

External v. Internal focus of attention and their affects on complex skills

Continued from previous page

(1998) and Wulf et al (2001) demonstrated that simply viewing the focus as internal or external was sufficient to generate different results. The use of the ski-poles could thus behave analogously to the marks on the stabilometer in Wulf et al (2001). Further research would be necessary to verify this.

In the case of Shea et al (2000), having participants spend part of their time watching other people perform the task means that participants will see the effects of the movements on the environment. They also are potentially getting the opportunity to see the totality of the movement, as well as the results of the different mistakes the other person might make. This could again serve to create an external focus, although once again further research would be required for confirmation.

Shea et al (2001) also implicitly supports the external focus hypothesis. Participants in Shea et al (2001) demonstrated superior performance when learning occurred implicitly instead of explicitly. It is highly likely that watching the patterns and coordinating motion according to those patterns helped generate an external focus when the participants did not know there was repetition. Participants simply allowed their bodies to do the right thing, while they focused on the images they were viewing. On the other hand, when they knew to look for a specific repeated segment, it is more likely that they made a more conscious effort to remember it and move accordingly. One possibility is that they spent time attempting to build up mnemonics to remember the pattern, instead of just practicing it. Again, further research would be required to verify this. Some anecdotal support is found in Gallwey (1974), which observes that the best tennis performance occurs when the player is not thinking about what he is doing. Gallwey (1974) further observes that the best way to ruin someone's game is to

ask him to explain what he is doing. The act of describing how he's doing what he's doing will cause him to lose his coordination and timing. In the context of Wulf & Prinz (1998), Wulf et al (2001), Wulf et al (2002), this would, in effect, be tricking the other person into switching from an external to an internal focus.

The exact reason that external focus is more effective than internal focus is unclear. Based on Wulf et al (2001), it appears that focusing on the effect of the action, instead of the detailed body movements, simply requires less attention. As pointed out in Cox (2002), the less attentional resources an athlete requires to perform a task, the more attentional resources he has available to attend to other things. Of course, this begs the question of why an external focus would require less attentional resources than in internal focus. Wulf et al (2001) suggests a constrained-action hypothesis: an internal focus of attention causes the athlete to interfere with the automatic control processes that regulate movement, whereas an external focus allows the body to naturally self-organize. The results of Shea et al (2001) also tend to support this hypothesis: participants performed better when they did not realize they were learning a pattern than they did when they were aware of the pattern being learned.

Returning to the initial discussion of qi, it appears that qi is a valuable teaching tool to the extent that it provides the martial artist with an external focus of attention. This also suggests that the use of abstractions and imagery to guide an athlete's attention away from this body and to the effects of his actions are superior to techniques that focus on specific body motions and conditions. Further research is necessary, especially into sports and scenarios other than those already tested. For example, an experiment similar to the ones used in Wulf et al (2002) with volleyball and soccer players could be to instruct a jujitsu student to: "spin in like a whirlwind and throw your opponent over your hip and along your belt," instead of "pivot low, with your legs bent, your waist beneath his waist, and your right hip projecting out past his right hip." Another example would be to instruct a grappler to pin his opponent by telling

him to "project your qi through his body and anchor it into the ground" instead of "relax all your muscles, let your limbs starfish out, and be a dead weight on top of him."

The use of external focus is a fruitful area of research, with the potential to change the way physical skills are taught. In the martial arts, the old paradigm of qi may turn out to have modern relevance within the context of the growing knowledge of sport skill learning.

References

- Balzac, S. (1997). *Pushing the Envelope. Kiai Echo, Issue S97.*
- Balzac, S. (2002). *The Inverse Pearl. Kiai Echo, Issue F02*
- Cox, R. (2002). *Sport Psychology, Concepts and Applications (5th Ed).* New York: McGraw-Hill.
- Deshimaru, T. (1982). *The Zen Way to the Martial Arts.* New York: Dutton.
- Gallwey, W. T. (1974). *The Inner Game of Tennis.* New York: Bantam.
- Musashi, M. (1645). *The Book of Five Rings (B. J. Brown, Trans).* New York: Bantam.
- Shea, C., Wulf, G., Whitacre, C., Park, J-H (2001). *Surfing the Implicit Wave. The Quarterly Journal of Experimental Psychology, 54A(3), 841-862.*
- Shea, C., Wright, D., Wulf, G., Whitacre, C. (2000). *Physical and Observational Practice Afford Unique Learning Opportunities. Journal of Motor Behavior, Vol. 32, Issue 1, p27-36.*
- Shea, C., Wulf, G., Whitacre C. (1999). *Enhancing Training Efficiency and Effectiveness Through the Use of Dyad Training. Journal of Motor Behavior, Vol. 31, Issue 2, p. 119-125.*
- Westbrook, A., Ratti, O. (1970). *Aikido and the Dynamic Sphere.* Rutland: Charles E. Tuttle.
- Williams, A. M., Singer, R., Frehlich, S. (2002). *Quiet Eye Duration, Expertise, and Task Complexity in Near and Far Aiming Tasks. Journal of Motor Behavior, Vol. 34, Issue 2, 197-207.*
- Wrisberg, C., Wulf, G. (1997). *Diminishing the Effects of Reduced Frequency of Knowledge of Results on*

Continued on next page