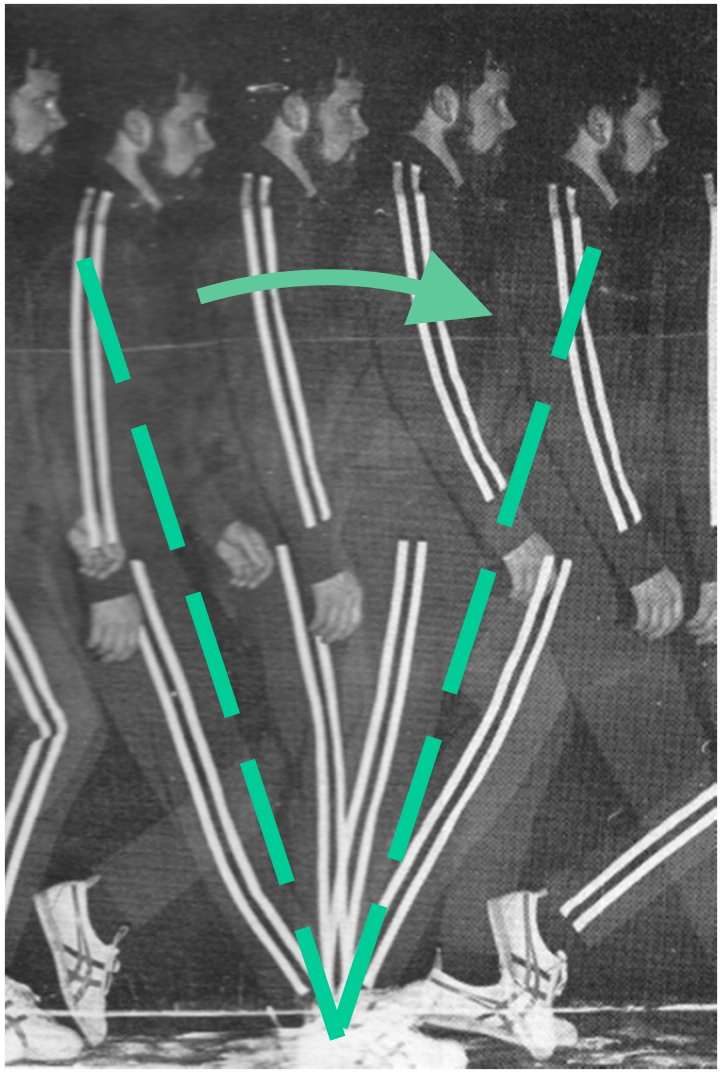
Timing of the Walk



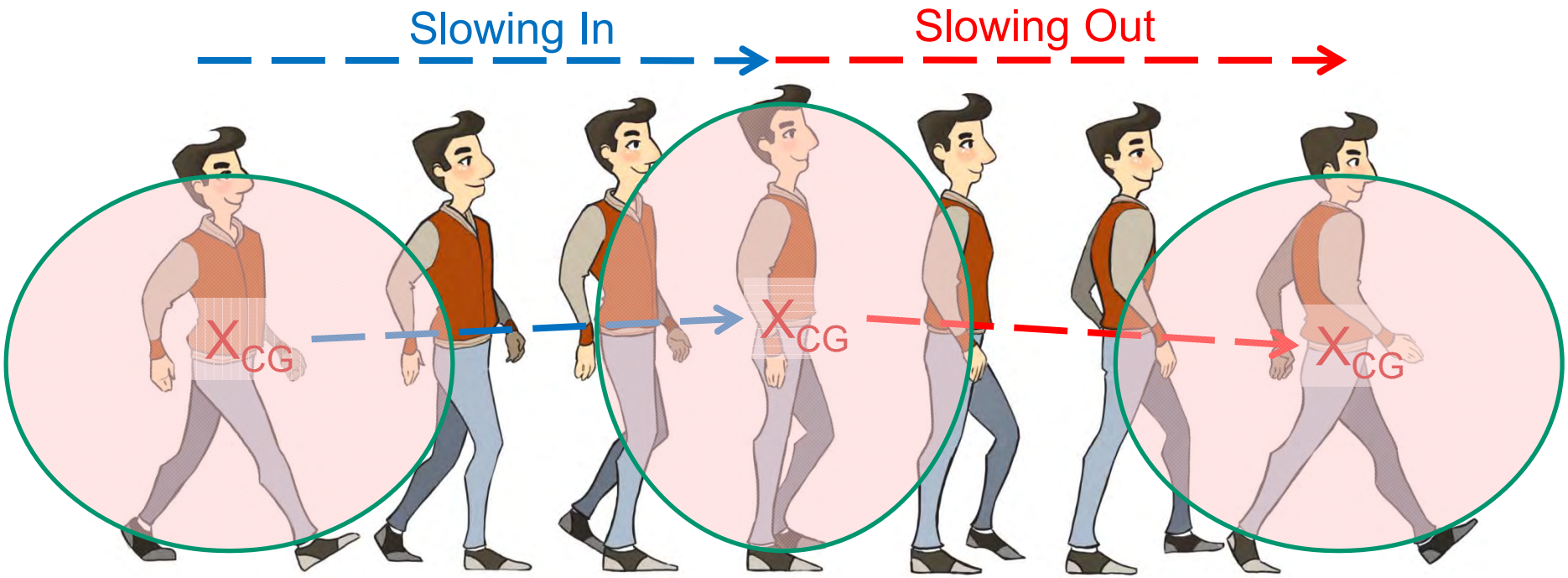
Timing and spacing has some slowing in and slowing out as the center of gravity rises and falls.

Inverted Pendulum

In the passing position the whole body swings up and down, as an inverted pendulum.



Rolling Egg Timing

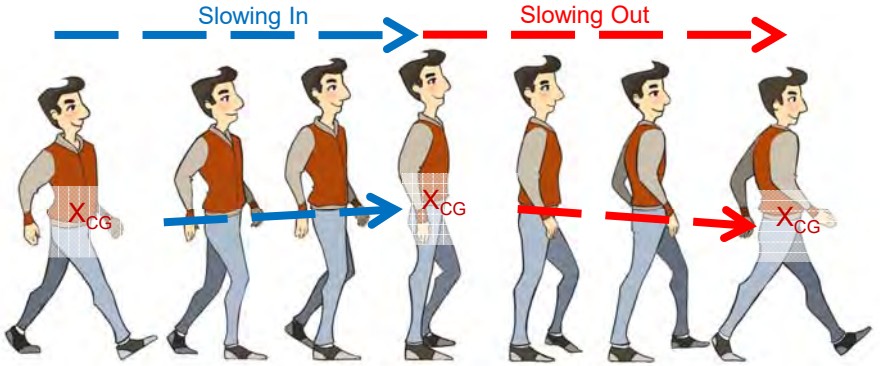


The timing of the motion due rising and falling center of gravity (CG) is like that of a rolling egg.

Home Demo: Carrying Water

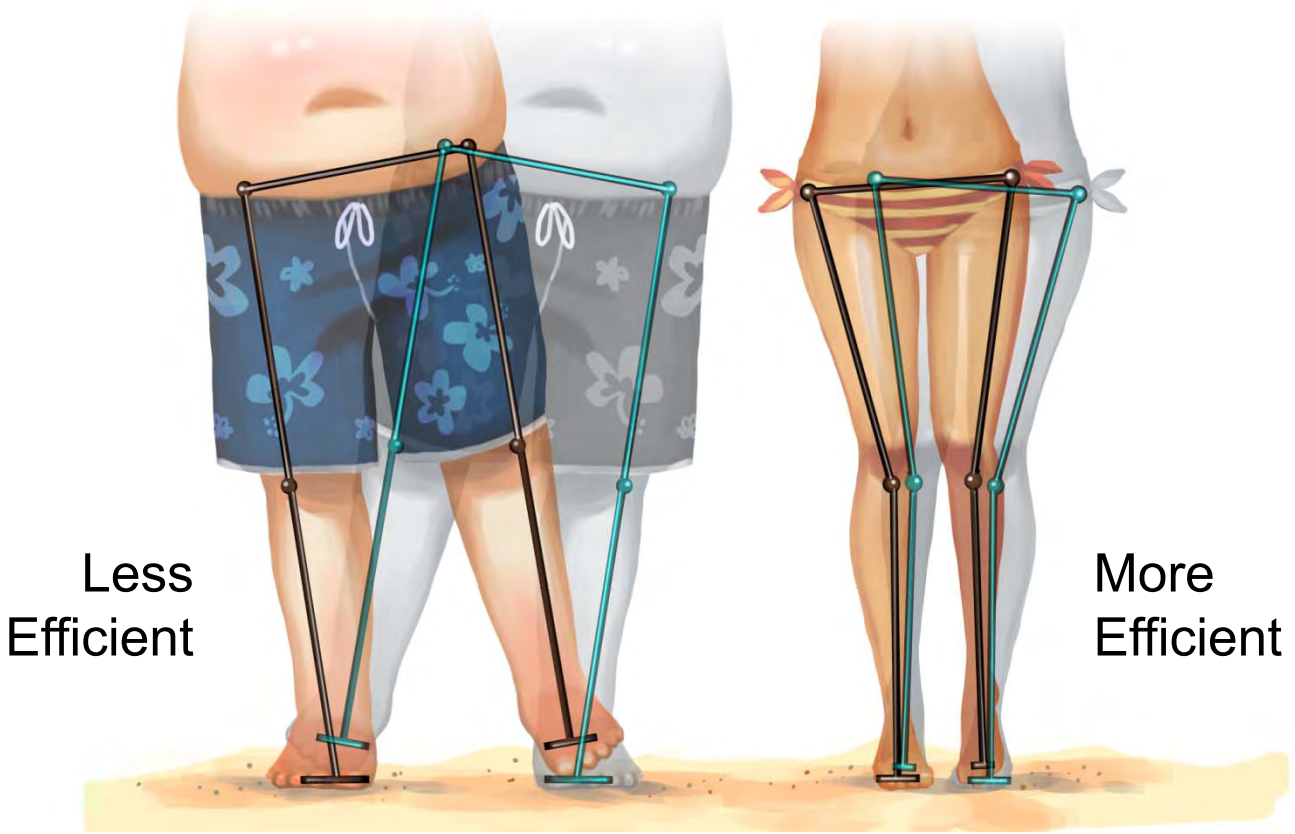
To appreciate the “rolling egg” timing of a walk, carry a shallow tray of water and notice the rhythm of the sloshing.

Walking stiff legged, like Frankenstein, exaggerates the slowing in and out.



Stride Width

The center of gravity also shifts from side to side as we walk, though walking is more efficient (takes less energy) if this motion is minimized.



Swaying

Center of gravity moves both up-and-down and side-to-side, making an ∞-shaped loop if walking slow and a U-shaped loop if walking fast.

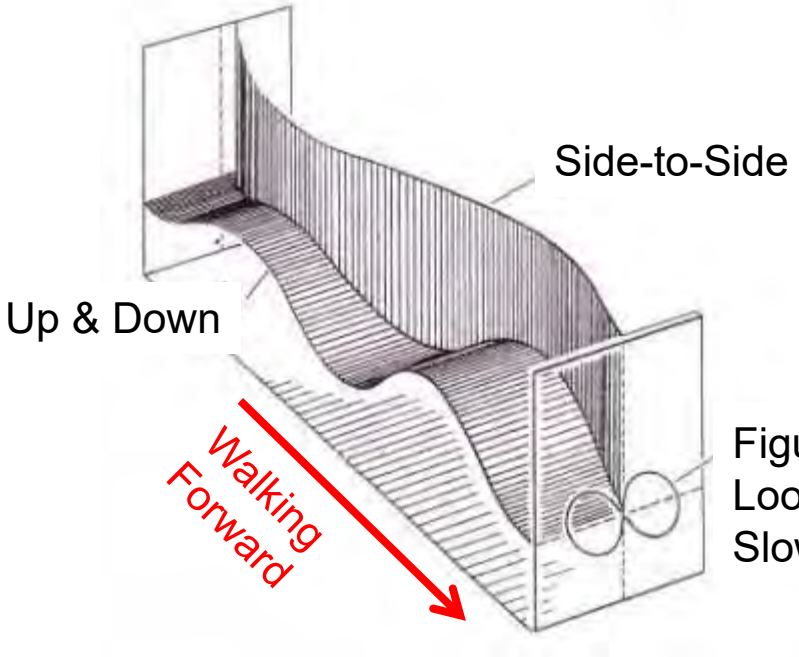
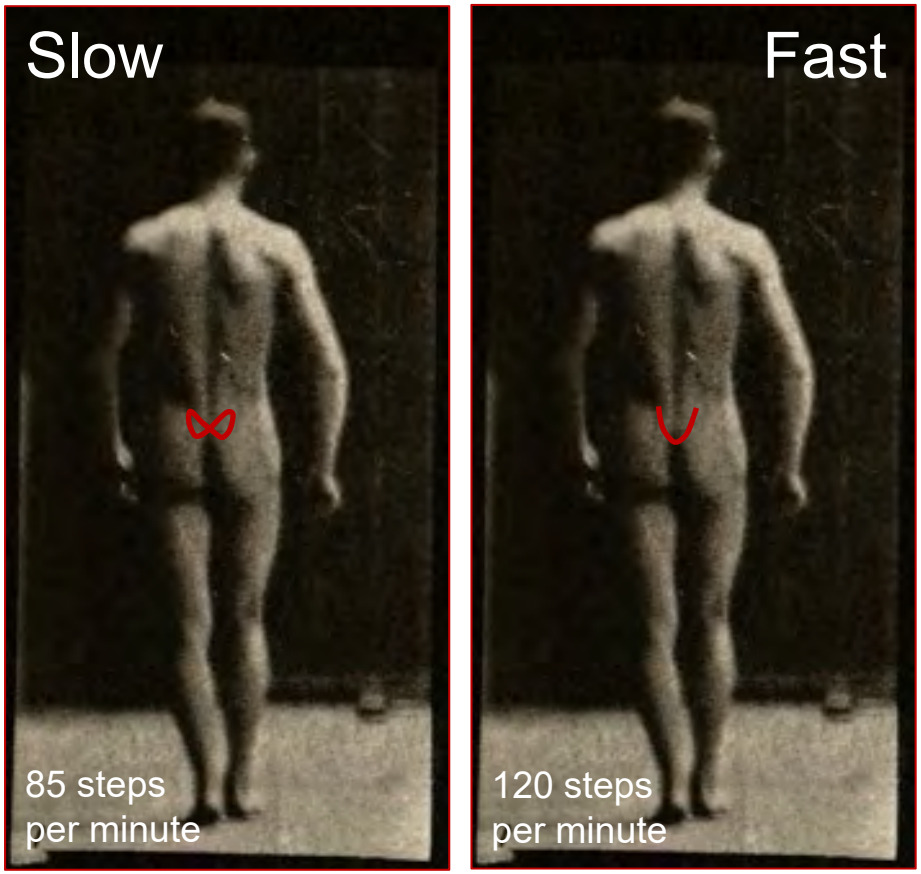


Figure ∞ Loop of a Slow Walk



Slow Fast

Summary

- In a basic walk the center of gravity rises from contact pose to passing position then drops again returning to contact.
- This rising and falling motion textures the timing with the body slowing in as it rises and slowing out as it drops back down.
- The center of gravity has a side-to-side motion synched with the up-down motion.
- In slow walks swaying makes an ∞-shaped loop while it's U-shaped for fast walks.