Mental Skills Training for Coaches to Help Athletes Focus Their Attention, Manage Arousal, and Improve Performance in Sport

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INTRODUCTION

It is not uncommon for a coach to tell an athlete to pay attention, focus, or concentrate. Athletes almost always answer with “Okay,” or “I am trying to,” as if they know exactly what the coach is asking them to do. Is this an automatic understanding between the parties? Do the participants really know what the other wants them to do? This example refers to the process of attention or attention control. There are a considerable number of factors that cause an athlete to move attention to optimal performance.

Abernethy (2001) states that “attention is clearly a broad and multifaceted psychological construct that impacts on sports performance and learning in a large number of quite diverse ways” (p. 76).

Abernethy (2001) and Zaichkowsky and Naylor (2004) believe that the increase in an athletes’ awareness of his or her arousal level as it relates to the construct of attention is the foundation to psychological skills training relative to performance. Interventions, such as relaxation, visualization, goal setting, positive self-talk, focusing, and re-focusing, are collectively called mental skills, and they have proven to be instrumental in helping athletes achieve their best. According to the research, there has been considerable development in mental skills training in applied sport psychology practice in the field of attention and performance.
Sport psychology research has shown that attention can be improved by evaluation, assessment of specific settings, and treatment of the maladaptive coping which impacts attention. From youth to late adulthood, there is a whole host of athletes from novice to master who can benefit from this research on attention, arousal, and performance. This manuscript presents a model to teach mental skills training to coaches in order to help athletes focus their attention, manage their arousal, and improve performance in sport. The seminar for coaches lays the foundation for further research with athletes on the subject.

**REVIEW OF LITERATURE**

The study of attention is apparent in the works of many sport psychologists. Abernethy (2001), Nideffer (1976), Singer (1999), Janelle, Singer, and Williams (1999), Zaichkowsky and Baltzell (2001), Zaichkowsky and Naylor (2004), and others have looked at the constructs of attention and arousal in the relationship that each construct has on the performance of athletes.

**ATTENTION**

*The Compact Edition of the Oxford English Dictionary* reports that "attention" was originally used by Chaucer in translation from Latin. Attention is defined as:

- The action, fact, or state of attending or giving heed; earnest direction of the mind, consideration or regard. The mental power or faculty of attending.
- Practical consideration, observant care, notice.
- The action of attending to the comfort and pleasure of others; ceremonious politeness, courtesy.
- A matter of attention, consideration.
- A cautionary word used as a preparative to any particular exercise or maneuver. (p. 138)
Throughout the history of psychology, there has been significant review, discussion and analysis on the topic of attention. The field of sport psychology has been interested in attention and how it relates to performance in sport for many years. Posner and Boise (as cited in Abernethy, 2001) and Robert Nideffer (1976) have each provided complete definitions of attention.

Posner and Boise identified three major definitions of attention in contemporary psychology:

- **Attention as alertness**, including concerns with the development and both short- and long-term maintenance of optimal sensitivity and readiness (or preparedness) for responding.

- **Attention as a limited capacity or resource**, as examined in studies of divided attention aimed at isolating capacity and/or resource limitations in information processing.

- **Attention as selectivity**, as examined in studies of selective attention requiring the reporting of information from a particular modality, spatial location, or context in the face of competition from other items and sources of distraction (p. 54).

Attention as alertness is best explained in the upcoming section on the construct of arousal and the impact on attention. The second categorization, attention as a limited capacity or resource, is best examined by focusing on the dual-task paradigm. In these studies, the subject performs two tasks simultaneously.

Researchers are beginning to perform more studies in the dual-task paradigm. Janelle, Singer, and Williams (1999) studied distraction and attentional narrowing tasks in a dual-task auto racing simulation. Forty-eight female university subjects with normal or corrected normal vision were assigned to random groups and tested using a simulated Indy Car driving task that required the subject to navigate a race course by controlling steering, acceleration and braking. The researchers confirmed the notion that distraction and attentional narrowing occurred concurrently, leading to inefficient visual search patterns and decrements in performance on central and peripheral tasks (p. 85).
Attention in the context of selectivity is the third category in the study of attention in sport. Selective attention problems in sport appear to be more visual according to many of the researchers and their writings on the topic. In the previously mentioned study by Janelle, Singer, and Williams (1999), the researchers recorded visual search patterns as an index of potential attentional changes that might occur when the forty-eight female university subjects were presented with relevant and distracting cues while driving a simulated race course. They stated that:

By not studying the interaction of emotions, attention, and performance, the generalizability [sic] of research on attention has been somewhat limited. Much still needs to be understood about dynamic sport settings in which attentional flexibility is crucial under conditions of severe time constraints and performance pressures (p. 71).

The research points to an examination of the differences between novice and experts as a way to further explore the anticipatory effects in selective attention. Abernethy (2001) states:

While there appears to be little evidence to indicate that the visual hardware of highly skilled players is systematically superior to that of the general population, there are increasing clear demonstrations of expert-novice differences in the ability to perform selective attention tasks in which the opportunity for using acquired situation specific strategies (or software) is present. The strongest, systematic evidence for a perceptual basis for sport expertise exists with respect to expert advantage on anticipation tasks and on pattern recognition tasks (p. 74).

A study that exemplifies this concept is Abernethy and Russell’s (1987) research comparing expert (n=25) and novice (n=35) racket sport players. The expert group was made up of participants in the 1982 Commonwealth Games badminton competition held in Brisbane, Australia. They consisted of 13 male and 12 female subjects ranging in age between 18 and 29 years old. The novice group, consisting of 22 males and 13 females, was drawn from a population of undergraduate students in physical education. All members of the
novice group were familiar with the game of badminton. The subjects were to predict the landing position of the stroke they viewed in a perceptual film of badminton. The authors found that the experts were better able to predict the landing position than the novices because of their ability to pick up earlier display cues that only could come from experience and prior knowledge. The evidence does show that as an athlete experiences something, the increased ability to use the information to improve follows suit.

The examination of attentional direction and breadth has been studied by using self-report measures. The Test of Attentional and Interpersonal Style (TAIS) was developed by Nideffer in 1976. The TAIS is a 144-item paper and pencil test structured on two basic theoretical beliefs. The first is that attention follows a continuum from broad to narrow. The second belief is that the subject’s attention can be located on the continuum of internal to external. Collectively, this scale allows an athlete to be positioned in one of the four possible quadrants (broad-internal, broad-external, narrow-internal, narrow-external). Although this test is widely used in research and in practice, the TAIS has fallen under scrutiny in regards to the predictability and its construct validity (Ford and Summers, 1992). Albrecht and Feltz (1987) used the TAIS in their study of 29 intercollegiate baseball and softball players. The study had three purposes, to construct a baseball/softball batting version of the TAIS (B-TAIS), to compare the TAIS and the B-TAIS reliability, and to compare the TAIS and B-TAIS validity. The researchers gave both the TAIS and the modified B-TAIS to the subjects and concluded that they could not demonstrate a significantly greater stability of the modified tool.

Robert Nideffer (1976) argues that his theory of attentional and personal style is a well-developed theoretical framework for examining the relationship among cognitive processes, emotional arousal, and performance.

The theory was developed to provide a framework for understanding and predicting the conditions under which individuals would, and would not, be able to perform up to their potential. The
theory has relevance to both physical (execution of a motor skill) and mental (decision making, problem solving) performance in virtually any performance area. The seven theoretical constructs of Nideffer's Theory of Attentional and Personal Style are:

1. Focus of attention, or focus of concentration shifts along two dimensions, a dimension of width (broad to narrow), and a directional dimension (internal or external). Conceptually, you can think of these two intersecting dimensions that result in four different attentional styles of foci (Nideffer, 1976).

2. Individuals have preferred attentional styles, though the average person can develop all four attentional styles, and under most conditions can shift his or her focus along both attentional dimensions in response to the changing demands of performance situations (Nideffer, 1976).

3. Different performance situations place different demands on the four attentional styles, and require different amounts of shifting between the four styles (Nideffer, 1976).

4. As arousal increases, shifting breaks down; attention begins to narrow involuntarily and becomes more internally focused (Nideffer, 1976).

5. The perception of the passage of time is dependent upon the amount of shifting that occurs between external and internal focus (Nideffer, n.d., 1).

6. Both the flow state and the zone are dependent on an individual's ability to move smoothly between physiological and cognitive transition points (Nideffer, 1997).

7. Performance-relevant characteristics, both intrapersonal and interpersonal, are important predictors of both the particular situations a given individual will experience as emotionally stressful, and of the types of behaviors on which they will rely most heavily when emotionally stressed (Nideffer, 2004).

Posner and Boise (as cited in Abernethy, 2001) and Nideffer (1976) highlight the fact that attention can be developed and optimized
to improve performance. This reinforces the notion that sport psychologists and coaches can assist athletes in the development of attention control to improve performance.

**AROUSAL**

It is important to define the construct of arousal and how it relates to attention. *The Random House Dictionary of the English Language* (1967) defines arouse (verb) as:

- To put in motion; stir to action; awaken; to arouse from sleep.
- To provoke; excite; to arouse a response.
- To awake or become aroused.

Synonyms: animate, inspirit, inspire, incite, excite, provoke, instigate, stimulate, kindle, and fire (p. 83).

In sport psychology research, arousal has been used synonymously with anxiety, activation, emotion, and psyched-up. Zaichkowsky and Baltzell (2001) state that “the interchange between arousal and anxiety has created conceptual confusion. Because anxiety often results in increased central and autonomic nervous system activity (arousal), it (unfortunately) has been used synonymously with arousal” (p. 319). Arousal level influences an athlete’s cognitive functioning. “It is suggested that an athlete beyond his or her optimal arousal level is likely to suffer from poor decision making, impaired memory and rushed thinking (Zaichkowsky and Naylor, p. 159). Nideffer and Sagal (2001) state that “if individuals are able to have control over their own level of arousal (so it is neither too high not too low), they are capable of effective attention” (p. 314). Therefore the right level of arousal has a strong impact on attention and emphasizes the need to train coaches and other professionals to understand both arousal and attention.

Zaichkowsky and Naylor (2004) identify arousal in sport and exercise as “a human condition that ranges along a continuum from sleep to high expectation and is expressed physiologically, cognitively and behaviorally” (p. 155). A swimmer focusing on getting off the
blocks quickly is an example of short-term maintenance of optimal sensitivity. The same swimmer keeping his focus on maintaining his optimal stroke count for the entire distance of the race is an example of long-term maintenance of optimal sensitivity.

Arousal can be measured by behavioral measures, by cognitive measures and by physiological measures according to Abernethy (1993). Behavioral measures are used to determine the level of arousal and anxiety that an athlete experiences. This is best determined by an observer categorizing these overt behaviors on a checklist. The observer’s goal is to link behaviors to the underlying activation constructs observed.

Cognitive measures seem to be the more favored in determining an athlete’s level of arousal and how it impacts attention. This is best measured by a subject’s self-report of their levels of activation, usually within the context of anxiety and level of attention. Liao and Masters (2002) studied self-focused attention, stress, and the competitive anxiety of twenty-one university hockey players (ten male, eleven female) in performance situations. They examined the level of self-focused attention in situations with varying degrees of stress. The authors used the Competitive State Anxiety Inventory-2 (CSAI-2), which was developed by Martens, Burton, Vealey, Bump, and Smith in 1990, to map the levels of anxiety before and after an important game. They also used the Private Self-Conscious (PSC) subscale of the Self-Consciousness Scale, which was developed by Fenigstein, Scheier, and Buss in 1975, to measure the participants’ self-focused attention. The results of the study concluded that stress does induce self-focused attention. Liao and Masters (2002) report:

It is possible, therefore, that an impending stressful event induces a process in which the demand of the event is compared to one's own response capabilities, which requires a high level of self-focused attention. However, when the stress is perceived as too demanding (cognitive anxiety is getting too high), the self-regulation process will be avoided and the self-focused attention will consequently abate (p. 295).
Physiological measures are used to monitor and evaluate the level of arousal in athletes. The autonomic nervous system is responsible for activating and controlling sympathetic and parasympathetic systems, the hypothalamus, all neural activity, and the peripheral organs in the body. Changes in the body, such as pupil dilation, increased heart rate, blood pressure, and respiratory elevation and increased sweating are measurements to determine activation, heightened attention, and arousal. EEG recordings and heart rate changes are being used by sport scientists to describe attention changes in discrete skills such as rifle shooting and archery. Analysis has been restricted to these sports because the athlete is essentially steady allowing good baseline recordings without contamination of physical exertion and movement artifacts (Abernethy, 1993).

The relationship between arousal and performance is well-known in the sport psychology field. Performance follows an inverted-U function as arousal increases and reaching moderate levels of arousal are ideal for the optimal athletic performance (Abernethy, 1993, 2001; Zaichkowsky and Naylor, 2004). This concept is seen in most sport psychology textbooks and is officially called the inverted-U hypothesis or as the Yerkes-Dodson Law, after the original discoverers, Yerkes and Dodson in 1908.

The study of attention as alertness has been fruitful in developing techniques with the goal of optimizing and maintaining optimal arousal at the behavioral level (behavioral interventions), cognitive level (cognitive therapy and mental exercises), and the physiological level (biofeedback). Nideffer and Sagal (2001) state that when optimal arousal is achieved and maintained effective attention is also achieved. They also emphasize that optimal arousal is individualized to the athlete and also to the task or sport at hand.

**Implications for Practice**

An understanding of attention and arousal and how both impact athletes is critical in order for a coach to have a positive impact on the athletes that he or she coaches. The research previously referenced shows
that attention can be focused and arousal can be controlled so that athletes improve performance. Sport psychology has focused on the practical application of mental skills to help athletes improve attention and control arousal. The use of cognitive techniques such as self-talk, relaxation, visualization, and goal setting have been studied to see if there is improvement in performance when using these techniques. The following studies provide a strong basis in which to support the framework of a seminar for coaches and the future research on the subject.

It has been found that self-talk seems to serve two functions for athletes, a cognitive function and a motivational function (Hardy, Hall, and Hardy 2004). The authors studied 291 athletes with a mean age of 21.82 (52% male and 48% female). The athletes competed in a variety of individual and team sports. These subjects also represented a range of skill levels from recreational (36%), club (10%), provincial (7%), varsity (39%), national (5%), through to international (2%) standards. The main purpose of the study was to find out how athletes use self-talk and if it varied throughout the sporting calendar. Hardy et al. (2004) discovered that 75% confirmed that the level of self-talk increased as the season progressed and that in general, individual sport and skilled athletes used this technique more frequently than team sport and less skilled athletes.

Thiese and Huddleston (1999) studied the use of psychological skills by female collegiate swimmers (n=147). The authors also wanted to investigate if swimmers specializing in different swim events utilized different mental skills. The study showed that swimmers in the study indicated that goal setting, positive self-talk, and music were the skills to be utilized “almost always” on a Likert scale. The results also indicated that there was no significant difference in psychological skills used by the swimmers and the distances that they swam.

Rogerson and Hrycaiko (2002) studied five male junior hockey goaltenders (ages 16–18 years old). The purpose was to examine the effectiveness of using relaxation in the form of centering and self-talk to produce improvements in goal save percentage. The authors con-
cluded that the results demonstrated that the mental skills training were effective in producing improvements in goal save percentage. The participants reported that they enjoyed using the mental skills and were satisfied with the results obtained. In addition, the coaches reportedly were very satisfied with the results and felt that mental skills' training was an important ingredient for improving performance.

The role of optimism has also received attention from sport psychology. Manzo, Ilhe-Helledy, and Blake (2004) studied 21 university swimmers (fourteen female, seven male) to see if optimistic thinking improved swimming performance. The study included giving the swimmers a workbook entitled "The Optimistic Swimmer," which is designed to teach youth swimmers how to think positively. The results were significant in finding that the swimmers who received the workbook increased their level of optimism as measured by pre- and post-tests. Although there was a small number of participants in the study, the goal of designing a mental skills training workbook for youth highlights the necessity for the purpose of this manuscript. There is an absence of research on the impact of mental skills training for youth.

The studies mentioned demonstrate that mental skills training has a positive impact on performance. Positive performance has been shown to improve a person's self-esteem, self-confidence, and general sense of well being. Because of the positive impact of mental skills on a person, it is curious as to why this has not received more attention by professionals in not only sport psychology, but in psychology as well.

An effective implementation of a plan must be comprehensive, focus on a target population, include resources for integration of the concepts, have clear methods for training, and incorporate a discussion around the desired and expected outcomes. Therefore, the remainder of this manuscript will present a plan specific to swim team coaches and their swimmers.
MENTAL SKILLS SEMINAR

This seminar is designed for coaches, and in particular for swim coaches of all levels in competitive swimming. The seminar is designed to inform coaches on how to focus attention, manage arousal, and teach mental skills to their swimmers to improve their performance. Although the seminar is for coaches, a second benefit of the seminar is to receive support from coaches to complete further research with youth swimmers on this topic. Because of this, swimmers should also be considered the subjects since the coaches who attend will be teaching mental skills training for their swimmers and hopefully be supporting further research.

This seminar emphasizes the role of coaches as leaders, followers, teachers, role models, limit setters, counselors, mentors, substitute parents, and family members (Anshel, 2003).

SETTING

The ideal setting for this seminar is a room with moveable chairs and a board for writing. The room ideally is in a place where there the surrounding noises are not too distracting and the temperature is comfortable. Pens, paper, and markers will be available in the room. The seminar shall be limited to a maximum of twenty coaches. The seminar will run for three hours with two fifteen-minute breaks included. Beverages and food will be available and appropriate to the time of the seminar (breakfast or lunch).

RESOURCES

A flyer with course description, date, and length of the seminar; objectives of the seminar; goals to accomplish; and contact information will be mailed to youth swim coaches in the area. The seminar will only be effective if knowledge about the participating coaches is obtained. A pre-seminar questionnaire will be completed by each coach and returned to the trainer five business days before the seminar. The
questionnaire includes questions about years of experience coaching, ages of swimmers, level of success, coaching style (multiple choice with definitions), knowledge of mental skills training, other employment, and openness to learning the mental aspects of sport. Space for coaches to write any comments or questions that they would like to have answered will be available on the questionnaire. When they arrive at the seminar, all participants will receive their own copies of the materials and tests that their swimmers will use for the research study.

There are several materials needed for this seminar that are related to the continued research. First, copies of the handbook, *The Mentally Tough Swimmer: Improving Performance in the Pool* (Howland, 2004), are needed. This handbook provides a comprehensive education and training program of mental skills for swimmers. The major sections provide definitions and exercises for implementation and practice of self-awareness, relaxation, self-talk, visualization, and attention control in swimming.

In addition, *The Sport Psychology Questionnaire for Swimmers*, by Lines et al. (1999) and the TAIS by Nideffer (1976) will also be available for coaches to view as these tools will be used for further research with the swimmers.

The Sport Psychology Questionnaire (Lines et al., 1999) is an evaluation tool to assess the importance of mental skills used at practice and in competition. The tool was selected for further research because it is designed specifically for swimmers and has shown high test-retest reliability and high face validity. In addition, the tool was used with swimmers grouped by age (13 to 16 years old) in a study by Lines et al. (1999).

The test of attention and interpersonal style inventory (TAIS) by Nideffer (1976) was previously mentioned in this manuscript. The TAIS is a 144-item paper and pencil test structured on two basic theoretical beliefs. The first is that attention follows a continuum from broad to narrow. The second belief is that the subject’s attention is on the continuum of internal to external. Collectively, this scale allows an athlete to be positioned in one of the four possible quadrants (broad-
internal, broad-external, narrow-internal, narrow-external). Nideffer has completed extensive work in determining which sport is more likely to be dominant in each quadrant as a way to identify the skill sets that are likely with that style. The premise is that individuals, like tasks, can be classified with respect to their dominant attentional style to match the situational demands (Abernethy, 2001). There are three main scales measuring effective attention and three additional scales that measure ineffective attention that gives way to the athletes’ present style. This scale will also be used with swimmers and be modified to measure only the three measurements of attention and three measurements of inattention.

A post-test self-assessment questionnaire will be given to swimmers for the purpose of evaluating their impression on the impact of mental skills on their performance. Included in this self-evaluation are questions on each of the mental skills learned and how they rate it to helping them in their swimming. This self-assessment also provides a link to the dominant attentional style of the swimmer as identified by the TAIS. The relationship of attentional style and preferred mental skill could be further evaluated by the existence of this data.

Coaches who would like to further evaluate the use of mental skills for their swimmers will need to have copies of the explanation of the research study for swimmers and parents, consent forms for parents to authorize consent for their children to participate in the study, and copies of the evaluation tools in order to receive approval from their organization in the event that they are not the decision makers.

**IMPLEMENTATION OF THE PLAN**

This seminar is designed to help youth swimming coaches identify their coaching style, understand the role of attention and arousal and how it impacts their swimmers, and teach and experience the mental skills present in *The Mentally Tough Swimmer: Improving Performance in the Pool*.

The format of the seminar is a combination of lecture, group discussion, and participation in activities designed to reinforce learn-
ing, and to allow participants to experience several mental skills exercises. In addition, videos of testimonials on the importance of mental skills from elite athletes will also be a part of the workshop.

The pre-seminar questionnaire will determine which part of the seminar needs the most time. For example, if the majority of coaches have no experience with mental skills training, more time will be devoted to the training of mental skills.

Enhancing the coaches' knowledge on the importance of self-awareness, relaxation, self-talk, visualization, and attention-control is vital to the success of the seminar. Coaches' perception of the efficacy of these skills and how they can help swimmers is critical to the success of further research. Coaches have an incredible amount of influence over the youths whom they lead. Youth look up to their coaches and a coach has to be aware of this influence.

**Desired Outcomes and Conclusions**

The first goal of the seminar is to provide coaches with the opportunity to understand and evaluate how attention and arousal impact swimmers' ability to perform to the best of their potential. This knowledge, coupled with the understanding of the important roles that coaches have with their teams, launches the plan of mental skills training for swimmers.

The post-seminar evaluation is designed to evaluate if the seminar met the goals and objectives outlined in the training outline and if it met the expectations of the coaches who participated. The desired outcome is that the goals matched the presentation and that it was enlightening and informative.

In addition, the coaches' participation in the exercises found in *The Mentally Tough Swimmer* workbook will hopefully provide a greater understanding of the uses of self-awareness, relaxation, self-talk, visualization, and attention control in swimming. Along with this, the comfort level of coaches in teaching these skills to their swimmers is strongly desired.
A key component in this seminar is for a coach to recognize that mental skills are important and that they should be incorporated into the practices and routines of training. The inclusion of mental skills training into a coach's season plan is a way to formalize this idea.

As mentioned earlier, the swimmers are also the subjects of this seminar. If the coaches concur that mental skills training techniques are valuable for a swimmer to possess for performance improvement, support for a season-long study is the goal to further the research in this subject. This season-long study would utilize the evaluation tools at the beginning of the season and launch a detailed training in the mental skills by using The Mentally Tough Swimmer: Improving Performance in the Pool workbook. With coaches' support and increased knowledge in the training of mental skills, a common language and reinforcement of the methods with their swimmers at practice and in competition will greatly enhance the validity of further research on the subject.

If the study of the impact of mental skills training on attention and performance in the swimmers is implemented at the beginning of the season before any competitions occur, coaches can also evaluate performance improvement of their swimmers by reviewing their results throughout the season to see if there is improvement. Although it may be difficult to attribute the improvements or lack thereof on mental skills training, a well-designed self-evaluation tool will determine if such an impact exists.

Because so little research has been done with coaches' perceptions of attention, arousal and mental skills in the youth that they lead, this study can begin to bridge the gap. For coaches to recognize the power that they have over their athletes is a critical determination in the success of a study like this. This is the rationale for providing the seminar to coaches. The study as a result of the coaches' support and acknowledgement of the importance of mental skills training for their athletes can set the stage for continued work in the subject of improving mental skills and performance with swimmers and other youth athletes.
References


