

# Performance Related Emotional States in Sport: A Qualitative Analysis

*Yuri L. Hanin*

## *1. Introduction*

There is a growing interest and a steady increase in the amount of qualitative research in sport psychology describing performance-induced and, especially, stress-related subjective experiences of high-level and competitive athletes and their coaches (COHN, 1990; COTE, SALMELA, TRUDEL, BARIA, & RUSSELL, 1995; GOULD, JACKSON, & FINCH, 1993; MALES, KERR, & GERKOVITCH, 1998; ORLICK & PARTINGTON, 1988; SCANLAN et al., 1989). Such an interest of sport psychologists in qualitative data is not surprising. First, performance related emotional states (positive and negative), as a relatively new topic and area, require exploratory approach and the emphasis on descriptive and qualitative database. Second, individual-oriented interventions are usually effective only if they are based on systematic observations "in natural settings, attempting to make sense of, or interpret, phenomena in terms of the meaning people bring into them" (DENZIN & LINCOLN, 1994, p.2). Space limitations preclude a detailed review of literature featuring the qualitative research in sport psychology and the readers are referred to several reviews highlighting potential values of qualitative research in sport psychology (DALE, 1996; MARTENS, 1987; STREAN, 1998), the issues of its validity (SPARKES, 1998), and approaches to organization, interpretation, and presentation of qualitative data (KRANE, ANDERSON, & STREAN, 1997). [1]

This paper will focus on the Individual Zones of Optimal Functioning (IZOF) model as a sports-specific conceptual framework and a methodological tool for the study of performance-related psychobiosocial states. The major emphasis, however, will be on an overview of data collection techniques assessing idiosyncratic content (quality) of athletes' emotional subjective experiences related to performance. Although such an analysis is especially important in idiographic studies using person- and task-oriented individualized assessment of athletes' emotional states, it has not so far received sufficient attention in the literature. Then I will examine existing practices in the individualized assessment of emotional states in sports with an emphasis on idiosyncratic nature of subjective experiences and the need to include an athlete's and coach's perspective. Furthermore, the advantages of athlete-generated idiosyncratic descriptors in the qualitative analysis of performance related subjective experiences will be described. I then briefly review several projects using a metaphor self-generation method to holistically and symbolically represent performance related states in high-level Finnish, Russian, and Spanish athletes. Finally, I will discuss a practical value of narratives complementing self-generated metaphors and implications for combining qualitative and quantitative approaches in the analysis of performance related states. [2]

## *2. The IZOF Model as a Framework for a Qualitative Analysis*

"The in-out of the zone notion or the usefulness of high precompetition anxiety." In 1975, I was invited to work with the best Russian divers who were preparing for their major competition of the season just before the selection to the Olympic team. During the pre-competition camp and, especially 2-3 days prior the competition, I noticed that several of these top performers, most of them aged 15-17, experienced clearly elevated levels of situational anxiety. That was manifested in their behavior, communication, and self-

ratings of performance related states. The closer the day of the competition was, the more anxiety they felt, which was actually not surprising. As they clearly deviated from the moderate anxiety level, traditionally considered as "universally" optimal for most athletes, the question was how this elevated anxiety would affect their performance. Did they need relaxation and reduction of anxiety? Of course, it would have been helpful if I had had a chance to observe these athletes' performance and emotional states in their previous high-level competitions, such as World or European championships or in Olympic games. However, it was my first camp with these athletes and therefore we had to rely on analysis of their past, especially successful, performance history. Using focused recall, we reconstructed their perception of feelings and behaviors prior to best-ever competitions. It turned out that these athletes were extremely successful with relatively high levels of anxiety, which did not disturb their performance and was even helpful to mobilize their resources and to keep the right focus during the entire competition. In discussing these observations with athletes and coaches it became clear that each diver had a particular patterns of emotions (in this case situational anxiety) prior to the successful and less than successful competitions. Moreover, these athletes experienced high anxiety and were self-confident and relaxed at the same time! For them high anxiety was not a danger signal but a message that they were ready for the forthcoming completion. On the other hand, there were divers who did not need high anxiety and were calm, self-confident and relaxed. The same paradox was observed in poor performance situations: some athletes were relaxed and confident before the contest but failed to perform up to their potential. These empirical facts were in sharp contrast with the traditional stereotyped view that moderate anxiety was universally optimal for all athletes. That was the beginning of systematic research and applied work with hundreds of athletes examining the impact of their pre-competition anxiety on performance. From this work, the "in-out of the zone" notion was developed predicting that each athlete has her own optimal anxiety level and zones of intensity that are always individual and could be either high, or moderate, or even high (Fig. 1 a, b). Later this work was extended to positive and negative emotions and other components of performance related state.

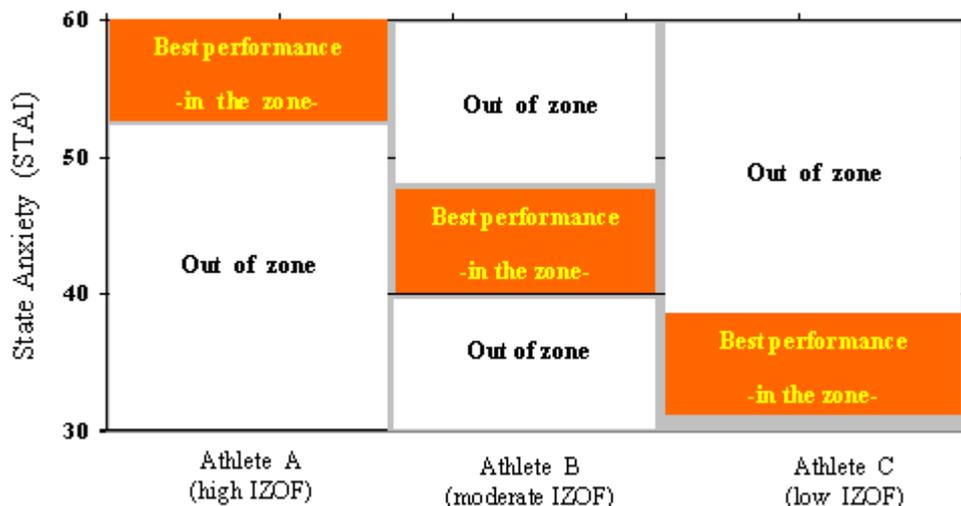


Figure 1a: Individually zones of optimal functioning in three athletes (Panel 1a); adapted from HANIN (1978). [3]

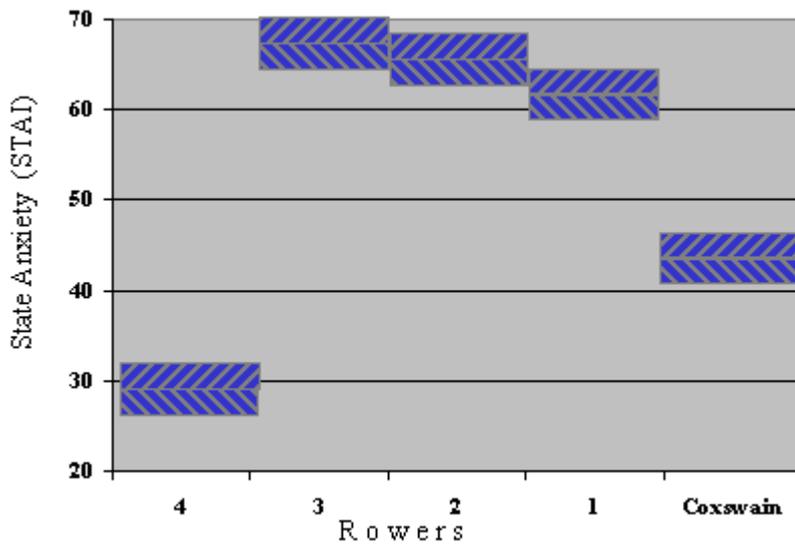


Figure 1b: Zones of optimal anxiety in five top female rowers (Panel 1b); adapted from HANIN (1978). [4]

The IZOF model (HANIN, 1997, 2000) is an intraindividual framework that aims to describe, predict, explain, and control athlete's optimal and dysfunctional experiences related to individually successful and poor performances. This action-oriented individualized approach provides tools to conceptualize and assess accurately performance related situational subjective experiences, relatively stable emotional patterns, and meta-experiences for the development of individualized self-regulation (intervention) programs (Fig. 2). The model defines performance related *psychobiosocial state* as a situational, multimodal, and dynamic manifestation of the total human functioning. Multilevel and system description of performance-related states includes at least five interrelated dimensions: *form*, *content*, *intensity*, *time*, and *context* (Fig. 3). Three of these dimensions (form, content, and intensity) describe the structure of subjective experiences and meta-experiences; two other dimensions (time and context) characterize the dynamics of performers' subjective experiences.

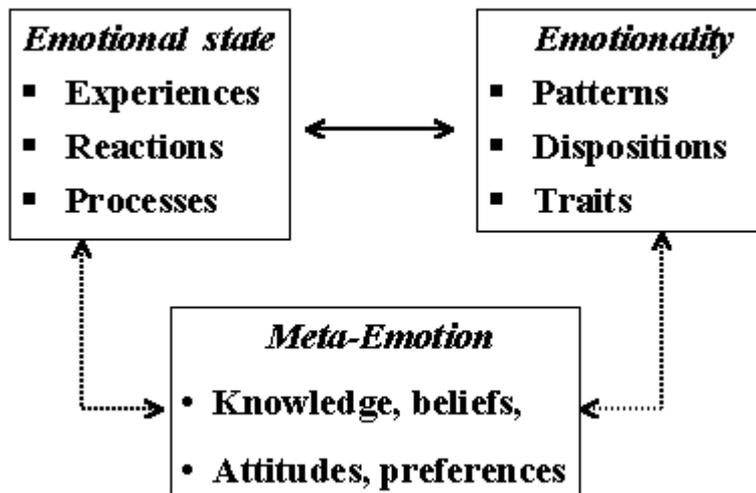


Figure 2: Subjective emotional experiences: emotional states, emotionality, and meta-experiences [5]

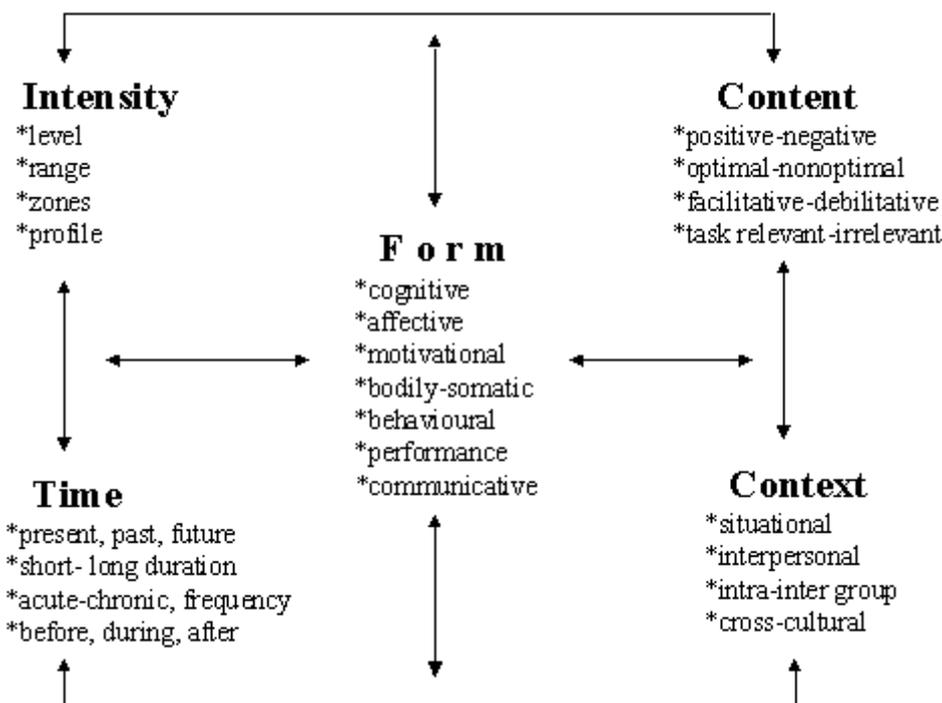


Figure 3: Five basic dimensions (penta-basis) of performance-related psychobiosocial states; adapted from HANIN (1993a, p.17a) [6]

## 2.1 Form dimension

I argue that an athlete's psychobiosocial state manifests itself in seven basic forms: cognitive, affective, motivational, bodily, motor-behavioral, operational, and communicative. The multiple-form notion in conceptualizing the form dimension of

performance states has received strong empirical support indicating that all seven modalities are interrelated and provide a relatively complete description of a performance state. From this perspective, emotion is conceptualized as an important component of performance-induced psychobiosocial state. To date, however, individual-oriented research focuses mainly on affective (emotional), motivational, and bodily components of performance state and their interactive effects (HANIN, 2000). The other research direction has a more holistic emphasis and examines athlete-generated metaphors as symbolical representations of performance states (HANIN & STAMBULOVA, 2002). In other words, the initial emphasis in the qualitative analysis mainly on emotion-motivational modality is gradually extended to other components of psychobiosocial state. It is also important to emphasize that these seven components can describe not only experiences but also their displays (expression or suppression). [7]

## **2.2 Content dimension**

The content dimension is a qualitative characteristic of the performance state usually categorized in terms of single or "basic" emotion syndromes, such as anxiety, anger, joy, depression, etc. (LAZARUS, 2000) or as a global affect (or dimensional) approach based on hedonic tone or positivity-negativity distinctions (WATSON & TELLEGEN, 1985). Both approaches emphasize group-level (nomothetic) and quantitative analyses. The functional impact of emotions upon performance (emotion functionality) is still another criterion for labeling emotion content as optimal-dysfunctional and facilitative-debilitative. [8]

The alternative individual-oriented approach which first categorizes emotion content is within the framework of two closely related but independent factors: a hedonic tone (pleasure-displeasure or positivity-negativity) and functionality (optimal-dysfunctional impact of emotion upon athletic performance). Both factors reflect qualitatively different experiences related to successful and poor performances (HANIN, 1993b, 1997). The four emotion categories derived from the hedonic tone and functionality are pleasant and functionally optimal emotions (P+), unpleasant and functionally optimal emotions (N+), pleasant and dysfunctional emotions (P-), and unpleasant and dysfunctional (N-) emotions. These four categories provide an initial robust and sufficiently broad structure to generate a wide range of idiosyncratic, individually relevant, and task-specific emotions experienced by athletes prior to, during, and after successful and less than successful performances. Thus, the framework of four general categories helps to identify the idiosyncratic (self-generated) content of emotions that is relevant for performance from an athlete's perspective. Fig. 4 reports two sets (constellations, ranges) of individually optimal and dysfunctional idiosyncratic emotion descriptors generated by players A and B describing their experiences in best ever competitions.

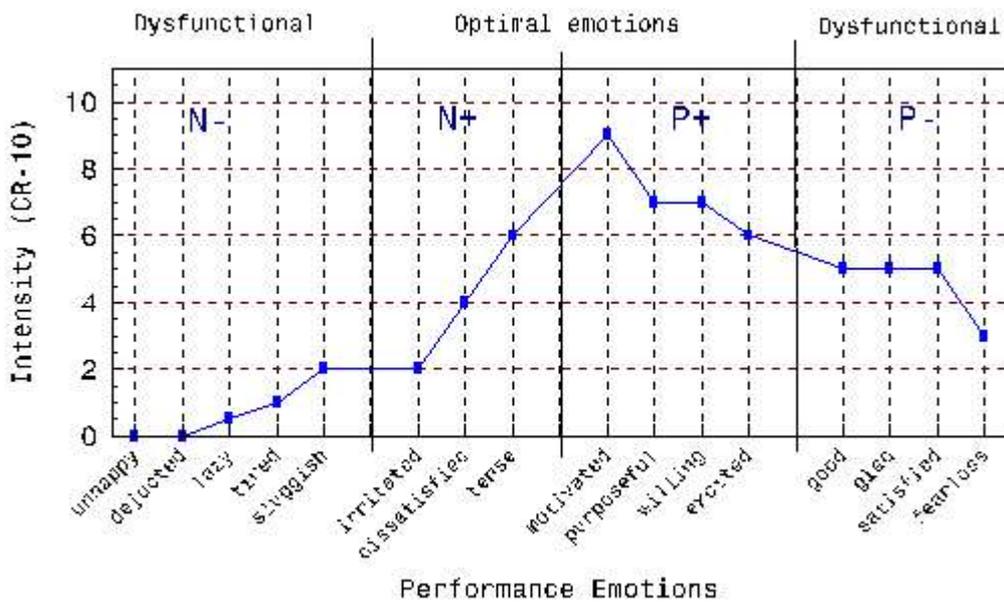
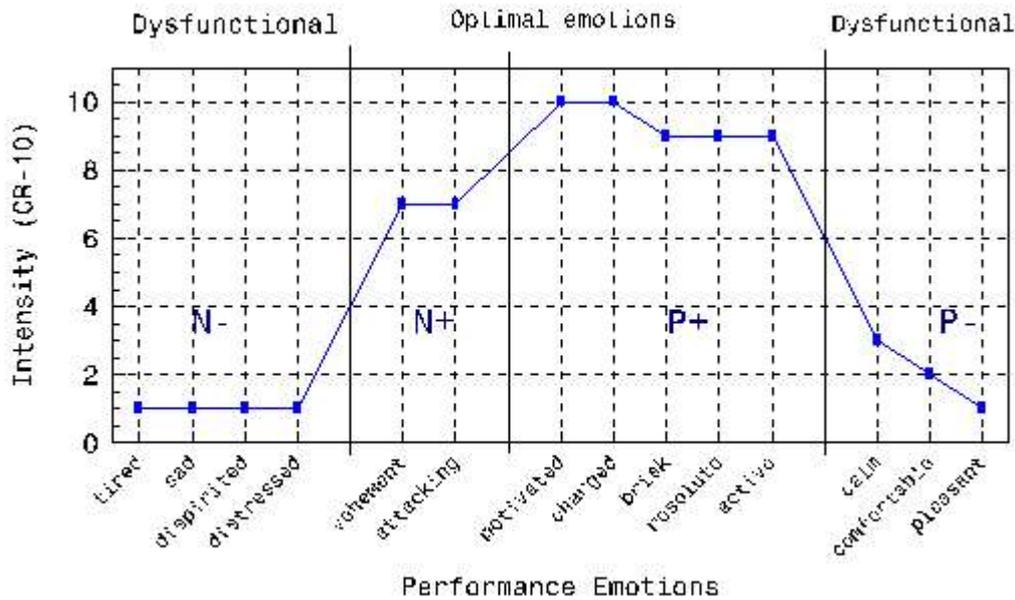


Figure 4: Individualized optimal emotions profile for players A (panel 4a) and player B (panel 4b) [9]

The content of idiosyncratic emotions, aggregated across athletes, tasks, and sports, can be re-analyzed using a discrete emotion framework. For instance, RUIZ & HANIN (submitted) used the LAZARUS' (2000) list of fifteen basic emotions as a framework for such a deductive content analysis. It was revealed that aggregated idiosyncratic emotions experienced by 16 Spanish high-level karate athletes in best ever and worst ever performance situations were related to three positive emotion categories (happiness, pride, and relief) and three stress-related emotions (anger, anxiety, and sadness). In addition, athletes' experiences in worst performance were also related to fright and

shame. Interestingly, none of the athletes selected seven other basic emotions (love, hope, compassion, gratitude, envy, jealousy or guilt) to describe their experiences in sports context. These findings suggest a specificity of emotion content in high achievement setting, especially if the emphasis is made on two extreme and qualitatively different situations as success and failure. [10]

### 2.3 Intensity dimension

Intensity, characterizing a degree or amount of strength, extreme force, power, or deep forceful feelings (COLLINS ENGLISH DICTIONARY, 1991, p.803), is a quantitative attribute of subjective experiences. Quantitatively, intensity is expressed either in objective or subjective metrics by individual or total scores on a selected component or modality of the performance state. However, intensity of different level can produce different functional effect related to perceived effort invested into a sporting activity and to energizing (de-energizing) and organizing (dis-organizing) aspects of performance process. Therefore, the in-out of the zone notion was proposed (HANIN, 1997) to describe a range of emotion intensity producing either optimal, neutral, or dysfunctional effects upon individual performance. If an athlete's actual state is close to or in the earlier established optimal zone of intensity, there is high probability of successful performance. In contrast, if an athlete's actual state is out of her optimal zone, she is likely to perform below her potential (Fig. 1, 2, 5). The in-out of the zone notion received strong empirical support and reflects the fact that functionally optimal or dysfunctional effects of any modality in the psychobiosocial state are related to its specific intensity (see HANIN, 2000, pp.79-81 for a more detailed discussion). It is important to realize, however, that items of varying content can also describe the intensity of subjective experiences qualitatively (cf. item-intensity specificity concept proposed by SPIELBERGER (1970). For instance, the anger scale may include items varying in their ability to discriminate among different intensities; "upset," "annoyed," and "irritated" qualitatively imply less intensity than such items as "enraged," "furious," and "flared up."

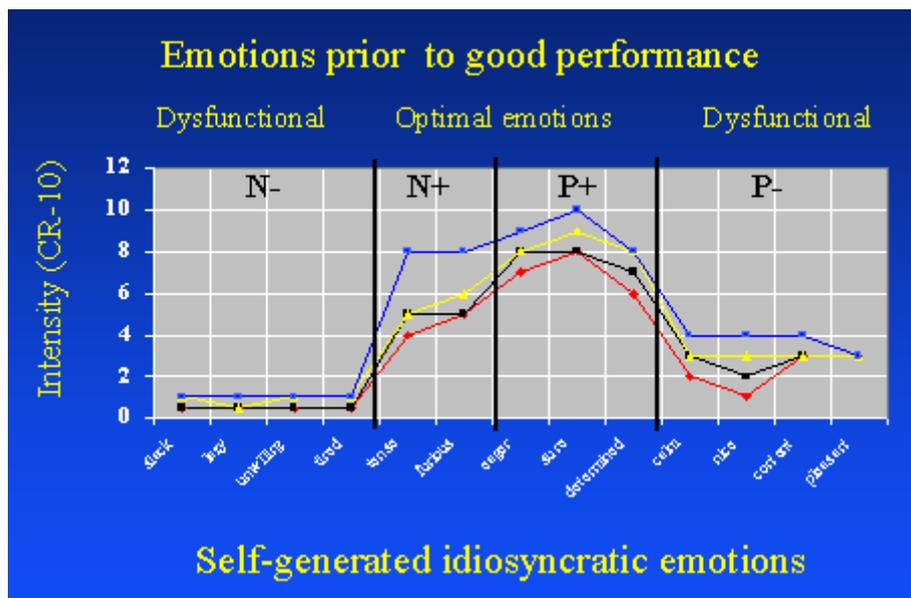


Figure 5: Optimal individualized emotional profiles in three successful competitions [11]

## 2.4 Time dimension

Temporal dimension includes *topological* (phases, cycles, sequencing, periodicity, timing) and *metric* (duration, frequency) characteristics reflecting the dynamics of performance related experiences. The short-term dynamics in sporting activity is observed in emotional states prior to (anticipation of, preparation for an action), during (task execution, action itself), and after (evaluation stage) performance in a single competition (practice). Although more emphasis on temporal dynamics of emotions is advocated (CERIN, SZABO, HUNT, & WILLIAMS, 2000; HANIN, 1997, 2000), current research in sport psychology examines mainly pre-competition anxiety in the preparatory stage of a task execution process. The long-term dynamics of emotional experiences indicates the need to investigate developmental aspects of optimal and dysfunctional states. Resources-matching hypothesis suggests that optimal (and dysfunctional) emotions reflect availability (or unavailability) of resources and their effective (or ineffective) recruitment and utilization (HANIN & STAMBULOVA, 2002, pp.400-401). If this hypothesis is correct, then a change in resources and their recruitment and utilization will be reflected in a change in an athlete's zones of optimal functioning. [12]

## 2.5 Context dimension

The context dimension is an environmental characteristic reflecting the impact of situational, interpersonal, and intra-group determinants of emotions intensity and content in sport and exercise (HANIN, 1989, 1992, 2000). Examples of situational impact are emotional reaction triggered in practices versus competitions of different level (local, national, and international), whereas interpersonal and intragroup emotional responses reflect how an athlete experiences her contacts and interactions with a particular partner (or partners and the team). Other examples of context dimension are organizational stressors in coaches (HANIN, 1993c) and athletes (WOODMAN & HARDY, 2001). Finally, this dimension also includes culturally coded and culturally determined beliefs of participants about expected impact of specific emotions on their performance or about the rules in a particular sub-culture for emotional displays. [13]

To summarize, these five basic dimensions (penta-basis) provide a framework for a relatively complete description and better understanding of the phenomenon and can guide data collection, analysis, interpretation, and generation of new ideas (Fig. 3). Moreover, the penta-basis approach also indicates that in any investigation the content (quality) dimension is inseparable from form, quantity, time, and context dimensions. JACKSON (1995) suggests that in qualitative research there are two comparison levels: the level of method (how you go about doing research) and the level of paradigm (researcher's philosophical assumptions). I would argue that it is also important to recognize the third level of comparison: the level of basic dimensions. Although in qualitative research the content (quality) is the key dimension, it would be impractical to ignore or underestimate other dimensions. Moreover, a penta-basis not only creates new grounds for qualitative methodology but potentially enrich quantitative studies. [14]

## 2.6 Predictions of emotion-performance relationships

There are certain stereotyped views and myths in sport psychology about emotion-performance relationships based on unsubstantiated beliefs and group-oriented studies. These include at least three notions: that there exists a universally optimal intensity of emotions facilitating performance of all athletes (for instance, moderate anxiety); that all negative emotions are always dysfunctional for athletic performance; that all positive

emotions are always optimal for athletic performance. [15]

In contrast, individual-oriented and empirically supported predictions of emotion-performance relationships indicate that it is not the case. Specifically,

1. A high degree of interindividual variability is expected in the intensity and content of idiosyncratic optimal and dysfunctional emotions accompanying individually successful and poor performances. Thus, different athletes can perform up to their potential experiencing emotions of different content and intensity (Fig. 1, 4, 5). Optimal emotional states (positive and negative) reflect (a) individual differences in the level of available resources, (b) athletes' ability to recruit and utilize efficiently these resources, and (c) athletes' individual coping strategies to compensate for a lack of or insufficient resources (low readiness for competition).
2. The prediction of individually successful, average or poor performance is based on the "in—out of the zone" principle. Thus, a player's emotional state is first described in terms of individually relevant emotion content and then current emotion intensity is contrasted with the previously established individually optimal and dysfunctional intensity zones. High probability of successful performance is expected when emotion intensity is within the optimal zones and outside dysfunctional ranges. Therefore, a large discrepancy (in intensity and emotion content) between the actual state and the individually established optimal zones indicates a high probability of less than successful performance. (HANIN, 1997; KAMATA, TENENBAUM, & HANIN, 2002). Fig. 1, 4, 5 illustrate how the notion of the in-out of the zone can be used in prediction of individual performance.
3. The interactive effects of emotions enhancing and impairing sporting activity are also of crucial importance in prediction of emotion-performance relationships. Specifically, a high probability of individually successful performance is expected when combined maximum enhancing and minimum impairing effects are observed. The IZOF-emotion "iceberg" is a visual representation of such optimal interactive effects. On the other hand, a high probability of individually average or impaired performance is expected when a combination of high enhancing and high impairing effects or low enhancing and low inhibitory effects are observed. Finally, a high probability of poor performance is expected when low enhancing and high inhibitory effects are observed. "Shallow" or "flattened" emotion profiles visually represent these less than optimal effects (see HANIN, 2000 for a review).
4. Emotion-performance relationships are dynamic and bi-directional. This notion reflects a continuous cycle of emotion effect upon performance followed by performance impact on emotions. In other words, pre-event emotions can affect performance, whereas on-going performance affects the dynamics of mid-event and post-event emotions. Thus to predict the entire process of emotion performance-performance relationships it is important to establish patterns of emotion impact upon performance and performance impact upon emotions. [16]

### 3. *Assessment of Emotion Content/Quality*

Most of data collection techniques focusing on content or quality of subjective experiences rely on self-report measures. Therefore, the advantages and limitations of these measures should be clearly recognized. Verbal reports are sometimes inaccurate

and misleading and recall biases may be caused by participant's lack of awareness, unwillingness, or personal insignificance of reported experiences. For instance, "... a normal person usually does not remember what he had for breakfast. Routine and repeated things are meant to be forgotten ... Breakfast is one thing, but your beloved ones is another matter ..." (BRODSKY, 2001/1986, p.60). However, there is compelling evidence that in some instances self-reports can provide information of truly impressive accuracy and reliability (LIEBERMAN, 1979), especially in reporting personally significant situations (for instance, in elite sport). The accuracy of recalled and anticipatory measures of performance emotions is well documented (HANIN & SYRJÄ, 1996; JOKELA & HANIN, 1999). Moreover, longitudinal studies provide evidence that accuracy of self-report measures can considerably improve with athletes' enhanced awareness (RUIZ & HANIN, submitted; SYRJÄ, 2000). Therefore, the advantages of self-reports in this particular setting seem to outweigh their limitations. In the sections below, I briefly describe different data collection techniques that have been used to assess individually relevant emotion content. These include interviews, individualized emotion profiling, self-generated metaphors, and narratives. Advantages and disadvantages of idiographic assessments using normative standardized self-report scales are described elsewhere (HANIN, 2000, pp.161-166). [17]

### **3.1 Interviews**

The first data collection technique for eliciting idiosyncratic emotion content is structured and in-depth interviews and questionnaires with open-ended questions. An example of semi-structured questionnaire is ORLICK's (1986, p.181) "competition reflections" activating an athlete's recall on thoughts and feelings prior to and during all-time best and all-time worst performances. Recently, however, with the renewed interest in emotions in sport, several research and applied projects used interviews and questionnaires to identify performance-related and exercise-induced items (GOULD et al. 1999; HANIN, 1993b; HARDY & REJESKI, 1989). Therefore, athletes generated idiosyncratic descriptors of emotion content by recalling how they felt mainly in pre-event, and sometimes in mid-event, and post-event situations. Interviewing is often used in pilot studies to generate idiosyncratic labels and then to aggregate most selected items into a stimulus list or standardized emotion scale. Identifying idiosyncratic content and personally meaningful labels to describe athletes' subjective experiences is a clear advantage of the interviews with open-ended questions. Experienced and verbally skillful athletes can provide detailed and meaningful accounts of their experiences and meta-experiences prior to the game. A transcript of such an account provided by a highly skilled ice-hockey player describing his emotional experiences in the game illustrates this point.

Transcript #1

1. "If I am *nervous* before the game,
  2. then I feel also very comfortable,
  3. because then I know that an important game is coming up.
  4. In contrast, if I don't feel nervous,
  5. I know that I'm not in the game and
  6. maybe I disparage the opponent.
  7. Being nervous is a good feeling for me.
  8. It keeps me on all the time before the game.
  9. However, when puck is dropped on ice,
  10. all nervousness is gone and I feel great.
  11. On the other hand, *self-confidence* is hard for me to identify
  12. and I think it is nearly the same all the time.
  13. Self-confidence depends much on how the game starts,
  14. how I do all these little things (pass, pass-against, shoot, timing etc.).
  15. Perhaps, too satisfied is the worst feeling.
  16. It's very dangerous if you think that you can walk over the opponent ...
  17. If I feel too *satisfied*, I don't concentrate properly on my warm-up,
  18. I just talk with the team-mates and drink a few cups of coffee.
  19. Of course, you can feel satisfied and self-confident for a little time,
  20. but you have to understand that you can't win just playing with a left hand.
  21. However, if I feel too satisfied,
  22. I know that it's going to be a long evening ...
  23. I never succeed when I am too satisfied and
  24. I can't get rid of this feeling ...
  25. When I feel *angry*, it usually has a negative influence on me.
  26. I start finding faults with others and
  27. that feeling is so strong that I can't handle it (I mean on ice).
  28. And I get stupid penalties and often fight with the opponent.
  29. But sometimes, I use my angry feelings when I need more aggressiveness in my game ..."
- [18]

This player is well aware and can describe his four primary emotional experiences involving performance-related nervousness (lines 1-10), self-confidence (11-14, 19), satisfaction (15-24), and anger (25-29). He makes a clear distinction between his feelings prior to the game (lines 1, 2, 4, 15, 21) and during the game (9, 10, 12, 13, 14). Moreover, as very experienced player, he goes beyond a mere description of his feelings and provides a detailed account of his perceptions of psychological meaning of the situation (3, 5, 6, 11, 19, 20), how different emotions affect his performance and behavior (7, 8, 16, 17, 18, 22, 23, 25), and how he copes with the situations (24, 26, 27, 28, 29). [19]

It should be realized that such particular format of open-ended questions to recall past performance history could be less effective for an athlete who lacks awareness, verbal skills, or even specific experiences to be reported. That is why interview data are often limited to mere descriptions, for instance, in studies identifying most frequently experienced thoughts and feelings representing positive and negative states. A notable exception is the study by COTE, SALMELA, TRUDEL, BARIA, and RUSSELL (1995) who assessed expert gymnastic coaches' knowledge. In their in-depth interviews these investigators used SPRADLEY's (1979) three types of open-ended questions: (a) "descriptive questions" to learn about the informant's activities, (b) "structural questions" to discover how the informant organized her/his knowledge, and (c) "contrast questions" to find out what an informant meant by the various terms used. As applied to emotion

research, descriptive, structural, and contrast questions could be useful to reconstruct athletes' and coaches' perceptions of their realities, especially in the case of lack of verbal skills. *Descriptive* questions (How did you feel prior to the game? What were your feelings during the first period...? How did you react after the opponents scored?) activate athletes' perceptions of their emotional response in particular performance situations. *Structural* questions (What did you do when you felt this way? How did it affect your performance?) identify an athlete's perception of situation and available coping skills. Finally, *contrast* questions (What are the differences between your feeling states in practices and games? What is the difference in how you feel when you are well prepared and poorly prepared for the game?) clarify and distinguish between experiences in different contexts. Further development of interview and questionnaires is associated with the use of all these three types of questions and in better conceptualizing the content beyond mere "raw" data categories. [20]

### **3.2 Individualized emotion profiling**

In the reconstruction of each athlete's emotional experiences related to successful and poor performances, it is important to go beyond the "numbers game." Indeed, "qualitative research is embedded in the idea that there are multiple, holistic perspectives which can only be understood through asking people about their perceptions, behaviors and experiences. In the asking, effort is made to keep the respondent's perceptions foremost; usually this requires using the respondent's words as the data, rather than assigning a number to a particular response and assuming this number captures the meaning of the response" (JACKSON, 1995, p.577). From this perspective, standardized (group-oriented) emotion self-report scales focusing mainly on interindividual cross-sectional comparisons are often problematic as they have a "fixed" content (a pool of researcher-generated items), which usually implies the same psychological meaning of emotion descriptors for all athletes. Moreover, these scales usually fail to capture athletes' idiosyncratic subjective experiences related to their successful or poor performances. For instance, SYRJÄ and HANIN (1997) found that from 80 to 85% of idiosyncratic items with emotion content relevant for individual players were not included in several existing standardized emotion scales. To address this concern, individualized emotion profiling (IEP) based on idiographic recall was developed (HANIN, 1993b, 1997, 2000). [21]

The IEP method determines subjectively meaningful positive and negative emotions based on the analysis of individual's past performance history and significant emotional experiences. Specifically, athletes generate individually relevant emotion words that best describe their optimal (helpful) and dysfunctional (harmful) positive and negative emotions. The emotion stimulus list with positive and negative emotions typically experienced in performance helps athletes generate individually relevant descriptors. The English version of the stimulus list was compiled through selection and revision of items from the 10 global affect scales described by WATSON and TELLEGEN (1985). Having three experts evaluate the item content and selecting most appropriate synonyms used in current spoken Finnish developed the Finnish form of the stimulus list. The final version of the list includes 40 positive emotions (arranged in 14 synonymous rows) and 37 negative emotions (arranged in 14 synonymous rows). Examples of positive emotion items include *active, calm, confident, pleased, determined, and excited*. Negative emotion items include *nervous, angry, annoyed, irritated, dissatisfied, and uncertain*. Equivalent forms of the emotion stimulus list in Spanish, Italian, Russian, and German have also been developed. [22]

Individualized emotion profiling includes several steps. First, to identify optimal emotion patterns, athletes assisted by the emotion stimulus list select 4 or 5 positive and then 4 or

5 negative items that best describe their emotions related to their individually successful performances in the past. Then athletes identify their dysfunctional emotion patterns by selecting 4 or 5 positive and 4 or 5 negative items that describe their emotions related to individually poor performances. Although athletes use the emotion stimulus list to generate individually relevant descriptors, they can also add emotion words of their own choice. The focus of recall is either on a specific situation (precompetition) or on repeated experiences across several similar situations. Individually optimal and dysfunctional intensities for each emotion item are identified using the Borg's CR-10 scale (ranging from "nothing at all" to "maximal possible"). Step-wise procedures and the self-rating forms are described in (HANIN, 2000, 301-316). [23]

An example will illustrate the idea of individualized emotion profiling and procedures used. Fig. 4, panel A shows that a player A, based on his past experiences, selected five positive-optimal emotions (*motivated, charged, brisk, resolute, active*), two negative-optimal (*vehement, attacking*), three positive—dysfunctional (*calm, comfortable, pleasant*), and four negative—dysfunctional (*tired, sad, dispirited, distressed*). This is an individualized set (constellation) of emotion content that is relevant for this athlete and describes how he feels prior to the games. In contrast, a player B selected quite different emotions: four positive—optimal emotions (*motivated, purposeful, willing, excited*), three negative—optimal (*irritated, dissatisfied, tense*), four positive—dysfunctional (*good, glad, satisfied, fearless*), and five negative—dysfunctional (*unhappy, dejected, lazy, tired, sluggish*). Each player's emotion descriptors reflect their unique experiences in recruiting and utilizing their resources and in coping with poor and successful performance situations. Therefore, some of the emotions that athletes generate within the four global categories are different, whereas others are similar. Interindividual content overlap (similarity) is usually low, which indicates a need to generate idiosyncratic labels using each athlete's vocabulary. To establish individually optimal intensity, players A and B, rated each emotion item in their scales based on their intensity before a most successful game in the past. As shown in Fig. 4, even though the sets of items selected by players A and B are different, their individualized emotion profiles form what is termed "IZOF-iceberg" profiles. In both cases, it is noteworthy that a relatively high intensity in optimal emotions located in the middle (P+ and N+) in the IZOF-iceberg profile is accompanied by a low intensity in dysfunctional items located by the sides (N- and P-). In other words, the IZOF-emotion iceberg profile is a deliberately constructed visual representation of an interactive (additive) effect of optimal and dysfunctional emotions upon individual performance. [24]

To summarize, individually-oriented and task-specific emotion profiling identifies: (a) individually relevant emotion content, (b) individually optimal and dysfunctional emotion intensity, (c) individually relevant context, and (d) interaction effects of optimal and dysfunctional emotions. In a comprehensive IZOF-based assessment program, first, the individual's past performance history is examined within the context of current situation; then individually relevant emotion content is generated; next, optimal (and dysfunctional) intensities for each emotion item are identified. Finally, the emotion profiles (with intensity zones for each individual item) are validated and refined in a series of repeated self-ratings in specific performance situations (practice or competitions). For repeated assessments in field setting, the total emotion profile can be condensed to 12 most important markers (3 items for each of the four emotion categories) (HANIN, 1997; 2000; ROBAZZA et al. 2000). The major emphasis in individualized emotion profiling is on analysis and reconstruction of athletes' performance-related idiosyncratic experiences and meta-experiences by using their vocabularies. However, each vocabulary expresses a local taxonomy and theory of the emotions, an "emotionology" (HARRÉ & GILLET, 1997).

1994, p.160). Therefore, for instance, if emotions arise in response to the meaning structures of given situations (FRIJDA, 1988, p.349), then different psychological situations result in different emotions. Moreover, the presence of a certain emotion also informs the individual about the nature of its current psychological situation (SCHWARZ & BOHNER, 1996). [25]

The individualized mood scales provide a direct way to assess psychologically meaningful idiosyncratic responses of athletes. However, they have at least two limitations that need to be addressed. First, athlete-generated emotion descriptors usually have strong connotations with such non-emotion concomitants of psychobiosocial state as, for instance, cognitive (*alert, focused*), motivational (*willing, determined, motivated*), and bodily (*relaxed, tense, jittery*) experiences (HANIN & STAMBULOVA, 2002; RUIZ & HANIN, submitted). Therefore, there is a clear need to extend the focus of individualized profiling from emotions to other modalities of an athlete's state. Second, a mere description of emotional experience (for instance, the same high level of pre-competition anxiety in the athlete on two occasions) may not explain why this athlete was very successful in the first race and less than successful in the second competition. SWAIN (1992, cited in JONES, 1995) describes similar observation in a varsity basketball player. Here, additional qualitative data (for instance, motivational domains or causes of these experiences and resulting self-talk) are apparently missing. Specifically, to continue with our example of highly anxious athlete, in the successful race, she felt "psyched up," "perceived the race as important" and "focused on fighting with tough opponents." Her self-talk was clearly self-empowering ("I can run at this level," "I'll show them all," "It is my day today"). In contrast, prior to a less than successful race, this athlete's thoughts included "doubts in her current shape," "insufficient recovery," "health problems," "poor team climate") and resulting self-talk was clearly self-defeating with too much focus on opponents' strengths ("they are going to beat me," "I've got no chance in this race," "today is not my day," "the race is meaningless"). [26]

In conclusion, practical experience with individualized emotion profiling suggests that in conceptualizing emotions as components of performance-related states, we should distinguish a so-called "experience unit" that includes idiosyncratic emotional experiences per se, experience domains (perceived causes of experience), appraisals, explicit or implied judgments, and inner dialogue (self-talk). Behavioral and communicative components of psychobiosocial state represent emotional display (deliberate or spontaneous expression or suppression) of emotional experience. Apparently, description of such experience unit requires the extension of existing individualized emotion profiling and the application of other qualitative methodology involving self-generated metaphors and narratives. These two latter methods of data collection are described in the sections below. [27]

### **3.3 Self-generated metaphors**

Although the individualized emotion profiling was successful in generating idiosyncratic descriptors of emotions, there is still a need for a more holistic description of the psychological meaning of performance situation and an athlete's role in it. To address this concern, a metaphor-generation method was proposed to examine the feasibility of symbolic description of performance related experiences using idiosyncratic athlete-generated metaphors (HANIN, 1997, 2000; HANIN, STAMBULOVA, LUKKARILA, & TUMMAVUORI, 2001; HANIN & STAMBULOVA, 2002; RUIZ & HANIN, submitted). The approach is based on symbolizing ability of a person, which is especially relevant for individualized interventions. Albert BANDURA (1986) in his social cognitive theory regards symbolizing as a fundamental human capability. He also states that

symbols serve as the vehicle of thought; by symbolizing their experience, people give structure, meaning, and continuity to their lives. [28]

A metaphor (from Greek *metaphora*—to transfer) is defined as a figure of speech in which a word or phrase is applied to an object or action that it does not literally denote in order to imply a resemblance, for example, *he is a lion in battle* (COLLINS ENGLISH DICTIONARY, 1991, p.982). A similar term, *simile*, is defined as a figure of speech that expresses the resemblance of one thing to another of a different category, usually introduced by *as* or *like* (ibid., p.1441). The term metaphor in this paper refers to both metaphors and /or similes. The essence of metaphor is experiencing and understanding one kind of thing in terms of another. Thus, a metaphor usually stands for something else and allows understanding of something unknown (or difficult to describe) through the "similarity" to something already known or described (COMBS & FREEDMAN, 1990). A metaphor is always related to a certain image, which is holistic and meaningful for a person. Therefore words, objects, mental images, stories, etc. are the units of metaphor. A symbolic nature of a metaphor provides a picture of one's understanding of something with an emphasis on most personally relevant and important aspects and shades of meaning. [29]

Probably no area of psychology is marked by more vivid metaphors than is the area of emotion (AVERILL, 1990) and motivation (McREYNOLDS, 1990; WEINER, 1991). There are hundreds of metaphors of emotion in different languages. In colloquial English, for instance, a fearful person is "yellow-bellied," "lily-livered," "faint-hearted," "spineless," "chicken," "with cold feet;" a person is "blue" when sad, "white" when fearful, and "red" when angry (AVERILL, 1990, p.104). However, a metaphor is "primarily a matter of *thought* and *action* rather than only derivatively a matter of language" (LAKOFF & JOHNSON, 1980, p.153; italics added). In sport, metaphors are a part of athletes' understanding of themselves and their interaction with the environment and, therefore, athletes often use metaphors spontaneously to describe their thoughts, emotions, bodily sensations, behavior, and actions. Well-known metaphors describing performance related states in sport include being "*in the zone*," "*in the groove*," "*in the cocoon*," "*flow state*," and "*choked*." As in other settings, metaphors in sports serve three communicative functions: *expressivity* of that, which is difficult or impossible to express if one is restricted to literal uses of language; *compact means of communication* enabling to convey a great deal of information (chunks of information) in a succinct manner; and finally, metaphors capture the *vividness of phenomenal experience* (ORTONY & FAINSILBER, 1989). [30]

From the applied perspective, it should be kept in mind that metaphors are multidimensional symbolic representations of personally meaningful experience (COMBS & FREEDMAN, 1990). Moreover, metaphors as holistic and action-oriented images can trigger specific emotional experiences therefore are often used in individual and family therapy, and interventions (MILLS & CROWLEY, 1986). Specifically, practitioners use metaphors to facilitate the processes of developing a client-consultant relationship, gathering information, assessing and utilizing resources, suggesting ideas, reframing, and, facilitating new patterns of thought, feelings, and behavior (COMBS & FREEDMAN, 1990). Finally, a value of idiosyncratic self-generated metaphor images was evident in two recent pilot studies (HANIN, 2000; HANIN et al., 2001). In one study, 29 highly skilled junior Finnish hockey-players were able to generate metaphors describing their "good" and "bad" days and the image of their team. In another study, 148 junior Finnish ice-hockey players described their successful and poor performances by generating metaphors. All images were highly idiosyncratic and related to action tendencies

reflecting high or low readiness to perform. These findings suggest that athlete-generated idiosyncratic metaphors may be useful in practice of sport psychology for holistic and personally meaningful description and better understanding of performance related experiences (HANIN et al., 2001). [31]

The metaphor-generation method is an instrument developed to identify self-generated metaphors and interpretative descriptors of feeling states prior to, during, and after best ever and worst ever competitions (HANIN & STAMBULOVA, 2002). Thus the focus is on assessment of idiosyncratic content (quality) of emotional experiences in high achievement setting. As an introduction, the concept of a metaphor is briefly explained and examples of metaphors describing feelings and emotions in non-sports settings are provided. Asking a person to complete such a sentence as, "When I am on a beach on a bright sunny day, I feel like ..." generates a metaphor. Completing a paraphrased sentence, "In other words, I feel myself ...," elicits a description or an interpretation of an athlete's state symbolized in a metaphor. As soon as participants understand the idea of a metaphoric description of psychological states, they are requested to recall their "best ever" competition and to describe how they felt by completing three open-ended sentences and paraphrases: "Prior to my best ever competition I felt like ... " ("In other words, I felt myself ..."); "During my best ever competition I felt like..." ("In other words, I felt myself ..."); "After the best ever competition I felt like..." ("In other words, I felt myself ..."). After reporting their feeling states in best ever competition, athletes described how they felt prior to, during, and after their worst ever competition by completing the same three open-ended sentences except for substituting "worst ever" for "best ever." In both cases, athletes generated descriptors without using an emotion stimulus list. Several studies using a metaphor-generation method in different performance situations revealed that athletes from different sports and varying in age and skill level are able to generate highly idiosyncratic images symbolically representing their high (or low) action readiness across these two qualitatively opposite performance situations (success and failure). [32]

A transcript of an interview using metaphor-generation method with a top Spanish karate athlete illustrates the approach (RUIZ, M. Personal communication, September 2002).

*Sport Psychologist:* Please, identify your best performance and a combat.

*Athlete:* It was in Spanish championship in the semi-final in Madrid. I had to fight against a very well-known karateka, (he is also in the national team). I won 6-0 in 20 seconds. I was very focused and I did three techniques and each of them was ippon [double point].

*SP:* Now identify your worst performance and combat.

*A:* It was in championship of Euskadi [region in Spain]. I had to fight against another boy from the Basque country and that was very "rocky" fighting.

*SP:* very "rocky"?

*A:* Yes, very strange fighting. He had very bad guard. Although I won, I fought really badly because I couldn't adapt to him, as he was very strange.

*SP:* Now let's talk about your best performance. Before this best performance you felt like ...

*A:* *The champion*

*SP:* In other words, you felt like ...

*A:* I felt good, willing to fight. I was motivated, enjoying it. I usually have very much fun fighting. If I enjoy, I win, I feel confident. It's as if you want to be the champion of the combat

*SP:* During your best performance you felt like ...

*A:* Like a *lion*

*SP:* In other words, you felt like ...

*A:* I was fulfilled, certain; I dominated and was in control of the situation.

*SP:* After your best performance you felt like ...

*A:* Like a *sloth*

*SP:* In other words, you felt like ...

*A:* Very slow, calm, and fulfilled

*SP:* And now, focus on your worst performance. Before your worst performance you felt like...

*A:* Willing of winning, almost the same as in the other one. I felt like I was the *champion*.

*SP:* In other words, you felt like ...

*A:* Like a *Ferrari*, willing, fast, I was good, concentrated and I started in the same way. The same as in the other one, but it didn't work. I was fast, willing, having more than enough power "with plenty of fuel"

*SP:* During your worst performance you felt like ...

*A:* Like a 600 [Spanish car from the 60's] that goes below, that doesn't accelerate, things don't go well, that when it wants to accelerate it is not able to.

*SP:* In other words, you felt like ...

*A:* Bad, uncomfortable, things didn't work out. Whatever I wanted to do it was all blocked me; I was confused.

*SP:* After your worst performance you felt like ...

*A:* Like a *tricycle* because I was ashamed "oh my God what a combat I did!" [33]

Based on such interview or having an athlete complete the sentences prompting generation of metaphors and interpretative descriptors it is possible to create a metaphor profile describing performance related feelings and their displays across pre-event, mid-event and post-event situations in two qualitatively and functionally different contexts (best ever and worst ever competitions). The transcripts below illustrate how another athlete in the same sample described his feelings in his best ever competition (won the regional championships #2) and in worst ever competition (lost to a weaker opponent #3).

#### Transcript #2

1. Before this competition I felt like *a tiger*
2. unbeatable, very strong,
3. did not think about my opponent at all
4. but just wanted to go out and fight;
5. during the contest I felt like I was *in the middle of the desert*
6. full concentration,
7. *as if all stands and referees disappeared;*
8. after the competition, I felt like *a boy finally getting my candy*
9. satisfied and
10. I had a nice feeling of having done my work well.

#### Transcript #3

1. Before this competition I felt like *a little bird in a cage*
2. felt very nervous,
3. fear of loosing and ridicule
4. was thinking only about my opponent and how good he was
5. during combat I felt like *David against Goliath*
6. very weak when I saw I could not counter attack
7. After the combat I felt like *a hunter after prey that finally escaped*
8. very disappointed uncomfortable as I could have done better and be a winner [34]

Another example of using metaphor-generation method involved monitoring of feeling states of the Finnish Olympic-level track and field male athlete in a series of different international competitions during the season. A chain of metaphor images generated by this athlete for different contests included "a colt on a spring pasture" (was very strong but too excited to control own performance), "a tractor" (started moving in the right direction), "a Volvo" (good routines, self-confident and reliable performance), "a Mercedes" (ready and knew what to do, enjoying successful performance), and "a Ferrari" (feeling great, powerful and in control). These metaphors helped to identify and anchor this athlete's optimal level of confidence, the right focus, and self-control skills prior to and during competition. [35]

As expected, self-generated metaphors were highly idiosyncratic and qualitatively different across different athletes in samples of Finnish, Spanish, and Russian athletes. There were, however, several similarities, which included the following features:

1. Inductive content analysis of self-generated metaphors revealed seven symbolic categories within the two large classes of animate and inanimate agents. Animate agents included animals ("*a clumsy bear*," "*a shark*"); human beings ("*a lucky hunter*"); and mythical characters ("*Zeus*"). Inanimate agents included objects ("*a wooden doll*"); vehicles ("*a powerful car*"); natural phenomena ("*a light wind*"); and plants ("*a trembling leaf*").
2. Most metaphors were symbolic representations of high or low action readiness reflected in action tendencies (agent's active or passive position, potential to move, and a quality of movement): "*a rocket at the start*," "*a tiger ready to jump*," "*a fish in the water*"). Strengths-weaknesses metaphors were the images of: (a) being strong, skilful, in control, and able to cope ("*Hercules*," "*a well working pipeline*") or (b) being weak, unskillful, out of control, and unable to cope with task demands ("*a sleepy fly*," "*a man without arms*," "*a beaten dog*"). Strength, power, and skill

- were prominent prior to, during, and after best ever competition; weakness, lack of power and skill were observed prior to, during, and after worst ever competition.
3. Metaphors reflecting available resources ("*a boat with an engine*," "*a mountain river*") and ability to recruit resources ("*a horse in a light cart*," "*a man who can move a mountain*") described athletes' states in best ever competition. A lack of resources ("*a sinking boat*," "*an empty bottle*") and inability to recruit resources ("*a man with weights on his legs*," "*a bird unable to fly*") were characteristic for metaphors the athletes used to describe their states in worst ever competition. Additionally, metaphors describing best ever competition reflected highly efficient use of resources ("*Batman in flight*," "*a fisherman catching a golden fish*"), whereas metaphors describing worst ever competition reflected inefficient or poor use of resources ("*a bear after hibernation*," "*a soldier in a burning tank*").
  4. Action tendencies, resources recruitment and utilization were all characteristics of perceived total readiness to cope with and to control the situation. Several interpretative descriptors highlight this total readiness for action: "I felt strong and ready to overcome any obstacle" (athlete #19), "I was ready for any situation in competition and for any results" (#27), "I was calm and completely ready to start" (#41), "I felt psyched up and ready" (#51), "I felt ready to move a mountain" (#53). As expected, high readiness for action was characteristic for descriptions of athletes' state prior to their best ever competition (70.6%), whereas low readiness for action was typical for the athletes' perceptions of their state in worst ever competition (85.9%).
  5. In some cases emotional state and performance relationships were either negatively or positively reversed. For instance, in a sample of 85 highly skilled Russian athletes, 33 metaphors (12.9% of 255) were negative prior to the best ever competitions. Although athletes felt like "*a hunted animal*," "*a tiger in a cage*," "*a wounded bird*," "*a fish on a frying pan*," "*a man sentenced to death*," but still they performed well. These metaphors were accompanied by negative interpretative descriptors (nervous, fearful, frightened, uncertain). On the other hand, in the worst-ever competitions, 16 metaphors (6.3% of 255) were positive ("*a fish in the water*," "*a calm lake*") and accompanied by highly positive descriptors (felt confident, did not expect anything bad, wanted to fight, was calm, and well focused). In other words, pleasant states, especially in pre-event situations, can sometimes have a detrimental effect upon subsequent performance (complacency, demobilizational effect). Both positive and negative reversals in self-ratings are contrary to the traditional views in sport psychology.
  6. Athletes usually described their states prior to, during, and after competition using different metaphors. For instance, a soccer player felt as "*a fish in the water*" (very confident) prior to the game, as "*a boa in front of rabbit*" (focused and confident) during the game, and as "*a squeezed lemon*" (very tired) after the game. In worst ever competition this player felt as "*a bear in winter*" (far from normal) prior to the game, as "*a fish without water*" (very badly) during the game, and as "*a bold lion in the zoo*" (ashamed and anxious to go home as soon as possible) after the game (see Transcripts 1 and 2, paragraphs 18 and 33). [36]

Taken together, these findings indicate that there are at least two important aspects in the application of the metaphor-generation method in the description of performance related states. First, the idiosyncratic content and personally relevant meaning of metaphors reflect their quality. Specifically, qualitative analysis can identify self-confidence metaphors, anxiety metaphors, anger metaphors, and complacency metaphors. Most of these images are either self-empowering (usually in best ever competitions) or self-defeating (usually in worst-ever competitions). Moreover, the quality of metaphors is

culturally coded and determined by the specific context, in which athletes perceive and experience performance related events. Context-induced beliefs about potential effects of positive and negative emotions can have a strong impact upon perception of consequences of emotional experiences for athletic performance. Thus, competitive stress can be perceived either as undesirable factor to be avoided or as a part of the job to be coped with. In other words, if athletes believe that, for instance, high pre-competition anxiety is detrimental for their performance, the quality of such anxiety will be different from anxiety perceived as an indicator of readiness for the game (see transcript #2). Therefore a sport psychologist working with elite athletes has to identify these context-determined and less than effective beliefs and substitute them with more individually optimal ones. [37]

Second, the situational perspective of metaphors is especially noteworthy. Metaphors differentiated well qualitatively different contexts (best ever and worst ever competitions) and captured the dynamics of emotional experiences across pre-event, mid-event, and post-event situations. Metaphors and feeling state descriptors in best ever and worst competition had opposite functional meaning in terms of athletes' ability to recruit available resources and to use them efficiently. Thus in best ever competition, metaphors symbolizing strength, power, speed, and skillfulness were generated 5-10 times more often than in worst ever competition. In contrast, in worst ever competition, athlete's metaphors symbolized weakness, slowness, and powerlessness five times more often than in best ever competition. An even stronger relationship was observed in the recruitment and utilization of resources, especially during performance in both best ever and worst ever competition. Therefore, the findings provide empirical support for the notion that a metaphor is primarily a matter of thought and action (LAKOFF & JOHNSON, 1980) and that feeling states accompanying performance reflect action tendencies (FRIJDA, 1986). However, in some cases, athletes reported negative images of feeling states prior to their successful competition and positive images of feeling states prior to their poor competitions. Such "conflicting" emotion-performance relationships oppose a stereotyped view but concur well with earlier individual oriented research (HANIN, 1997; 2000; HANIN & SYRJÄ, 1995; ROBAZZA et al., 2000). [38]

Idiosyncratic metaphors describing the content of feeling states experienced throughout competition were different across pre-, mid-, and post-performance situations. This data provides support for the notion that a performance task usually involves three interrelated but functionally and qualitatively different stages: preparation for, execution of, and evaluation of performance. A low content overlap between metaphors across these three situations in best ever and worst ever competition provides a strong empirical support for this hypothesis. The findings suggest that the functional meaning of these three situations, as symbolically represented by idiosyncratic metaphors, is different for each athlete. These differences are triggered by situational appraisals of anticipated and occurred outcomes (gains and harms) (LAZARUS, 2000) and, therefore, vary greatly across pre-, mid-, and post-event situations. [39]

These suggest that emotion content is also very dynamic and can change from pre-event to mid-event and to post-event situations, if the meaning of performance situation for an athlete changes. Therefore, in research and applications it is important to identify a specific constellation (or a set) of emotion content that is optimal or dysfunctional for an athlete's performance and temporal patterns of emotion content throughout a particular competition or several competitions. Moreover, metaphors reflecting even slight changes in personal meaning of each performance situation could be useful for a practitioner in monitoring dynamics of performance related states and planning interventions. [40]

### 3.4 Narratives

A narrative is defined as "an account, report, or story, as of events, experiences or the process or technique of narrating" (COLLINS ENGLISH DICTIONARY, 1991, p.1037). Actually,

"we organize our experience and our memory of human happenings mainly in the form of narrative—stories, excuses, myths, reasons for doing and not doing, and so on ... Narratives, then, are a version of reality whose acceptability is governed by convention and narrative necessity" rather than by empirical verification and logical requiredness ..." (BRUNER, 1991, p.4). [41]

A narrative is usually a continued account of any series of occurrences. Therefore, a person's self-story is "first-person narrative through which he defines his identity, based on his memories and perceptions of his history, his present life, his roles in various social and personal settings, and his relationships" (PAYNE, 2000, p.19). It is also important to realize that these self-stories, these accounts of life (*or performance situations*) can change in precise detail at each telling but with recurring dominant themes and concepts. Actually a narrative is a scheme by means of which human beings give meaning to their experience of temporality and personal actions. It provides a framework for understanding the past events of one's life and for planning future actions. It is the primary scheme by means of which human existence is rendered meaningful (POLKINGHORNE, 1988, p.11). Distortions in narratives therefore are not just memory distortions but social and cultural influences. A crucial difference between expert knowledge and experiential knowledge is that the latter incorporates *meaning*—it has no claims to be objective. Narratives are self-stories conveying intention and feeling related to a series or a sequence of events and therefore provide a holistic picture of unfolding processes (BRUNER, 1991). Although narratives (SPARKES & SILVINOINEN, 1999) or their elements in in-depth interviews are just beginning to be used in sport psychology, their potential value as a tool, especially in the study of dynamics of subjective emotional experiences related to athletic performance, is still not fully appreciated. Narratives (as self-stories told by athletes and coaches) can describe concrete performance situations and identify automatic thoughts and emotional responses in frustrating situations, re-create reality of high-level performer, and identify the most appropriate ways to cope with adversity and also to introduce permanent and successful change. [42]

A transcript below illustrates how a 16 year-old ice-hockey goal-tender perceives and describes his problem during important games.

#### Transcript #4

1. "... This is perhaps a silly question but can someone help me?
2. I am very good technically and physically with the qualities needed for a goaltender.
3. I always train much and well.
4. For instance, I trained on the average 12 times per week during the summer season.
5. However, I have one very big problem.
6. In the game, I start feeling very nervous and fear that I will play badly.
7. Then usually easy things become very difficult ...
8. This is especially often in the games where it is necessary to win.
9. Sometimes the tension goes away, if the play starts well.
10. I know that I am really good.
11. My coach thinks that my flexibility and other qualities are top level in Finland ...
12. In training, I can tend off really well, but in really tough situations I cannot stand it ...
13. Now it is again the time when I have to succeed especially in training games.
14. Based on these results they will select a future National junior team ... " [43]

This narrative describes briefly the goaltender's feelings and performance in practices (lines 3, 4, 12) and tough games (6-9, 12) accompanied by his general self-ratings (2, 10, 11) and expectations (1, 13, 14). However, for individualized interventions, the text should be more contextualized and provide more detailed information on this athlete's perceptions of his automatic thoughts, feelings, and their functions in successful and less than successful game episodes. More information is possible to collect by enhancing this athlete's awareness and by focusing on personally significant performance episodes. A narrative below illustrates a detailed account of such a significant event experienced and reported by a professional golfer after a successful round: 68 (- 4 under par)[D](#).

1. "On the way to the course I felt calm and surprised not to feel any nervousness. This was my "home" competition and I wanted to play really well. Usually I try too much and I feel nervous because I play at home and everybody is expecting me to play well and also everybody (other players) want to play better than I do ... I don't know why but I always felt uncomfortable to play "home" game ... but now I felt peaceful and wanted to play well ... wanted to show that I can in a positive way! During warm-up, I just wanted to go out and play.
2. Hole 1 (par3) – I felt a little nervous and did not hit the green. The chip wasn't good and I still felt nervous on the green when putting two putts. Bogey wasn't a good start but I knew how to take it easy and let it go. Tried to concentrate on the next shot.
3. Hole 2 – I felt relieved that there was no public ... Now I don't like to be close to public ... Well I played this hole strongly to the green and holed my birdie to make up for the bogey on the first one.
4. Hole 3 – After making a par I felt impatient ... I wanted a birdie...
5. Hole 4 – A nice chip and a par ... I felt relaxed and I really enjoyed it!
6. Hole 5 – (tough par 3) A little uncertain with the club (selection) but it finished nicely to the green and I holed the tricky birdie putt after seeing the line of the putt very clearly and trusting that!
7. Hole 6 – (Steady par) a little bit worried about the green, as I felt impatient and the rhythm of my swing did not feel good. Par.
8. Hole 7 – I worried about the shot but it landed pin high and I made another birdie
9. Hole 8 – Three nice shots into the green and a birdie. I felt that everything is going my way and this is my day ... All those putts that did not drop lately, did drop today!
10. Hole 9 – Par and I did not want to calculate how I was doing ... I knew I was doing well and wanted to stay that way!
11. Hole 10 – par ... hole 11 – par ... hole 12 – par ...
12. Hole 13 – I started thinking about my "monster" hole (par3 – #15). It was coming and I started to think how I was going to survive ... but I stopped myself right there to shift to be "here and now" and enjoy this moment ...
13. Hole 14 – Par
14. Hole 15 – (Monster hole) I felt a little uncertain always with this hole because a couple of years ago it is here at this hole that my fears about "hitting into water" started. I thought, "it's only like 140 m long par 3 ... but I tried too much this time and I "duffed" (hit the ground close to the ball) and made a couple of shots into lake in this hole ... On that day, my sponsors watched me play and I felt so embarrassed ... Since then it sometimes comes into my mind that I will hit the water ... I know it's silly and years since it has happened but I can't get rid of this thought ... I can laugh at it now but back then it wasn't funny ... Well, with such a nervous shot I did not hit the green but got up & down.
15. Hole 16 – par.
16. Hole 17 – Nice birdie ...
17. Hole 18 – I felt nervous after missing the green ... how do I get a par? ... But just focused on "here and now" and on "doing" and the par was ready! Feeling good about playing a good round. .... Actually, there were moments and "bad" thoughts but I managed to cope with these unproductive thoughts relatively well. ... After a short rest, I went to train and get ready for the next day. Calmed down and told myself that tomorrow I will again begin from the very beginning ... Then I went to the swimming pool to relax ... I was ready to play again." [44]

This transcript provides a wealth of information about the dynamics of performance related subjective experiences in a specific context of personally significant activity. It shows how situational pre-short appraisals affect emotional responses (hole 13, 15), how performance process and outcomes determine emotional reaction (1, 3, 4, 7, 8, 18), and how by controlling emotions the golfer was able to avoid performance decrement (1, 6, 13, 18). A narrative is flexible and does not "push" an athlete to think about specific emotions or focus. Sometimes narratives include metaphors as substitutes for a description of experiences that are difficult to describe or interpret. However, the story always tells about the moments of the current game, perceived as most significant within the context of past personal experiences. Interestingly, in describing this exceptionally

successful round, the golfer mentioned only a few game episodes without detailed comments (holes 10, 11, 12, 14, 15, 16). [45]

The main advantage of narratives is that they provide means for holistic and dynamic reconstruction of unfolding process of athletic performance in real-life setting. From the discursive perspective in psychology (EDWARDS, 1999; HARRÉ & GILLET, 1994), narratives focus on the functions of emotion feelings and displays in the episodes of everyday life (or specific activity) that are treated as psychological equivalents of statements. Therefore discursive perspective involves the analysis of emotional experiences and displays in specific contexts. Thus of special value is the fact that story telling includes not only emotion words as descriptors of idiosyncratic experiences but also athletes' interpretations of these experiences and culturally determined beliefs within a specific context. Although the main emphasis so far was on emotion experiences, emotion displays (expression and suppression of feelings) have specific features, and stereotyped views in the context of competitive and high achievement sport. In this particular setting, athletes learn to read body signals of other competitors to see how they feel and if they are ready. An Olympic champion in decathlon recalls the situation prior to the last event (1500m race) in one of the international meets. "*I was warming up and looking at how other competitors were feeling before to the race. Suddenly I noticed as one of them (who was the biggest threat to me) lightening a cigarette! That was it! I knew I'd win this race!*" Indeed, he won the race and the entire competition using to his advantage this last minute observation of his opponent's spontaneous emotional display. Other examples are high anxiety (traditionally perceived as a sign of weakness), which is usually concealed and a deliberate display of sometimes faked anger to distract an opponent's focus (e.g. a tennis-star John McEnroe was notoriously well known for such anger outbursts during the game). [46]

#### 4. Conclusion

The main purpose of this paper was to provide an overview of selected data collection techniques to generate idiosyncratic content (quality) of subjective emotional experiences related to athletic performance. Hopefully, this discussion creates new grounds for methodology and identifies several promising future research directions. Specifically, more attention is required for the assessment of idiosyncratic content of performance related subjective emotional experiences. These experiences, however, should include not only person-relevant emotion labels (calm, self-confident, happy, angry, anxious) but also idiosyncratic experience *domains* (self-confident or angry about what?) and resulting *inner dialogues* (self-talk). Furthermore, descriptions should also capture the content of other modalities of psychobiosocial state (cognitive, motivational, bodily, motor-behavioral, operational and communicative) and their interaction. Finally, temporal patterns of these experiences and displays should be assessed using self-generated metaphors and narratives to address the limitation of cross-sectional measures. [47]

So far, most emphasis was on qualitative analysis of experiences rather than their displays. Conceptually, seven forms of performance psychobiosocial states provide a tentative framework for assessing and differentiating between both experiences (cognitive, affective, motivational and bodily) and displays (motor-behavioral, operational and communicative). Social nature of these experiences and displays should also be clearly identified by emphasizing the role of the context dimension and social psychological factors. Earlier attempts to examine interpersonal and intergroup anxiety (HANIN, 1989, 1992, 2000) should be extended to positive and negative emotional experiences. A special focus on the role of existing culturally coded beliefs about the functionality or dysfunctionality of different emotional states could also be a promising

avenue to explore in the future. Finally, a shift to more holistic descriptions and reconstruction of multiple subjective realities in sport becomes possible with the use of self-generated metaphors and narratives. [48]

### Note

1) Par in golf is an estimated standard score for a hole or course that a good player should make: par for the course was 72 and this golfer was four strokes less and thus better in this particular round. [<back>](#)

### References

Averill, James R. (1990). Inner feelings, works of flesh, the beast within, diseases of the mind, driving force, and putting on a show: six metaphors of emotion and their theoretical extensions. In David E. Leary (Ed.), *Metaphors in the history of psychology* (pp.104-132). Cambridge: Cambridge University Press.

Bandura, Albert (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Brodsky, Joseph (2001/1986). *Poklonit'sya teni* (Essays from Less than one). St-Petersburg: Azbooka-klassika.

Bruner, Jerome (1991). The Narrative Construction of Reality. *Critical Inquiry*, 18, 1-21.

Cerin, Ester, Szabo, Attila, Hunt, Nigel, & Williams, Clive (2000). Temporal patterning of competitive emotions: A critical review. *Journal of Sports Sciences*, 18, 605-626.

Cohn, Patrick, J. (1990). An exploratory study of sources of stress and athlete burnout in youth golf. *The Sport Psychologist*, 4, 95-106

Collins English Dictionary (1991) (3rd edition). Glasgow: Harper Collins.

Combs, Gene, & Freedman, Jill (1990). *Symbol, story, and ceremony. Using metaphor in individual and family therapy*. New York: W.W. Norton & Company.

Coté, Jean; Salmela, John H., Trudel, Pierre, Baria, Abderrahim, & Russell, Storm J. (1995). The coaching model: A grounded assessment of expert gymnastic coaches' knowledge. *Journal of Sport & Exercise Psychology*, 17, 1-17.

Dale, Gregory A. (1996). Existential phenomenology: emphasizing the experience of the athlete in sport psychology research. *The Sport Psychologist*, 10, 307-321.

[Denzin, Norman, K.](#), & Lincoln, Yvonna S. (1994). Introduction: Entering the Field of Qualitative Research. In Norman K. Denzin & Yvonna S. Lincoln (Eds.), *Handbook of Qualitative*

Research (pp.1-17). London: Sage Publications.

Edwards, Derek (1999). Emotion discourse. *Culture and Psychology*, 5(3), 271-291.

Frijda, Nico, H. (1988). The laws of emotion. *American Psychologist*, 43, 349-358.

Gould, Daniel, Jackson, Susan A. & Finch, Laura (1993). Sources of stress in national champion figure skaters. *Journal of Sport & Exercise Psychology*, 15, 134-159.

Gould, Daniel, Hardy, Lew, Medbery, Russell, Dieffenbach, Kristen, Lauer, Larry, Damarjian, Nicole, & Jones, Graham (1999). *Identifying the range of emotions in sport achievement striving*. A paper presented at the Association for the Advancement of Applied Sport Psychology, Banff, Alberta, Canada.

Hanin, Yuri L. (1989). Interpersonal and intragroup anxiety in sports. In Dieter Hackfort & Charles D. Spielberger (Eds.), *Anxiety in sports: An international perspective* (pp.19-28). Washington: Hemisphere Publishing Corporation.

Hanin, Yuri L. (1992). Social psychology and sport: Communication processes in top performance teams. *Sport Science Review*. 2: 13-28.

Hanin, Yuri L. (1993a). *IZOF Level 1 Certification course: A Handbook and Materials*. Jyväskylä, Finland: Practical Psychology.

Hanin, Yuri L. (1993b). Optimal Performance Emotions in Top Athletes. In Sidónio Serpa, José Alves, Vítor Ferreira, & António Paula-Brito (Eds.), *Sport psychology: An integrated approach. Proceedings from the VIII World Congress of Sport Psychology* (pp.229-232). Lisbon, Portugal: ISSP.

Hanin, Yuri L. (1993c). Organizational Psychology in Sport Setting. *Revista de Psicologia del Deporte*, 3, 17-30.

Hanin, Yuri L. (1997). Emotions and athletic performance: Individual zones of optimal functioning model. *European Yearbook of Sport Psychology*, 1, 29-72.

Hanin, Yuri L. (Ed.) (2000). *Emotions in sport*. Champaign, Illinois: Human Kinetics.

Hanin Yuri L., & Stambulova, Natalia B. (2002). Metaphoric description of performance states: An application of the IZOF model. *The Sport Psychologist* 16(4), 396-415.

Hanin, Yuri L., Stambulova, Natalia, Lukkarila, Jouko, & Tummuavuori, Margareetta (2001). Performance related states: a metaphoric description. *Journal of Sport Science*, 19(8), 650-651.

Hanin, Yuri L. & Syrjä, Pasi (1995). Performance Affect in Junior Ice Hockey Players: An Application of the Individual Zones of Optimal Functioning Model. *The Sport Psychologist*, 9, 169-187.

Hanin, Yuri L. & Syrjä, Pasi (1996). Predicted, actual and recalled affect in Olympic-level soccer players: idiographic assessments on individualized scales. *Journal of Sport*

and *Exercise Psychology*, 18(3), 325-335.

Hardy, Charles J., & Rejeski, Jack, W. (1989). Not what, but how one feels: The measurement of affect during exercise. *Journal of Sport and Exercise Psychology*, 11, 304-317.

Harré, Rom & Gillet, Grant (1994). *The Discursive Mind*. London: Sage.

Jackson, Susan A. (1995). The growth of qualitative research in sport psychology. In Tony Morris & Jeff Summers (Eds.), *Sport psychology. Theory, applications and issues* (pp.575-591). New-York: John Wiley & Sons.

Jokela, Miia & Hanin, Yuri, L. (1999). Does Individual Zones of Optimal Functioning Model discriminate between successful and less successful athletes? A meta-analysis. *Journal of Sport Sciences*, 17, 873-887.

Jones, Graham (1995). Competitive Anxiety in Sport. In Stuart J.H. Biddle (Ed.), *European Perspectives on Exercise and Sport Psychology* (pp.128-153). Champaign, Illinois: Human Kinetics.

Kamata, Akihito, Tenenbaum, Gershon, & Hanin Yuri (2002). Individual Zone of Optimal Functioning (IZOF): A Probabilistic conceptualisation. *Journal of Sport & Exercise Psychology*, 24(2), 189-208.

Krane, Vikki, Andersen, Mark B. & Strean, William B. (1997). Issues of qualitative research methods and presentation. *Journal of Sport & Exercise Psychology*, 19, 213-218.

Lakoff, George & Johnson, Mark (1980). *Metaphors we live by*. Chicago: The University of Chicago Press.

Lazarus, Richard S. (2000). How emotions influence athletic performance. *The Sport Psychologist*, 14, 229-252.

Lieberman, David A. (1979). Behaviorism and the mind. A (limited) call for a return to introspection. *American Psychologist*, 34(4), 319-333.

Males, Jonatan R., Kerr, John H. & Gerkovitch, Mary M. (1998). Metamotivational states during canoe slalom competition: A qualitative analysis using reversal theory. *Journal of Applied Sport Psychology*, 10, 185-200.

Martens, Rainer (1987). Science, knowledge, and sport psychology. *The Sport Psychologist*, 1, 29-55.

McReynolds, Paul (1990). Motives and metaphors: a study in scientific creativity. In David E. Leary (Ed.), *Metaphors in the history of psychology* (pp.133-172). Cambridge: Cambridge University Press.

Mills, Joyce C., & Crowley, Richard J. (1986). *Therapeutic metaphors for children and child within*. New York: Brunner/Masel Publishers.

- Orlick, Terry (1986). *Psyching for sport*. Champaign, IL: Human Kinetics.
- Orlick, Terry & Partington, John (1988). Mental links to excellence. *The Sport Psychologist*, 2(2), 105-130.
- Ortony, Andrew, Clore, Gerald L., & Collins, Allan (1988). *The Cognitive Structure of Emotions*. Cambridge: Cambridge University Press.
- Ortony, Andrew & Fainsilber, Lynn (1989). The role of metaphors in descriptions of emotions. In Yorick Wilks (Ed.), *Theoretical issues in natural language processing* (pp.181-184). Hillsdale, NJ: Erlbaum. See also <http://acl.ldc.upenn.edu/T/T87/T87-1037.pdf>.
- Payne, Martin (2000). *Narrative Therapy. An introduction for Counsellors*. London: Sage.
- Polkinghorne, Donald (1988). *Narrative Knowing and the Human Sciences*. New York: State University Press.
- Robazza, Claudio, Bortoli, Laura, Nocini, Filippo, Moser, Giovanna, & Arslan, Carlo (2000). Normative and idiosyncratic measures of positive and negative affect in sport. *Psychology of Sport and Exercise*, 1(2), 103-116.
- Ruiz, Montse, & Hanin, Yuri L. (2002). *Metaphoric description and individualized emotion profiling of performance related states in high-level karate athletes*. (Submitted)
- Scanlan, Tara K., Ravizza, Kenneth, & Stein, Gary L. (1989). An in-depth study of former elite figure skaters: I. Introduction to the project. *Journal of Sport & Exercise Psychology*, 11, 54-64.
- Schwartz, Norbert & Bohner, Gerd (1996). Feelings and their motivational implications. Mood and the action sequence. In Peter M. Gollwitzer & John A. Bargh (Eds.), *The psychology of action* (pp.119-145). New York: The Guilford Press.
- Sparkes, Andrew C. (1998). Validity in qualitative inquiry and the problem of criteria: Implications for sport psychology. *The Sport Psychologist*, 12, 363-386.
- Sparkes, Andrew C. & Silvennoinen, Martti (Eds.). (1999). *Talking bodies. Men's narratives of the body in sport*. Jyväskylä, Finland: Sophi, University of Jyväskylä.
- Spielberger, Charles D, Gorsuch, Richard L., & Lushene, Robert E. (1970). *Manual for the State-Trait Anxiety Inventory (STAI)*. Palo Alto: Consulting Psychologist Press.
- Spradley, James P. (1979). *The ethnographic interview*. New York: Holt, Rinehart & Winston.
- Strean, William B. (1998). Possibilities for qualitative research in sport psychology. *The Sport Psychologist*, 12, 333-345.
- Syrjä, Pasi, & Hanin, Yuri L. (1997). Measurement of emotion in sport: a comparison of individualized and normative scales. In Ronnie Lidor & Michael Bar-Eli (Eds.), *ISSP IX*

*World Congress of Sport Psychology. Proceedings, Part 2* (pp.682-684). Netanya, Israel: Wingate Institute.

Syrjä, Pasi (2000). *Performance-related emotions in highly skilled soccer players: A longitudinal study based on the IZOF model*. *Studies in Sport, Physical Education and Health*, 67. Jyväskylä, Finland: Jyväskylä University Press.

Watson, David & Tellegen, Auke (1985). Towards a consensual structure of mood. *Psychological Bulletin*, 98(2), 219-235.

Weiner, Bernard (1991). Metaphors in motivation and attribution. *American Psychologist*, 46(9), 921-930.

Woodman, Tim, & Hardy, Lew (2001). A case study of organizational stress in elite sport. *Journal of Applied Sport Psychology*, 13, 207-238.



# **Efficacy Belief Research in Sport: Athletes, Teams, and Coaches**

*Deborah L. Feltz*

Athletes and coaches know the powerful effects that confidence can have on thoughts, feelings, and behavior, especially performance. Bandura (1977, 1997) has defined this sense of confidence as self-efficacy: “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (1997, p. 3). In sports terms, it is the belief an athlete has in being able to execute a task successfully (e.g., a pitcher striking out a batter) in order to obtain outcomes, such as self-satisfaction or coach recognition (Feltz & Lirgg, 2001). Bandura’s theory of self-efficacy (and its collective efficacy extension) has been proposed as a cognitive explanation for differences in the abilities of athletes, teams, and coaches to carry out challenging tasks in the athletic arena. Since the first publication of the self-efficacy concept in 1977, there have been 3 decades of research on the topic related specifically to sport and motor performance, with over 200 published research articles (Feltz, Short, & Sullivan, 2007)

What I find so appealing about self-efficacy theory and why I think it is so popular within sport is that efficacy beliefs are modifiable. They can be changed by a number of events, thoughts, and worries. Thus, sport psychologists can target strategies to strengthen efficacy beliefs for athletes, teams, and coaches rather than just predict behavior based on personality traits. In addition, the concept of self-efficacy is placed within the broader theory of social cognition, where it is an important, but not the sole determinant of goal-directed behavior. In this paper, I provide an overview of the self-efficacy theory and its measurement, a review of relevant research on athletes, athletic teams, and coaches, and future directions for research in this field.

## **Overview of Self-Efficacy Theory**

Bandura (1977) proposed that psychological procedures, whatever their form, alter self-efficacy beliefs. Self-efficacy theory was originally proposed to account for the different results achieved by these diverse psychological procedures used in clinical psychology for the treatment of anxiety; however, it has since been expanded and applied to other domains of psychosocial functioning, including sport and motor performance (Feltz, 1988b). The efficacy beliefs formed as a result of these procedures or through other means are a product of a complex process of self-appraisal and self-persuasion that relies on cognitive processing of diverse sources of efficacy information (Bandura, 1997). Bandura (1977, 1997) categorized these sources as past performance accomplishments, vicarious experiences, verbal persuasion, and physiological states. Others have added separate categories for emotional states and imaginal experiences (Maddux, 1995; Schunk, 1995). Performance accomplishments have been shown to be the most influential source of efficacy information because they are based on one’s own mastery experiences (Bandura, 1997).

---

Paper presented at XI National Congress of Sports Psychology, XI Andalusian Congress and III Ibero-American Congress, March 5-8, 2008.

The consequences of these judgments have been shown to determine people’s levels of motivation, as reflected in the challenges they undertake, the effort they expend in the activity, and their perseverance in the face of difficulties (Bandura, 1997). In addition, individuals’ self-efficacy judgments also have been shown to influence certain thought patterns (e.g., goal intentions, worries, causal attributions) and emotional reactions (e.g., pride, shame, happiness, sadness) that also influence motivation (Bandura, 1997). Thus, efficacy beliefs are hypothesized to influence not only physical proficiency, as Bandura (1997) notes, but all aspects of performance, including reading shifting game situations, selecting effective performance strategies, predicting opponents’ likely

actions, making in-the-moment decisions, utilizing visualization, managing pressure and setback situations, and managing distractions.

### **Measurement of Self-Efficacy**

Bandura (2006) has developed guidelines for constructing efficacy measures. These include three recommendations that I discuss in this paper: domain specification, gradations of challenge, and phrasing of items. Of these, domain specification is probably the most important guideline in Bandura's set of recommendations. Bandura advocates the use of efficacy-belief measures that are specific to particular domains of functioning rather than ones that assess global expectations of performance that are devoid of context. Within this guideline, the degree of specificity is determined by the nature of the situation to which one wishes to generalize or predict.

In terms of gradations of challenge, the appropriate gradations of challenge against which efficacy judgments are made should be identified in order to avoid floor and ceiling effects. This typically involves conducting a conceptual analysis of the subskills needed to succeed in the performance area of interest and a contextual analysis of the level of situational demands. Items should be pretested those for which the vast majority of participants check the maximum efficacy category should be discarded because this indicates a lack of sufficient difficulty to differentiate among respondents (Bandura, 2006). Creating enough gradations of challenge also implies that multiple items should be constructed to tap all of the key competence components. One-item self-efficacy measures should be avoided because it reduces self-efficacy's predictive power (Lee & Bobko, 1994) and it more apt to create ceiling effects when athletes do not want to admit to lack of efficacy (Feltz et al., 2007).

Phrasing of items has to do with fidelity to the construct of self-efficacy as a "can do" perception (Feltz et al., 2007). Self-efficacy judgments are about what one thinks one can do with one's skills, not about what one has and not about what one will do (i.e., one's intentions). In addition, as Feltz et al. note, self-efficacy items should not be phrased in terms of *have* or *am* because these types of items are not constructed within a goal-striving context. These phrases do not focus on what athletes think they can do in terms of choice, effort, and perseverance.

Further in terms of fidelity to the construct of self-efficacy, it is important not confuse self-efficacy expectations with outcome expectations. Outcome expectancies are defined as the belief that certain behaviors will lead to certain outcomes. Self-efficacy, as stated previously, is the belief in one's ability to perform the behavior successfully (Bandura, 1977, 1997). In essence, outcome expectations are concerned with beliefs about one's environment and efficacy expectations are concerned with beliefs about one's competence. These outcome beliefs can take three major forms according to Bandura: physical effects (e.g., positive or negative sensory experiences), social effects (e.g., approval or disapproval from a coach), and self-evaluative effects (e.g., self-satisfaction or self-sanctions).

As Feltz et al. (2007) stated, "Some sport psychology researchers confuse performance markers, such as 'winning or losing an event,' with an outcome expectation (e.g., Dawson, Gyurcsik, Culos-Reed, & Brawley, 2001; Eyal, Bar-Eli, Tenenbaum, & Pie, 1995; Neiss, 1989)." But, clearly, an athlete's position in a competition --first, second, third, etc -- does not fit the classification of outcome expectations.

### **Types of Scales**

In sport studies, self-efficacy measures typically are constructed by listing a series of tasks that vary in difficulty, complexity, or stressfulness. These are called hierarchical self-efficacy measures. Participants are asked to rate their degree of certainty (efficacy strength) that they can execute items on a near-continuous scale from complete uncertainty to complete certainty, with

scale ranges from zero to 10, in one-unit increments, or zero to 100, in 10-unit increments. Most hierarchical scales are constructed by listing tasks in increasing order of difficulty, such as kicking a soccer ball into a goal from 1 out of 10 to 10 out of 10 times. The number of tasks that are rated as at least 1 or above is considered the level of self-efficacy.

In constructing nonhierarchical scales, a conceptual analysis of the subskills needed to perform in a given domain is conducted, along with a contextual analysis of the level of situational demands. Such a scale for wrestling might include the following items: escape, get reversal, get back points, pin opponent, not get take down, get take down by throw, get take down single leg, ride opponent, get take down double leg, and not be pinned (Treasure Monson, & Lox, 1996). Examples of these types of scales are contained in the Appendix.

## Self-Efficacy Research in Sport and Motor Performance

Research on self-efficacy in sport and motor performance has examined either (a) the efficacy – performance relationship or (b) the sources of efficacy information and their effects on self-efficacy. Most of the researchers who have investigated self-efficacy beliefs of athletes have examined the self-efficacy-performance relationship. These studies tested the functional properties of efficacy beliefs (i.e., effects on choice, effort, persistence, or performance) through experimental manipulation of efficacy beliefs or through nonexperimental studies where efficacy beliefs and performance vary concurrently.

*The efficacy – performance relationship.* Two series of studies comprised the early research. One program of work was by Feltz and her colleagues ((Feltz, 1982, 1988a; Feltz, Landers, & Raeder, 1979; Feltz & Mugno, 1983) that did not manipulate self-efficacy, but examined the causal pathways of the efficacy – performance relationship. The other research program was by Weinberg and his colleagues (Weinberg, 1985; Weinberg, Gould, & Jackson, 1979; Weinberg, Gould, Yukelson, & Jackson, 1981; Weinberg, Yukelson, & Jackson, 1980). The Weinberg studies manipulated efficacy beliefs using competitive tasks. These studies showed a significant and at least moderate relationship between self-efficacy and performance.

After two decades of research, Moritz, Feltz, Fahrback, and Mack (2000) conducted a meta-analysis and found that the average correlation between self-efficacy and individual performance in sport (based on 45 studies and 102 correlations) was .38. What this result means is that approximately 16% of the variance in athletic performance can be attributed just to self-efficacy. Investigations in which low correlations between the two measures were reported used at least one of the following: a nontraditional measure of self-efficacy, a long time-lag between measures, or had a low concordance between the self-efficacy and performance measure. Predictive strength improved when self-efficacy and performance measures are concordant, self-efficacy measured as specified by Bandura, and when self-efficacy is measured within 24 hr of performance. Furthermore, contribution of efficacy beliefs is probably underestimated given that self-efficacy assessment is rarely inclusive of all facets in athletic performance (Bandura, 1997).

Feltz (1982) used path-analysis techniques to investigate the mediational predictions of self-efficacy theory using a modified back-diving task. She also tested whether self-efficacy is a stronger predictor of performance than is past performance across four trials. Results supported the mediational predictions of self-efficacy on performance and its reciprocal relationship across performance trials. However, as one gained experience on the task, past performance had a greater predictive strength on self-efficacy than self-efficacy had on performance.

Bandura (1997) criticized the Feltz (1982) study as statistically ‘overcontrolling’ for past performance by using raw past performance scores along with self-efficacy as predictors of

performance. Wood and Bandura (1989) suggest residualizing past performance by regressing the raw scores on self-efficacy and entering them into the model to remove prior contributions of self-efficacy imbedded in past performance scores. To resolve this controversy, Feltz, Chow, and Hepler (2007) reanalyzed the Feltz diving study comparing the “raw” and “residualized” methods. Results revealed that self-efficacy was a stronger predictor of performance in the residualized model than in the raw past performance model. Furthermore, the influence of past performance on future performance was weaker when the residualized method was used.

Athletes’ judgments about their efficacy also influence their goals, certain thought patterns (e.g., attributions and worry), and emotional reactions (e.g., anxiety and fear). In terms of emotional reactions, self-efficacy has been shown to be inversely related to perceived autonomic arousal (Feltz, 1982; Feltz & Mugno, 1983). And, in terms of thought patterns, self-efficacy for imagery predicts greater imagery use (Short, Tenute, & Feltz, 2005) and faster and more accurate decision-making performance (Hepler & Feltz, 2006).

*Sources of efficacy beliefs.* On the antecedent side of self-efficacy, studies have examined prior performance (Feltz, 1982; Feltz & Mugno, 1983), modeling (George, Feltz, & Chase, 1992; Lirgg & Feltz, 1991), imagery (Feltz & Riessinger, 1990; Garza & Feltz, 1998), verbal persuasion and self-talk (Vargas-Tonsing, 2004), and perceived emotional states and physical conditions (Feltz & Mugno, 1983; Feltz & Riessinger) as predictors of self-efficacy expectations. Feltz and Riessinger showed that imaging oneself winning against an opponent can raise self-efficacy beliefs regarding a muscular endurance task, but in the face of subsequent failure, competitors’ performance had a greater influence on their efficacy expectations. In addition Feltz and Riessinger inquired about people’s sources of efficacy beliefs. Frequency results indicated that most participants (86%) used a form of past performance accomplishments as the basis for their beliefs. The second most popular category was physiological states (e.g., “I’m in poor shape right now”), which was followed by self-persuasion (e.g., “I told myself I could do it”) and vicarious experiences (i.e., “my comparison to the other guys”).

### **Team (Collective) Efficacy**

Sport coaches and spectators alike are often baffled by teams who are composed of talented individuals but who perform poorly. In contrast, some overachieving teams frequently are characterized by a togetherness that overshadows any individual performer. Other overachieving teams win in spite of within-group problems. The confidence that group members have in their collective abilities (team efficacy) may help to explain these inconsistencies.

*Definition.* Bandura (1997) defines collective efficacy as a group’s shared beliefs in its capacities to organize and execute actions to produce a desired goal. Bandura asserts that merely summing a group’s individual assessments of personal efficacy is insufficient to represent the coordinative dynamics of its members. In other words, groups may be composed of high or low efficacious persons; however, how members perceive their group’s ability as a whole is more salient than how they perceive their individual capabilities according to Bandura. Thus, team efficacy beliefs affect the amount of effort members will exert, the degree to which members will remain task-oriented when the team is not performing well, and the resiliency of members following difficult defeats.

*Team efficacy – performance relationship.* Similar to the research on self-efficacy in sport, research on team efficacy has examined either (a) the efficacy – performance relationship or (b) the correlates of team efficacy. Early research on the team efficacy – performance relationship was, similarly, laboratory oriented or field based. Laboratory studies followed a similar paradigm to self-efficacy manipulation (Greenlees, Graydon, & Maynard, 1999, 2000; Hodges & Carron, 1992; Lichacz & Partington, 1996). These studies demonstrated that team efficacy was a significant

influence on team performance.

Although these experimental studies in the lab provided the clearest evidence for the theoretical link between team efficacy and performance, the teams were artificial, did not comprise the characteristics of true sports teams, and did not allow for examination of the network of dynamic relationships that occur over the course of a season (Feltz et al., 2007). Feltz and her colleagues (Feltz & Lirgg, 1998; Myers, Feltz, & Short, 2004; Myers, Paiement, & Feltz, 2007; Myers, Payment, & Feltz, 2004) conducted another series of studies that examined the pathways between team efficacy and performance over the course of an athletic season. This series of studies also showed support for team efficacy as a significant predictor of team performance, that team efficacy is a stronger predictor and aggregated self-efficacy of team performance, and that the efficacy – performance relationship is reciprocal over time.

For instance, Feltz and Lirgg (1998) investigated relationships between self-efficacy, collective efficacy, and team performance with six intercollegiate hockey teams over the course of a 32 game season. In addition to showing that that aggregated team efficacy was a stronger predictor of team performance than was aggregated self-efficacy, they showed that past performance influenced team efficacy to a greater degree than player efficacy. Furthermore, teams who were victorious in their previous competition held higher perceptions of team efficacy prior to their next game than teams who suffered defeat.

*Sources and correlates of team efficacy.* Because collective efficacy is rooted in self-efficacy (Bandura, 1997), at least some of the sources of collective efficacy should be similar to self-efficacy. Of course, these sources should be focused at the group level. Thus, enactive mastery experiences would be based on team masteries, vicarious experience might involve watching a similar team in a similar situation, verbal persuasion would be directed to the group, and physiological and affective states might involve perceptions of the group's nervousness. For instance, Vargas-Tonsing and Bartholomew (2006) showed that athletes displayed greater team efficacy after listening to a motivational talk from the coach compared to their efficacy prior to the talk. While these sources focused at the team level may indeed affect individuals' perceptions of their team's efficacy, other specific team influences have been shown to be important, such as, motivational climate and team cohesion (Feltz et al., 2007).

For instance, Magyar, Feltz, and Simpson (2004) found that motivational climate significantly predicted team efficacy among age-group rowing teams. Specifically, perceptions of mastery climate significantly predicted perceptions of team efficacy at the team level of analysis. Team cohesion is the group attribute that has received the most attention in relation to team efficacy in sport (Chow & Feltz, 2007). Studies have typically shown that team cohesion is significantly related to team efficacy (Heuze, Raimbault, & Fontayne, 2006; Kozub & McDonnell, 2000; Paskevich et al., 1999; Spink, 1990).

*Multidimensionality of team efficacy.* Most measures that have been used to examine team efficacy have been unidimensional and tailored to the specific nature of the study. In order to investigate multiple dimensions of team efficacy and be able to study this construct across different sports, Short, Sullivan, and Feltz (2005) developed the Collective Efficacy in Sport Questionnaire (CEQS). Short et al. provided empirical support for a 5-factor instrument containing 20 items (4 items per factor). The five subscales included *Ability* (e.g., play more skillfully than the opponent), *Effort* (e.g., play to its capabilities), *Persistence* (e.g., persist in the face of failure), *Preparation* (e.g., mentally prepare for this competition), and *Unity* (e.g., be united). These findings suggest that aspects of team functioning, in addition to team ability, are salient in defining collective efficacy in sport.

*Future directions in team efficacy research: Efficacy dispersion.* Previous research has assumed that teams must be in agreement about their confidence in their team in order for a single averaged score to represent a team's collective efficacy (Myers & Feltz, 2007). However, team members vary in their beliefs about their team. In fact, Moritz and Watson (1998) argued that ignoring the individual, within-team perceptions of collective efficacy is misguided because it disregards interesting within-team variability that could be partitioned and explained. Consistent with this argument, DeRue and colleagues (2005) proposed that the dispersion of efficacy perceptions within the team (i.e., the team-level variability in the magnitude of team efficacy perceptions), as well as how this dispersion changes over time, is fundamental to considering the relationship between team efficacy and effectiveness. DeRue and colleagues contend that, in general, the greater the dispersion, the greater the team's effort and capacity to prepare for competition and persist at a task because dispersion causes team members to reappraise the team's task strategies. Consensus, they suggest, hinders reappraisal motivation but increases team viability, trust, and social integration. Thus, a future question for research is: For a given level of collective efficacy, do teams with high perceptual consensus in their collective beliefs outperform teams with dispersed efficacy judgments?

### **Coaching Efficacy**

The coach's efficacy expectations of the athlete or team may also play a role in determining the efficacy beliefs of their athletes. When US Olympic athletes were asked to list the best coaching actions to enhance athletes' performance, providing support and confidence were ranked second (Gould, Greenleaf, Lauer, & Chung, 1999).

As Bandura (1997) suggests, the development of resilient self-efficacy in athletes is heavily influenced by the managerial efficacy of coaches. Coaching efficacy is defined as the extent to which coaches believe they have the capacity to affect the learning and performance of their athletes (Feltz, Chase, Moritz, & Sullivan, 1999). My colleagues and I (Feltz et al., 1999) conceptualized a model of coaching efficacy to provide a framework for studying the relationships among coaching efficacy, coaching behavior, and the motivation and performance of athletes and teams. Our concept of coaching efficacy comprised four dimensions: motivation, technique, game strategy, and character building efficacy. Motivation efficacy was defined as the confidence coaches have in their ability to affect the psychological skills and motivational states of their athletes. Technique efficacy was defined as the belief coaches have in their instructional/diagnostic skills. Game strategy efficacy was defined as the confidence coaches have in their ability to coach during competition and lead their team to a successful performance. Lastly, character-building efficacy involved the confidence coaches have in their ability to influence a positive attitude towards sport in their athletes.

In line with Bandura's concept of self-efficacy, I proposed that the four dimensions of coaching efficacy are influenced by one's past performance and experience (e.g., coaching experience, coaching preparation, previous won-lost record), the perceived ability of one's athletes, and perceived social support (e.g., school, community, and parents). I also proposed that coaching efficacy has an influence on one's coaching behavior, player satisfaction of the coach, the performance of one's athletes, and player efficacy levels.

In addition to the model, my colleagues and I developed the Coaching Efficacy Scale (CES: Feltz et al., 1999) to measure the multidimensional aspects of coaching efficacy. We found supporting but modest evidence for fit of multidimensional structure. Three subsequent studies evaluated the internal structure of the CES using its 10-point scale structure and reported similar fit indices (Lee, Malet, & Feltz, 2002; Myers, Wolfe, & Feltz, 2005; Sullivan & Kent, 2003). Myers, Feltz, and Wolfe (2006), however, found that using a 4- or 5-point scale improved the fit of the

scale.

Feltz et al. (1999) also tested the proposed sources and outcomes of CES using high school basketball coaches. Support was identified for our model of coaching efficacy, in that past winning percentage, years in coaching, perceived team ability, community support and parental support were significant predictors of coaching efficacy. The most important sources of coaching efficacy were years of coaching experience and community support. Additional support for the sources of coaching efficacy also has been found using intercollegiate male and female Division II and III coaches (Myers, Vargas-Tonsing, & Feltz, 2005; Sullivan, Gee, & Feltz, 2005) and youth-sport coaches (Feltz, Hepler, Roman, & Paiement, 2006). Sullivan et al. and Feltz et al. found, additionally, that playing experience was also a significant source of coaching efficacy, especially for game strategy confidence.

A few studies also have addressed the role that formal education programs play in the development of coaching efficacy (Lee et al., 2002; Maleté & Feltz, 2000). These studies showed that coaches who received formal coaching education reported higher coaching efficacy than those who had received no formal coaching education.

In terms of the consequences of coaching efficacy, Feltz et al. (1999) found that higher efficacy high school coaches had significantly higher winning percentages, greater player satisfaction, used more praise and encouragement behaviors, and used fewer instructional and organizational behaviors than lower efficacy coaches. Following this study, Kent and Sullivan (2003), surveying U.S. and Canadian intercollegiate coaches, found a relationship with organizational commitment, defined as the extent to which workers in an organization are committed to the organization, its goals and values, and its processes.

Another team variable that coaching efficacy is hypothesized to predict is team efficacy. Vargas-Tonsing, Warners, & Feltz (2003) showed a positive relationship between the coach's character-building efficacy and team efficacy, but no relationship with player efficacy in a study of girls' high school volleyball teams and coaches.

The research on coaching efficacy has supported its multidimensionality; it has sources that conform to self-efficacy theory plus some that are unique to coaches (e.g., perceived skill of athletes, one's own playing experience); and it is a significant predictor of coaching behavior and athlete and team outcome variables. In addition, The CES (Feltz et al., 1999) is the only published scale to date to measure coaching efficacy within the confines of Bandura's (1977, 1997) theory of self-efficacy, and it has stood up to psychometric testing, and has been strengthened by using a reduced rating scale structure.

In summary, my 3 decades of research on self-efficacy theory in numerous sport contexts has shown a consistently significant relationship between self-efficacy and performance. My work has expanded to include investigations of teams, coaches, unique sources within sport, relationships to other social cognitive variables, and the self-regulation of other processes beyond physical performance in sport. I could not have accomplished this without the help of numerous graduate students who have collaborated with me on this work. The following is a list of my doctoral students who have helped on this program of research.

**PhD. Students and Former Students who have worked on this program of research:**

Cathy Lirgg 1991	Anthony Kontos 2000
Jeong K. Park 1992	Lynette Craft 2002
Tom George 1993	Michelle Magyar 2002
Richard Albrecht 1993	Sian Beilock 2003
Brenda Riemer 1995	Tiffanye Vargas-Tonsing 2004
Melissa Chase 1995	Nicholas Myers 2005
Inwha Lee 1995	Craig Paiement 2006
Robert Neff 1997	Laura Kietzmann
Joseph Carlson 1997	Kristen Murray
Sandra (Moritz) Short 1998	Graig Chow
Rodney Wilson 2000	Teri Hepler
Leapsetawe Maletе 2000	Nicole Forrester
Philip Sullivan 2000	

**References**

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215.

Bandura, A. (1990). Perceived self-efficacy in the exercise of personal agency. *Journal of Applied Sport Psychology*, 2, 128-163.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bandura, A. (2006). Guide for creating self-efficacy scales. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 307-337). Greenwich, CT: Information Age Publishing.

Bandura, A., & Locke, E.A. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology*, 88, 87-99.

Chow, G.M., & Feltz, D.L. (2007). Exploring new directions in collective efficacy and sport. In M. Beauchamp & M. Eys (Eds.), *Group dynamics advances in sport and exercise psychology: Contemporary themes*. London: Routledge.

Dawson, K.A., Gyurcsik, N.C., Culos-Reed, S.N., & Brawley, L.R. (2001). Perceived control: A construct that bridges theories of motivated behavior. In G.C. Roberts (Ed.), *Advances in motivation in sport and exercise*. Champaign, IL: Human Kinetics.

DeRue, D. S., Hollenbeck, J. R., Ilgen, D. R., & Feltz, D. L. (2005). *A theory of efficacy dispersion and trajectory in teams: Beyond agreement and aggregation*. Manuscript submitted for publication.

- Eyal, N., Bar-Eli, M., Tenenbaum, G., & Pie, J.S. (1995). Manipulated outcome expectations and competitive performance in motor tasks with gradually increasing difficulty. *The Sport Psychologist, 9*, 188-200.
- Feltz, D.L. (1982). A path analysis of the causal elements in Bandura's theory of self-efficacy and an anxiety-based model of avoidance behavior. *Journal of Personality and Social Psychology, 42*, 764-781.
- Feltz, D.L. (1988a). Gender differences in the causal elements of self-efficacy on a high-avoidance motor task. *Journal of Sport and Exercise Psychology, 10*, 151-166.
- Feltz, D.L. (1988b). Self-confidence and sports performance. In K.B. Pandolf (Ed.), *Exercise and sport sciences reviews* (pp. 423-456). New York: Macmillan.
- Feltz, D.L., Chase, M.A., Moritz, S.A., & Sullivan, P.J. (1999). A conceptual model of coaching efficacy: Preliminary investigation and instrument development. *Journal of Educational Psychology, 91*, 765-776.
- Feltz, D.L., Chow, G., & Hepler, T.J. (2007). Path analysis of self-efficacy and performance: Revisited.
- Feltz, D.L., Landers, D.M., & Raeder, U. (1979). Enhancing self-efficacy in high-avoidance motor tasks: A comparison of modeling techniques. *Journal of Sport Psychology, 1*, 112-122.
- Feltz, D.L., & Lirgg, C.D. (1998). Perceived team and player efficacy in hockey. *Journal of Applied Psychology, 83*, 557-564.
- Feltz, D.L., & Mugno, D.A. (1983). A replication of the path analysis of the causal elements in Bandura's theory of self-efficacy and the influence of autonomic perception. *Journal of Sport Psychology, 5*, 263-277.
- Feltz, D.L., & Riessinger, C.A. (1990). Effects on in vivo emotive imagery and performance feedback on self-efficacy and muscular endurance. *Journal of Sport and Exercise Psychology, 12*, 132-143.
- Feltz, D.L., Hepler, T.J., Roman, N., & Paiement, C.A. (2006). Coaching efficacy of youth sport coaches: Extending validity evidence for the Coaching Efficacy Scale. Unpublished manuscript, Michigan State University, East Lansing.
- Feltz, D.L., & Lirgg, C.D. (2001). Self-efficacy beliefs of athletes, teams, and coaches. In R.N. Singer, H.A. Hausenblas, & C.M. Janelle (Eds.), *Handbook of sport psychology* (2nd ed., pp. 340-361). New York: Wiley.
- Feltz, D.L., Short, S.A., & Sullivan, P.J. (2007). *Self-efficacy in sport*. Champaign, IL: Human Kinetics.
- Garza, D.L., & Feltz, D.L. (1998). Effects of selected mental practice techniques on performance ratings, self-efficacy, and competition confidence of competitive figure skaters. *The Sport Psychologist, 12*, 1-15.
- George, T.R. (1994). Self-confidence and baseball performance: A causal examination of self-efficacy theory. *Journal of Sport and Exercise Psychology, 16*, 381-399.

- George, T.R., Feltz, D.L., & Chase, M.A. (1992). The effects of model similarity on self-efficacy and muscular endurance: A second look. *Journal of Sport and Exercise Psychology, 14*, 237-248.
- Gould, D., Greenleaf, C., Lauer, L., & Chung, Y. (1999). Lessons from Nagano. *Olympic Coach, 9* (3), 2-5.
- Greenlees, I.A., Graydon, J.K., & Maynard, I.A. (1999). The impact of collective efficacy beliefs on effort and persistence in a group task. *Journal of Sports Sciences, 17*, 151-158.
- Greenlees, I.A., Graydon, J.K., & Maynard, I.A. (2000). The impact of individual efficacy beliefs on group goal commitment. *Journal of Sports Sciences, 18*, 451-459.
- Hepler, T.J., & Feltz, D.L. (2006). Self-efficacy and decision-making performance in baseball. Manuscript submitted for publication.
- Heuze, J.P., Raimbault, N., & Fontayne, P. (2006). Relationships between cohesion, collective efficacy, and performance in professional basketball teams: Investigating mediating effects. *Journal of Sports Sciences, 24*, 59-68.
- Hodges, L., & Carron, A. (1992). Collective efficacy and group performance. *International Journal of Sport Psychology, 23*, 48-59.
- Kent, A., & Sullivan, P.J. (2003). Coaching efficacy as a predictor of university coaches' commitment. *International Sports Journal, 7*, 78-88.
- Kozub, S.A., & McDonnell, J.F. (2000). Exploring the relationship between cohesion and collective efficacy in rugby teams. *Journal of Sport Behavior, 23*, 120-129.
- Lee, C., & Bobko, P. (1994). Self-efficacy beliefs: Comparison of five measures. *Journal of Applied Psychology, 79*, 364-369.
- Lee, K.S., Maleté, L., & Feltz, D.L. (2002). The strength of coaching efficacy between certified and noncertified Singapore coaches. *International Journal of Applied Sport Science, 14*, 55-67.
- Lichacz, F.M., & Partington, J.T. (1996). Collective efficacy and true group performance. *International Journal of Sport Psychology, 27*, 146-158.
- Lirgg, C.D., & Feltz, D.L. (1991). Teacher versus peer models revisited: Effects on motor performance and self-efficacy. *Research Quarterly for Exercise and Sport, 62*, 217-224.
- Maddux, J.E. (1995). Self-efficacy theory: An introduction. In J.E. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research, and application* (pp. 3-33). New York: Plenum Press.
- Magyar, T.M., Feltz, D.L., & Simpson, I.P. (2004). Individual and crew level determinants of collective efficacy in rowing. *Journal of Sport and Exercise Psychology, 26*, 136-153.
- Maleté, L., & Feltz, D.L. (2000). The effect of a coaching education program on coaching efficacy. *The Sport Psychologist, 14*, 410-417.
- Moritz, S.E., Feltz, D.L., Fahrback, K.R., & Mack, D.E. (2000). The relation of self-efficacy

- measures to sport performance: A meta-analytic review. *Research Quarterly for Exercise and Sport*, 71, 280-294.
- Moritz, S. E., & Watson, C. B. (1998). Levels of analysis issues in group psychology: Using efficacy as an example of a multilevel model. *Group Dynamics: Theory, Research, and Practice*, 2, 285-298.
- Myers, N. D., & Feltz, D. L. (2007). From self-efficacy to collective efficacy in sport: Transitional issues. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology (3<sup>rd</sup> ed.)*, (pp. 799-819). New York: Wiley.
- Myers, N.D., Feltz, D.L., & Short, S.E. (2004). Collective efficacy and team performance: A longitudinal study of collegiate football teams. *Group Dynamics: Theory, Research, and Practice*, 8, 126-138.
- Myers, N.D., Feltz, D.L., & Wolfe, E.W. (2006). A confirmatory study of rating scale category effectiveness for the Coaching Efficacy Scale.
- Myers, N.D., Paiement, C. A., & Feltz, D. L. (2007). Regressing team performance on collective efficacy: Considerations of temporal proximity and concordance. *Measurement in Physical Education and Exercise Science*, 11, 1-24.
- Myers, N.D., Payment, C.A., & Feltz, D.L. (2004). Reciprocal relationships between collective efficacy and team performance in women's ice hockey. *Group Dynamics: Theory, Research, and Practice*, 8, 182-195.
- Myers, N.D., Vargas-Tonsing, T.M., & Feltz, D.L. (2005). Coaching efficacy in intercollegiate coaches: Sources, coaching behavior, and team variables. *Psychology of Sport and Exercise*, 6, 129-143.
- Myers, N.D., Wolfe, E.W., & Feltz, D.L. (2005). An evaluation of the psychometric properties of the coaching efficacy scale for American coaches. *Measurement in Physical Education and Exercise Science*, 9, 135-160.
- Neiss, R. (1989). Expectancy in motor behavior: A crucial element of the psychobiological states that affect performance. *Human Performance*, 2, 273-300.
- Paskevich, D.M., Brawley, L.R., Dorsch, K.D., & Widmeyer, W.N. (1999). Relationship between collective efficacy and team cohesion: Conceptual and measurement issues. *Group Dynamics: Theory, Research, and Practice*, 3, 210-222.
- Schunk, D.H. (1995). Self-efficacy, motivation, and performance. *Journal of Applied Sport Psychology*, 7, 112-137.
- Short, S.E., Sullivan, P.J., & Feltz, D.L. (2005). Development and preliminary validation of the Collective Efficacy Questionnaire for Sports. *Measurement in Physical Education and Exercise Science*, 9, 181-202.
- Short, S.E., Tenute, A., & Feltz, D.L. (2005). Imagery use in sport: Mediational effects for efficacy. *Journal of Sports Sciences*, 23, 951-960.
- Spink, K.S. (1990). Group cohesion and collective efficacy of volleyball teams. *Journal of Sport*

and *Exercise Psychology*, 12, 301-311.

Sullivan, P.J., Gee, C.J., & Feltz, D.L. (2006). Playing experience: The content knowledge source of coaching efficacy beliefs. In A.V. Mitel (Ed.), *Trends in Educational Psychology*. New York: Nova Publishers.

Sullivan, P.J., & Kent, A. (2003). Coaching efficacy as a predictor of leadership style in intercollegiate athletics. *Journal of Applied Sport Psychology*, 15, 1-11.

Treasure, D.C., Monson, J., & Lox, C.L. (1996). Relationship between self-efficacy, wrestling performance, and affect prior to competition. *The Sport Psychologist*, 10, 73-83.

Vargas-Tonsing, T. (2004). An examination of pre-game speeches and their effectiveness in increasing athletes' levels of self-efficacy and emotion. Unpublished doctoral dissertation, Michigan State University, East Lansing.

Vargas-Tonsing, T., & Bartholomew, J.B. (2006). An exploratory study of the effects of pre-game speeches on team-efficacy beliefs. *Journal of Applied Sport Psychology*, 36, 918-933.

Vargas-Tonsing, T.M., Warners, A.L., & Feltz, D.L. (2003). The predictability of coaching efficacy on team efficacy and player efficacy in volleyball. *Journal of Sport Behavior*, 26, 396-407.

Weinberg, R. (1985). Relationship between self-efficacy and cognitive strategies in enhancing endurance performance. *International Journal of Sport Psychology*, 17, 280-292.

Weinberg, R., Gould, D., & Jackson, A. (1979). Expectations and performance: An empirical test of Bandura's self-efficacy theory. *Journal of Sport Psychology*, 1, 320-331.

Weinberg, R.S., Gould, D., Yukelson, D., & Jackson, A. (1981). The effects of pre-existing and manipulated self-efficacy on a competitive muscular endurance task. *Journal of Sport Psychology*, 3, 345-354.

Weinberg, R.S., Yukelson, D., & Jackson, A. (1980). Effect of public and private efficacy expectations on competitive performance. *Journal of Sport Psychology*, 2, 340-349.

Wood, R.E., & Bandura, A. (1989). Impact of conceptions of ability on self-regulatory mechanisms and complex decision-making. *Journal of Personality and Social Psychology*, 56, 407-415.

## Appendix

### Example of a Hierarchical Scale:

**For each level below, mark how sure you are that you can successfully kick a soccer ball into a soccer goal.**

No. of tries	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1 out of 10											<b>X</b>
2 out of 10										<b>X</b>	
3 out of 10										<b>X</b>	
4 out of 10									<b>X</b>		
5 out of 10								<b>X</b>			
6 out of 10								<b>X</b>			
7 out of 10						<b>X</b>					
8 out of 10				<b>X</b>							
9 out of 10		<b>X</b>									
10 out of 10	<b>X</b>										

**Level = 9, Strength =  $590/10 = 59\%$**

### Example of a Nonhierarchical Scale:

**How confident are you that you can perform the following wrestling moves against your next opponent?**

Items:	Rating of Certainty											
	Complete Uncertainty							Complete Certainty				
	0	1	2	3	4	5	6	7	8	9	10	
1. Escape										<b>X</b>		
2. Get reversal				<b>X</b>								
3. Not get pinned							<b>X</b>					
4. Not get taken down						<b>X</b>						
5. Get take down					<b>X</b>							
6. Ride opponent										<b>X</b>		
7. Pin opponent	<b>X</b>											

**Strength =  $34/7 = 4.86$**