

## Visualization and Brain Science

Professional athletes and performers almost all use visualization because it works. The body does not know the difference between what is happening and what we imagine or remember. When a runner visualizes a race, while attached to electrodes, the exact same sequence of brain activity is observed as when the runner is physically racing.

If you imagine eating a juicy lime and tasting its sour juice, your mouth will salivate because your mind has tricked your body. The same is also true if you visualize yourself failing or losing.

According to research using brain imagery, **visualization works** because neurons in our brains, those electrically excitable cells that transmit information, interpret imagery as equivalent to a real-life action. When we **visualize** an act, the brain generates an impulse that tells our neurons to “perform” the movement.

In 2004, the Cleveland Clinic conducted a study on mental exercises and the impact that it has on strength (in participants’ fingers and arms). They separated people into three groups and had them follow a protocol for 12 weeks. One group did the physical exercises. One group visualized doing the exercises. The last group did nothing. At the end they re-tested their strength. When it came to finger strength the group that physically did the exercises had a 53% increase in strength, the ones that visualized it had an increase of 35%, and the ones that did nothing had no significant change.

***It is incredible to think that your thoughts are so powerful that simply visualizing exercising your finger can significantly increase your strength, without any physical movement.***

They also found that arm strength increased by 13% through visualization alone. If your mind can do that, what else can it do for you that you may not be tapping into?

Another study looking at brain patterns in weightlifters found that the patterns activated when a weightlifter lifted hundreds of pounds were similarly activated when they only imagined lifting. In some cases, research has revealed that mental practices are almost effective as true physical practice, and that doing both is more effective than either alone. For instance, Guang Yue, an exercise psychologist from Cleveland Clinic Foundation in Ohio, compared “people who went to the gym with people who carried out virtual workouts in their heads”. He found a 30% muscle increase in the group who went to the gym. However, the group of participants who conducted mental exercises of the weight training increased muscle strength by almost half as much (13.5%). This average remained for 3 months following the mental training