



## Handout 1 - Neurologist John Krakauer on Why We Dance.

*From John Krakauer, "Why do we like to dance--And move to the beat?" Scientific American.*

Many things stimulate our brains' reward centers, among them, coordinated movements. Consider the thrill some get from watching choreographed fight or car chase scenes in action movies. What about the enjoyment spectators get when watching sports or actually riding on a roller coaster or in a fast car?

Scientists aren't sure why we like movement so much, but there's certainly a lot of anecdotal evidence to suggest we get a pretty big kick out of it. Maybe synchronizing music, which many studies have shown is pleasing to both the ear and brain, and movement—in essence, dance—may constitute a pleasure double play.

So, why is dance pleasurable?

First, people speculate that music was created through rhythmic movement—think: tapping your foot. Second, some reward-related areas in the brain are connected with motor areas. Third, mounting evidence suggests that we are sensitive and attuned to the movements of others' bodies, because similar brain regions are activated when certain movements are both made and observed. For example, the motor regions of professional dancers' brains show more activation when they watch other dancers compared with people who don't dance.

This kind of finding has led to a great deal of speculation with respect to mirror neurons—cells found in the cortex, the brain's central processing unit, that activate when a person is performing an action as well as watching someone else do it. Increasing evidence suggests that sensory experiences are also motor experiences. Music and dance may just be particularly pleasurable activators of these sensory and motor circuits. So, if you're watching someone dance, your brain's movement areas activate; unconsciously, you are planning and predicting how a dancer would move based on what you would do.

That may lead to the pleasure we get from seeing someone execute a movement with expert skill—that is seeing an action that your own motor system cannot predict via an internal simulation. This prediction error may be rewarding in some way.