Use of relaxation skills in differentially skilled athletes

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ABSTRACT

Objectives: To examine the use of relaxation skills by differentially skilled athletes in relation to the deliberate practice framework.
Design: Differentially skilled athletes completed a survey about their use of relaxation skills.
Method: 150 athletes representing three skill levels (recreational, college, and professional) completed the deliberate relaxation for sport survey, which assessed relaxation on three deliberate practice dimensions (relevancy, concentration, and enjoyment); time spent in different relaxation skills in a recent typical week; and functions of relaxation.
Results: Athletes perceived relaxation as relevant to performance, requiring concentration, and enjoyable, and the relationships between these dimensions were positive. Professional and college athletes perceived relaxation as more relevant to effective competition than recreational athletes. Professional athletes engaged in more relaxation in a typical week than college and recreational athletes. In a typical week, autogenic, eastern, and muscle relaxation types were used least, deep breathing, meditation, and imagery relaxation types moderately, and stretching most. Athletes reported the primary functions of relaxation were to cope with competitive anxiety and promote recovery but relaxation was also reported to be used to cope with "everyday" anxieties associated with being an athlete. More physical (e.g., muscle relaxation) than mental relaxation types were used in relation to coping with competitive anxiety, whereas more mental (e.g., meditation) than physical relaxation types were used in relation to coping with everyday anxiety.
Conclusions: The study provides support for the sport-specific framework of deliberate practice in relation to use of relaxation skills and informs the current understanding of self-regulation by athletes.

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An athlete's psychological state, in terms of self-confidence, motivation, anxiety, and attention, is considered to affect his or her performance. Certain psychological states are more facilitative to performance than others dependent upon the individual athlete and the task at hand. A challenge for athletes is to attain and maintain a state comprising the right "recipe of…emotions and cognitions" (Gould & Udry, 1994, p. 479). The ability to obtain such a state is thought to depend, in part, on the use of self-regulatory skills (Eccles et al., 2011; Hardy, Jones, & Gould, 1996). Hardy et al. proposed that such skills take two forms, termed *basic* and *advanced psychological skills*. Advanced psychological skills are the skills of being able to regulate self-confidence, motivation, anxiety, and attention. Basic psychological skills are considered to underpin advanced psychological skills and include goal-setting, mental imagery, relaxation and activation, and self-talk skills.

Of the four basic psychological skills, goal-setting and imagery have been relatively well researched (Wadey & Hanton, 2008). In contrast, while sport psychologists often advocate the use of relaxation and self-talk skills to athletes and coaches, these skills have not been widely examined. The lack of data concerning these psychological skills limits our current understanding of self-regulation by athletes and our ability to advise sports performers and practitioners about the use of these skills (Tod, Hardy, & Oliver, 2011). While others have taken up the challenge of better understanding self-talk skills (e.g., Tod et al., 2011), our concern here is to investigate relaxation skills. Little is known about these skills in terms of the relevance of their role to performance, extent of their use, types of skills used, and their functions. Furthermore, little is known about whether relevance to performance, extent of use, types, and functions of such skills depend on athlete skill level.

Studies that have considered the extent to which relaxation skills are used by athletes typically have involved the Test of Performance Strategies (TOPS) questionnaire (Thomas, Murphy, & Hardy, 1999) as a measure of relaxation skill use during competition and practice.

Our review of studies involving the TOPS revealed 11 studies reporting data on use of relaxation during competition; fewer studies reported data on use of relaxation during practice. Reviewing these 11 studies revealed that, in general, athletes report using relaxation skills at least "sometimes" during competition. (Limitations on space prevent us from providing references to these studies but the references can be obtained from the corresponding author.) Less clear is how relaxation use depends on athlete skill level as only 3 of the 11 studies involved skill level contrasts in relaxation use and the results of these studies were mixed. Thomas et al. found that female (but not male) international level athletes reported more relaxation use in competition compared to their less skilled counterparts and Hayslip, Petrie, MacIntire, and Jones (2010) reported that golfers with a handicap less than 12 used more relaxation during competition than golfers with a handicap greater than 11. In contrast, Neil, Mellalieu, and Hanton (2006) found that professional rugby players reported less relaxation use than rugby players at or below the semi-professional level. Thus, studies of the extent of relaxation use by athletes are limited in number. Furthermore, the data yielded by these studies are almost exclusively in the "never-to-always" Likert-scale form associated with the TOPS questionnaire. Currently, there are no alternative sources of quantitative data about athletes' use of relaxation skills and how such use might differ by skill level.

Relaxation types can be grouped into mental relaxation skills, where relaxation is achieved via regulation of thinking, or physical relaxation, where relaxation is achieved via regulation of a physical parameter such as breathing (Hardy et al., 1996). Athletes report using various types of mental relaxation, such as imagery, and physical relaxation, such as deep breathing (Hanton & Jones, 1999; Jones & Hardy, 1990; Wadey & Hanton, 2008). However, there are no data at present concerning the extent to which athletes use these different types. Most previous studies of the functions of relaxation have involved a focus on one function, which is to cope with anxiety and arousal experienced in relation to competition (e.g., Wadey & Hanton, 2008). Little is known about possible alternative functions of relaxation. We propose that alternative functions include promoting recovery and coping with "everyday" anxiety. The basis for this proposal is as follows. First, Kellmann (2002) proposed that psychological and physical recovery from practice or competition is critical to effective performance and means of recovery include "psychoregulative techniques" such as relaxation activities (p. 18). Second, researchers have recently broadened investigations of stressors in sport beyond a focus on competition-based stressors to consider the athlete's overall environment (Pain & Harwood, 2007). Research has revealed many stressors are present within the "everyday" environments of athletes such as uncertainty about being selected to compete. Thus, it is likely athletes develop strategies, including relaxation skills, to cope with anxiety resulting from these everyday stressors.

The purpose of the present study is to better understand the relevance of relaxation skills to athletic performance as well as the extent of use, types, and functions of relaxation skills. Another aim is to identify how athlete skill level affects relaxation use. The rationale for examining the effects of skill level on relaxation use, which is akin to Griffith's (1925, p. 194) "first task" for sport psychologists, is as follows. By identifying psychological skills that discriminate highly skilled athletes from their less successful counterparts, it is possible to develop "expert models" of self-regulation in athletes (cf. Eccles, Ward, & Woodman, 2009). These models constitute a principled basis for the design of practice regimens aimed at helping less skilled athletes cope with the demands of practice and competition. To this end, relaxation skills are examined within the context of the deliberate practice framework (Ericsson, Krampe, & Tesch-Römer, 1993). According to Ericsson

et al., deliberate practice is structured, purposeful practice relevant to improving performance in a domain. It comprises activities requiring effort and/or concentration and as such is not inherently enjoyable. Researchers have investigated which activities constitute deliberate practice within a sport by asking athletes to rate practice activities on three dimensions: relevance to performance; enjoyment; and effort and/or concentration required to perform the activity (Helsen, Starkes, & Hodges, 1998; Young & Salmela, 2002). Activities studied have mainly included physical activities such as technical skills practice in soccer (Helsen et al.) but one basic psychological skill has been studied, which is imagery (Cumming & Hall, 2002). Generally, activities rated more relevant to performance require more effort and/or concentration, in line with Ericsson et al.'s proposals. In contrast with their proposals, activities rated more relevant to performance are often rated more enjoyable, a finding that has led to the development of a sport-specific framework of deliberate practice in which activities that enhance performance are perceived as enjoyable, despite requiring effort and/or concentration (Helsen et al.).

In the present study, the extent to which use of relaxation might be considered a deliberate practice activity was investigated by examining athletes' ratings of dimensions of deliberate practice for relaxation skills (relevance, concentration, and enjoyment). On the basis that relaxation may be used by athletes to cope with anxiety and arousal experienced in relation to competition (hereon, simply "to cope with competitive anxiety"), cope with everyday anxiety, and promote recovery, we predicted that relaxation activities would be perceived as at least moderately relevant to performance. We also predicted that such skills would require at least moderate levels of concentration, as effective engagement in relaxation likely requires considerable concentration (cf. Cumming & Hall, 2002). Given the empirical support for the sport-specific framework of deliberate practice, we predicted that the relevance, concentration, and enjoyment dimensions would be positively related.

Generally, perceptions of relevance, concentration and/or effort, and enjoyment of deliberate practice activities, including imagery, do not depend significantly on athlete skill level (Helsen et al., 1998). Cumming and Hall's (2002) study of imagery is an exception: Athletes at different skill levels did not differ on ratings of concentration and enjoyment but more skilled athletes rated imagery as significantly more relevant to improving current performance and competing effectively. As the demands of sport are likely greater at higher skill levels, we hypothesized that athletes at higher skill levels would perceive relaxation as more relevant to improving current performance and competing effectively. Following Cumming and Hall's finding, it was also hypothesized that ratings of concentration and enjoyment would not depend significantly on athlete skill level.

We also examined time spent in relaxation and the types of relaxation used during a recent typical training week. As athletes at higher skill levels spend more hours in a typical training week engaged in demanding practice activities, they likely spend more hours using relaxation to cope with, and recover from these demands. Cumming and Hall (2002) found that higher skilled athletes spent more time in a typical training week using imagery than lower skilled athletes. We hypothesized that this would be true in the present study for use of relaxation. No hypotheses were proposed about differences in time spent between relaxation types as this was an exploratory component of the study.

Following the discussion above about the potential functions of relaxation, we examined the extent to which athletes use relaxation to cope with everyday anxiety, promote recovery, and cope with competitive anxiety, hypothesizing that relaxation would be used most to cope with competitive anxiety, as anxiety is often intense during competitions. A final aim here was to identify