

**Jackson, R. C.** (2014). Concentration. In R. C. Eklund & G. Tenenbaum (Eds.) *Encyclopedia of sport and exercise psychology*. Sage Publications.

## CONCENTRATION

In sport psychology, concentration refers to focusing on sensory or mental events coupled with mental effort. It therefore relates primarily to the selective attention dimension in which individuals are able to selectively process some sources of information while ignoring others. It has its roots in the oft-cited quote from William James' 1890 book *The Principles of Psychology (Vol. 1)*: "Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration, of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others..." Within sport psychology, research interest in concentration is predominantly focused in two areas. First, the study of skill failure under pressure, or 'choking', due to the strong evidence that skill failure can result from 'reinvestment' of conscious control processes. Second, researchers have investigated the efficacy of external and internal foci of attention during learning and in skilled performance.

## Measurement

Researchers have used a range of psychophysiological tools, as well as self-report measures, to infer attentional states. These include heart rate, electroencephalogram (EEG), and functional magnetic resonance imaging (fMRI) and ratings of the extent of focus on a particular information source in experimental paradigms. In addition, dual-task paradigms have been used to measure performers' awareness of task-relevant and extraneous information, most notably in

the study of choking. Self-report measures include the Test of Attentional and Interpersonal Style (TAIS) which was devised by Robert Nideffer to assess a range of personality measures, a subset of which were linked to his proposed two-dimensional model of attention. This model distinguishes between direction of attention (external, internal) and breadth of attention (broad, narrow) creating four combinations. The scale contains groups of items to measure positive attributes of attention (effective integration and effective narrowing) and items to measure negative attributes (overloading and under-inclusion). Other scales that are more specifically focused include the Self-Consciousness Scale, which measures individual propensity for attending to the self, and the Reinvestment Scale (and its movement-specific and decision-specific versions), which measures the tendency to exert conscious control over movements or the decision making process.

## **Concentration and 'Choking'**

There is good evidence that skill failure in self-paced skills such as golf putting, basketball free throws, rugby goal kicks, and static target shooting events is caused by individuals concentrating on consciously controlling their movements. Much of this work has assessed the performer's attentional state in the few seconds prior to skill execution in combination with various experimental paradigms. These include cross-sectional designs comparing individuals of different levels of ability or experience, and within-participant designs in which performers' concentration is directly manipulated via explicit instruction or task-related instructions. Evidence from performance measures and indirect measures of attention indicates clear differences between high-skilled and less-skilled performers, and that skilled performance breaks down when individuals reinvest conscious control over largely automatic actions. For

example, explicit monitoring of motor skills has been shown to have a detrimental effect on skilled performers but does not impair, and sometimes facilitates, novice performance. By contrast, experts are able to perform a concurrent secondary task without impairing primary task performance whereas novice performance tends to get worse. Relatedly, there is within-group evidence that skilled performers' ability to report task-relevant and extraneous information relates to how well they have been performed on preceding trials. Specifically, players are better able to report bat position during a performance 'slump' than when on a 'streak' of good performance, implying their concentration is more directed to the swing motion during slumps.

A second line of research into concentration in sport concerns the efficacy of adopting either an external focus (on an implement or movement effects) or internal focus (on body movements) during learning and skilled performance. There is now a considerable body of evidence across a variety of tasks and using different age groups that an external focus is preferable for learning and there is some evidence this extends to skilled performance. Further, the effect is moderated by distance so that a more distal external focus is more beneficial than a proximal focus. By studying task outcome alongside the movement kinematics and EMG activity, improvements in movement efficiency as well as accuracy have been reported resulting in more rapid skill acquisition and better retention. The Constrained Action Hypothesis has been proposed to explain these findings, referring to the self-organising nature of the motor system and the potential for an external focus of attention to facilitate high frequency unconscious adjustments. Conversely, an internal focus of attention is hypothesised to constrain the self-organising nature of the motor system as the performer attempts to actively monitor and control the system.

## Conclusion

The term 'concentration' embodies one element of the multidimensional construct of attention. In the sport psychology literature, the term has been particularly important in the study of skill failure under pressure and in the realm of skill acquisition. Although not mentioned here, concentration strategies are a key component of the mental routines performers employ before executing self-paced skills. Proposed interventions for aiding performance, particularly under pressure, support the view that the information on which a performer concentrates in the few seconds before skill execution is a key determinant of performance.

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### FURTHER READINGS

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