Charles University

Faculty of Physical Education and Sport

Sources of Acute Stress and Psychological Skill Training Methods among Czech Elite Soccer Players

Master Thesis

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Prague April, 2007

I declare that this thesis is my own work and information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

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Acknowledgement

It never occurred to me that I needed so many helps from others to complete the thesis. The process of writing the thesis was like the miniature of my four-year study in this beautiful foreign city. Tough at very beginning that I doubted whether I could make it or not; after deciding the effort and direction to devote myself, supports from everywhere came to my rescue and I realized how lucky I am to be surrounded by so many warm, kind and supportive friends and colleagues. Hey, my dear friends and colleagues, I just wanted to take the chance to say thank you for all your help and support. If there were not you, I wouldn't have made it -both thesis and study. Dear Eva, when I had to meet you in the early morning or got your e-mail response in the midnight, I told myself that I can never let you down since you had made so many efforts to help me. Your fully support and encouragement meant a lot to me because they reassured me the value of this research and kept my enthusiasm and devotion toward the work. And also thanks for translating the questionnaire and abstract into Czech language. James, thanks for those constructive discussions and suggestions which saved me from worries of being lost in the academic research world. Mr. Bunc, thanks for your support to make the impossible mission-investigating those elite soccer players into reality. And Lenka, thanks for spending so much time communicating with those players. And also Ott, you would never know how helpful all the talks were when I was exhausted from doing the thesis. Not only they revitalized my energy but also your soccer life shared in the talks motivated me to carry on the efforts. And last but of course not the least, my dear sister and all my friends who suffered from my stress during the composing period, thanks for your encouragements and arrangements of leisure activities to assure me that I am not alone. I am really blessed I know, and I feel grateful for that.

Hey guys, THANK YOU!!!

Abstract

The purpose of this research was twofold: first, to identify the sources of acute stress among Czech Elite Soccer Players (CESPs) by investigating their perceived intensity and appraisal direction and second, to investigate the psychological skill training (PST) methods used by Czech elite soccer players. "Stress Intensities, Appraisals and PST methods Questionnaire" was created under the conceptual framework of stress process concluded from literature review to serve the purpose. Total 83 players from 5 teams competing at Czech premier soccer league (Gambrinus liga) completed the questionnaire. The main findings from the questionnaire were: 1) All the pre-competition stressors which were perceived with high intensity were all appraised strongly positive; 2) Cheers from spectators was the major facilitative in-competition stressor while making a goal-relevant game error was the major debilitative one; 3) "Team dynamics" has profound influence on the appraisal direction of stressors; 4) Defenders tend to be more aroused by negative stressors while Forwarders by positive ones; 5) Teams with higher performance level use PST methods more frequently and team's strategies such as "Team's goal setting", "Coach's pep talk" are more frequently used than individual ones. The results of the research were presented and discussed with the coaches and effective PST methods concluded from antecedent research were recommended. The experimental attempt to use questionnaire for investigation of sources of acute stress and usage of PST methods among CESPs was proved to be effective even though further modification was needed in order to complete the questionnaire with validity and reliability for research purpose in the future.

Key Words: Acute Stress, Stress Intensity, Appraisal, Arousal, Psychological Skill Training, Soccer, Elite Athlete

Abstrakt

Cílem této práce bylo za prvé identifikovat zdroje akutního stresu u českých elitních fotbalových hráčů, vnímanou intenzitu a směr subjektivního hodnocení u těchto stresorů. Za druhé práce popisuje metody psychologické přípravy používané těmito hráči. Na základě studia literatury z oblasti výzkumu procesů stresu byl vytvořen dotazník „Stress Intensities, Appraisals and PST methods Questionnaire," který zjišťuje intenzitu stresu, jeho subjektivní hodnocení a použití metod psychologické přípravy. Dotazník vyplnilo celkem 83 hráčů z 5 týmů české Gambrinus extraligy. Hlavními závěry dotazníkového průzkumu jsou: 1) Všechny předsoutěžní stresory vnímané jako vysoce intenzivní byly zároveň hodnoceny výrazně pozitivně. 2) Povzbuzování fanoušků bylo hlavním facilitativním soutěžním stresorem, zatímco udělat chybu, která vede ke gólu, hlavním negativně hodnoceným stresorem. 3) Týmová dynamika má velký vliv na směr hodnocení stresorů. 4) Obránci mají tendenci být více aktivováni negativními stresory zatímco útočníci pozitivními. 5) Týmy vyšší výkonnostní úrovně používají častěji metody psychologické přípravy, týmové metody jako např. plánování týmových cílů a promluva trenéra jsou používány častěji než individuální metody. Výsledky práce byly prezentovány a diskutovány s trenéry, na jejich základě byly doporučeny efektivní techniky psychologické přípravy. Pilotní užití dotazníku pro výzkum zdrojů akutního stresu a používání metod psychologické přípravy u českých elitních fotbalistů sě ukázalo efektivním s tím, že jsou nutné další modifikace a ověření validity a reliability dotazníku pro jeho využití v dalším výzkumu.

klíčová slova: akutní stres, intenzita stresu, sodnocení stresu, sktivace, psychologická příprava, fotbal, vrcholový sport

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Chapter 1 Introduction

1.1 Motivation

From personal experience of participation in sport competition, the feeling of nervousness and excitement always occurred at the same time pre and in-competition and had profound effect on my performance. Please allow me to term this mixed feeling as stress feeling tentatively before going into academic discussion where more specific and explicit definition will be given. When I prepared myself in front of the 100-meter starting line, I was overwhelmed by the stress feeling that I just wanted to get rid of it. Although the final release came when I finished the race, I tried to control the intensity of stress in order to feel better. I asked myself to take it easy and suppressed the stress. Sometimes the suppression worked well that I managed to perform better but other time the result just worsens because the time I eliminated stress feeling, I lost the desire to win as well. And this uncontrollable result due to my aimless control of stress happened also when I had volleyball competition. Stress feeling was necessary to keep concentration and sometimes even entered the "self-forgetful" situation when I would perform extremely well. But stress feeling also caused disaster especially when I had to serve or spike at critical moment. The finding from these experiences was clear: some part of stress feeling was needed which enhanced my performance, while others should be eliminated or at least under control because they debilitated my performance. As I tried to find the solutions to deal with negative effects to my performance caused by stress feeling, the following questions raised inevitably: Why do I have this feeling? Where does it come from? What is the relationship between it and my performance? What are the solutions I could have to deal with it? And how do these solutions work to enhance my performance? I was overwhelmed by these questions and realized that I cloud not find the answers without understanding the stress process systematically. And

at the same time, I was quite interested in how do those elite athletes deal with their stress since they must have overcome this stress feeling successfully. Is there any difference between them and me concerning the perception of stress? If there is, what are the factors that cause the difference? Answering these interesting questions is my motivation of conducting this research. In the research, I try to conceptualize the framework of stress process to understand how stress affects sport performance. And also do survey on Czech Elite Soccer Players (CESPs) with self-developed questionnaire derived from the stress process framework to investigate what their sources of stress are pre and in-competition, how they perceive these stressors and what methods they have to deal with these stress. Besides these descriptive answers, I do some analysis to exam whether there is any stress perception inclination (similar perceived intensity and appraisal direction) among CESPs. In what kind of stressor does the inclination exist? The categories where inclination exists imply the common characteristics of CESPs whereas the categories where tendency doesn't exist indicate the variety of individual difference in these stressors. The potential factors which might influence stress perception are also explored to check how these factors: "Age", "League Experience", "Marital Status", "Education Plan", "Playing Position", "Team", "Team's Performance Level", "PST Experience" affect stressor perception. Hopefully the findings could do some help to other athletes especially soccer players who are also struggling in the ambiguous effect of their stress feeling and looking for "solutions".

1.2 Research Background

The relation between stress and performance has long been the main topic in sport psychology study. Most of the research focused on the identification of athletes' stress sources, understanding of appraisal process and coping strategies (Anshel &

Delany, 2001; Anshel & Wells, 2000; Gould *et al.*, 1993a; Gould *et al.*, 1993b, 1993c; Kim *et al.*, 2002; Scanlan *et al.*, 1988, 1991). But surprisingly that little among the research, the level of perceived stress intensity which influence cognitive appraisals and type of coping strategies (Holroyd & Lazarus, 1982) was identified. The overlook of perceived stress intensity also leads us to the overemphasis on anxiety as only indicator for performance because little attention was given to other psychological responses to stressors such as excitement, vigorousness which also have strong but positive impact to performance. The main purpose of this research was to investigate both the perceived intensity and cognitive appraisals of acute pre and in-competition stressors of Czech Elite Soccer Players (CESPs). The investigation was conducted under the stress process framework suggested by previous researchers (Martens et al., 1990; McGrath, 1970; Spielberger, 1966; Weinberg & Gould, 1995), but with a more holistic approach to psychological response without narrowing it to anxiety only. The findings of the existence of inclination among CESPs toward specific stressors in terms of perceived intensity and appraisal direction could serve as fundamental information for implementation of psychological skill training (PST) for CESPs. To fulfill this practical purpose, I surveyed the usage of PST methods of CESPs to help coaches prioritize PST methods which were most needed but haven't been adapted fully to their players.

"Stress" has long been one of the most confusing concepts in sport psychology. As Martens et al. (1990) noted is their review of stress: "Stress has been defined as stimulus, intervening, and response variables by different researchers. As a stimulus variables, stress is a precipitator; as an intervening variable, a mediator; and as a response variable, a behavior". The ambiguous roles of stress can be seen in Table 1-1 which summarized the various definitions of stress given by researchers:

Table 1- 1 Summary of Stress Definition

Researcher	*Definition of Stress*
Schafer (1996)	Stress is arousal of mind and body in response to demands made on them.
Lazarus and Folkman (1984)	Stress is a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being.
Loehr (1994)	Stress is anything that causes energy to be expended physically, mentally and emotionally
McGrath (1970)	Stress has to do with a (perceived) substantial imbalance between demand and response capability, under conditions where failure to meet demand has important (perceived) consequences
Martens et al. (1990)	Stress is the process that involves the perception of a substantial imbalance between environmental demand and response capabilities under conditions in which failure to meet demands is perceived as having important consequences and is responded to with increased levels of cognitive and somatic A-State.
Spielberger (1972)	Stress is denoting environmental condition or circumstance that is characterized by some degree of objective physical or psychological danger.
Jones & Hardy (1990)	Stress is a state in which some demand is placed on the individual, who is then required to react in some way to be able to cope with the situation

The term of stress sometimes represents similar phenomena like "Arousal" (G. Jones & Hardy, 1990; Loehr, 1994a; Schafer, 1996) which focuses on "intensity" changes, whereas others imply "Anxiety" (Lazarus & Folkman, 1984; McGrath, 1970; Spielberger, 1972) which refers to response to stimuli in negative direction. The confusion raised in many aspects when we reviewed the various definitions given by

different researchers who investigated the same stress process. Either did they give different terms to describe "stimulus", "intervene" and "response" in the stress process, or did they theorize differently on the relationship of each construct and its influence on the whole process. McGrath's stress process and Spielberger's anxiety process transitional model serve as a good example for the confusion raised when they used similar terms to describe different constructs in the process which is "same in essence"(Martens et al., 1990, p8).

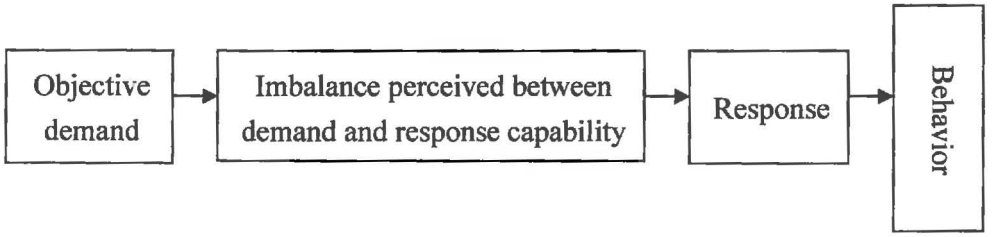

Figure 1- 1 McGrath's "stress" process (Adapted from Martens et al, 1990)

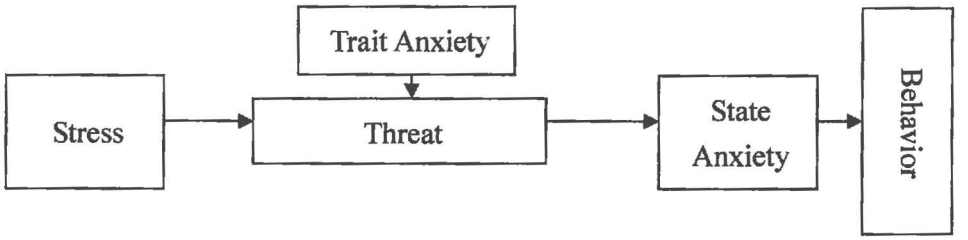

Figure 1- 2 Spielberger's "anxiety" process (Spielberger, 1972)

The significant differences between the McGrath and the Spielberger models are the terms they use to describe their overall processes and the individual components of their models. In essence, they are describing the same process, but Spielberger refers to it as anxiety, whereas McGrath calls it stress. Moreover, they use different terms to describe the stimulus, cognition and response components of their models. Spielberger calls the stimulus stress,

whereas McGrath refers to it as objective demand. Spielberger uses the succinct term threat to describe the subjective cognitive appraisal process that McGrath refers to as an imbalance perceived between demand and response capability. Finally, Spielberger refers to the response as state anxiety reaction, whereas McGrath uses the more general term response. (Martens et al., 1990, p8)

Martens *et al.* (1990) consolidated the two models and gave explicit definition to each component of the stress process to avoid the confusion when they developed Sport Competition Anxiety Test (SCAT). Even though there are still arguments on how cognition works and what the responses are, at least the definition of stress is commonly accepted. Two of the contributions from Martens et al. on the stress process are: 1) When studying the stress process, all the objective demands should be taken into consideration as stimulus instead of focusing only on those demands which are characterized by some degree of objective physical or psychological danger. And 2) Instead of viewing stress as emotion response, it is treated as a "process". Martens et al. (1990, *p.*24) *"Stress is the process that involves the perception of a substantial imbalance between environmental demand and response capabilities under conditions in which failure to meet demands is perceived as having important consequences"*. This is important distinction to anxiety, since anxiety is only one of the negative psychological responses in the stress process. The terms used to label each construct of the whole stress process is illustrated in Table 1-2.

Table 1- 2 Comparisons of terms used to describe stress process

	Stimulus	*Cognition*	*Response*
McGrath	Objective Demand	Imbalance perceived between demands and resources	Stress
Spielberger	Stress	Threat	State anxiety
Martens et al.	Objective Demand	Threat	State anxiety

The issue in the study of stress process in sport psychology does not only come from the confusion of terms used to describe the construct of the process but also from the content of the construct to be studied. Since Martens first published Sport competition anxiety test (SCAT) in 1977, the major focus of stress process study was on measuring the level of anxiety because it was suggested to be the main negative emotion which had a deleterious impact on performance. However, after two decades of intensive research, the arguments are arising recently: 1) Is it a useful approach to isolate anxiety from other emotions when trying to control the negative effect on performance resulting from the stress process (Hanin, 2000; Jackson, 2000; Kerr, 1997)? 2) Shouldn't we focus more on the relationship between anxiety and performance and its cause instead of the measuring of anxiety level. (let alone the concerns (Nesti & Sewell, 1999) on the effectiveness of SCAT and competitive State Anxiety Inventory-2 ((CSAI-2)) to measure anxiety). Nowadays, researchers redirect the attention back to the whole stress process, some of them (JonesGould & Krane, 1992; Jones, 1995) put effort on exploring the source of stress with qualitative methodology in different kind of sport area; some of them (Cerin *et al.*, 2000; Hanin, 2000; Lazarus, 1966, 2000; Nesti & Sewell, 1999; Terry, 1995) shift away from anxiety and towards emotion where contemporary models such as "individualized Zones of Optimal Functioning" (Hanin & Syrja, 1995) and "Flow State" (Csikszentmihalyi, 1990; Jackson, 1996) may have much to offer. And also some researchers suggest the interpretation of anxiety should be directed to restructure instead of reducing to have a facilitative effect on self-confidence and performance (Hanton & Jones, 1999; Jones, 1995; Nesti & Sewell, 1997).

Therefore, based on the conceptual framework of stress process in sport psychology, efforts were made to improve the knowledge in the three areas: 1) the construct of stimulus-the objective demands served as the source of stress. Researchers

tried to develop the knowledge of the characteristics of stressors and categorize them systematically. Some researchers (Gould et al., 1993c; Gould *et al.*, 2002a; Gould Daniel *et al.*, 1999; Greenleaf et al., 2001; Kim et al., 2002; Scanlan et al., 1988, 1991) used qualitative method to explore athletes' stressors from both daily life and competition, some used questionnaire where stressors were first identified either by former qualitative research (Anshel & Delany, 2001) or used the method proposed by Rotter (1955) to exhaust stressor list on the basis of their psychological characteristics (Dunn & Nielsen, 1996; Pervin, 1978) and investigated the perception of stressors of their subjects from different sports; 2) The cognitive-behavioral relationship. Cognitive appraisal mechanism (Anshel, 1996; Lazarus & Folkman, 1984) was developed to conceptualize cognition process which explained how stressors were perceived both in intensity and direction aspects and how the appraisal style was formed by mediators like personality, trait anxiety, resources they had to deal with the demands. And the other focus about the cognitive-behavioral relationship was to discover the dynamic relationship between arousal and performance. Drive theory (Hull, 1943) was reexamined and theories used invert-U hypothesis such as Catastrophe theory (Hardy & Fazey, 1987; Spence J. & K., 1966), Individual Zone of optimal functioning (IZOF) (Hanin, 1980) were developed for this purpose. 3) The development of methods and strategies which could effectively enhance sport performance. The efforts were first put on the understanding of coping style and coping strategies (Lazarus & Folkman, 1984), later were the discovery of coping strategies (Gould et al., 1993a; Gould et al., 1993b) and nowadays sport psychologists focus more on the effectiveness of coping strategies (Blair *et al.*, 1993; Callery & Morris, 1997a; Adam R. Nicholls *et al.*, 2006). Based on the findings, psychological skills which were important for peak performance were identified and psychological skill training methods were developed to enhance athletes' performance. Unlike most of the research in stress study which focused on identification

of the sources of stress and its corresponding coping strategies while taking every stressors at same weight or exploration of emotions (mainly anxiety) and its influence on sport performance while ignoring individual's interpretation of the mixed emotions induced by specific stressors, the present research aimed at identifying acute stressors with high importance (high perceived intensity and its appraisal direction). Through the identification of important acute stressors, further psychological interventions such as enhancement of motivation or arousal regulation could be followed in a more effective way.

1.3 Research Structure

In the present research, the background, goal and value of the research was described in the first chapter which provides the basic information for readers. In chapter two, theories and research related to the conceptual framework of stress process, constructs of the process: sources of stress (stimulus), arousal and appraisal (perception & response), and PST methods to facilitate acquirement of psychological skills essential for peak performance were reviewed and summarized. Based on review, the logic behind my self-developed questionnaire "Stress source, Appraisal, Psychological skill training method questionnaire" was explained. The process of developing questionnaire and how the data were collected and analyzed were introduced in the chapter three and the results were presented in the chapter four. In the chapter five, possible explanation for the results was given based on the theories review in the chapter two including the comparisons of my results with those of other studies. Recommendations for future research were made at the end of the research for the further advancement of stress study in sport psychology.

1.4 Research Goal

The purpose of the thesis was to explore the need for psychological skill training among Czech elite soccer players (CESPs) based on a comprehensive stress process model. Through investigating CESPs' perceived intensity and appraisal direction of acute stressors, and usage of psychological skill training methods, effective psychological skill training methods which have been used with familiarity and proved to be effective were suggested. There was a hope that the efforts made to clarify the construct of stress process model and the finings from the questionnaire contributed to the advancement of stress study in sport psychology.

1.5 Research Questions

Given the theoretical and practical positions taken for the thesis and the status of the field as briefly reviewed above, major sets of research questions to be addressed in this thesis are as follows:

1. What are the acute stressors with high perceived intensity for CESPs?
2. In which stressor does the inclination of perceived stress intensity among CESPs exist and in what direction (High, Moderate, or Low)?
3. How do "Age", "League Experience", "Marital Status", "Education Plan", "Playing Position", "Team", "Team's Performance Level", "PST Experience" influence CESPs' perceived intensity and appraisals of acute stressors?
4. In which stressor does the inclination of appraisal direction among CESPs exist and in what direction (Positive or Negative)?
5. What are the most frequently used PST methods for CESPs?

1.6 Definition and Terminology

Stress: "Process" that involves the perception of a substantial imbalance between environmental demand and response capabilities under conditions in which failure to meet demands is perceived as having important consequences.

Acute Stress: Situational stress process where the stimuli are short-term objective demands induced from specific situation. In the research, it refers to the stress process initiated by the stimuli of objective demands pre and in competition on soccer players.

Anxiety: "Negative" psychological state that has a cognitive (mental) and a somatic (physiological) component which respond differently to the stressor within the environment.

Arousal: General physiological and psychological activation of the organism which varies on a continuum from deep sleep to intense excitement.

Appraisal: Interpretation of how perceived stress influences sport performance. In this research, appraisal was made into two directions: facilitative and debilitative to sport performance.

Psychological Skill Training Method: Psychological skill training methods are psychological interventions which are implemented to help players develop a particular psychological skill such as confidence, concentration and hence enhance performance.

Chapter 2 Literature Review

This chapter has five sections: 2.1 Development of stress process model; 2.2 Research on sources of acute stress in sports; 2.3 Theories and research on perception of stressors and its influence on performance; 2.4 Research on psychological skills and PST methods; 2.5 Conclusion from literature review. The purpose of this chapter was to review related theories and research about the conceptual framework of stress process and psychological skill training methods which are used to cope with stress in sports. Through the literature review, the framework of stress process and the relation and content of each constructs in the process were identified. It formed the foundation of the first part of my self-developed questionnaire "Stress Intensities, Appraisals and PST Methods Questionnaire". The effect of PST on sport performance is presented in the fourth part of this chapter which was the basis of PST methods selected in the second part of my questionnaire. The logic and goal of my self-developed questionnaire will be explained in the last section of this chapter because they are derived from the conclusion of literature review.

2.1 Development of Stress Process Model

As what we have already knew, the confusing terms used to label each construct in the stress process lead us to misunderstanding of the explanations of stress, arousal and anxiety. Therefore Martens et al. (1990) put efforts on clarifying the definition of terms which describe "stimulus", "intervene" and "response" on the framework of stress process proposed by McGrath and Spielberger when they tried to identify the role of anxiety. Later on, the arguments of the overemphasis on anxiety as the only predicator on sport performance raised and there was call for detail examination of the content and interaction of each construct (Cerin et al., 2000; Euband & Collins, 2000; Hanin, 2000;

Jones et al., 1994; Lazarus, 2000; Swain & Jones, 1996). To understand the stress process mechanism, it is necessary to review Martens et al.'s stress model which focused on the study of competitive anxiety. And then the contemporary theories contributed to explain each construct will be reviewed in the following sections to provide a holistic view of the stress process.

2.1.1 Martens et al's stress process model

According to Martens et al.(1990), both McGrath's stress process and Spielberger's anxiety process are in essence the same. They all follow the same scheme: Stimulus-> intervene -> response. The main difference lies in the terms used to label "stimulus", "intervene" and "response" in the whole process. The confusion rises when both of them used stress to describe different constructs in the similar process. For McGrath stress was the one of the "response" which occurs when one perceives the imbalance between external demand and own capability whereas Spielberger used stress as "stimulus" which will be appraised under the influence of A-Trait and resulted in A-State. Therefore Martens et al (1990) integrated above two models and developed an independent model of competitive anxiety that borrows from the terminology of both Spielberger and McGrath. They gave clear definition to each construct in the stress process. The stress process model which concerned more on competitive anxiety was illustrated in Figure 2-1. We could see from the model that it has same scheme as Spielberger's anxiety model. Only they borrowed the term of objective demands from McGrath as "stimulus" which refers to those antecedent variables that may elicit the perceptions of threat, although the objective environmental demand need not necessarily be perceived as dangerous or threatening. "Competitive A-Trait" is the sport-specific modification of the more general A-Trait construct and is defined as a inclination to perceive competitive situations as threatening and to respond to these situations with A-

State. Therefore the behavior consequence was changed to performance which is the main concern when studying stress process in competitive sport settings. These developments provide a theoretical basis for the development of Sport Competitive Anxiety Test (SCAT) as a measure of competitive A-trait. (Martens, 1977)

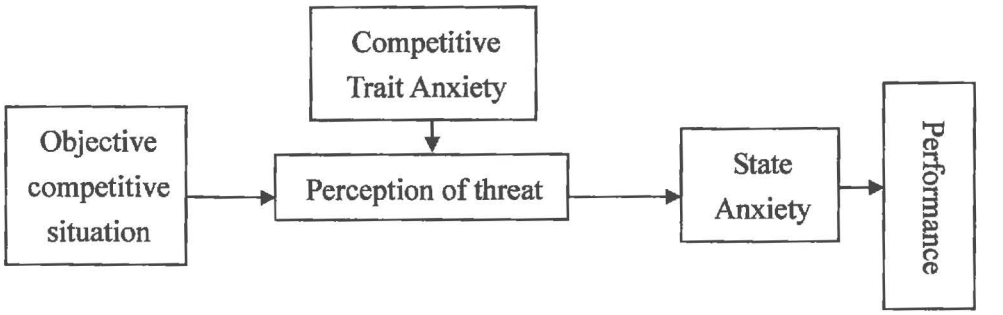

Figure 2- 1 Martens et al.'s stress process model (1990)

2.1.2 Contemporary approach to stress process model

The purpose of Martens et al.'s development of stress process model was to specify clearly what SCAT was designed to measure-Competitive Trait Anxiety because competitive Trait Anxiety is an indicator of a person's inclination to perceive objective demand as threatening. All the efforts were devoted to avoid the occurrence of State Anxiety reaction because it is "an existing or current emotional state characterized by feelings of apprehension and tension and associated with activation of the organism. State anxiety is linked with negative affect" (Martens et al., 1990). This is quite understandable because sport psychology originated from classic psychology where negative emotions such as anxiety, depression were given more attention since they hindered the ability of human beings to execute basic daily activity profoundly. Like Euband and Gilbourne (2005) pointed out "Anxiety has been viewed as the dominant

emotion in sport, with research being based on the traditional assumption that anxiety is indicative of debilitative cognition that has negative effects on performance" (p. 215). However, anxiety is not the only psychological response after cognitive appraisal and threat is not the only perception we perceived in cognition process. The "stimulus" -> "perception" -> "response" -> "consequence" scheme of stress process should not only focus on threat and anxiety. The consensus is addressed by Euband and Gilbourne in their article discussing stress and performance:

> *As there are many other pleasant and unpleasant emotions that play an important role in performance, a number of researcher (Kerr, 1977; Hanin, 2000; Jackson, 2000) have questioned why sport psychology is so preoccupied with anxiety, as there is little justification for restricting investigations in this way. The current consensus would appear to be that whilst anxiety is an important ingredient of psychological state, it may not be the central variable that researchers assume it to be. The examination of the anxiety response alone cannot fully explain the affective experience of players, emphasizing a need to address the performer's won idiosyncratic labeling of the experienced symptomatology (Euband and Gilbourne, 2005, p. 215).*

Instead of focusing only on anxiety, contemporary approach to stress process is in a holistic way. Each construct of the schematic stress process is reexamined by answering its corresponding question: "What are the sources of stress (Stimulus) which influence sport performance", "What are the factors that will influence athlete's perception of these objective demand?", "What's the characteristics of response to stimulus after individual perception process?", "How do these response influence sport performance, in other words, what is the relationship between response and performance? (Consequence)", and the last but definitely not the least go to the ultimate goal in sport psychology study which could never be forgotten "How could sports performance be improved through these studies: intervention with effective PST?". By doing so, the

confusion resulted from using anxiety as the only indicator to sport performance is also decreased and the contribution of stress study in sport psychology to sport performance could be advanced. Following sections are going to review the thorough idea of what contemporary theories and research are to answer these questions originated from the stress process model.

2.2 Research on Sources of Acute Stress in Sports

Sources of stress are those objective demands put on individuals when they try to reach some goal. These situational stimuli could come from physical or psychological demands. Because they are the stimuli in the first stages of the stress process, they were also called "stressors". The content of stressors varies in different setting; they could be from physical environment such as temperature, noise, physiological load such as training or psychological demand such as expectation from others. There have been a number of studies which focused on investigating the sources of stress in different sport setting. Some researchers (Anshel & Delany, 2001; Gould et al., 1993c; Gould et al., 2002a; Gould et al., 1999; Greenleaf et al., 2001; Kim et al., 2002; Scanlan et al., 1988, 1991) used qualitative method (interview) to explore athletes' stressors from both daily life and competition, while others used questionnaire where stressors were first identified either by former qualitative research (Anshel & Delany, 2001); or using the method proposed by Rotter (1955) to exhaust stressor list on the basis of their psychological characteristics (Dunn & Nielsen, 1996; Pervin, 1978). The findings of these studies help us to identify the characteristics of stressors which have impacts on sport performance and provide the foundation of research on further intervention. Frederiksen (1972) in his attempt to develop taxonomies, he proposed that in order to progress in understanding how situation influence behavior, we must develop a

systematic way of conceptualizing the domain of situations and situational variables (p.115). Therefore the categories based on the characteristics of stressors concluded from previous research (both by interview and questionnaire) help us understand what the sources of stress are in sport settings. By doing so, we could make better prediction on the influence of specific stressors which might have great impact on athlete's performance and execute effective PST to regulate the influence into facilitating direction. Since the occurrence of stressors is closely related to specific situation, here the review mainly focused on the acute stressors which occurred right before and during competition (pre and in-competition). Other competitive stressors such as organizational stressor (Hardy & Woodman, 1999) which have chronic characteristics and tend to have longer effect than those acute pre and in-competition stressors were not included in the research even though their importance have drew lot of attention from prolific researchers (Gould et al., 1993c; Scanlan et al., 1988).

2.2.1 Acute Pre-Competition Stressors

Pre-competition stressors are stressors which arise due to specific demands from a particular competition. Unlike other sports-related stressors which are chronic and have long term effect, pre-competition stressors appear only when athlete is going to participate in one specific competition. In other words, they are acute stressors which occur right before competition starts. When Scanlan, Stein & Ravizza (1991) first tried to investigate the sources of stress, they interviewed 26 former national championship figure skaters to identify the stressors encountered during the most competitive phase of their career. The interviews were analyzed for content and the sources of stress were categorized under five headings: 1) Negative aspects of competition (e.g., experiencing competition worries), 2) Negative significant-other relationships (e.g., not getting along with others); 3) Demands/costs of skating (e.g., dealing with family's financial sacrifice);

4) Personal struggles (e.g., experiencing the consequences of having an injury); and 5) Traumatic experiences (e.g., having significant others die). Gould et al.(1993c) later extended Scanlan et al.'s research by interviewing 17 current and former U.S. national champion figure skaters. Stress source dimensions were also identified and included: 1) Relationship issues, 2) Expectations and pressure to perform, 3) Psychological demands on skater resources, 4) Physical demands, 5) Environmental demands, 6) Life direction concerns, and a number of individual specific uncategorizable sources. The sources of stress revealed in Gould et al.'s study were similar to those revealed by Scanlan and her colleagues. Even though these studies investigated not only acute but also chronic stress, the classification served as guideline for exploring acute stressors. Besides above studies which inducted the categories of stressors from interview finding, there are some other studies which tried to investigate independently the cause of anxiety in sport (Marchant et al., 1998), the pre-game stressors identified which caused anxiety were: 1) Poor preparation or lack of physical readiness(Cohn *et al.*, 1990; Jones et al., 1990), 2) Previous performance(Jones et al., 1990; Martens & Gill, 1976; Scanlan, 1978), 3) The uncertainty that surrounds the outcome of that event (Lox, 1992; Martens et al., 1990; Santomier, 1983), 4) The importance placed on an event or contest (Lox, 1992; Martens et al., 1990; Mechanic, 1970), 5) Task difficulty (Dowthwaite & Armstrong, 1984; Gruber & Beauchamp, 1979), 6) Playing in poor conditions (Cohn, 1990; Marchant, 1992), 7) Environment cues (Martens et al., 1990), 8) Presence of spectators (Anshel, 1996; Fisher & Zwart, 1982a; Scanlan et al., 1991), and 9) Expectations (Scanlan & Passer, 1981) which contains two part: a) How well a player personally expected to perform and b) How well a player expected team to perform.

Stressors categories explored by Scanland et et (1991) and Gould et al. (1993c), single stressors proposed by previous research and soccer specific demands were all

taken together to identify acute pre-competition stressors for CESPs. The categories and its corresponding objective demands identified were illustrated in Table 2-1:

Table 2- 1 Categories and items of pre-competition acute stressors for soccer players

Categories	*Objective demands*	
Expectation	Team	Previous good game result (record)
		Previous bad game result (record)
		Compete with much stronger team (opponent)
		Compete with well-matched team (opponent)
		Compete in your club's stadium
		Compete in opponent's stadium
	Individual	High expectation from coach, teammate, fans
		Lack of experience to the competition
Importance	High importance of the game to your team	
	High importance of the game to yourself	
Environment	Play in poor conditions	
	Unfamiliar with the playing stadium	
	Large amount of spectators	
Significant others	Bad relationship with some of the teammates	
	Bad relationship with coach	
	Coach's long speech in the changing room	
Personal issues	Lack f physical readiness or poor preparation (physical)	
	Previous injury (physical)	
	Occurrence of personal unexpected misfortune (mental)	

The stressor category concluded from this review was the main effort since I intended to exhaust sources of stressors for soccer players even though objective demands could vary from situation to situation.

2.2.2 Acute In-Competition Stressors

When Dunn & Nielsen (1996) tried to identify and classify anxiety-inducing game situations on the basis of their objective characteristics, they investigated

university and regional athletes from four team sports (basketball, field hockey, ice hockey and soccer) and the four principle superordiante anxiety-inducing game categories emerged: 1) Ongoing Game Situations: the situations that occurred while the ball was still in play (e.g., 1 on 1 defensive or offensive situation) 2) Game/Score/Time Criticality Situations (e.g., penalty kick, behind opponent when it is about the end of the game), 3) Coach Related Situations: situations that were considered to be under the direct or indirect influence of the coach (e.g., coach's shouting at your mistake, disagree with coach's tactics decision) and 4) Miscellaneous Situations: situations that were discernible in content but which did not fit under the three previous categories (e.g., amount of audience, quality of officiating, teammate's behavior, the strength of opponents) (Dunn & Nielsen, 1996). Anshel & Wells (2000) in their attempt to identify the sources of acute stress experienced by competitive basketball players occurring during a game, they interviewed 20 basketball players and identified 25 sources of acute stressors into five categories :1) Interpersonal conflicts: experiencing physical or psychological abuse (e.g., verbally abused with a cheap shot, injured by opponent), 2) Refereeing decisions: decisions made by the referees with which players did not agree (e.g., the referee made a bad call on me), 3) Personal performance problems: unforced errors which were not directly induced by opponents (e.g., miss shot), 4) Opposition influences: incidents when the player's efforts were directly affected by an intervention from an opponent or forced errors (e.g., pass intercepted) and 5) Team behaviors: experiencing mental distress because of the behaviors of a teammate (e.g., teammate's unforced errors). The conclusion from this study that a set of competitive situations exists which typically produce anxiety across a variety of similarly structured team sport settings is one of criteria as to how to decide the source of stress listed on the questionnaire. Besides Dunn et al.'s effort to identify and classify within-game stressors for team sports, there are also causes of anxiety identified in some other studies

(Marchant, 1998): 1) Concentration disruption (Krane *et al.*, 1994), 2) Loss of control (Kroll, 1979), 3) Ongoing performance result (Highlen & Bennett, 1979; McAuley, 1985a), 4) Situation criticality within a game (Krane et al., 1994), 5) Spectators (Anshel, 1996; Fisher & Zwart, 1982a; Kim et al., 2002; Scanlan et al., 1991).

Acute in-competition stressors categories explored by Dunn et al. (1996) and Anshel et al. (2000), single stressors proposed by previous research and soccer specific demands were all taken together to identify acute in-competition stressors for CESPs. The categories and its corresponding objective demands identified were illustrated in Table 2-2.

Table 2- 2 Categories and items of in-competition acute stressors for soccer players

Categories	*Objective demands*
Personal performance	Make a goal-irrelevant game error
	Make a goal-relevant game error
	Pain of sudden injury
Teammate's behavior	Teammates make a goal-irrelevant game error
	Teammates make a goal-relevant game error
	Teammate's shout at your mistake
Opponent's performance	Opponent's scoring goal
	Opponent's continuous success
	Opponent's provoking behaviors
Coach's behavior	Coach's shout at your mistake
	Coach's shout at your teammate's mistake
Referee's behavior	Continuous bad calls from referee
Audience's behavior	Boo from antagonistic spectators
	Cheers from supporting spectators
	Hear unpleasant comments from commentator
Criticality time	At last few mins, your team is ahead by 1 goal
	At last few mins, you have tied goals
	At last few mins, your team is behind by 1 goal
	Get a yellow card
	Kick penalty

2.3 Theories and Research on Perception of Stressors and Its Influence on Performance

Once objective demands are put on players in competition, the influence they had always varied. The various results came from the different perception of players on stressors and their individual response to the perceived stressors. Therefore, to explore the relationship between stress and performance, researchers proposed various arousal theories and appraisal theories and coping theories to explain how stressors was perceived, what factors contributed to the different perceptions, what responses was generated and how these responses influence the achievement of peak performance.

2.3.1 The Perception of Stressors- Perceived Intensity and Appraisal

Even though there is no consensus on how performance would be influenced by perceived stress, after decade's development of stress study, it is commonly agreed that the perceived stress should be studied in both "intensity" and "direction" aspects (Jones et el., 1994; Jones & Swain, 1992; Kerr, 1985). Arousal theories were developed to explain how the intensity of perceived stress influenced performance. Drive theory (Hull, 1943; Spence J. & K., 1966) predicted that as arousal increases, performance increases in a straight line. The inverted-U hypothesis (Yerkes & Dodson, 1908), Individualized Zones of Optimal Functioning (IZOF)(Hanin, 1980) and Catastrophe Model (Hardy & Fazey, 1987), even though they had different opinion on how the optimal level of arousal was decided, held that up to some extent, arousal and performance had positive relationship; however, as arousal continued to increase over the optimal level which created peak performance, the performance would be decreased.

There are also theories focused on the influence of the direction of preceived stress on performance. Cognitive appraisal model proposed by Lazarus and Folkman

(1984) when they constructed coping process suggested that the manner in which an athlete interpreted a stressful event influenced one's coping responses. The ways players appraised stressors as harm-loss: damage that has already occurred, threat: the potential for harm or loss, or challenge: the anticipation of mastery or a beneficial outcome would influence their use of coping strategies. Besides Lazarus and Folkman's category of appraisals, some researchers (Buntrock & Reddy, 1992; Decker & Borgen, 1993; Dewe, 1992) categorized appraisals of stressors as positive and negative interpretations (Anshel et al., 2001). Jone's model of facilitative and debilitative anxiety (Jones, 1995) also addressed the importance of individual's interpretation of anxiety and contended that viewing anxiety as facilitative lead to superior performance whereas viewing it as debilitative leads to poor performance.

As the advancement of knowledge on stress process, theories formulated to explain the relationship between stress and performance took both intensity and direction into consideration. Hanin (1997) expanded the IZOF notion beyond anxiety to show how zones of optimal functioning use a variety of emotions, such as determination, pleasantness and laziness and concluded that for peak performance to occur, athletes need individualized optimal levels not only of state anxiety but of a variety of other emotions as well. Reversal theory proposed by Smith and Apter (1975) and applied by Kerr (1985, 1997)contended that the way in which arousal affected performance depended basically on an individual's interpretation of his arousal level. High arousal could be interpreted as both pleasant (excitement) and unpleasant (anxiety), same to low arousal as pleasant (relaxation) and unpleasant (boredom). The influence of perceived stress should therefore be looked into both "intensity" and "direction" aspects.

2.3.2 The Factors Which Influence Perception Process

Through reviewing the factors which influence perceived stress proposed by previous research, we could have more thorough understanding at the stress process. Lazarus and Folkman (1984) explained how the appraisals were formed in their cognitive appraisal model indicated both personal and situational factors jointly influence the person's appraisal of stressors. This view was shared by Martens et al. (1990) and Weinberg & Gould (1995) where Martens et al. specified the personal factor was trait anxiety and situational factors were the importance and uncertainty of event and Weinberg & Gould suggested more personal factors including self-esteem proposed by Scanlan (1986) and social physique anxiety. Some researchers also discovered other important personalities dispositions which influenced perceived stress (Marchant et al., 1998): 1) Fear of failure (Gould *et al.*, 1983; Kroll, 1979; Passer, 1983; Rainey & Cunningham, 1988; Scanlan & Lewtheaite, 1984), 2) Ego threat/fear of evaluation (Anshel, 1996; Fisher & Zwart, 1982b; Gould & Weinberg, 1985; Pierce & Stratton, 1981; Rainey & Cunningham, 1988). Besides personal and situational factors, Lazarus and Folkman also suggested that the resources one had to overcome or prevent harm or to improve the situation could influence appraisals. Jones (1995) adapted this thinking in his facilitative and debilitative anxiety model by emphasizing that the perception of control relative to coping and goal attainment was critical in determining whether state anxiety will be viewed as facilitative or debilitative. In Landers and Boutcher's (1986) suggestion of five areas that lead to feelings of over-intensity, or negative reactions to intensity, "individual's resources for effectively managing the demands" was one of them. Performer's skill level (Hembree, 1988; Kroll, 1979; Santomier, 1983), years of experience in the sport (Fenz & Jones, 1972; Gould *et al.*, 1984) and instrumental coping skills (Mechanic, 1970) are believed to have effects on one's control perception and consequently influenced sport performance.

Taken together, we could conclude that situational factors (importance and uncertainty of event) which were described as objective demands, personal factors (personality dispositions such as trait anxiety, self-esteem, and social physique anxiety) and perception of control (resources available to cope, experience) are main factors which influence individual's perception of stressors.

2.3.3 Responses to Perceived Stress

Understanding the characteristics of responses help us to know why the perceived stress influenced performance. The responses to perceived stress could be divided into two categories: somatic response and cognitive response. Somatic responses were characterized by various physiological symptoms such as butterflies in stomach, clammy hands, increased muscle tension or elevated adrenalin. The responses might have debilitative influence on performance such as loss of coordination due to muscle tension (Weinberg & Gould, 1995) as well as facilitative influence such as gaining of strength due to elevation of adrenalin. Cognitive responses are characterized by psychological reactions such as occurrence of emotions like anxiety, excitement, and anger or changes of attention and concentration (Nideffer, 1976; Williams & Elliott, 1999). Like somatic responses, cognitive responses have both debilitative and facilitative influence on performance.

Since the interpretation of stressor played critical role on how the arousal affected performance, individuals who took the arousal as fear could not perform the skill successfully, whereas others took it as excitement would be propelled to perform better (Feltz, 1988; Jones & Hardy, 1990; Kerr, 1997). When constructing the appraisal part of the questionnaire, I followed the proposal made by Jones and Swain(1992) to examine how performers perceive their arousal symptoms in terms of their likely effect

on performance without considering what kinds of emotions (if any) were induced.

2.4 Research on Psychological Skills and Psychological Skill Training Methods

Since the responses to perceived stress had both debilitative and facilitative influence on performance, to enhance sport performance, sport psychologists devoted themselves to explore the methods for regulation of arousal and development of psychological skills which were considered critical to performance.

2.4.1 Psychological Skills for Peak Performance

The effectiveness of strategies could not be examined if we don't know what outcomes to be evaluated. It is like when having up-hill training, we expect speed endurance to be improved instead of flexibility. It is same to sport psychology, when using the strategies "positive thinking", we have to know what psychological skills we aim to improve. Therefore researchers tried to identify the psychological profile of the ideal performance state by collective works: Some researchers reviewed literature on characteristics of peak performance: Brewer et al. (1991) concluded five psychological profiles from reviewing previous literature on characteristics of peak performance: "Heightened concentration", "Free from worry of result", "Effortless performance", "Awareness of change of competition tempo", and "High level of self-confidence". Williams and Krane (1998) used the same method and found psychological characteristics associated with peak performance were "High levels of motivation and commitment", Heightened concentration", "High levels of self-confidence", and "Self-regulation of arousal". Some researchers conducted interviews with elite players to explore the psychological characteristics: Orlick and Partington (1988) assessed mental readiness of Canadian athletes from 1984 Olympic Games and found below

psychological profiles: "Mental readiness", "Focus attention", and "Total commitment to pursuit of excellence". Gould et al. (1992) conducted a series of studies examining the mental factors with Olympic wrestling excellence and found the important mental factors were: "Positive expectancies", "Optimal arousal states, "Heightened effort" and "Commitment". Through these collective works, we could conclude the important psychological skills for peak performance are: Self-confidence, Concentration, Motivation, and Arousal regulation. Difference found when comparing successful and less successful athletes in terms of above concluded psychological skills: motivation (Mahoney, 1989), confidence (Gould *et al.*, 1981; Highlen & Bennett, 1983), concentration (Gould et al., 1981; Highlen & Bennett, 1979, 1983), and arousal regulation (Mahoney, 1989) served as another validity source of the importance of these psychological skills for peak performance. And research on finding the positive relationship between performance and specific psychological skill such as concentration (Boutcher & Crew, 1986; Orlick & Partington, 1988), confidence (Weiss *et al.*, 1989) provided direct evidence to prove that these mentioned psychological skills were important for peak performance.

2.4.2 Psychological Skill Training Methods

Psychological skill training methods are psychological interventions which are implemented to help players develop a particular psychological skill and hence enhance performance. PST methods were developed through exploring coping strategies by antecedent research. Coping strategies proposed by Lazarus and Folkman (1984) suggested how stress situation could be softened through identifying and resolving the problem (problem-focused strategy) or managing emotion/attitude to cope with a situation (emotion-focused strategy). Later on, abundant of researchers (Carver *et al.*, 1989; Endler & Parker, 1990; Madden, 1987; Roger *et al.*, 1993; Yoo & Park, 1998)

followed this concept and developed more classification of coping strategies. And measures of stress and coping were constructed to examine coping strategies in different sport area. Other researchers (Gould et al., 1993a; Gould et al., 1993b; Orlick & Partington, 1988) conducted interviews to explore the elite athletes' experience of stress and the way people cope. Coping strategies proposed by antecedent research were illustrated in Table 2-3.

Table 2- 3 Coping strategies proposed by antecedent research

Researchers	*Classification of Coping Strategies*
Lazarus and Folkman (1984)	1) Problem-focus and 2) Emotion-focus
Endler and Parker (1990)	1) Problem-focus; 2) Emotion-focus; 3) Avoidance
Roger, Jarvis and Najarian (1993)	1) Problem-focus; 2) Emotion-focus; 3) Avoidance; 4) Detachment
Madden (1987)	1) Seeking social support; 2) General emotionality; 3) Increased effort and resolve; 4) Denial; 5)Wishful thinking; 6)Emphasizing the positive
Gould, Eklunk, Jackson (1993) (interview with 20 US Olympic wrestlers)	1) Thought control strategies: blocking distractions, positive thinking and coping thoughts; 2) Task-focused strategies: comprising the maintenance of a narrow focus on aspects of the tasks such as goals; 3) Emotion control strategies: efforts to control feeling states or activation level; 4) Behavioral strategies: acting out various behaviors that changed or controlled the environment.
Orlick and Partington (1988)	Goal setting, competitions simulation, mental imagery, detailed competition plans, and plans for dealing with distractions.
Gould, Finch & Jackson (1993) (Interview with 17 elite current and former US national figure skating champions)	Rational thinking, self-talk, positive focus and orientation, social support, time management, prioritization, pre-competition, mental preparation, anxiety management, training hard and smart, isolation, ignoring stressors.

Even though the effectiveness of these coping strategies has not been supported due to methodological weaknesses such as a failure to adequately control for placebo effects, the use of invalid performance measures, and the limited use of longitudinal design (Jones & Hardy, 1990), and the complexity of the stress-coping process (the effectiveness of coping strategy varies to different stressors with different players (Nasution et al., 1999), these studies served as the valuable resource pool for sport psychologists when they tried to explore the psychological skill training methods.

2.4.3 Psychological Skills and Psychological Skill Training Methods

The effectiveness of coping strategies varied with the source of stress and the coping process were constantly changing (Folkman & Lazarus, 1985; Gould et al., 1993a; Nasution *et al.*, 1999) Instead of attempting to exhaust coping strategies for various situations that might occur in soccer competition, the research focused on finding effective PST methods to facilitate the achievements of psychological skills which were identified critical for peak performance.

Self-confidence

Self-confidence is the belief that one can successfully perform a desired behavior. Sport confidence was defined by Vealey (1986) as " the belief or degree of certainty individuals possess about their ability to be successful in sport". In sport area it could be related to self-efficacy which was defined by Bandura (1977) as the conviction that one can successfully execute the behavior required to produce the desired outcomes. Perceptions of personal efficacy will facilitate and determine the degree of effort that will be expended in coping and how long that effort will be sustained in the face of stressors. Raising self-efficacy is central to interventions designed to increase confidence and enhance performance (Morris & Koehn, 2004). A four-phase research project

(Vealey *et al.*, 1998) utilizing over 500 athletes from a variety of sports was conducted to identify relevant sources confidence: 1) Mastery: mastering or improving personal skills, 2) Demonstration of ability: showing off skills to others or demonstrating more ability than one's opponent. Research found that techniques involving performance accomplishments enhance self-efficacy (Hogan & Santomier, 1984; McAuley, 1985b) and early success on a task has a positive effect on self-efficacy as well (Feltz, 1982; Feltz & Lirgg, 2001). 3) Physical/mental preparation: Feeling physically and mentally prepared with an optimal focus for performance. The importance of physical preparation as source of confidence was revealed in previous research on coach's strategy (Gould *et al.*, 1989), and investigation of successful world-class athletes (Orlick & Partington, 1988). 4) Physical self-presentation: perceptions of one's physical self (how one perceives one looks to others), 5) Social support: Perceiving support and encouragement from significant others in sport, such as coaches, family and teammates. 6) Vicarious experience: watching others, such as teammates or friends, perform successfully. Studies (George *et al.*, 1992; Lirgg & Feltz, 1991; McAuley, 1985a; Weiss *et al.*, 1998) supported that vicarious experience as source of confidence. 7) Coach's leadership: believing coach is skilled in decision making and leadership. Horn's research (1985) established a link between coaching behavior and perceptions of competence in athletes. 8) Environmental comfort: feeling comfortable in a competitive environment. Home advantage study (Courneya & Carron, 1992) supported the importance of environmental comfort. 9) Situational favorableness: Feeling that the breaks of the situation are in one's favor (Richardson *et al.*, 1988). These nine sources of confidence could be categories into three broad domains (Vealey, 2001): 1) Achievement, which includes both mastery and demonstration of ability. 2) Self-regulation, which includes physical/mental preparation and physical self-presentation and 3) Positive social climate, which includes the sources of social support, vicarious experience, coach's leadership, environmental

comfort and situational favorableness. Effective psychological interventions targeted on these three areas were proposed by previous research: 1) Goal setting: appropriate goal setting and evaluation which is concrete and focus on controllable factors could have positive influence on perceived achievement and hence improve confidence. Several research (Kane *et al.*, 1996; Kingston & Hardy, 1997; Lee, 1988; Miller & McAuley, 1987) supported goal setting as an effective mediator or enhancer of self-efficacy. Proximal goal setting also facilitated development of self-efficacy (Bandura & Schunk, 1981). 2) Imagery program: players imagine themselves performing in a confident manner to develop, maintain or regain sport confidence. Imagery was proved in some studies (Callery & Morris, 1997a; Callery & Morris, 1997b; Garza & Feltz, 1998; She & Morris, 1997) to be effective intervention for athletes to increase self-efficacy and hence performance. The study of Moritz, Hall, Martin and Vadocz (1996) showed that athletes who were high in confidence used more mastery imagery (e.g., I imagine myself to be focused during a challenging situation) and arousal imagery (e.g., I imagine the excitement associated with visual imagery) than did athletes with low confidence. 3) Positive Self-talk: players manage their own thoughts and believe in the thoughts. Stop thinking negative things, focus on the positive part and reframe the thoughts by looking at events in more productive way. This is the technique to develop and internalize a positive belief structure about oneself and thus enhance confidence. Elko & Ostrow's (1991) study showed that through understanding how irrational and inappropriate beliefs create negative thinking, positive self-talk to counter the beliefs would enhance confidence. 4) Autonomous coaching styles: coaches as significant others in social climate play important role in players' confidence (Horn, 1985). Study conducted by Horn & Harris (1996) showed that coaches who use autonomous coaching styles that facilitate athletes' perceptions of control are more likely to enhance the confidence of their athletes, as compared to controlling leadership styles. 5) Support from significant

persons (teammate, coach and etc.). Studies found that reinforcement (Weinberg et al., 1992) from significant others as an important facilitator of perceived competence and was one of the most common strategies used by coaches.

Team-Efficacy

Soccer is team sports, therefore when concerning self-confidence is important for individual to achieve peak performance, team-efficacy was proved to have reciprocal relationship with team performance (Mayers *et al.*, 2004; Watson *et al.*, 2001). Team-efficacy is the belief of team members in the capabilities of the team to be successful at a particular task. Positive result of team performance will increase team-efficacy which consequently helps team have next positive result while negative result has its negative cycle. The relation is even stronger especially when the group task is highly interdependent, where team members have interdependent goals and experience interdependent consequences for their performance (team sports such as soccer, handball, volleyball belong to these highly interdependent group). Team-efficacy has been proved to have positive relationship with "effort and persistence on a group task" (Greenlees *et al.*, 1999a) and influence pre-competition affect and state anxiety of individuals (Greenlees *et al.*, 1999b). In Ronglan's study (2007)of handball team, he identified the sources of team efficacy from different stages: 1) Before competition which focused on developing joint perceptions of capabilities and fitness to manage the upcoming competition in a successful manner: a)Perceptions of being well prepared (physically, mentally, tactically), b) Having sufficient abilities (individually, collectively), c) Being a strong team unit (collective strength), and d) being ready to handle the coming tasks. 2) During competition: at this stage, team-efficacy is dynamic due to interaction with opponents. It is showed in the form of enthusiasm, willpower, persistence and team morale against opponent. 3) After competition: self-efficacy derived from evaluation

process which is about developing interpretations of experiences, incidents during the game, performances and results achieved. Bundura (1977, 1986) who first proposed the idea of team efficacy suggested that the sources of team efficacy were similar to self-efficacy: 1) Performance accomplishments: previous positive team performances and outcomes, 2) Vicarious experiences: watching similar teams perform successfully and 3) Verbal persuasion: being supported and encouraged by others. And later other researchers added three more factors 1) Team cohesion: cohesive team are likely to be more effective, 2) Team leadership: leaders who focus on developing the coordinative and integrative functioning of the team as a whole appear to increase collective efficacy and 3) Team size: bigger size is facilitative for talent player selection however if debilitative for team cohesion. Besides these team factors, research (Bray & Widmeyer, 2000) also found that team efficacy is influenced by game location factors and "home advantage".

Taken from these studies, we conclude that previous outcome, vicarious experience, team cohesion, physical preparation, coaching styles and game location factors are the main sources of team-efficacy. The principles to enhance team-efficacy are similar to self-efficacy. Creating successful team experience to break vicious circles caused by negative performance, appropriate goal setting for teams to have rational evaluation of the result, game plan in advance to help players concentrate on related task and increase confidence in team due to well preparation, set team routines to psyche up players and enhance team cohesion, autonomous coaching style to involve players into decision making are believed to facilitative in increasing team efficacy.

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Concentration

Concentration is the ability to focus on the relevant information in surroundings and maintain the attention for a period time. Moran (1996) used the term concentration

as the capacity to exert mental effort on a task while ignoring distractions. Weinberg and Gould (1995) gave a useful definition of concentration in sport and exercise settings and described it with containing four parts: 1) Focusing on the relevant cues in the environment 2) Maintaining that attentional focus over time, 3) Having awareness of the situation 4) shifting attentional focus when necessary. Regain concentration is critical especially when making mistakes or bad calls the referee has made. Nideffer (1981) proposed five attentional styles for all athletes to master if they are to achieve good performance: 1) Broad-external (e.g., reading the game); 2) Broad-internal (e.g., planning and strategy); 3) narrow-external (e.g., focusing on the ball/opponent); 4) narrow-internal (e.g., monitoring your own heartbeat); and 5) Switching. In all, concentration had three dimensions: 1) Direction: what to focus, 2) Intensity: how much attention is devoted to the direction and 3) Flexibility: alteration of intensity and direction as required (Moran & Summers, 2004). Focus on the three dimensions, effective strategies proposed by previous research to improve concentration were: 1) Using specific cue words: key words are verbal cues that remind athletes on what they need to focus. They could be instructional; motivational (e.g., move) or emotional (e.g. relax) for technique, tactics, physiology, thoughts, emotions, and behavior. The key is to keep the cue words simple and let them automatically trigger the desired response. Some research (Bull, 2000; Loehr, 1994b) have been stressed the importance of cues to assist athletes in switching to high attentional intensity. 2) Establish Routines: The routines include pre-event (e.g., warm up, checking equipment) and in-event which helps athletes to focus on task-relevant thoughts and increase the likelihood that individuals will not be distracted internally or externally prior to and during performance. The effectiveness of routines has substantial support by several research (Cohn et al., 1990; Feltz & Landers, 1983; Jackson & Baker, 2001; Wrisberg & Pein, 1992). Cohn (1990) concluded from his study on golfer that the chosen routine should reflect the tempo and feel of the activity in

order to prepare the appropriate mind-set. 3) Goal setting or competition plan developing: a specific and measurable goal and plan help players prepare for what they would do before competition and maintain their focus during competition. And the goal should be focus on process instead of result. The relationship between goal setting and concentration was revealed in previous in-depth interviews (Greenleaf et al.Gould et al., 1992; Greenleaf et al., 2001). 4) Imagery: playing games in the head before the actual game could facilitate concentration and minimize distractions. It also helps to achieve an optimal arousal level which subsequently allows players to focus attention on task-relevant cues and screen out task-irrelevant or distracting cues. It also worked like simulating training to practice mentally and find positive feeling toward own performance under pressure. Evidence from scientific experiments in support of imagery was impressive and clearly demonstrated the value of imagery in learning and performing motor skills (D. L. Feltz & Landers, 1983; K. Martin *et al.*, 1999; Murphy, 1994).

Motivation

Motivation is the direction and intensity of effort. Direction refers to whether an individual is attracted to certain situations while intensity refers to how much effort a person puts in a particular situation. To have positive influence on motivation, sport psychologists have to discover why (direction) players participated and how to increase the intensity of the factors. Strategies proposed by previous research to improve motivation: 1) Effective goal setting could not only enhance performance, it also served as important source of motivation (Locke & Latham, 1985). Research done by Orlick & Partington (1988) also indicated that successful players would set precise and attainable goals for practice and competition in order to maintain high motivation. 2) Positive feedback from coach was proved to be facilitative to intrinsic motivation (Vallerand,

1983; Vallerand & Reid, 1984). 3) Imagery: When athletes imagine specific goals such as winning or being congratulated for a good performance, they are using motivational-specific imagery. Motivating imagery can reignite player's passion for their sport and the desire and determination to keep going in the face of pain, frustration, and disappointment (Martin et al., 1999; Paivio, 1985). The study conducted by Martin & Hall (1995) on beginner golfers provided supportive evidence that when athletes parallel their performances with imaged representations, they may have more realistic self-standards and be less likely to give up when they fail to perfect a skill. 4) Provide for successful experiences: competition itself served as source of motivation,. If the competitive situation is perceived to provide competence feedback about one's ability (e.g., winning, achieving goal), then intrinsic motivation will be enhanced (McAuley & Tammen, 1989; Tauer & Harackiewicz, 1999) .

Arousal regulation

Everyone had individual level of optimal arousal (Hanin 1980), the psychological skill training methods aimed to help players to control their own arousal level somatically and cognitively. The regulation of arousal had two dimensions: directions (excitement vs anxiety) and intensity (psyche down and psyche up). The matching hypothesis by Davidson and Schwartz (1976) suggested that cognitively based anxiety management techniques will lower cognitive anxiety levels more than somatically based techniques. Therefore, cognitive interventions such as positive self talk, and thought stopping would be more effective in reducing cognitive arousal; while somatic type interventions such as progressive muscle relaxation (PMR), breathing exercises would be more effective for the reduction of somatic arousal. Some studies (Maynard *et al.*, 1995) have provided support for the matching hypothesis.

Existing techniques developed in psychology area to reduce anxiety could be good source for players to select for arousal reduction: 1) Goal setting: to help with reducing the perceived intensity of negative emotions such as anxiety and increase sense of control, goal setting was proposed to be effective. Based on achievement goal theory, task-involved people are self-referenced when they judge their perceptions of ability, and their subjective success is based on the experience of personal improvement. Therefore they are expected to have a higher sense of control and less sense of threat (anxiety), regardless of their levels of perceived competence (Roberts, 1986). Several studies (Beauchamp *et al.*, 1996; Burton, 1989; Hall, 1988; Jourden *et al.*, 1991; Kane et al., 1996) were conducted to examine the sports performance predictions emanating from achievement goal theory and found supportive results to the positive relationship between goal-setting (task-orientated) and performance. 2) Support from coach and teammates: to increase sport enjoyment instead of threat helps players have arousal into positive direction (Smith et al., 1995; Smoll *et al.*, 1993). 3) Arousal Imagery: previous studies (Caudill *et al.*, 1983; Hecker & Kaczor, 1988; White & Hardy, 1998) found that arousal imagery could psyching-up players to increase their arousal level while studies(Cancio, 1991; White & Hardy, 1998) also found that it could psyche-down players (e.g. meditation). And it would be more effective to combine arousal-reducing imagery with relaxation training (Cogan & Petrie, 1995). 4) Self-talk: it could be energizing self-talk or pep-talks to increase arousal or calming self-talk to reduce arousal. The cognitive restructuring has proven effective in reducing a related form of performance anxiety(Goldfried *et al.*, 1978; Rushall, 1993; Silva, 1982). 5) Somatic arousal regulation techniques: Edmund Jacobson's (1906) progressive muscle relaxation (PMR), Breathing control, Biofeedback (use electronic instruments to provide visual or auditory feedback of physiological responses such as muscle activity, skin temperature, brain waves or heart rate) are effective techniques to reduce somatic arousal level. Quick,

shallow breathing is used to increase somatic arousal. 6) Listen to music: music can act as a potent mood enhancer. The choice of music demands great sensitivity to the personal preferences of the players, the match, and between the characteristics of the music and the target emotion. Music could be simulative music for energizing, soft music for relaxing or using music with associations of glory in the face of adversity to inspire athletes before important competition. Research (Boutcher & Trenske, 1990; Karageorghis & Terry, 2000; Kodzhaspirov *et al.*, 1988) has shown that well-chosen music has the potential to generate significant improvements in mood. It was obvious to note the inter influence among these skills, once concentration improved, performance enhanced and consequently the self-efficacy increased. The decision as to which method to implement in specific situations is therefore crucial. In this research, I intended to investigate how those frequently cited psychological skill training methods to improve confidence, concentration, motivation and control arousal were adapted among Czech elite soccer players (Table 2-4).

Table 2- 4 Psychological Skills and PST Methods

Psychological skills	*PST Methods*
Self-confidence & Team Efficacy	Self-Talk
	Pre-competition mental rehearsal
	Participating in goal setting for individual
	Support from teammates & Coach (team cohesion)
	Goal setting (individual & team)
	Game plan
	Positive interpretation of outcome
Concentration	Cue words
	Routines/Rituals
	Concrete process goal
	Make game plan
	Imagery of performance and game plan
Motivation	Imagery of good result
	Support from significant others

	Positive feedback from significant others
	Goal setting
Arousal Control	Game plan & goal to achieve
	Supports from teammates
	Meditation
	Coach's pep talk for increase arousal
	Self talk to psyche up and down
	Listen to music
	Breath control
	Muscle relaxation

2.4.4 Research on Effectiveness of Psychological Skill Training Methods for Soccer Game

Even though there are consistent psychological skills needed for peak performance, every sport has its unique demands on players. Therefore the effectiveness of PST methods on specific sports is worthwhile discussing. Through reviewing research on the effectiveness of psychological skill training methods for soccer players, it helps us prioritize PST methods which have to be taught to enhance performance. Here is the summary of PST methods which are proved to be effective to soccer player by antecedent research:

Goal setting

Through appropriate goal setting, both self and team efficacy could be increase because players know what they should achieve instead of expecting unrealistic success which consequently results in frustration and doubt about self and team capabilities. It helps players concentrate on tasks which are important for goals pre and in competition and hence reduce unnecessary arousal in negative direction. Effective goal setting also motivate players to try their best without feeling helpless when being in negative vicious circles or encountering strong teams or dull when the competition is not challenging

enough. Weinberg, Burton, Yukelson, & Weigand (2000) interviewed 185 male and 143 female Olympic athletes and found that all Olympic athletes set difficulty goals that were somewhat higher than the athletes' current performance capabilities to enhance performance and they found their goals to be highly effective. Lee's research on 9 wonen's field hockey teams (96 women) and found that Team goals were positively related to winning percentage (Lee, 1988). Filby et al's research on 40 adult participants showed that multiple-goal strategies (outcome+ performance+ process goals) more effectively improved soccer performance compared to single-goal strategies (Filby *et al.*, 1999).

Imagery

Cognitive specific imagery could help players practice the skills in mind which is proved to have positive effect in skill acquisition. Blair, Hall and Leyshon (Blair *et al.*, 1993) investigated the effectiveness of cognitive specific imagery practice to the regular physical practice with nonelite and elite soccer players. They found after six weeks of imagery practice on the task, the imagery group significantly improved its performance on the task and the control group showed no change. The amount of improvement was about the same for both nonelite and elite players in the imagery group. These results suggest that athletes should supplement their regular physical practice with cognitive specific imagery practice. Imagery of game play and successful moment could help players increase confidence, motivation and concentration and hence regulate arousal. Salmon et al.(1994) examined the imagery use of soccer players at the national, provincial and local levels. Although players at all three skill levels reported using imagery more for its motivational function than its cognitive function, the elite players reported more imagery than the nonelite players regardless of the function imagery served. The more extensive use of imagery by elite athletes is undoubtedly due to the

greater commitment these athletes make to their sport (Hall, 2001).

Routines

Routines could be in both behavioral (e.g., self or team rituals) and cognitive (e.g., self-talk, imagery) formation. It structures the player's thought process and emotional states, keeping the focus of attention in the present and on task-related cues. Pre-competition routine builds self and team efficacy through belief that this is the way to victory. Routines in critical time such as penalty kick in soccer or service in volleyball, help players concentrate on the coming tasks. Research (lamirand & Rainey, 1994; lobmeyer & Wasserman, 1986; Wrisberg & Anshel, 1989) showed that pre-performance routines are an effective means of promoting physical and mental readiness prior to the execution of self-paced motor skills. In-competition routines such as deep breath, cue words help players regain concentration especially in the situations which easily cause distraction such as interruption of games (injury of some player, player substitution, scoring moment), physical exhaustion, or external distractions such as cheers from spectators.

2.5 Conclusion from Literature Review

Through literature review, the framework of stress process was identified and terms used to describe each construct were decided. Instead of only focusing on the negative part of stimuli, objective demands coming from external environment which could also be called as situational factors would serve as the source of stress (stimulus) and fired up the stress process. In this study, the focus was on acute stressors which were encountered when players were in the competition environment and divided into pre and in-competition categories since they generated different response and so as to demand

for different psychological interventions. As the objective demands put on players, individual's personality predisposition and perception of control worked together to decide how much (intensity) individual's psychological status would be influenced and whether the influence would be facilitative or debilitative (direction) to performance. After the perception process, somatic and cognitive responses were generated which directly influenced performance. Psychological skill training methods are psychological interventions which help the regulation of arousal psychologically and physiologically, and the occurrence of facilitative psychological skills especially self-confidence, concentration, and motivation. Player's performance was enhanced by the implementation of effective psychological skill training methods which would subsequently result in increasing perception of control and therefore influenced the perception construct in the whole stress process. The conceptual framework of stress process with intervention of psychological skill training was illustrated in figure 2-2.

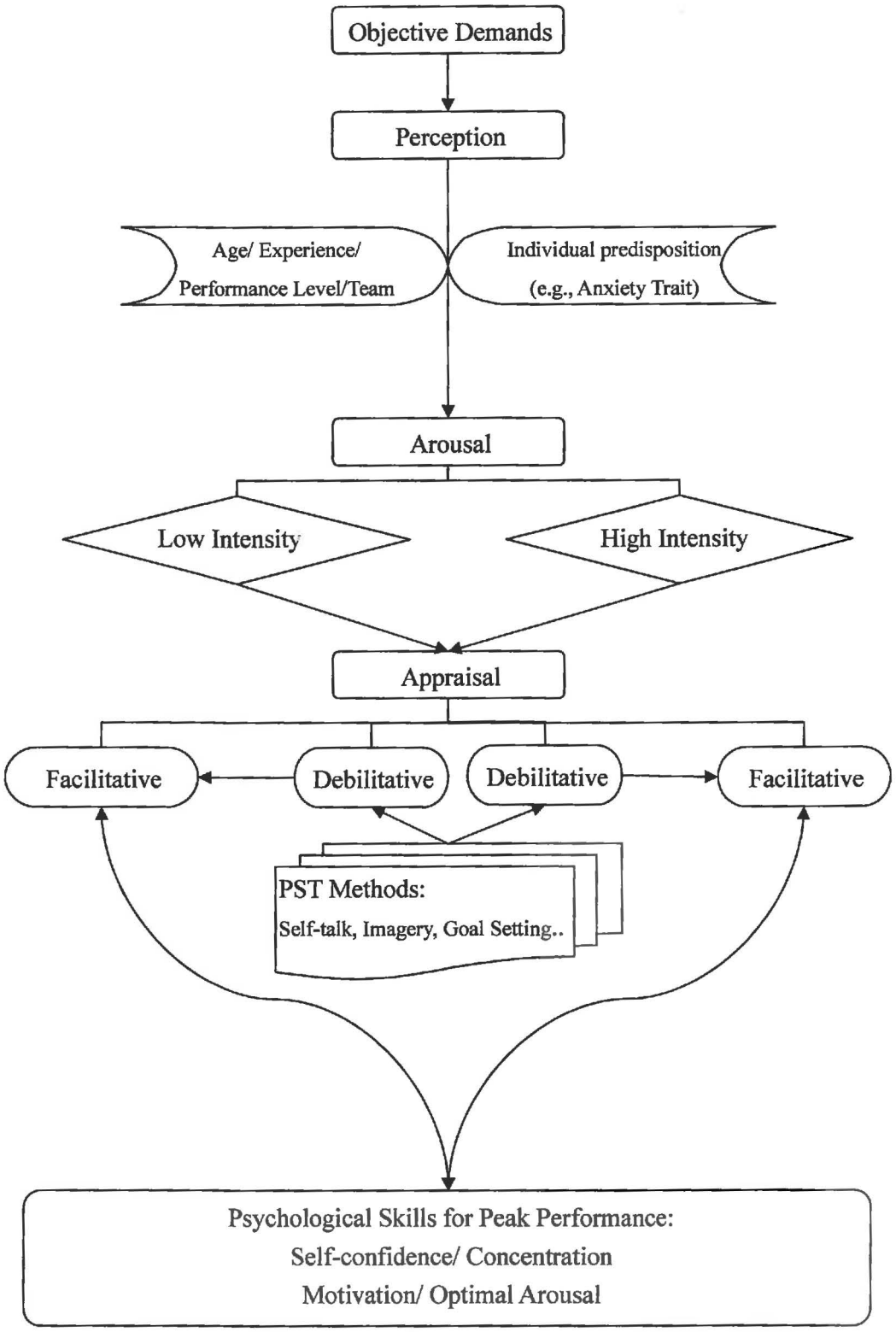

Figure 2- 2 Conceptual framework of the research

Chapter 3 Research Method

As mentioned before, the purpose of this research was to investigate CESP's arousal level to acute pre and in-competition stressors and examined if any arousal inclination among CESPs existed. Through the investigation, the stressors which caused high arousal were also identified. Further investigation was done to survey how these stressors were appraised and the usage of psychological skill training methods which all together provided coaches fundamental information for implementation of psychological skill training in the future.

3.1 Subjects

The subjects comprised 83 Czech soccer players belonging to five different teams (team 1, N=19; team 2, N=17; team 3, N=16; team 4, N=20; team 5, N=11). The five teams all participated at Gambrinus liga-Czech premier professional soccer league. The term "elite" was used to describe their abilities to play in the premier soccer league in Czech Republic. These five teams had arranged fitness test with department of physiology and biochemistry in our faculty before the start of second-half soccer season. Three (Team 1, Team 4, team 5) of the five teams finished their seasons ranked in the league top 5 in 2004/2005 and 2005/2006, while the other two (Team 2, team 3) ranked out of top 10 among all the 16 premier teams. The mean age of the entire sample was 23.67 years (SD= 4.15) and subjects reported an average of 5.06 years (SD= 3.9) playing experience in the premier league.

Please refer to Table 3- 1 for Team Summaries.

Table 3-1 Team summaries

	AGE			YEAR[a]	
TEAM	N	Mean	SD	Mean	SD
1	19	23.74	4.56	5.31	3.52
2	17	24.13	4.62	4.78	4.67
3	16	24.13	4.76	4.59	3.12
4	20	23.90	3.24	4.85	3.86
5	11	21.82	3.40	6.12	4.80
Total	83	23.67	4.15	5.06	3.90

a. Year represents the length of playing experience in premier soccer league (Gambrinus liga)

3.2 Instrument

There are no published psychometrically validated questionnaires in the sport psychology literature that identify either perceived stressors intensity or cognitive appraisals. Therefore when I tried to refocus on the transitional stress process and restored anxiety to its original place, a five-part questionnaire was designed for research, not diagnostic, purpose to investigate perceived intensity and cognitive appraisals of acute stressors for Czech elite soccer players and the survey of usage of PST methods was included in the last part.

Part I requested demographic and playing information (e.g., age, playing years in the premier league, playing positions). Part II & III requested the subjects rate perceived intensity of each source of stress (19 were listed from pre-competition-Part II and 20 from in-competition situation-Part III) on a 5-point Likert scale, ranging from 1, not at all to 5, very much and followed by identifying its corresponding influence on his performance, ranging from 1, very negative to 5, very positive. Source of acute stressors was selected based on the categories proposed by previous research and illustrated in

literature review. And the concern of appraisal was followed the proposal made by Jones and Swain (1992) to examine how performers perceive their arousal symptoms in terms of their likely effect on performance, that is to say, facilitative or debilitative direction. There was an open question section at the end of this part intending to explore uncovered stressors which could help to complete the questionnaire in the future. Part IV requested subjects rate the usage frequency of 15 psychological skill training methods on 5-point Likert scale, ranging from 1, never to 5, always. The psychological skill training methods were selected from literature review and were considered to help achieve important psychological skills: arousal regulation, confidence, concentration and motivation. Part V was open questions and requested players offer their in-competition strategies freely in attempt to explore uncovered PST methods. Consensus on the questionnaire content which derived from literature review with my thesis supervisor Mgr. Eva Tomešová, Ph.D. familiar with stress study in sport literature was reached to provide validity of the questionnaire. The questionnaire was presented in Appendix A for English version and Appendix B for Czech Version.

3.3 Procedure

My thesis supervisor Mgr. Eva Tomešová, Ph.D. familiar with stress study in sport literature translated the questionnaire from English to Czech. After talking to coaches or trainers in advance for their agreement of players' participation in the research, players who volunteered to participate in the research came to the room which was prepared specifically for filling questionnaire before or after they finished fitness test. Another Czech colleague who was fully aware of the purpose of the research and I were in the room to inform players the purpose of the research and provide verbal instruction which were also written on the questionnaire. We asserted again the irrelevance of the result of the questionnaire and their performance evaluation and the anonymous characteristics of

the questionnaire to ensure the reliability of answers. Players were encouraged to ask questions when they did not understand the content of the questionnaire and we were all the time there to answer the questions to avoid the confusion caused by ambiguous interpretation of terms. There was confusion raised concerning the identification of perceived intensity of stress (instructions on Part II & III for identifying the perceived intensity) and was clarified on the spot for the first team and revised immediately to eliminate the confusion which never happened again in the teams afterward. It took average 20 minutes to complete the whole questionnaire. Since the purpose of the questionnaire was to investigate the common response of perceived intensity and appraisal to acute stressors instead of specific significant match, and these players were all very familiar with soccer competition, I assumed that the variance of the answers between off and right before competition would be small and acceptable. However, this is one of the research limitations and should be put into consideration for future improvement.

3.4 Data Analysis

SPSS 11.0.0 (19 Sep 2001) standard version was the tool used to do the statistics analysis.

"Descriptive statistics" was used to rank the perceived intensity of stress and usage frequency of PST methods by computing mean and standard deviation.

"Chi-Square Goodness-of-Fit Test" was conducted to examine if the inclination (preference) of perceived intensity and appraisal direction of each acute stressors existed among CESP. Chi-Square goodness-of –fit test is a test of how well a model fits the observed data. In this inclination analysis, I hypothesized that CESPs' perceived intensity and appraisal direction were not ranked uniformly, and which indicated the

existence of inclination (preference) of intensity and appraisal. Small observed significance levels (say less than 0.05) indicate that the uniform model doesn't fit well with CESPs' ranking, therefore the inclination (preference) does exist. Whilst big observed significance level (bigger than 0.05) indicates there is no such inclination (preference) exist.

"Kruskall Wallis test" was performed to examine the different levels at which the intensity of acute stressors were perceived and the different directions which the influence of acute stressors were appraised in terms of "Teams", "Playing Positions", "Marital Status", "PST Experience", "Education Plan " and "Team's Performance Level". Kruskall Wallis test is a nonparametric equivalent to one-way ANOVA which tests whether several independent samples are from the same population. Assumes that the underlying variable has a continuous distribution, and requires an ordinal level of measurement.

"Mann-Whitney test" was conducted to verify where these significant differences occurred. Mann-Whitney test is nonparametric equivalent to the T test. It tests whether two independent samples are from the same population. It is more powerful than the median test since it uses the ranks of the cases. Requires an ordinal level of measurement. U is the number of times a value in the first group precedes a value in the second group, when values are sorted in ascending order.

"Bivariate Correlation Analysis" was conducted to investigate the correlation of perceived intensity/ appraisal directions with age and league years. Spearman's correlation coefficient was computed to check whether the correlation is significant and they were linearly related. The Bivariate Correlations procedure computes Pearson correlation coefficient, Spearman rho, and Kendall tau-b with their significance

levels. Correlations measure how variables or rank orders are related. Before calculating a correlation coefficient, screen data for outliers (which can cause misleading results) and evidence of a linear relationship. Spearman's correlation coefficient is commonly used nonparametric measure of correlation between two ordinal variables. For all of the cases, the values of each of the variables are ranked from smallest to largest, and the Pearson correlation coefficient is computed on the ranks.

Chapter 4 Results

The results revealed a number of interesting possible relationships from inter-individual level. Several of the more important are reported here for illustrative purposes.

4.1 Perceived Intensity of Acute Stressors

4.1.1 Ranking of Perceived Stress Intensity

Czech elite soccer players (n=83) rated each of the sources of acute stress on a 5 point Likert scale ranging from 1, not at all to 5, very much. Descriptive statistics and rank of the players' arousal level for these stressors were presented in Appendix C.

Pre-competition

The results indicated that the most intense sources of acute pre-competition stress included "High importance of the game to yourself (M=4.22, SD=0.917)", "High importance of the game to your team (M=4.15, SD=0.92)", "Previous good game result (M=3.74, SD=1.20)", and "Large amount of spectators (M=3.71, SD=1.32)". Items which were rated as less influence by the players included "Coach's long speech in the changing room (M=2.52, SD= 1.10)"; "Unfamiliar with the playing stadium (M=2.56, SD= 1.16)"; "Play in poor conditions (M=2.66, SD=1.376)". Importance, expectation to set good record and presence of spectators contributed a lot to CESPs' arousal before competition while environmental condition and coach's speech did not affect players' arousal too much.

In-competition

The results indicated that the most intense sources of acute pre-competition stress included "At last few mins, your team is behind by 1 goal (M=3.84, SD= 1.26)";

"Cheers from supporting spectators (M=3.82, SD=1.34)"; and "Make a goal-relevant game error (M=3.78, SD=1.01)". Items which were rated as least influence by the players included "Coach's shout at teammate's mistake (M=1.95, SD=0.92); "Hear unpleasant comments from commentator (M=1.98, SD=1.08)"; "Get a yellow card (M=1.99, SD=1.01)". Again, spectators play important role in player's arousal. Personal significant performance error and behind opponents also generate arousal intensity.

4.1.2 Inclination of Perceived Stress Intensity

A "Chi-Square Goodness-of-Fit Test" was conducted to examine if the inclination of perceived intensity of each acute stressors existed among CESP. If the inclination existed, median which is the value above and below which half the cases fall (the 50th percentile) was computed to identify the inclination. We used median instead of mean value as indicator because median is a measure of central tendency which is not sensitive to outlying values whiles mean can be affected by a few extremely high or low values. The result of Chi-Square Test and median value was presented in Appendix D.

Pre-competition

The results showed that the inclination of perceived intensity existed in most of the stressors among CESPs, except "Lack of physical readiness or poor preparation (χ^2= 4.71, P= 0.32)", "Compete in your club's stadium (χ^2= 4.12, P= 0.39)", "Bad relationship with teammate (χ^2= 7.63, P= 0.11)", "Bad relationship with coach (χ^2= 8.85, P= 0.06)", "Occurrence of personal unexpected misfortune (χ^2= 3.85, P=0.43)" where individual variance were bigger.

Table 4- 1Inclination of perceived intensity of pre-competition stressors

High perceived intensity (Median ≧4*)	High importance of the game to your team; High importance of the game to yourself; Previous good game result; Compete with much stronger team; Large amount of spectators; High expectation from coach, teammate, fans
Moderate perceived intensity (Median=3*)	Previous bad game result; Compete with well-matched team; Lack of experience to the competition; Compete in opponent's stadium; Unfamiliar with the playing stadium; Play in poor conditions; Previous injury
Low perceived intensity (Median≦ 2*)	Coach's long speech in the changing room

**1-Not at all, 2-Not very much, 3-Moderately much, 4-Very much, 5-Extremely much*

In-competition

The results showed that the inclination of perceived intensity existed in most of the in-competition stressors among CESPs, except "Pain of sudden injury (χ^2= 8.32, P= 0.08)" and "Opponent's continuous success (χ^2= 4.34, P= 0.36)" where inclination of perceived intensity among CESPs didn't exist.

Table 4- 2 Inclination of perceived intensity of in-competition stressors

High perceived intensity (Median ≧4*)	Make a goal-relevant game error; Cheers from supporting spectators; Opponent's scoring goals; Continuous bad calls from referee; At last few mins your team ahead or behind by one goal; Kick penalty.
Moderate perceived intensity (Median=3*)	Make a goal-irrelevant game error; Coach's shout at your mistake; Teammate's shout at your mistake; Teammates make a goal-relevant game

	error. At last few mins, your team has tied goals.
Low perceived intensity (Median≦ 2*)	Get a yellow card; Boo from antagonistic spectators; Hear unpleasant comments from commentator; Coach's shout at your teammate's mistake; Opponent's provoking behaviors. Teammates make a goal-irrelevant game error.

**1-Not at all, 2-Not very much, 3-Moderately much, 4-Very much, 5-Extremely much*

4.1.3 Inter-Individual Analysis of Perceived Stress Intensity

A "Kruskal-Wallis test" was performed to examine the different levels at which the intensity of acute stressors were perceived by different "teams", "positions", "marital status", "PST experience", "Education Plan" and "Team's Performance level". In addition, a Mann-Whitney test was conducted to verify where significant differences occurred.

Pre-Competition

Team

Significant differences of perceived intensity between the teams were found in two pre-competition stressors: "Previous bad game result (H= 14.3; P=0.01)" and "Bad relationship with coach (H=11; P=0.03)". Mann-Whitney test was conducted to verify where significant differences occurred between teams.

- "Previous bad game result", we found the difference occurred between team 3 vs 5 (Z= -2.75, P=0.01), team 3 vs 2 (Z= -3, P<0,01) and team 1 vs 5 (Z= -2.09, P=0.04). After excluding team 3, the significant difference had no longer existed among other 4 teams (H=6.97, P=0.07). So we concluded that the perceived intensity of

team 3 was higher than other four teams in terms of "previous bad game result". (table 4-3)

- "Bad relationship with coach", we found the difference occurred between team 1 vs 2 (Z= -2.93, P<0.01) and team 1 vs 4 (Z= -2.6, P=0.01). After excluding team 1, the significant difference had no longer existed among other 4 teams (H=3.22, P=0.36). So we concluded that the perceived intensity of team 1 was higher than other four teams in terms of "Bad relationship with coach". As to mean values of each team, please refer to Table 4- 3 Intensity of pre-competition stress perceived by team.

Table 4-3 Intensity of pre-competition stress perceived by Team

	team	Mean	SD
Previous bad game result	1	3.39	1.24
	2	2.71	.77
	3	3.87	1.30
	4	3.10	1.17
	5	2.30	1.16
Bad relationship with coach	1	4.00	1.29
	2	2.59	1.37
	3	3.40	1.59
	4	2.75	1.55
	5	3.18	1.47

Playing Positions

Here we mainly focused on "Defender", "Midfielder" and "Forwarder" because they are most distinguishable positions in soccer competition and the data available for other positions were insufficient. Significant difference of perceived intensity between the positions was found in "Previous bad game result" (H=11.32, P<0.01). After conducting Mann-Whitney U test, we found the significant difference lies in Defender vs Midfielder (Z= -3.23, P<0.01). After excluding "Defender", the significant difference had no longer existed between Midfielder and Forwarder (H=-1.36, P-0.17). So we

concluded that the perceived intensity of "Defender" was higher than other positions in terms of "Previous bad game result". Mean value please refer Table 4- 4 to Perceived intensity by positions.

Table 4-4 Perceived intensity by Positions

Previous bad game result		
position	Mean	Std. Deviation
defender	3.80	1.00
midfielder	2.71	1.24
forwarder	3.20	1.08

Education Plan

By Education plan, what interested my most was the difference between those who choose secondary where opportunity for further education is limited and those who choose "Secondary with examination" where higher education is pursued in the future. So here I would like to focus on the comparison between these two education plans. Significant difference of perceived intensity between these two education plans were found in "High expectation from coach, teammate, fans (Z=-2.79, P=0.01)", "Bad relationship with some of the teammates (Z=-2.28, P=0.02)", and "Bad relationship with coach (Z=-2.24, P=0.03). The result showed that players with secondary school degree and intended to go to further education have higher perceived intensity in teams of relationship and expectation. Please refer to mean value in Table 4- 5 Perceived intensity by education plan.

Table 4-5 Perceived intensity by Education (S vs S+E)

	education	Mean	SD
High expectation from coach, teammate, fans	secondary school	3.00	1.06
	secondary school with maturita examination	3.71	.96
Bad relationship with some of the teammates	secondary school	2.42	1.36
	secondary school with maturita examination	3.13	1.20
Bad relationship with coach	secondary school	2.74	1.50
	secondary school with maturita examination	3.50	1.44

Marital Status

Significant difference of perceived intensity between single and married were found in "High importance of the game to your team" (H=7.47, P=0.01); and "High importance of the game t yourself (H=5.78, P=0.02).We found that both of them ranked importance with high intensity; however single players tend to rank it as "Very much" while majority of married players rank it as "much". This resulted in the higher perceived intensity by single players. Even though it is commonly known that married ones are tended to be more "calm", however the phenomena only appears in "importance" category among CESPs. Please refer to mean value in Table 4- 6 Perceived intensity by Marital Status.

Table 4-6 Perceived intensity by Marital Status

	marital status	Mean	SD
High importance of the game to your team	Single	4.29	.88
	Married	3.70	.92
High importance of the game to yourself	Single	4.34	.90
	Married	3.85	.88

PST Experience

There is no significant difference found in terms of PST experience. This might due to most of them who contacted PST were in school and only heard about it instead of took it into practice. Others experienced PST in clubs but only at very beginning stage. These are the possible explanation why there is no significant difference found.

Team's Performance level

There is no significant difference found in terms of Team's performance level. Team's performance level was divided into two groups, top 5 represented teams (team 1,4 and 5) which were at top five for 2 years and others are the remaining teams (team 2 and 3) which were out of top 10 among 16 team in Czech premier soccer league.

In-Competition

Team

Significant differences of perceived intensity between the teams were found in four in-competition stressors: "Coach's shout at your mistake (H=10.56; P=0.03)", "Coach's shout at your teammate's mistake (H=9.82; P=0.04)", "Teammates make a goal-relevant game error (H=14.59; P=0.01)", and "Continuous bad calls from referee (H=12.15, P=0.02). Mann-Whitney test was conducted later to verify where significant differences occurred between teams.

- "Coach's shout at your mistake", we found the difference occurred between team 1 vs 2 (Z=-2.46, P=0.01), team 1 vs 4 (Z=-2.64; P=0.01)and team 3 vs 4 (Z=-2.05, P=0.04). After excluding team 1, the significant difference had no longer existed among other 4 teams (H=5.93, P=0.12). After excluding team 4, the significant difference had no longer existed among other 4 teams (H=6.23, P=0.1). So we concluded that the difference mainly caused by Team 1 and Team 4 where Team 1 has the highest perceived intensity (3.42± 0.9) while Team 4 (2.55± 0.94) has the lowest (Table 4-7).
- "Coach's shout at your teammate's mistake", we found the difference occurred between team 1 vs 2 (Z=-2.63, P=0.01) and Team 1 vs 5 (Z=-2.29, P=0.02). After excluding team 1, the significant difference had no longer existed among other 4 teams (H=5.21, P=1.44). Excluding team 2, the significant difference disappeared too (H=5.29, P=0.15). Same situation happened when excluding Team 5 (H=7.3, P=0.06). So we concluded that Team 1 vs 2 and Team 1 vs 5 are the cause of the significant difference in terms of "Compete with much stronger team". Team 1 has the highest perceived intensity (2.32± 0.89) while team 2 (1.53± 0.72) & 5 (1.55± 0.69) have the lowest intensity (Table 4-7).

- "Teammates make a goal-relevant game error", we found the difference occurred between team 1 vs 2 (Z=-3, P<0.01), Team 1 vs 4 (Z= -2.03, P=.0.43), Team 2 vs 3 (Z=-2.73, P=0.01), Team 2 vs 5 (Z=-2.26, P=0.02), Team 3 vs 4 (Z=-2.17, P=0.03). After excluding each team one by one, the significant difference still lies among other four teams. So we concluded that Teams varied in the perceived intensity of "Teammates make a goal-relevant game error". From table 4-7 we could see that the Team 3 has the highest intensity (3.4 ± 1.14) while Team 2 is the lowest (2 ± 1.12).
- "Continuous bad calls from referee". The significant difference was found between Team 3 vs 4 (Z=-3.3, P<0.01). Where Team 3 has the highest intensity (4.2±0.68) and Team 4 has the lowest one (3.1± 0.91). Please refer to mean value in Table 4- 7 Perceived intensity by team.

Table 4-7 Perceived intensity by team

	team	Mean	Std. Deviation
Coach's shout at your mistake	1	3.42	.90
	2	2.65	.79
	3	3.33	1.18
	4	2.55	.94
	5	3.09	1.30
Coach's shout at your teammate's mistake	1	2.32	.89
	2	1.53	.72
	3	2.20	1.08
	4	2.00	.92
	5	1.55	.69
Teammates make a goal-relevant game error	1	3.11	.94
	2	2.00	1.12
	3	3.40	1.40
	4	2.40	1.10
	5	3.00	1.10
Continuous bad calls from referee	1	3.63	1.07
	2	3.41	1.18
	3	4.20	.68
	4	3.10	.91
	5	3.60	1.17

Playing Positions

Significant difference of perceived intensity between the positions (Defender, Forwarder, Midfielder) was found in "Make a goal-irrelevant game error" (H=6.66, P=0.04), "Cheers from supporting spectators (H=6.47, P=0.04), "Opponent's scoring goals (H=7.3, P=0.03).

- "Make a goal-irrelevant game error", we found the differences were in Defender vs Midfielder (Z=-2.17, P=0.03), and Defender vs Fowarder (Z=-2.17, P=0.03), Defender tended to have higher perceived intensity than Midfielder and Forwarder. Please refer to mean value in Table 4-8 Perceived intensity by position- make a goal-irrelevant game error.

Table 4-8 Perceived Intensity by Position

Make a goal-irrelevant game error

position	Mean	Std. Deviation
defender	3.28	1.10
midfielder	2.62	.98
forwarder	2.47	.99

- "Cheers from supporting spectators", we found the differences were in Defender vs Forwarder (Z=-2.35, P=0.02) and Forwarder vs Midfielder (Z=-2.27, P=0.02). Forwarder tended to have higher perceived intensity than Midfielder and Defender Please refer to mean value in Table 4- 9 perceived intensity by position- Cheers from support spectators

Table 4-9 Perceived intensity by position

Cheers from supporting spectators

position	Mean	Std. Deviation
defender	3.85	1.22
midfielder	3.41	1.68
forwarder	4.67	.49

- "Opponent's scoring goals", the difference was in Defender vs Midfielder (Z=-2.87, P<0.01). Defender tended to have significant higher perceived intensity than midfielder. Please refer to mean value in Table 4- 10 Perceived intensity by position- opponent's scoring goals.

Table 4-10 Perceived intensity by position

Opponent's scoring goals		
position	Mean	Std. Deviation
defender	4.12	1.03
midfielder	3.31	1.11
forwarder	3.67	1.45

Education Plan

Significant difference of perceived intensity between secondary and secondary with examination was found only in "Kick penalty (Z=-2.35, P=0.02). Secondary with examination tended to have higher perceived intensity in terms of kicking penalty. Please refer to mean value in Table 4- 11 perceived intensity by education play- kick penalty.

Table 4-11 Perceived Intensity

Kick penalty		
education	Mean	Std. Deviation
secondary school	3.20	1.30
secondary school with maturita examination	3.90	1.20

Marital Status

There was no significant difference of perceived intensity between single and married in terms of in-competition stressors.

PST Experience

There is no significant difference found in terms of PST experience. This might due to most of them who contacted PST were in school and only heard about it instead of took it into practice. Others experienced PST in clubs but only at very beginning stage. These are the possible explanation why there is no significant difference found.

Team's Performance level

Significant difference of perceived intensity between the two different team's performance level was found in "Make a goal-relevant game error (Z=-2.62, P=0.01). Teams belonged to Top 5 level tended to have higher perceived intensity Please refer to mean value in Table 4- 12 perceived intensity by team's performance level- make a goal-relevant game error.

Table 4-12 Perceived Intensity

Make a goal-relevant game error		
performance level	Mean	Std. Deviation
Top 5	4.04	.81
others	3.38	1.16

Age & League years

"Bivariate Correlation analysis" was conducted to see if there any significant relationship of perceived intensity with age and league years. Spearman's correlation coefficient was computed to check whether the correlation is significant and they were linearly related.

- "Age", we found that age has positive liner correlations with perceived intensity of "previous bad game result" (r=0.34, P<0.01).

- "League years", we also found that league experience has positive liner correlations with perceived intensity of "previous bad game result" (r=0.32, P<0.01).

4.2 Appraisal Direction of Acute stressors

4.2.1 Inclination of Appraisal Direction

A "Chi-Square goodness-of-fit test" was conducted to examine if the inclination of appraisal direction of each acute stressors existed among CESP. If the inclination existed, median which is the value above and below which half the cases fall (the 50th percentile) was computed to identify the inclination. We used median instead of mean value as indicator because median is a measure of central tendency which is not sensitive to outlying values whiles mean can be affected by a few extremely high or low values. Later on when those stressors whose median value was 3 (either positive or negative appraisal), mean was computed to decide the appraisal direction. The results of Chi-Square Test, median and mean value were presented in Appendix E.

Pre-competition

The results showed that the inclination of appraisal direction existed in all pre-competition stressors among CESPs (P< 0.05).

Table 4- 13 Inclination of appraisal direction of pre-competition stressors

Positive effect (Median >3*)	High importance of the game to your team; High importance of the game to yourself; Previous good game result; Compete with much stronger team; Compete with well-matched team; Compete in opponent's stadium; Compete in your club's stadium; Large amount of spectators; High expectation from coach, teammate fans.

Moderate effect (Median=3*)	Slightly Positive (Mean >3*)	Lack of experience to the competition; Play in poor conditions; Unfamiliar with the playing stadium; Coach's long speech in the changing room.
	Slightly negative (Mean<3*)	Previous bad game result; Bad relationship with some of the teammates; Previous injury; Occurrence of personal unexpected misfortune.
Negative effect (Median <3*)	Lack of physical readiness or poor preparation; bad relationship with coach.	

** 1-Strongly Negative, 2-Somewhat Negative, 3-No Effect, 4-Somewhat Positive, 5-Strong Positive*

In-competition

The results showed that the tendency of appraisal direction existed in all in-competition stressors among CESPs ($P< 0.05$).

Table 4- 14 Inclination of appraisal direction of in-competition stressors

Positive effect (Median >3*)		Cheers from supporting spectators; At last few mins, your team is ahead by 1 goal.
Moderate effect (Median=3*)	Slightly Positive (Mean >3*)	Make a goal-irrelevant game error; Get a yellow card; Boo from antagonistic spectators; Opponent's continuous success; Opponent's provoking behavior; At last few mins, you have tied goals; At last few mins, your team is behind by 1 goal; Kick penalty.
	Slightly negative (Mean<3*)	Unpleasant comments from commentator; Coach's shout at your mistake; Coach's shout at your teammate's mistake; Teammate's shout at your mistake; Teammates make a goal-irrelevant game error; Teammate make a goal-relevant game error;

Negative effect (Median <3*)	Make a goal-relevant game error; pain of sudden injury; Opponent's scoring goals; Continuous bad calls from referee.

** 1-Strongly Negative, 2-Somewhat Negative, 3-No Effect, 4-Somewhat Positive, 5-Strong Positive*

4.2.2 Inter-Individual Analysis of Appraisal Direction

A "Kruskal-Wallis test" was performed to examine the different directions which the influence of acute stressors were appraised by different "teams", "positions", "marital status", "PST experience", "Education Plan" and "Team's performance level". In addition, a Mann-Whitney test was conducted to verify where significant differences occurred.

Pre-Competition

Team

Significant differences of appraisal direction between the teams were found only in "Coach's long speech in the changing room (H=11.18; P=0.03)". After conducting Mann-Whitney test, we found the significant differences occurred between Team 1 vs 2 (Z=-3, P<0.01) and Team 1 vs 3 (Z=-2.77, P=0.01). After excluding Team 1, the significant difference among other four teams has no longer exist (H=1.88, P=0.6). We conclude that Team 1 appraised "coach's long speech in the changing room" in a more positive way than other four teams. Refer to Table 4- 15 Appraisal direction by team.

Table 4-15 Appraisal Direction by team

Choch's long speech in the changing room

team	Mean	Std. Deviation
1	3.53[a]	.61
2	2.82	.64
3	2.87	.64
4	3.10	.79
5	2.73	1.27

a. 1-Strongly Negative, 2-Somewhat Negative, 3-No Effect, 4-Somewhat Positive, 5-Strong Positive

Positions

Significant difference of appraisal direction between the positions (Defender, Forwarder, Midfielder) was found in "Coach's long speech in the changing room" (H=7.43, P=0.02). We found the significant were in Defender vs Forwarder (Z=-2.64, P= 0.01) and Midfielder vs Forwarder (Z=-2.27, P=0.02). Forwarder tends to appraised "coach's long speech in changing room" in a more negative way than the other two positions. Please refer to Table 4- 16 Appraisal direction by positions (D,M,F).

Table 4-16 Appraisal direction by position (D,M,F)

Choch's long speech in the changing room

position	Mean	Std. Deviation
defender	3.19[a]	.75
midfielder	3.17	.80
forwarder	2.60	.63

a. 1-Strongly Negative, 2-Somewhat Negative, 3-No Effect, 4-Somewhat Positive, 5-Strong Positive

Education Plan

Significant difference of appraisal direction between secondary and secondary with examination was found only in "Lack of physical readiness or poor preparation

(Z=-2.2, P=0.03), and "Bad relationship with some of the teammates (Z=-2.91, P<0.01). Secondary with examination tended to appraise more negatively toward these two pre-competition stressors. Refer to Table 4- 17 Comparison of appraisal by Education level.

Table 4-17 Comparision of appraisal by Education level (S vs S+E)

	education	Mean	Std. Deviation
Lack of physical readiness or poor preparation	secondary school	2.84[a]	.97
	secondary school with maturita examination	2.36	.98
Bad relationship with some of the teammates	secondary school	3.10	1.11
	secondary school with maturita examination	2.37	.89

a. 1-Strongly Negative, 2-Somewhat Negative, 3-No Effect, 4-Somewhat Positive, 5-Strong Positive

Marital Status

Significant difference of appraisal direction between single and married players was found only in "Previous bad game result (Z=-2.02, P=0.04). Single players tended to appraise more negatively toward "Previous bad game result". Refer to Table 4-18 Appraisal by Marital status.

Table 4-18 Appraisal by Marital status

Previous bad game result		
marital status	Mean	Std. Deviation
Single	2.82	1.04
Married	3.30	.86

PST experience

There is no significant difference found in terms of PST experience. This might due to most of them who contacted PST were in school and only heard about it instead of took it into practice. Others experienced PST in clubs but only at very beginning stage. These are the possible explanation why there is no significant difference found.

Team's Performance level

Significant difference of appraisal direction between the two different team's performance level was found in "Coach's long speech in the changing room (Z=-2.09, P=0.04). Teams belonged to Top 5 level tended to appraisal more positively on "coach's long speech in the changing room". Please refer to Table 4- 19 Appraisal direction by team's level.

Table 4-19 Appraisal Direction by Team's level

Coach's long speech in the changing room

performance level	Mean	Std. Deviation
Top 5	3.18	.90
others	2.84	.63

In-Competition

Team

Significant differences of appraisal direction between the teams were found in seven in-competition stressors: "Make a goal-irrelevant game error (H=16.75; P<0.01)", "Make a goal-relevant game error (H=13.6, P=0.01), "Cheers from supporting spectators (H=12.74, P=0.01), "Teammate's shout at your mistake (H=12.09, P=0.02), "Opponent's scoring goals (H=11.71, P=0.02), "Continuous bad calls from referee (H=15.04, P=0.01), and "At last few mins, you have tied goals (H=12.45, P=0.01). Mann-Whitney test was conducted to verify where significant differences occurred between teams.

- "Make a goal-irrelevant game error", we found the difference occurred between team 1 vs 2 (Z=-2.82, P=0.01), team 1 vs 3 (Z=-3.43; P=0.01), team 1 vs 5 (Z=-3.11, P<0.01), and team 3 vs 4 (Z=-2.29, P=0.02). After excluding team 1, the

significant difference had no longer existed among other 4 teams (H=6.56, P=0.09). We concluded that Team 1 tended to appraise more positively on "make a goal-irrelevant game error" than others (Table 4-20).

- "Make a goal-relevant game error", we found the difference occurred between team 1 vs 3 (Z=-2.93, P=0.03), Team 1 vs 5 (Z=-2.43, P=0.02), Team 2 vs 3 (Z= -2.25, P=0.03) and Team 3 vs 4 (Z= -2.5, P=0.01). After excluding team 3, the significant difference had no longer existed among other 4 teams (H=5.91, P=0.12). Team 3 tended to appraisal more negatively than other four team in terms of "make a goal-relevant game error" (Table 4-20).

- "Cheers from supporting spectators", we found the difference occurred between team 1 vs 3 (Z=-2.52, P=0.01), Team 1 vs 5 (Z= -2.91, P=.0.01), and Team 2 vs 5 (Z=-2.22, P=0.03). After excluding team 1, the significant difference had no longer existed among other 4 teams (H=7.01, P=0.07). And when excluding Team 5, the significant difference also didn't exist among other four teams. From table 4-20 we could see both extreme of Team 1 which tended to appraise more negatively than other four team and Team 5 which tended to appraise more positively in terms of "cheers from supporting spectators".

- "Teammate's shout at your mistake", the significant difference were found between Team 1 vs 3 (Z= -2.83, P=0.01), Team 1 vs 5 (Z=-2.34, P=0.02) and Team 3 vs 4 (Z= -2.24, P= 0.03). Excluding Team 1 (H=6.01, P=0.12) or Team 3 (H=7.36, P=0.06), the significant difference didn't exist among other four teams. Team 1 tended to be more positive while team 3 tended to be more negative when appraising "Teammate's shout at your mistake" (Table 4-20).

- "Opponent's scoring goals", the significant difference were found between Team 1 vs 3 (Z= -2.83, P=0.01) and Team 1 vs 5 (Z=-2.81, P=0.01). Excluding Team 1 (H=5.01, P=0.17) or Team 5 (H=7.61, P=0.06), the significant difference didn't exist among other four teams. Team 1 tended to appraise more positive while team 5 more negative compared with other teams in terms of "opponent's scoring goals" (Table 4-20).

- "Continuous bad calls from referee". The significant difference were found between Team 1 vs 3 (Z=-3.51, P<0.01), Team 1 vs 4 (Z= -2.17, P= 0.03) and Team 1 vs 5 (Z= -2.58, P= 0.1). When excluding Team 1, the significant difference has no longer existed among other four teams (H=5.6, P=0.13). Team 1 tended to appraise more positively than other four teams toward "continuous bad calls from referee" (Table 4-20).

- "At last few mins, you have tied goals", The significant difference were found between Team 1 vs 2 (H= -2.49, P=0.01), Team 1 vs 3 (H=-3, P<0.01), Team 1 vs 4 (H= -2.58, P=0.01), and Team 1 vs 5 (H= -2.16, P=0.03). Excluding Team 1, the significant has no longer existed among other four teams (H=0.5, P=0.9). Team 1 tended to appraise more positively toward this stressor than other four teams (Table 4-20) Please refer to Table 4- 20 Appraisal direction by team.

Table 4-20 Apprasial Direction by Team

	team	Mean	Std. Deviation
Make a goal-irrelevant game error	1	3.21	.63
	2	2.53	.72
	3	2.20	.86
	4	3.00	.97
	5	2.36	.67
Make a goal-relevant game error	1	2.74	.99
	2	2.41	.87
	3	1.73	.88
	4	2.72	.86
	5	2.74	.99
Cheers from supporting spectators	1	1.73	.88
	2	2.55	1.15
	3	1.91	.54
	4	2.33	.99
	5	4.82	.40
Teammate's shout at your mistake	1	3.28	.83
	2	2.76	.90
	3	2.40	.74
	4	3.00	.73
	5	2.50	.71
Opponent's scoring goals	1	3.21	1.32
	2	2.59	1.18
	3	2.00	1.13
	4	2.55	1.15
	5	1.82	.75
Continuous bad calls from referee	1	3.16	1.07
	2	2.59	1.00
	3	1.93	.46
	4	2.40	.82
	5	2.00	.89
At last few mins, you have tied goals	1	3.95	.85
	2	3.29	.69
	3	3.13	.52
	4	3.20	.83
	5	3.27	.79

Playing Positions

There was not significant difference of appraisal direction for in-competition

stressors. Defender, Midfielder and Forwarder in CESPs tended to appraise in the same direction for in-competition stressors.

Education Plan

Significant difference of perceived intensity between secondary and secondary with examination was found only in "Kick penalty (Z=-2.48, P=0.01)". Secondary with examination tended to appraise more negatively in terms of kicking penalty. Please refer to mean value in Table 4- 21 Appraisal by education.

Table 4-21 Appraisal by Education (S vs S+E)

Kick penalty		
education	Mean	Std. Deviation
secondary school	3.73	1.11
secondary school with maturita examination	3.05	1.12

Marital Status

There was no significant difference of appraisal direction between single and married in terms of in-competition stressors.

PST experience

Significant difference between PST experiencer and non experiencer were in "Make a goal-irrelevant game error (Z=-2.55, P=0.01) and "Make a goal-relevant game error (Z= -2.67, P=0.01). We could find that players with PST experience tended to appraisal more positively than those without PST experience. Please refer to mean value in Table 4- 22 Apprasial direction by PST experience.

Table 4-22 Apprasial direction by PST experience

	Make a goal-irrelevant game error		Make a goal-relevant game error	
experience of psychological training	Mean	Std. Deviation	Mean	Std. Deviation
Yes	2.98	.96	2.66	1.17
No	2.46	.67	2.00	.63

Team's Performance level

Significant difference of appraisal direction between the two different team's performance level was found in "Make a goal-irrelevant game error (Z=-2.83, P<0.01)", "Teammate's shout at your mistake (Z= -2.27, P=0.02)" and "Kick penalty (Z= -2.44, P=0.01)". Teams belonged to Top 5 level tended to appraise more positively toward these three stressors Please refer to mean value in Table 4- 23 appraisal direction (in-competition) by Team's level.

Table 4-23 Appraisal Direction (in-competition) by Team's level

	Make a goal-irrelevant game error		Teammate's shout at your mistake		Kick penalty	
performance level	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Top 5	2.94	.84	3.00	.80	3.63	1.08
others	2.37	.79	2.59	.84	2.97	1.11

Age & League Years

After conducting "Bivariate Correlation analysis" and computing Spearman's correlation coefficient, we found no significant linear correlation between appraisal direction with age and league years.

4.3 Usage of Psychological Skill Training Methods

4.3.1 Ranking of PST Methods Usage

Czech elite soccer players (n=83) rated each of psychological skill training methods on a 5 point Likert scale ranging from never (1) to always (5). After conducting Chi-Square Goodness-of-Fit Test, we found the PST Methods usage inclination existed among CESPs except three methods: "Build individual rituals ($\chi2$=8.61, P=0.07)", "Control of breathing ($\chi2$=3.98, P=0.41)", and "Make game plan to prevent unexpected incidence ($\chi2$=6.41, P=0.17)". Result of Chi-Square test was list in Appendix F. After computing the mean value of usage frequency, we found that the PST methods which were reported the most frequently used are all group strategies, while individual strategies were reported less frequently. Frequency of PST Methods usage by CESPs was illustrated in Table 4- 24 Mean, SD and ranking of PST methods usage frequency.

Table 4-24 Mean, SD and ranking of PST Methods usage frequency

	Rank	Mean	Std. Deviation
Set team goals for the match	1	4.34[a]	1.04
Coach's pep talk	2	4.29	1.05
Meaningful or encouraging keywords in the changing room	3	4.26	1.03
Build team rituals	4	4.07	1.20
Talk to coach or teammates to find support	5	3.99	1.05
Imagery of positive performance	6	3.85	1.04
Set individual goals for the match	7	3.73	1.32
Listen to high evergy music	8	3.63	1.22
Mental rehearsal of the whole game strategy	9	3.51	1.13
Muscle relaxation techniques	10	3.42	1.21
Build individual rituals	0	3.39	1.45
Make game plan to prevent unexpected incidence	0	3.02	1.26
Positive self-talk	11	2.81	1.10
Control of breathing	0	2.76	1.37
Listen to relaxing music	12	1.70	.94

a. 1=Never, 2=Occasionally, 3=Sometimes, 4=Often, 5=Always

4.3.2 Inter-Individual Analysis of PST Methods Usage

A "Kruskal-Wallis test" was performed to examine the different frequency of PST methods were used by CESPs in terms of "teams", "positions", "marital status", "PST experience", "Education Plan" and "Team's performance level". In addition, a Mann-Whitney test was conducted to verify where significant differences occurred.

Team

Significant differences of PST methods usage frequency between the teams were found only in "Mental rehearsal of the whole game strategy (H= 13.72; P=0.01)", "Build team rituals (H=14.56, P=0.01)", and "Coach's pep talk (H=15.13, P<0.01).

- "Mental rehearsal of the whole game strategy". After conducting Mann-Whitney test, we found the significant differences occurred between Team 1 vs 2 (Z=-2.65, P=0.01), Team 1 vs 4 (Z=-2.19, P=0.03), Team 2 vs 5 (Z=-2.94, P<0.01), Team 3 vs 5 (Z=-2.18, P=0.03), and Team 4 vs 5 (H=-2.5, P<0.01). From Table 4-25 we found that Team 1 and Team 5 used this method much more frequently while Team 2, Team 3 and Team 4 used it more moderately.

- "Build team rituals". The differences we could find between Team 1 vs 2 (Z=-2.8, P=0.01), Team 2 vs 4 (Z=-3.11, P<0.01), and Team 4 vs 5 (Z=-2.18, P=0.03). From Table 4-25 we found that Team 1 & 4 used team ritual more often than Team 2 & 5 while Team 3 was quite moderate at the usage that it has no significant difference from other teams.

- "Coach's pep talk". The differences were found between Team 1 vs 2 (H=-3.52, P<0.01), Team 1 vs 3 (H=-2.59, P-0.01), Team 2 vs 5 (H=-2.08, P=0.04), Team 2 vs 4 (H=-2.16, P=0.03). From table 4-25 we could find that Team 1, team 4 and

team 5 used this method more than team 2 and team 3. Please refer to Table 4- 25 Mean of PST usage frequency by team

Table 4-25 Mean of PST Usage frequency by team

	Mental rehearsal of the whole game strategy		Build team rituals		Coach's pep talk	
team	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
1	3.95[a]	1.03	4.47	.96	4.79	.71
2	3.18	.88	3.29	1.45	3.59	1.37
3	3.27	1.22	4.13	.99	4.07	1.03
4	3.15	1.27	4.60	.68	4.45	.83
5	4.30	.67	3.55	1.51	4.55	.82

a. 1=Never, 2=Occasionally, 3=Sometimes, 4=Often, 5=Always

Playing Positions

Significant difference of appraisal direction between the positions (Defender, Forwarder, Midfielder) was found in "Listen to high energy music" (H=7.28, P=0.03). We found the significant were in Defender vs Forwarder (Z=-2.45, P= 0.01) and Midfielder vs Forwarder (Z=-2.15, P=0.01). Forwarder tends to listen to high energy music more often than Defender and midfielder. Please refer to Table 4- 26 Mean of PST Usage frequency by Position.

Table 4-26 Mean of PST Usage frequency by Position

Listen to high evergy music		
position	Mean	Std. Deviation
defender	3.50[a]	1.27
midfielder	3.52	1.27
forwarder	4.40	.99

a. 1=Never, 2=Occasionally, 3=Sometimes, 4=Often, 5=Always

Education Plan

Significant difference of PST Methods usage frequency between secondary and secondary with examination were found in "Positive self-talk (Z=-2.65, P=0.01), and "Coach's pep talk" (Z=-2.19, P=0.03). Secondary with examination tended to use more positive self-talk and listen less to coach's pep talk compare with Secondary school players. Please refer to Table 4- 27 for Mean value of PST usage frequency by Education.

Table 4-27 Mean of PST Usage frequency by Education

	Coach's pep talk		Positive self-talk	
education	Mean	Std. Deviation	Mean	Std. Deviation
secondary school	4.58[a]	.76	2.37	.76
secondary school with maturita examination	4.02	1.18	3.07	1.21

a. 1=Never, 2=Occasionally, 3=Sometimes, 4=Often, 5=Always

Marital Status

Significant difference of PST Methods usage frequency between single and married players were found in "Positive self-talk (Z=-2.62, P=0.01)", "Listen to relaxing music (Z=-2.06, P=0.04), "Imagery of positive performance (Z=-2.22, P=0.03)" and "Make game plan to prevent unexpected incidence (Z=-2.15, P=0.03)". From Table 4-28 we could find that single players tend to use more positive self-talk, listen to relaxing music and imagery of positive performance while less in making game plan to prevent unexpected incidence.Table 4- 28 Mean of PST Usage frequency by Marital Status.

Table 4-28 Mean of PST Usage frequency by Marital Status

	Positive self-talk		Listen to relaxing music		Imagery of positive performance		Make game plan to prevent unexpected incidence	
marital status	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Single	3.00[a]	1.07	1.81	.97	3.98	1.01	2.85	1.30
Married	2.25	1.02	1.35	.75	3.45	1.05	3.55	.94

a. 1=Never, 2=Occasionally, 3=Sometimes, 4=Often, 5=Always

PST experience

Significant difference between players who had PST experience and those who did not have PST experience were found in 'Positive talk (Z=-2.32, P=0.01)" and "Muscle relaxation techniques (Z=-3.5, P<0)". Players with PST experience tended to use these two methods more frequently than others. This might due to their PST experience where they got more touch with these two methods. Please refer to Table 4-29 for mean value of PST usage frequency by PST experience.

Table 4-29 Mean of PST Usage frequency by PST Experience

	Positive self-talk		Muscle relaxation techniques	
experience of PST training	Mean	Std. Deviation	Mean	Std. Deviation
Yes	3.11[a]	1.06	3.90	.98
No	2.54	1.07	2.95	1.24

a. 1=Never, 2=Occasionally, 3=Sometimes, 4=Often, 5=Always

Team's Performance level

There were lots of significant differences found in the frequency of PST methods by different team's performance level. The significant difference were found in "Build individual rituals (Z=-2.16, P=0.03), "Mental rehearsal of the whole game strategy (Z=-2.28, P=0.02)", "Muscle relaxation techniques (Z=-2.02, P=0.04)", "Build team rituals (Z=-2.56, P=0.01)", and "Coach's pep talk (Z=-3.42, P<0.01). From Table 4-30 we could found that Top 5 teams tended to use more of these methods than other teams. It might imply the importance of these methods to be a better team.

Please refer to Table 4- 30 for mean value of PST Usage frequency by Team's performance level.

Table 4-30 Mean of PST Usage frequency by Team's performance level

	performance level	Mean	Std. Deviation
Build individual rituals	Top 5	3.66[a]	1.39
	others	2.97	1.45
Mental rehearsal of the whole game strategy	Top 5	3.69	1.16
	others	3.22	1.04
Muscle relaxation techniques	Top 5	3.65	1.09
	others	3.06	1.32
Build team rituals	Top 5	4.32	1.08
	others	3.69	1.31
Coach's pep talk	Top 5	4.60	.78
	others	3.81	1.23

a. 1=Never, 2=Occasionally, 3=Sometimes, 4=Often, 5=Always

Age

After conducting "Bivariate correlation analysis", we found three methods have slightly positive linear correlation with Age: "Talk to coach or teammates to find support (r=0.3, P=0.01)", "Make game plan (r=0.22, P=0.04)" and "Control of breathing (r=0.28, P=0.01).

Years in League

After conducting "Bivariate correlation analysis", we found "Make game plan" has slight positive linear correlation with league year (r=0.23, P=0.04) and "Control of breathing" has medium positive linear correlation with league year (r=0.42, P<0.01).

Chapter 5 Discussion and Conclusions

5.1 Findings and Discussion

Some interesting findings were concluded from the results of investigating CESPs. Discussion was made by comparing the findings with other studies and giving possible explanation for the results.

Finding 1: All the pre-competition stressors which were perceived with high intensity (Median $\geq$4) were all appraised strongly positive (Median $\geq$4).

Those pre-competition stressors which were identified with high arousal intensities by CESPs such as "high importance of the game", "Previous good game result", "Compete with stronger team", " Large amount of spectators" and "High expectation from coach" were all appraised strongly positively. Instead of feeling anxious, CESPs tends to be more motivated and excited when encounter such stressors which might cause high intensity of arousal. The finding reassures the importance of investigation the interpretation of stress instead of viewing stress only in debilitative direction and the perceived stress should be studied in both "intensity" and "direction" aspects (Jones et el., 1994; Jones & Swain, 1992; Kerr, 1985). The reasons why those stressors with high arousal intensity were appraised positively might due to: 1) Soccer is the kind of game which high arousal is needed. According to some research (Krane & Williams, 1987; Simons & Martens, 1979), type of sport (i.e., contact vs noncontact, individual vs team, objective vs subjective scoring) is important for deciding optimal arousal and soccer is suggested to have higher level of arousal by Oxendine (1970). 2) CESPs are players with high skill level and the skill level will influence the appraisal direction according to some researchers (Heckhausen, 1990; Hembree, 1988; Kroll,

1979). Although to what extent should CESPs be aroused in order to reach optimal functioning level (Hanin & Syrja, 1995) needs more research in both "soccer game" and "individual" aspects, it is important for practitioners to be aware of the needs of arousal before the competition especially CESPs are highly skilled athletes who need a moderately high level of arousal for maximum performance (Cox, 1990). The finding suggest that "Importance of the game to individual and team", "Expectation of success and challenge", and "Spectator" are sources for facilitative arousal which could be used as enhancement of motivation for CESPs.

Finding 2: Cheer from spectators during competition has the biggest positive effect on player's psychological status.

From the investigation, cheers from spectators was perceived with high intensity and appraised strongly positively among CESPs. The reaction CESPs have toward spectators is quite consistent to previous studies on arousal and appraisal of spectators. In sport study, presence of spectators has been found having influence on athletes' performance and identified as influential source of anxiety (Anshel, 1996; Fisher & Zwart, 1982a; Kim et al., 2002; Scanlan et al., 1991). Supporting spectators are appraised positively because they are the main source of home advantage in soccer competition. It brings environment comfort to let players feel comfortable in a competitive environment which results in increasing of both self- confidence (Courneya & Carron, 1992) and team-efficacy (Bray & Widmeyer, 2000) and hence facilitate players' performance. Zajonc's (1965) general theory of social facilitation suggested that the crucial thing that determines whether an audience will enhance or inhibit performance depends on the interaction of three factors: Task difficulty, skill level and type of audiences. Simply, when novices perform a difficult task before an audience,

they will perform poorly, whereas experts will perform well. The finding supports Zajonc's theory that high skill players have positive interaction with spectators and spectators serve as reinforcement of motivation for CESPs during competition.

Finding 3: There are three biggest threats during competition which were appraised very negatively with high perceived intensity: "Make a goal-relevant game error", "Opponent's scoring goals", and "Continuous bad calls from referee".

These three biggest negative stressors identified by CESPs were concluded from cross evaluation of stress intensity and appraisal direction. The identified negative stressors are similar to previous studies of anxiety in different sports with different research methods. "Ongoing Game Situations" were the main source of when Dunn & Nielsen (1996) investigated anxiety-inducing situations for 185 athletes from four team sports (basketball, field hockey, ice hockey and soccer). In Nicholls et al's (2005) diary study on stressors of international adolescent golfers, they find the most frequently reported stressors are physical error, mental error and opponent playing well. And also from Anshel's (2001) interview study of 28 professional rugby league players, the most frequently reported stressors were physical error, opponent cheating, referee's decision and experiencing pain. The consistent findings have two important implications: 1) It supports that the questionnaire intended to explore stressors by perceived intensity and appraisal direction is effective. The proven effectiveness of the questionnaire urges us to complete the questionnaire construction with validity and reliability since it is efficient investigation tool to identify stressors especially when the target objects are in great numbers. And 2) The degree to which players can control the situations they encounter appears to be crucial since they cause debilitative effect on athletes' performance across sports. Suggestions from researchers (Krohne, 1993; Roth & Cohen, 1986) to reduce the

negative emotional arousal or deal with continuous tasks and open, unstable environments, cognitive avoidant coping strategies are high recommended. Krohne and Hindel (1988) found that successful elite table tennis players used avoidant coping strategies and experienced less state anxiety following performance errors than their less successful teammates. In Nicholls et al's (2006) study also showed that the effective coping strategy identified by professional rugby players to deal with physical error is by increasing concentration on task.

Finding 4: Team dynamics has profound influence on the appraisal direction of stressors.

From the results of comparing appraisal direction by teams, we found diversity in most of the categories: personal performance, Teammate/ Coach/ Opponent/ Referee/ Audience behavior, and in critical time. Teams have different inclination of appraisal direction in most of the stressors. These differences imply that team dynamics such as team cohesion, team efficacy do have profound effects on players' psychological status during competition and hence influence players' appraisal direction. The supportive findings of the influence of team dynamics on players' interpretation of stressors are important for the study of team dynamics even though we are not going to discussed it in this research. However, if we only focus on team-efficacy aspect from team dynamics, we still find some satisfactory explanations: 1) Team's performance level: when we compare the appraisal direction by teams, we found that team 1 which belongs to top 5 level of group tended to appraise stressors in more facilitative direction while team 3 which was excluded from top 10 out of 16 teams appraise stressors in more debilitative direction. When we compare Top 5 group with the other group, we also found appraisal difference in "making game error" and "teammate's shout at your mistakes" where top 5

level appears to be more positive to these stressors than the other group. The finding is consistent with Jones, Hanton and Swain's study (1994) which noted that elite performers had higher levels of facilitative versus debilitative cognitive and somatic anxiety symptoms compared to nonlite counterparts, 2) Coach's leadership style: from the investigation, we found all the coach-related stressors except coach's long speech before competition were perceived differently by teams in terms of intensity. According to Horn's (1985) assertion, coaches as significant others in social climate play important role in players' confidence. Studies found that reinforcement (Weinberg et al., 1992) from significant others as an important facilitator of perceived competence and was one of the most common strategies used by coaches. It is important for coaches to create positive team dynamics by applying "Autonomous coaching styles" which encourages players participate in individual and team goal setting and was proved (Horn & Harris, 1996) to be more effective to enhance team's efficacy and motivation than controlling leadership styles. Taken together with Greenlees et al's (1999b) finding, team-efficacy influences pre-competition affect and state anxiety of individuals. Practitioners should work on the enhancement of team efficacy to direct the appraisals of in and pre competition stressors into positive direction and hence facilitate team performance especially when research (Mayers *et al.*, 2004; Watson *et al.*, 2001) has proved the positive relationship between team efficacy and team performance.

Finding 5: Defenders tend to be more aroused by negative events while Forwarders response more to positive events.

From the results comparing positions, we found that Defenders have higher perceived intensity in terms negative events such as previous bad game results, making game errors, or opponent's scoring goal, while Forwarders have significant higher

perceived intensity by fans' cheering. These differences are crucial for implementing PST for CESPs in different positions. In this case, defenders need more PST methods such as positive self-talk, thought control, support from others to increase confidence while forwarders should focus on concentration methods such as cue words to avoid distraction from spectators which on the other hands could serve as good source of motivation for forwarders.

Finding 6: Teams belongs to Top-5 level were reported to use PST methods more frequently than the other group.

When we tried to compare the usage of PST methods by various factors such as teams, playing positions, education preparation and etc., we found that the differences existed mainly when we compared different team's performance level. In all the differences, "top 5 level" reported to use PST methods such as "individual rituals", "relaxing music", "muscle relaxation", "game plan" and "team rituals" more frequently than the other group. This higher usage frequency of PST methods by Top-5 level teams served as evidence that PST methods do help teams to enhance their performance. From the investigation we also could find that top four PST methods used among CESPs all belonged to team methods such as team's goal setting, coach's pep talks, cue words in dressing room, and team rituals. The insufficient usage of individual PST methods might potentially cause the three biggest threats discovered in Finding 3. Therefore, to help players better deal with these uncontrollable events during competition, we recommend that the priority of implementation of psychological skill training should focus on "though control" to regain concentration and confidence in on-going situation. The suggestions of effective PST methods for this purpose include: 1) Positive Self-talk: players manage their own thoughts and believe in the thoughts. Stop thinking negative

things, focus on the positive part and reframe the thoughts by looking at events in more productive way, 2) Post-mistake routine: routines could be in both behavioral (e.g., self rituals, breathing control) and cognitive (e.g., cue word, imagery) formation. It helps athletes to focus on task-relevant thoughts and structures the player's thought process and emotional states, keeping the focus of attention in the present and on task-related cues instead of thinking and regretting his previous mistake. and 3) Support mechanism from teammates and coaches: the support could be expressed by coaches' gesture, verbal persuasion, teammate's behaviors to ensure players that they are not alone and hence help players feel confident in himself, in team when making mistakes, motivate them continue to try their best even when the game situation is not on their side and regulate negative arousal when uncontrollable events like officiation occurs.

5.2 Conclusion

The research aimed to identify soccer player's stress source and usage of PST methods under the conceptual framework (Figure 2-2) concluded from antecedent studies. The questionnaire was derived from the framework to investigate players' perceived intensity and appraisal direction of acute stressors. The effectiveness of the questionnaire was supported by the consistent findings with previous studies where other research methods such as interview (Anshel, 2001) and diary study (Nicholls, 2005) were used. Through the investigation, we have more clear understanding about how CESPs perceive and appraise different stressors. The findings of potential threats, motivational needs, team dynamics and PST implementations are important for practitioners who try to enhance CESPs performance. These contextual stressors are likely to have implications for the practitioner in terms of PST methods that may be taught. The different perceived intensities and appraisals of stressors in terms of teams

and playing positions implies the influential power of team cohesion and unique needs for different playing positions. Coaches need to possess a complete understanding of the nature of stress and its relationship to soccer competition, as well as effective PST methods for psychological skills which are important to achieve peak performance of soccer players. Future improvement of the questionnaire is expected to complete the investigation tool with validity and reliability. The refined questionnaire could serve as an efficient tool for soccer coaches in identifying stress source and PST methods for the improvement of their player's psychological preparation for soccer competition. There was a hope that the efforts made to clarify the construct of stress process model and the finings from the questionnaire contributed to the advancement of stress study in sport psychology.

5.3 Limitations of the Research

Although the present study has yielded findings that have both theoretical and practical implications, its design is not without flaws. The language barriers prevented me from collecting more sources of stress directly from interviewing players. Even though efforts were made to exhausted related literature and previous studies for identifying stress sources, specific stressors to CESPs could not be explored. And also the timing executing questionnaire is debatable since it focuses on acute stressors which might be more "truly" reflected when doing the investigation right before or after competition. Despite these limitations, the approach described here can provide useful insights and hypotheses for applied sport psychologists in investigating soccer player's stress process and implication for other sport game.

5.4 Recommendations for Future Research

In the process of stress study on soccer players, I found some important issues in both stress and soccer areas where further research will be recommended: 1) Stress study: the efforts made to identify the perceived intensity of stressors instead of only focusing on appraisals direction when investigating stress sources should be carried on in order to have holistic view on the stress process. And the study focus on acute stress instead of chronic stress in specific sports setting is still insufficient; there is the need to identify acute stress in a systematical way for different types of sports (e.g., team sport, individual sport, combat sport and etc.) which will further benefit the intervention of psychological skill training for application purpose. 2) Sport Psychology of Soccer: The experimental attempt to investigate soccer player's acute stress source and usage of PST methods by questionnaire was proved to be effective. Future work will hopefully clarify this important reliability and validity concern of the Questionnaire and future research should aim at investigating stress source and PST methods with qualitative methods to complete the questionnaire. And besides understanding stress in individual level, the effort should also be put on how the team dynamics influence soccer players in perception and interpretation of stress because soccer is the kind of sport where players are highly interdependent (interdependent tasks, goals and consequences), team dynamics play important role in the perception and interpretation of stress which has been pointed out in the finding of this research.

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Appendix A

Stress Source, Appraisal, and PST methods Questionnaire - English version

Dear Players:

To help you improve your mental strength in football matches, we have to know what kinds of psychological trainings you might need. Therefore we create the questionnaire to identify two things:

1) The sources of stress you have in football matches, and

2) The psychological skills you have to deal with these stresses

This questionnaire is for research purpose only and your answers will be totally confidential, Please feel comfortable to write down your true feelings since your honesty will help both you and us clearly identify the problems we have to deal with!!

Thank you for your time and patience filling in the questionnaire, your cooperation is going to contribute a lot to the improvement of the qualityyou're your training.

Researcher Meichi Chen

Supervisor Mgr Eva Tomesova, Ph.D

January 2007

I. Basic Information

1. Age: _____

2. How long have you been play in Gambrinus League?____years ____monthes

3. What team do you play_____?

4. Position:

___1.Defender; ___2.Midfielder; ___3.Forwarder; ___4.Goalkeeper;

___5. Midfielder + Defender; ___6. Midfielder + Forwarder

5. Education:

___1.Basic school; ___2.Secondary school ___3.Secondary school with maturity exam;

___4.Higher education

6. Marital Status: ___1.Single; ___2.Married

7. Have you ever done any psychological/mental training? ___1.Yes; ___2.No

II. Source of Stress, Intensity and personal appraisal before competition:

Now imaging that you are going to have a football match:

1) Please read description of different kinds of situations and check the box ☒ to identify "how much" it usually affect your emotion/psychological status and make you feel stressed, angry or motivated.

1.Not at all 2.Not very much 3.Moderately much 4.Very Much 5.Extremely much

2)What do you think will be it's effect on your performance?

1.Strongly negative 2.Somewhat Negative 3.No effect 4.Somewhat positive 5.Strongly Positive

Before Competition	1 2 3 4 5	1 2 3 4 5
1. High Importance of the game to your team	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
2. High Importance of the game to yourself	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
3. Previous good game result	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
4. Previous bad game result	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
5. Compete with much stronger team	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
6. Compete with well-matched team	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
7. Lack of experience to the competition	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
8. Lack of physical readiness or poor preparation	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
9. Compete in opponent's stadium (guest)	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
10. Compete in your club's stadium (host)	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
11. Play in poor conditions (bad weather/stadium)	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
12. Unfamiliar with the playing stadium	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
13. Large amount of spectators	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
14. Coach's long speech in the changing room	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
15. High expectation from coach, teammate, fans	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
16. Bad relationship with some of the teammates	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
17. Bad relationship with coach	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
18. Previous injury	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
19. Occurrence of personal unexpected misfortune	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐

➢ Please advise whether there is any other factor that will make you feel stressed, or motivated when you are in the changing room waiting for the start of the football match?

III. Source of Stress, Intensity and personal appraisal during competition:

Now, imaging that the match has started and you are now playing on the field:

1) Please read description of different kinds of situations and check the box ☒ to identify "how much" it usually affect your emotion/psychological status and make you feel stressed, angry or motivated.

1.Not at all 2.Not very much 3.Moderately much 4.Very Much 5.Extremely much

2)What do you think will be it's effect on your performance?

1.Strongly negative 2.Somewhat Negative 3.No effect 4.Somewhat positive 5.Strongly Positive

During Competition	1 2 3 4 5	1 2 3 4 5
20. Make a goal-irrelevant game error	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
21. Make a goal-relevant game error	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
22. Pain of sudden injury	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
23. Get a yellow card	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
24. Boo from antagonistic spectators	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
25. Hear unpleasant comments from commentator	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
26. Cheers from supporting spectators	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
27. Coach's shout at your mistake	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
28. Coach's shout at your teammate's mistake	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
29. Teammate's shout at your mistake	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
30. Teammates make a goal-irrelevant game error	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
31. Teammates make a goal-relevant game error	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
32. Opponent's scoring goals	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
33. Opponent's continuous success	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
34. Opponent's provoking behaviors	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
35. Continuous bad calls from referee	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
36. At last few mins, your team is ahead by 1 goal	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
37. At last few mins, you have tied goals	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
38. At last few mins, you team is behind by 1 goal	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
39. Kick penalty	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐

- Please advise whether there is any other situation happened during competition which will make you feel stressed, anxious?

IV. Psychological techniques used before competition

Please check the box ☒ to identify how often you use the psychological techniques to deal with the stress you have when you are in changing room waiting for the start of the match. Thanks!

1.Never 2.Occasionally 3.Sometimes 4.Often 5. Always

Psychological techniques	1	2	3	4	5
40. Positive self-talk	☐	☐	☐	☐	☐
41. Build individual rituals	☐	☐	☐	☐	☐
42. Listen to high energy music (strong, fast tempo)	☐	☐	☐	☐	☐
43. Listen to relaxing music (soft, slow tempo)	☐	☐	☐	☐	☐
44. Mental rehearsal of the whole game strategy	☐	☐	☐	☐	☐
45. Imagery of positive performance	☐	☐	☐	☐	☐
46. Muscle relaxation techniques	☐	☐	☐	☐	☐
47. Control of breathing	☐	☐	☐	☐	☐
48. Set individual goals for the match	☐	☐	☐	☐	☐
49. Talk to coach or teammates to find support	☐	☐	☐	☐	☐
50. Set team goals for the match	☐	☐	☐	☐	☐
51. Meaningful or encouraging keywords in the changing room	☐	☐	☐	☐	☐
52. Make game plan to prevent unexpected incidence (what if...)	☐	☐	☐	☐	☐
53. Build team rituals	☐	☐	☐	☐	☐
54. Coach's pep talk	☐	☐	☐	☐	☐
Other "Team" strategies?					
Other "Personal" strategies?					

V. Psychological techniques used during competition

Below is a list of stress reactions/situation that might happen ***during competition***, please write down your strategies to deal with the stress *if any*! Thanks!

Stress situation	*Strategies:*
Lose confidence to yourself	
Lose confidence to your team	
Lose concentration	
Physical Exhaustion	
Lose control of your emotion	
Kick penalty	
Face intensively competitive situation at the end of game	

This is the end of the survey, thanks again for your attention and cooperation. If you are interested in the findings of the survey, please leave your e-mail:_____

Best wishes to your coming matches and Good Luck!!! Meichi Chen Jan.2007

Appendix B

Stress Source, Appraisal, and PST methods Questionnaire"- Czech version

Milí hráči,

Rádi bychom Vás poprosili o pomoc při výzkumu, který se snaží zlepšit psychologickou přípravu fotbalistů. Dotazník, který máte před sebou, zjišťuje

a) zdroje stresu při fotbalových zápasech

b) způsoby, jakými se s nimi vyrovnáváte

Dotazník je určen pouze pro výzkumné účely, Vaše odpovědi zůstanou anonymní. Na položené otázky neexistuje žádná špatná ani správná odpověď, zajímají nás Vaše opravdové pocity. Vaše upřímnost pomůže nám i Vám identifikovat problémy, kterým při zápasech čelíte.

Děkujeme Vám za čas a pozornost, kterou dotazníku věnujete. Vaše odpovědi mohou napomoci zlepšení psychologické přípravy ve fotbale.

Meichi Chen, diplomantka
Mgr. Eva Tomešová, Ph.D., vedoucí práce
FTVS UK, oddělení psychologie, leden 2007

I. Základní informace (Prosím dopište nebo zaškrtněte):

1. Věk: _____

2. Jak dlouho hrajete na extraligové úrovni?_____roků, _____ měsíců

3. V jakém týmu hrajete? _____

4. Na jaké hrajete pozici?
___1. obránce; ___2. záložník; ___3. útočník; ___ 4. brankář
___5. záložník a obránce; ___6. záložník a útočník

5. Jaké je Vaše nejvyšší dosažené vzdělání?
___1. základní; ___2. středoškolské; ___3. středoškolské s maturitou;
___4.vysokoškolské

6. Stav: ___1. svobodný; ___2. ženatý

7. Dělal jste někdy něco z psychologické přípravy? ___1. Ano; ___ 2. Ne

II. Zdroje stresu, jeho intenzita a interpretace - před zápasem

Představte si, že se chystáte na zápas:

1) Přečtěte si prosím popis různých situací a zaškrtněte čtvereček ☒ podle toho, jak moc tato situace obyčejně ovlivní Váš psychický stav (změna pocitů, cítíte se stresovaní, naštvaní nebo naopak i motivovaní či „vyhecovaní")

1. vůbec ne 2. nepatrně 3. málo 4. trochu více 5. velmi

2) Jaký to má podle Vašeho názoru vliv na Váš výkon?

1. velmi negativní 2. spíše negativní 3. žádný 4. spíše pozitivní 5. velmi pozitivní

Před zápasem	1 2 3 4 5	1 2 3 4 5
1. Zápas je velmi důležitý pro tým	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
2. Zápas je velmi důležitý pro mě osobně	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
3. V minulém zápase jsme uspěli	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
4. V minulém zápase jsme neuspěli	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
5. Hrajeme s o mnoho silnějším týmem	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
6. Hrajeme s týmem stejné úrovně	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
7. Nemám dostatek zkušeností	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
8. Nejsem dostatečně fyzicky připravený	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
9. Hrajeme na cizím stadiónu (hosté)	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
10. Hrajeme na našem stadiónu (domácí)	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
11. Špatné herní podmínky (špatné počasí, trávník)	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
12. Hrajeme na neznámém stadiónu	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
13. Velké množství diváků	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
14. Trenérova dlouhá řeč v šatnách	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
15. Vysoká očekávání trenéra, spoluhráčů, fanoušků	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
16. Špatné vztahy s některými spoluhráči	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
17. Špatné vztahy s trenérem	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
18. Nedávné zranění	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐
19. Osobní problémy	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐

➢ Je tu ještě nějaká jiná situace před začátkem zápasu, která kladně či záporně působí na Vaši psychiku? Prosím popište ji zde:

III. Zdroje stresu, jeho intenzita a interpretace - během zápasu

Představte si, že hrajete zápas:

1) Přečtěte si prosím popis různých situací a zaškrtněte čtvereček ☒ podle toho, jak moc tato situace obyčejně ovlivní Váš psychický stav (změna pocitů, cítíte se stresovaní, naštvaní nebo naopak i motivovaní či „vyhecovaní")

1. vůbec ne 2. nepatrně 3. málo 4. trochu více 5. velmi

2) Jaký to má podle Vašeho názoru vliv na Váš výkon?

1. velmi negativní 2. spíše negativní 3. žádný 4. spíše pozitivní 5. velmi pozitivní

Během zápasu	1	2	3	4	5	1	2	3	4	5
20. Udělám chybu, která nezpůsobí, že dostaneme gól	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
21. Udělám chybu, která způsobí, že dostaneme gól	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
22. Bolest náhlého zranění	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
23. Dostanu žlutou kartu	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
24. Pískání nespokojených diváků nebo fanoušků soupeře	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
25. Nepříjemné poznámky komentátora	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
26. Povzbuzování fanoušků	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
27. Trenérův křik kvůli mé chybě	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
28. Trenérův křik kvůli chybě spoluhráče	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
29. Křik či poznámka spoluhráče kvůli mé chybě	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
30. Chyba spoluhráče, která nezpůsobí, že dostaneme gól	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
31. Chyba spoluhráče, která způsobí, že dostaneme gól	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
32. Dostali jsme gól	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
33. Dlouhotrvající úspěch našich soupeřů	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
34. Provokování od protihráčů	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
35. Dlouhotrvající chyby rozhodčího	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
36. Během posledních pár minut zápasu vedeme o jeden gól	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
37. Během posledních pár minut zápasu je stav nerozhodný	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
38. Během posledních pár minut zápasu prohráváme o jeden gól	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
39. Kopu penaltu	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

➢ Je tu ještě nějaká jiná situace během zápasu, která kladně či záporně působí na Vaši psychiku? Prosím popište ji zde:

IV. Psychologické techniky používané před zápasem

Prosím zaškrtněte ☒, jak často používáte před zápasem (v šatně) pro snížení stresu následující psychologické techniky.

1. Nikdy 2. Zřídka 3. Občas 4. Často 5. Vždy

psychologické techniky.	1	2	3	4	5
40. Pozitivní sebeinstrukce	☐	☐	☐	☐	☐
41. Osobní rituály	☐	☐	☐	☐	☐
42. Poslech energické hudby (hlasitá, rychlá)	☐	☐	☐	☐	☐
43. Poslech relaxační hudby (klidná, pomalá)	☐	☐	☐	☐	☐
44. Projíždění představy herní strategie	☐	☐	☐	☐	☐
45. Představování si úspěšného výkonu	☐	☐	☐	☐	☐
46. Svalová relaxace	☐	☐	☐	☐	☐
47. Dechová cvičení	☐	☐	☐	☐	☐
48. Stanovování si osobních cílů pro zápas	☐	☐	☐	☐	☐
49. Rozhovor s trenérem a spoluhráči	☐	☐	☐	☐	☐
50. Stanovení týmových cílů pro zápas	☐	☐	☐	☐	☐
51. Povzbuzující pokřiky nebo hesla v šatně	☐	☐	☐	☐	☐
52. Plánování strategií pro neočekávané situace (co když...)	☐	☐	☐	☐	☐
53. Týmové rituály	☐	☐	☐	☐	☐
54. Trenérova motivační řeč	☐	☐	☐	☐	☐
55. Jiné „týmové“ strategie (prosím napište)					
56. Jiné „osobní“ strategie (prosím napište)					

V. Psychologické techniky používané během zápasu

Následuje seznam stresových reakcí nebo situací, které mohou nastat během zápasu. Prosím napište, jaké strategie používáte k tomu, aby jste je psychicky zvládli.

Stresová situace	*Strategie*
Ztráta sebedůvěry.	
Ztráta důvěry v tým.	
Ztráta koncentrace.	
Fyzické vyčerpání	
Ztráta kontroly nad vlastními emocemi.	
Kopu penaltu	
Napjatá situace před koncem utkání.	

Toto je konec dotazníku. Velmi Vám děkujeme za vaši pozornost a spolupráci. Pokud Vás zajímají celkové výsledky našeho výzkumu, napište zde email, na který je můžeme zaslat:_____

Přejeme Vám i Vašemu týmu mnoho úspěchů v dalších zápasech! Meichi Chen leden 2007

Appendix C

Ranking, mean scores and standard deviations of acute stressors

Appendix C-1 Ranking, mean scores and standard deviations of 19 acute pre-competition stressors

Pre-competition Stressors		Rank	Mean	Std. Deviation
Importance	High Importance of the game to yourself	1	4.22	.92
Importance	High Importance of the game to your team	2	4.15	.92
Expectation	Previous good game result	3	3.74	1.20
Environment	Large amount of spectators	4	3.71	1.32
Expectation	Compete with much stronger team	5	3.67	1.22
Expectation	High expectation from coach, teammate, fan	6	3.38	1.01
Expectation	Compete in your club's stadium	7	3.21	1.34
Significant others	Bad relationship with coach	8	3.18	1.52
Personal	Lack of physical readiness or poor preparation	9	3.18	1.37
Expectation	Previous bad game result	10	3.13	1.22
Personal	Previous injury	11	3.11	1.23
Expectation	Compete with well-matched team	12	3.11	1.15
Expectation	Compete in opponent's stadium	13	2.91	1.10
Expectation	Lack of experience to the competition	14	2.82	1.26
Significant others	Bad relationship with some of the teammates	15	2.79	1.29
Personal	Occurrence of personal unexpected misfortune	16	2.70	1.38
Environment	Play in poor conditions	17	2.66	1.03
Environment	Unfamiliar with the playing stadium	18	2.56	1.16
Significant others	Coach's long speech in the changing room	19	2.52	1.09

Appendix C-2 Ranking, mean scores and standard deviations of 20 acute in-competition stressors

In-competition Stressors		Rank	Mean	Std. Deviation
Criticality Time	At last few mins, your team is behind by 1 goa	1	3.84	1.26
Audience's Behavior	Cheers from supporting spectators	2	3.82	1.33
Personal Performance	Make a goal-relevant game error	3	3.78	1.01
Opponent's Performance	Opponent's scoring goals	4	3.62	1.19
Criticality Time	Kick Penalty	5	3.58	1.29
Referee's Behavior	Continuous bad calls from referee	6	3.56	1.05
Criticality Time	At last few mins, your team is ahead by 1 goal	7	3.53	1.21
Criticality Time	At last few mins, you have tied goals	8	3.28	1.16
Personal Performance	Pain of sudden injury	9	3.17	1.24
Coach's behavior	Coach's shout at your mistake	10	2.99	1.05
Personal Performance	Make a goal-irrelevant game error	11	2.81	1.04
Opponent's Performance	Opponent's continuous success	12	2.77	1.33
Team's Performance	Teammates make a goal-relevant game error	13	2.74	1.22
Team's Performance	Teammate's shout at your mistake	14	2.70	1.11
Audience's Behavior	Boo from antagonistic spectator	15	2.43	1.12
Opponent's Performance	Opponent's provoking behaviors	16	2.40	1.17
Team's Performance	Teammates make a goal-irrelevant game erro	17	1.99	1.01
Criticality Time	Get a yellow card	18	1.99	1.01
Audience's Behavior	Hear unpleasant comments from commentato	19	1.98	1.08
Coach's behavior	Coach's shout at your teammate's mistake	20	1.95	.91

Appendix D

Chi-Square Test on Inclination and Median of Perceived Intensity

Appendix D-1 Chi-Square Test on inclination of perceived intensity (pre-competition stressor)

	Chi-Square	df	Asymp. Sig.
High importance of the game to your team	33.02	3	.00
High importance of the game to yourself	34.78	3	.00
Previous good game result	22.89	4	.00
Previous bad game result	11.00	4	.03
Compete with much stronger team	29.59	4	.00
Compete with well-matched team	19.71	4	.00
Lack of experience to the competition	10.56	4	.03
Lack of physical readiness or poor preparation	4.71	4	.32
Compete in opponent's stadium	20.54	4	.00
Compete in your club's stadium	4.12	4	.39
Play in poor conditions	28.49	4	.00
Unfamiliar with the playing stadium	18.00	4	.00
Large amount of spectators	26.17	4	.00
Coach's long speech in the changing room	20.80	4	.00
High expectation from coach, teammate, fans	37.70	4	.00
Bad relationship with some of the teammates	7.63	4	.11
Bad relationship with coach	8.85	4	.06
Previous injury	10.91	4	.03
Occurence of personal unexpected misfortune	3.85	4	.43

Appendix D-2 Mdeian of Perceived intensity (Pre-Competition Stressors)

	Median
High importance of the game to your team	4.00[a]
High importance of the game to yourself	4.00
Previous good game result	4.00
Previous bad game result	3.00
Compete with much stronger team	4.00
Compete with well-matched team	3.00
Lack of experience to the competition	3.00
Lack of physical readiness or poor preparation	3.00
Compete in opponent's stadium	3.00
Compete in your club's stadium	3.00
Play in poor conditions	3.00
Unfamiliar with the playing stadium	3.00
Large amount of spectators	4.00
Coach's long speech in the changing room	2.00
High expectation from coach, teammate, fans	4.00
Bad relationship with some of the teammates	3.00
Bad relationship with coach	4.00
Previous injury	3.00
Occurence of personal unexpected misfortune	3.00

a. 1-Not at all, 2-Not very much, 3-Moderately much, 4-Very much, 5-Extremely much

Appendix D-3 Chi-Square Test on Inclination of Perceived Intensity (in-competition stressor)

	Chi-Square	df	Asymp. Sig.
Make a goal-irrelevant game error	37.70	4.00	.00
Make a goal-relevant game error	41.17	4.00	.00
Pain of sudden injury	8.32	4.00	.08
Get a yellow card	45.98	4.00	.00
Boo from antagonistic spectators	21.78	4.00	.00
Hear unpleasant comments from commentator	47.58	4.00	.00
Cheers from supporting spectators	38.37	4.00	.00
Coach's shout at your mistake	24.71	4.00	.00
Coach's shout at your teammate's mistake	21.22	3.00	.00
Teammate's shout at your mistake	19.75	4.00	.00
Teammates make a goal-irrelevant game error	18.11	3.00	.00
Teammates make a goal-relevant game error	10.80	4.00	.03
Opponent's scoring goals	18.37	4.00	.00
Opponent's continuous success	4.34	4.00	.36
Opponent's provoking behaviors	17.21	4.00	.00
Continuous bad calls from referee	43.88	4.00	.00
At last few mins, your team is ahead by 1 goal	15.37	4.00	.00
At last few mins, you have tied goals	15.44	4.00	.00
At last few mins, your team is behind by 1 goal	33.75	4.00	.00
Kick penalty	18.03	4.00	.00

Appendix D-4 Median of Preceived Intensity (pre-competition stressors)

	Median
Make a goal-irrelevant game error	3.00[a]
Make a goal-relevant game error	4.00
Pain of sudden injury	3.00
Get a yellow card	2.00
Boo from antagonistic spectators	2.00
Hear unpleasant comments from commentator	2.00
Cheers from supporting spectators	4.00
Coach's shout at your mistake	3.00
Coach's shout at your teammate's mistake	2.00
Teammate's shout at your mistake	3.00
Teammates make a goal-irrelevant game error	2.00
Teammates make a goal-relevant game error	3.00
Opponent's scoring goals	4.00
Opponent's continuous success	3.00
Opponent's provoking behaviors	2.00
Continuous bad calls from referee	4.00
At last few mins, your team is ahead by 1 goal	4.00
At last few mins, you have tied goals	3.00
At last few mins, your team is behind by 1 goal	4.00
Kick penalty	4.00

a. 1-Not at all, 2-Not very much, 3-Moderately much, 4-Very much, 5-Extremely much

Appendix E

Chi-Square Test, Median and Mean Value of Appraisal Direction

Appendix E-1 Chi-Square Test on Inclination of Apprasial Tendency (pre-competition)

	Chi-Square	df	Asymp. Sig.
High importance of the game to your team	40.44	3.00	.00
High importance of the game to yourself	30.88	3.00	.00
Previous good game result	38.38	4.00	.00
Previous bad game result	33.26	4.00	.00
Compete with much stronger team	31.27	3.00	.00
Compete with well-matched team	26.29	3.00	.00
Lack of experience to the competition	37.71	3.00	.00
Lack of physical readiness or poor preparation	34.95	4.00	.00
Compete in opponent's stadium	73.51	4.00	.00
Compete in your club's stadium	46.84	4.00	.00
Play in poor conditions	30.68	3.00	.00
Unfamiliar with the playing stadium	142.63	4.00	.00
Large amount of spectators	45.02	3.00	.00
Choch's long speech in the changing room	56.66	4.00	.00
High expectation from coach, teammate, fans	37.63	4.00	.00
Bad relationship with some of the teammates	29.80	4.00	.00
Bad relationship with coach	17.76	4.00	.00
Previous injury	53.38	4.00	.00
Occurence of personal unexpected misfortune	58.49	4.00	.00

Appendix E-2 Median Value of Apprasial Direction (pre-competition stressors)

	Median
High importance of the game to your team	4.00[a]
High importance of the game to yourself	4.00
Previous good game result	4.00
Previous bad game result	3.00
Compete with much stronger team	4.00
Compete with well-matched team	4.00
Lack of experience to the competition	3.00
Lack of physical readiness or poor preparation	2.00
Compete in opponent's stadium	4.00
Compete in your club's stadium	4.00
Play in poor conditions	3.00
Unfamiliar with the playing stadium	3.00
Large amount of spectators	4.00
Choch's long speech in the changing room	3.00
High expectation from coach, teammate, fans	4.00
Bad relationship with some of the teammates	3.00
Bad relationship with coach	2.00
Previous injury	3.00
Occurence of personal unexpected misfortune	3.00

a. 1-Strongly Negative, 2-Somewhat Negative, 3-No Effect, 4-Somewhat Positive, 5-Strong Positive

Appendix E-3 Mean Value of Appraisal Direction (pre-competition stressors)

	Mean
High importance of the game to your team	3.84[a]
High importance of the game to yourself	3.89
Previous good game result	3.89
Previous bad game result	2.94
Compete with much stronger team	3.94
Compete with well-matched team	3.59
Lack of experience to the competition	3.23
Lack of physical readiness or poor preparation	2.57
Compete in opponent's stadium	3.51
Compete in your club's stadium	3.68
Play in poor conditions	3.15
Unfamiliar with the playing stadium	3.26
Large amount of spectators	4.32
Choch's long speech in the changing room	3.05
High expectation from coach, teammate, fans	3.45
Bad relationship with some of the teammates	2.67
Bad relationship with coach	2.41
Previous injury	2.59
Occurence of personal unexpected misfortune	2.52

a. 1-Strongly Negative, 2-Somewhat Negative, 3-No Effect, 4-Somewhat Positive, 5-Strong Positive

Appendix E-4 Chi-Square Test on Inclination of Apprasial Direction (in-competition stressors)

	Chi-Square	df	Asymp. Sig.
Make a goal-irrelevant game error	61.17	4.00	.00
Make a goal-relevant game error	62.15	4.00	.00
Pain of sudden injury	49.80	4.00	.00
Get a yellow card	138.11	3.00	.00
Boo from antagonistic spectators	32.14	3.00	.00
Hear unpleasant comments from commentator	113.75	4.00	.00
Cheers from supporting spectators	54.68	3.00	.00
Coach's shout at your mistake	47.63	4.00	.00
Coach's shout at your teammate's mistake	106.80	3.00	.00
Teammate's shout at your mistake	54.63	4.00	.00
Teammates make a goal-irrelevant game error	112.33	3.00	.00
Teammates make a goal-relevant game error	63.98	4.00	.00
Opponent's scoring goals	13.37	4.00	.01
Opponent's continuous success	37.27	4.00	.00
Opponent's provoking behaviors	60.54	4.00	.00
Continuous bad calls from referee	47.88	4.00	.00
At last few mins, your team is ahead by 1 goal	42.84	4.00	.00
At last few mins, you have tied goals	72.02	4.00	.00
At last few mins, your team is behind by 1 goal	12.77	4.00	.01
Kick penalty	15.75	4.00	.00

Appendix E-5 Median Value of Apprasial Direction (in-competition stressors)

	Median
Make a goal-irrelevant game error	3.00[a]
Make a goal-relevant game error	2.00
Pain of sudden injury	2.00
Get a yellow card	3.00
Boo from antagonistic spectators	3.00
Hear unpleasant comments from commentator	3.00
Cheers from supporting spectators	5.00
Coach's shout at your mistake	3.00
Coach's shout at your teammate's mistake	3.00
Teammate's shout at your mistake	3.00
Teammates make a goal-irrelevant game error	3.00
Teammates make a goal-relevant game error	3.00
Opponent's scoring goals	2.00
Opponent's continuous success	3.00
Opponent's provoking behaviors	3.00
Continuous bad calls from referee	2.00
At last few mins, your team is ahead by 1 goal	4.00
At last few mins, you have tied goals	3.00
At last few mins, your team is behind by 1 goal	3.00
Kick penalty	3.00

a. 1-Strongly Negative, 2-Somewhat Negative, 3-No Effect, 4-Somewhat Positive, 5-Strong Positive

Appendix E-6 Mean Value of Appraisal direction (in-competition stressors)

	Mean
Make a goal-irrelevant game error	2.72[a]
Make a goal-relevant game error	2.33
Pain of sudden injury	2.35
Get a yellow card	3.07
Boo from antagonistic spectators	3.05
Hear unpleasant comments from commentator	2.88
Cheers from supporting spectators	4.39
Coach's shout at your mistake	2.72
Coach's shout at your teammate's mistake	2.95
Teammate's shout at your mistake	2.84
Teammates make a goal-irrelevant game error	2.96
Teammates make a goal-relevant game error	2.73
Opponent's scoring goals	2.51
Opponent's continuous success	3.07
Opponent's provoking behaviors	3.27
Continuous bad calls from referee	2.48
At last few mins, your team is ahead by 1 goal	3.81
At last few mins, you have tied goals	3.39
At last few mins, your team is behind by 1 goal	3.04
Kick penalty	3.37

a. 1-Strongly Negative, 2-Somewhat Negative, 3-No Effect, 4-Somewhat Positive, 5-Strong Positive

Appendix F

Chi-Square Test on the Inclination of PST Methods Usage

Appendix F-1 Inclination of PST Methods Usage

	Chi-Square	df	Asymp. Sig.
Positive self-talk	20.43	4.00	.00
Build individual rituals	8.61	4.00	.07
Listen to high evergy music	22.15	4.00	.00
Listen to relaxing music	80.80	4.00	.00
Mental rehearsal of the whole game strategy	25.11	4.00	.00
Imagery of positive performance	35.73	4.00	.00
Muscle relaxation techniques	19.56	4.00	.00
Control of breathing	3.98	4.00	.41
Set individual goals for the match	25.32	4.00	.00
Talk to coach or teammates to find support	41.05	4.00	.00
Set team goals for the match	97.39	4.00	.00
Meaningful or encouraging keywords in the changing room	78.32	4.00	.00
Make game plan to prevent unexpected incidence	6.41	4.00	.17
Build team rituals	57.76	4.00	.00
Coach's pep talk	88.73	4.00	.00