

## THE EFFECTS OF ANXIETY TO ELITE SPRINTER'S ANAEROBIC CAPACITY IN COMPETITION

**MURAT YALCIN BESIKTAS**, PhD.

Okan University Applied Sciences School  
Department Of Sport Management.  
Akfirat/Tuzla/ISTANBUL  
Post Code: 34959  
+905333281414  
E-Mail: yalcin.besiktas@yahoo.com

### ABSTRACT

**P**re-competition training of athletes leads to emergence of some physiological and psychological situations. Athletes may experience psychological disorders, such as stress, worry, anxiety as well as motivation and concentration disorders during in-season training intended for gaining technical skills and condition. Anxiety experienced during competition is one of the emotional states that negatively affect the performance of athletes. Anxiety causes athletes to suffer from muscle tension, difficulty in making decisions, confusion, low efficiency in training, inability to focus, lack of self-confidence, low concentration etc.. During periods close to competition, athletes in sprint branch of athleticism have to apply various strict diets in addition to intensive training programs. In such a period, any decrease in the intensity of training is out of question. This situation negatively affects the physiological and psychological states of athletes. As a result, there may be an increase in some feelings such as anxiety, worry, and fear. In this study, the effect of athletes' anxiety levels on anaerobic capacity was investigated. A statistically significant reduction was observed in the anaerobic capacities of athletes who had high anxiety levels during competition. Therefore, various solutions were made for the overcome and elimination of anxiety that adversely affects sportive performance.

**Key Words:** Anxiety, performance, anaerobic capacity

## 1. INTRODUCTIONS AND OBJECTIVE

The purpose of this study is to determine how anxiety emerging in elite sprinters due to external factors affects anaerobic capacity (Andersen 2000, Beck and Emery 2005). Anxiety is the most frequently observed state in individuals' daily behaviour. Everyone has a different degree of anxiety state but the dimension of this is different. In this context, the type and degree of anxiety is important. If anxiety becomes the center of the daily life of an individual, and if the individual focuses on it, that individual becomes unable to maintain his/her normal life (Cox 2007, Cuceloglu 2000, Bicer 1998). Such states adversely affect an individual's physiological and psychological condition. Such states cause the individual to develop various behavioural disorders.

Although an individual in anxiety seizure is constantly anxious, he/she feels difficulty in showing the source of the anxiety. Individuals with high anxiety develop many physical and psychological symptoms, under the effect of anxiety state. Some of these symptoms are the followings:

- 1- Very tense muscles: In such a case, muscles fail to function or begin to function limitedly, and consequently, sportive performance is affected adversely and directly.
- 2- Autonomic nervous system active at a high level: Sweating, pulse rise, cold palms, dizziness, nausea, and diarrhoea is some of these symptoms.
- 3- State of anxious wait: It is the state of an individual's inability of restraining from worrying and thinking about bad things that he or others may encounter.
- 4- Difficulty in focusing attention: It is seen in the form of difficulty in focusing on a work, short temper and insomnia (Cuceloglu 2000).

Symptoms indicating an anxiety disorder can be classified in four functional systems as cognitive, emotional, behavioural and psychological symptoms, which are coordinated for producing reactions compatible with the hazardous situation (Blumenstein, Lidor and Tenenbaum 2007, Gardner and Moore 2006). Anxiety disorders indicate the dysfunction of the system that activates a defensive response to a threat or eliminates that threat. This is an incompatible reaction that may be interpreted as an inappropriate suppression of a more compatible state by the main mechanism. Symptoms are the expressions of the excessive function of the individual's systems or the intervention in the functions of a certain system (Burton and Raedeke 2011, Hanin 2000, Leahy 2004, Martens 1987).

States of panic can be shown as anxiety symptoms, as well as. Panic shows itself in extreme anxiety states. Individuals, who feel anxiety at the degree of panic, suffer difficulty in breathing. Respiratory difficulties may show themselves in the form of intermittent and frequent breathing as well as obstruction in breathing. If such a situation occurs during sportive competition, athletes cannot be successful in terms of performance (Bartholomew et al. 2011, Kull 2011, Moran 2004). If the state of anxiety is experienced constantly and if it is not prevented, phobias and obsessive-compulsive disorders begin to appear in those who have anxiety problems, at the next stage (Cuceloglu 2000, Weinberg and Gould 2003). The most evident feature of phobias is that their sources are senseless. According to Freud's approach, the sources of phobias are the subconsciously unresolved contradictions. Unless these contradictions are resolved, any effort intended for elimination of only the phobia will remain inefficient and pointless (Beck and Emery 2005). In obsessive-compulsive disorders, it expresses obsessions to think and act. An obsessive individual cannot escape from an obsessed thought, the thought is continuously repeated in his mind, and a thought obsession occurs; and such a case has adverse effects on sportive performance, and is a state of anxiety, main source of which has not eliminated (Lee 1990, Morris, Spittle and Watt 2005, Orlick 2008).

Physical disorders caused by anxiety show themselves without any reason. In other words, psychological causes lead to physical disruptions. Such physical disruptions are the followings:

1- *Conversion Hysteria:*

Ancient Greeks used the term hysteria for referring to those who faint, become deaf and cannot hear, and whose bodies show the symptoms of paralysis, even though they have no physical disorder. Freud termed the behavioural disorder of such individuals as conversion. According to him, ominous conflict in subconscious changes form and shows itself in the body. An individual with conversion hysteria shows certain functional disabilities, even though there is no physiological and neurological reason.

2- *Psychogenic Pain*

This is a state similar to conversion hysteria; with the only difference that there is a constant pain or ache in different parts of the body, instead of a dysfunction in the sensory organs. It is not possible to find out the cause of the physical pain physiologically or neurologically. As in conversion hysteria, the psychogenic pain specifically accommodates itself to the individual's life; in other words, it has a function.

3- *Hypochondriasis*

Some individuals always complain about their health conditions, and on all occasions, they see a doctor. They have a pain in another place of their bodies, catch various diseases, and complaint about different parts of their bodies. They always tend to take different medicines. Such individuals are called hypochondriac. An individual, who cannot directly struggle against the unresolved anxiety in his subconscious, makes up physical diseases in order to get rid of the anxiety. This situation is more frequently seen in individuals with constant anxiety. When considered especially in terms of sportive performance, this situation constantly disrupts athletes' training program and training periodization; and as a result, it has adverse effects on the performance.

4- *Hypochondriasis*

This state is the exact opposite of hypochondriasis. In this behavioural disorder, individuals do not see a doctor even though they show various disease symptoms. This type of individuals has the phenomenon "I am strong", "Nothing happens to me". On the basis of this state, there is a case of anxiety, the source of which cannot be eliminated; and it adversely affects the sportive performance (Cuceloglu 2000, Silva, Metzler and Lerner 2007).

For what some reactions such as anxiety and inhibition serve cannot be fully understood, when we consider anxiety in terms of its function. Intrinsic values ensuring the continuation of the organism, and concepts about conformity indicate the behaviours serving for enabling the organism to maintain its existence in terms of evolution. If we approach with the same logic, the ability to adapt can also be applied to behaviours intended for the organism's main objectives such as survival, growth, proliferation, maintenance, and outmanoeuvring (Martens 1987, Moran 2004).

## 2. MATERIAL AND METHODS

In this study, the effect of the anxiety states of 30 elite sprinters aged between 18 and 25 on their anaerobic capacities were measured. Sport Competition Anxiety Test (SCAT  $r=0.77$ ) was used to measure the anxiety levels of the athletes. SCAT is a test that measures the anxiety by asking 15 questions to individuals. Scoring is made according to the responses given based on the scale, and the level of anxiety is determined as low, medium and high (Martens 1990). In this study, Running-based Anaerobic Sprint Test (RAST  $r=0.88$ ) was used to measure anaerobic capacity of athletes (Tenenbaum, Eklund and Kamata 2012). In this test, athletes perform 6 x 35m sprints, and after each 35 meters, they rest for 10 seconds. At the end of the Test, fatigue index values of the athletes indicate the status of their anaerobic capacities. In RAST survey, fatigue indexes greater than the numerical value of 10 indicate the athlete's decreased anaerobic capacity.

## 3. FINDINGS

According to the result of the research, anaerobic a capacity fatigue index of the athletes with higher levels of anxiety was higher, compared to the athletes with lower anxiety levels. According to the SCAT results, 66.7% (20 individuals), 13.3% (4 individuals) and 20% (6 individuals) of the athletes were found to be at high, moderate, and low anxiety levels, respectively. According to the RAST results, the fatigue indexes of 66.7% (20 individuals) and 10% 33.3 (10 individuals) of the athletes were found to be higher and lower than 10, respectively. According to the SCAT results, the anxiety levels of athletes with high fatigue index, whose anaerobic capacity reduced, were found to be at "high level of concern" as well. In conclusion, high levels of anxiety have a negative impact on anaerobic sportive performance.

Figure I. Scat Results

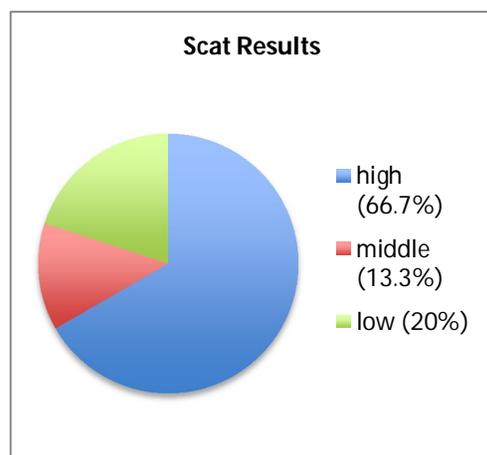
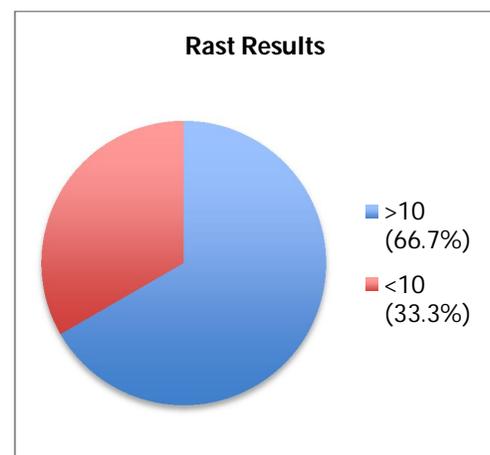


Figure II. Rast Results



#### 4. DISCUSSION AND RESULTS

According to results of the research, high anxiety has an adverse effect on anaerobic performance. Athletes should reduce their anxiety levels especially during competition periods, in order to avoid this situation.

We can classify the ways of coping with anxiety in two groups: Consciously applied techniques and unconsciously applied techniques. Unconsciously applied techniques are called defense mechanisms. An individual using a defense mechanism is not aware of that he uses a technique for reducing the anxiety. The techniques that we use consciously are the behaviours that we obtained at the end of the learning. Consciously applied techniques can be listed as follows:

- 1- Auto Hypnosis Technique: Holland and Tarlow argued that autohypnosis could be used effectively for reducing anxiety. Holland and Tarlow asserted that an individual can hypnotize himself; and as a result, he can eliminate the anxiety by getting rid of his undesired thoughts and feelings, and entering into a more desirable form of thinking and perception. This is a technique that contains self-talk elements, and is a part of mental training.
- 2- Relaxation Training: It ensures minimized muscle tension, disturbing emotions, worry, and anxiety. Stress, worry, anxiety, hyperactivity condition, fatigue, muscle tension emerging before competition can be minimized, as well (David, Hardy and Oliver 2011). The most important benefits of relaxation exercises for athletes.
  - i. Minimizes chronic stress and anxiety.
  - ii. Enables short-and long-term disabilities to be healed as soon as possible.
  - iii. Makes positive contribution to ensure the athlete's regular sleep routine.
  - iv. Enables negative emotional states that emerged in training and competition to be overcome in a short time (Hird et al. 1991).
- 3- Resource Discovery Technique: It is possible to reduce the severity of anxiety, by finding, revealing, and understanding the causes that lead to the anxiety. Causes that lead to anxiety lie behind the individual's feeling of incapability, as related to his environment or his feeling of self-concept. Therefore, understanding the source of anxiety is not an easy process. This technique has been developed for detecting the source of anxiety.

And the ways of coping with anxiety unconsciously are defense mechanisms. General characteristics of defense mechanisms are the followings.

- 1- The individual using defense mechanism is not aware of the actual function of his behaviour. In this sense, defense mechanisms are considered to be unconscious behaviours.
- 2- Under the effect of defense mechanisms, we perceive the fact a little bit different. We attempt to deceive ourselves to some extent, and as a result, that change in perception leads to a decrease in the level of our anxiety.
- 3- Defense mechanisms are used by everyone, and are considered to be a normal behaviour. If an individual consistently uses his defense mechanisms, with intent to adapt to the environment, that situation causes a problem and it has also adverse effect on sportive performance. Since defense mechanisms used occasionally reduce the level of our anxiety, and since they enable us to temporarily communicate with the environment more effectively, they are healthier (Cuceloglu 2000).

Envisaging training, autogenic training, and positive imagery training can be practiced, in order to reduce the level of anxiety. If athletes continue to regularly practice their imagery training within the framework of their mental plans, the anxiety experienced before and during competition will decrease to a level that cannot adversely affect the athlete's performance (Murru and Kathleen 2010). Mental plan is a program prepared individually for an athlete, which contains systematic competition strategies and includes mental skills. It enables the athlete to get mentally prepared for training and competitions. Mental plan must definitely be combined with physical training. A continuous mental plan accompanied with physical training ensures a controlled increase in the athlete's performance. In this context, mental plan must be properly periodized.

According to the results of this study, high level of anxiety is one of the important states that negatively affect sportive performance of athletes. Therefore, special training programs should be practiced, in order to keep athletes away from anxiety states that may affect their performances, and to reduce and eliminate the anxiety states in yearly training periodization. Even athletes in a very good condition in terms of physical performance may fail in competitions, due to lack of psychological training. This study was done on elite sprinters; however, similar studies can be done on other sports branch, in the light of scientific developments.

---

## REFERENCES

- 1- Andersen, B. M. (2000). *Doing Sport Psychology*. 1<sup>st</sup>. Edition, Human Kinetics, USA.
- 2- Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Thogersen-Ntoumani, C. (2011). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *JSEP*, 33:75-102.
- 3- Burton, D., Raedeke T. (2011). *Sport Psychology for Coaches*. 1<sup>st</sup>. Edition, Human Kinetics, USA.
- 4- Cox, R. (2007). *Sport Psychology Concepts and Applications*. 6<sup>th</sup>. Edition, Usa, The McGraw-Hill.
- 5- Cuceloglu, D. (2000). *Insan ve Davranis*. 10th Edition, Istanbul, Remzi Kitabevi.
- 6- Beck, A., Emery, G. (2005). *Anxiety Disorders and Phobias: A cognitive perspective*. 1<sup>st</sup>. Edition, Basic Books.
- 7- Bicer, T. (1998). *Doruk Performans*. 2<sup>nd</sup> Edition, Beyaz Publishing, Istanbul.
- 8- Blumenstein, B., Lidor, R., Tenenbaum, G. (2007). *Psychology of Sport Training*. 1<sup>st</sup>. Edition, Meyer & Meyer Sport, UK.
- 9- David, T., Hardy, J., Oliver, E. (2011). Effects of self-talk: A systematic review. *JSEP*, 33:666-687.
- 10- Gardner, F., Moore, Z. (2006). *Clinical Sport Psychology*. 2<sup>nd</sup> Edition, Human Kinetics, USA.
- 11- Gould, D., Damarjian, N., Greenleaf, C. (2000). Imagery training for peak performance. In *exploring sport and exercise psychology*. Raalete J.L, Brewer B.W. (Ed.), 2<sup>nd</sup>. Edition, DC: American Psychological Association, Washington.
- 12- Hanin, Y. (2000). *Emotion in Sports*. 1<sup>st</sup>. Edition, Human Kinetics, USA.
- 13- Hird, J., S., Landers, D., M., Thomas, J., R., Horan, J., J. (1991). Physical practice is superior to mental practice in enhancing cognitive and motor task performance. *Journal of Sport and Exercise Psychology*, 8:293.
- 14- Kull, M. (2011). Physical activity and mental health: Relationships between depressiveness, psychological disorders and physical activity level in women. *Biology of Sport*, 20(2): 129-138.
- 15- Leahy, R. Translators: Hacak, H., Macit, M., Ozpilavcı, F. (2004). *Bilissel Terapi ve Uygulamaları*. 1<sup>st</sup> Edition, Istanbul, Litera Yayıncılık.
- 16- Lee, C. (1990). Psyching up for a muscular endurance task: Effects of image content on performance and mood state. *Journal of Sport and Exercise Psychology*, 12:66-73.
- 17- Martens, R. (1987). *Coaches Guide to Sport Psychology*. 1st. Ed, Human Kinetics, USA.
- 18- Martens, R., Vealey, R., Burton, D. (1990). *Competitive Anxiety in Sport*. 3rd. Edition, Human Kinetics, USA.
- 19- Morris, T., Spittle, M., Watt, A., P. (2005). *Imagery in Sport*. 1<sup>st</sup>. Edition, Human Kinetics, USA.
- 20- Moran, A. (2004). *Sport and Exercise Psychology*. 1<sup>st</sup>. Ed, Routledge, USA.
- 21- Murru, C., E., Kathleen, M., G. (2010). Imagining the possibilities: The effects of a possible selves intervention on self-regulatory efficacy and exercise behaviour. *JSEP*, 32:537-554.
- 22- Orlick, T. (2008). In *Pursuit of Excellence*. 4th. Ed, Human Kinetics, USA.
- 23- Silva, J., M., Metzler, J., N., Lerner, B. (2007). *Training Professionals In The Practice of Sport Psychology*. 1<sup>st</sup>. Edition, Fitness Information Technology, Morgantown.
- 24- Tenenbaum, G., Eklund, R., Kamata, A. (2012). *Measurement in Sport and Exercise Psychology*. 1st. Ed, Human Kinetics, USA; 2012
- 25- Weinberg, R., Gould, D. (2003). *Foundations of Sport and Exercise Psychology*. 3rd. Ed, Human Kinetics, USA.