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Debunking Visualization: Does Mental Imagery have an effect on sport performance?

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Emily Cook competing in the Winter Olympics.

Noise from the crowd is blaring. The weather is cold. You have done the trick many times in practice, but are you able to perform it in the face of an overwhelming audience and millions watching? These were all thoughts and fears facing Emily Cook, an U.S Olympic athlete, as she prepared to do what she does best: perform acrobatic tricks at the highest level. Emily has seen her fair share of medals, and takes a spot on the podium each time. She credits her success to not only enduring physical training, but also mental preparation. More specifically, **visualization**. She states, "*Visualization, for me, doesn't take in all the senses, you have to smell it. You have to hear it. You have to feel it, everything."* For Emily, it's an all-encompassing practice. To put into perspective how much emphasis and value is placed on this practice, in Emily's sport missing the mark slightly can have disastrous consequences.

This begs the question: *when an athlete is preparing for a race or competition, how do they compete at their highest level and what preparation do they have to do ahead of time mentally? More specifically:* ***Does mental imagery have an effect and to what degree does it improve performance in sport?***

There is a growing amount of research that suggests that physical training must be coupled in tandem with mental training. For this discussion, the following definition proves useful: visualization is "a relaxation technique based on visualizing pleasant images and body awareness to help people to create sensory-rich images in their minds to promote relaxation, concentration and body awareness." (Abdoli, Rahzani, Safaie, & Sattarie, 2011)

In a highly recommended book, *The Rise of Superman: Decoding the Science of Ultimate Human Performance*, Steven Kotler accounts the baffling story of how running the four minute mile gradually became something that was accepted. He discusses how in a phenomenal way, running a four minute mile became more achievable once the mental block and barrier was passed. Once the first man completed it, the rest followed. Between the time the first person did it, then the second, and third, the time in between what seemed like an impossible task to achieve became negligible. This was in part to the so called power of visualizing the impossible.

The question then becomes to what degree does visualization or mental imagery improve performance outside the popularized discourse. With a quick glance at the popular forums surrounding visualizations, one can conclude that the subject matter is discussed extensively yet the discussion shows to be inconclusive in many facets. What is becoming more crystallized and clear is this notion of **objective based imagery and process imagery**, the ladder focusing on the steps needed to get to a desired objective.

For Emily Cook this meant breaking down piece by piece what her routine looked like. *"I would say into the recorder: 'I'm standing on the top of the hill. I can feel the wind on the back of my neck. I can hear the crowd,"* Cook said. "*Kind of going through all those different senses and then actually going through what I wanted to do for the perfect jump. I turn down the in-run. I stand up. I engage my core. I look at the top of the jump.'* The question then becomes a matter of delineating the lines between fantasy and reality.

Harvard psychologist Edmund Jacobson first discovered this link of the mind and body, he "found that imagining oneself lifting an object triggered corresponding electrical activity in the muscles involved in the lift." Similar to Jacobson's finding, research out of the Cleveland Clinic proved similar results with a finger exercise. "Folks who did no physical training but merely imagined their fingers going through exercise motions saw a 35% increase in strength" That is incredible! The research proves to demonstrate some insight into the relationship of the mind and body. Overall, it appears that the same circuits fire in either case of imagination or reality. The implications for this are enormous and connects visualization to cognitive processes.

On the other hand, Research from the *Journal of Experimental Social Psychology* shows that fantasies about goals in the future effect the body on a physiological level. Researchers Heather Barry Kappesa and Gabriele Oettingena found after conducting experiments that "positive fantasies translate into poor achievement." This brings into the discussion how one processes visualization. This research highlights that there are differences between conducting a mental rehearsal exercise and a goal driven exercise.

Cook in this instance could have easily turned to a desired goal of landing a spot on the podium. She could have stated “I imagine myself winning that gold medal” or “Standing up on the podium, I would feel full of pride.” However, there is research that shows that this type of orientation of mental observation is actually harmful, and counterproductive.

The discourse and discussions around visualization became more nuanced with the addition of literature and research. While it is out of the scope of this discussion the concept can further be extended to imagery and music as studied at the USC Brain and Creativity Institute. Additionally, the research differs by variable factors, so I am hoping there is more expansive knowledge on the subject. Overall, one of the most prominent benefits seem to be a heightened sense of well-being and awareness and a boost in confidence. This article demonstrates that the results are greater than initially thought, if properly applied. This is for numerous reasons, which include but not limited to “ gaining confidence, learning new exercise routines, to reducing tension and anxiety prior to exercising, increasing excitation and psychological readiness, and to improving motivation.” (Vadocz, Hall, & Moritz, 1997). Therefore, at the very least there is a boost in self-confidence. In the absence of the physical movement of the task, mental imagery and practice can be quite helpful. Guided imagery has a positive effect on performance, whether you choose to subscribe to the notion or not.

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