

## Competitive Anxiety Level before and during Competition among Malaysian Athletes

Vincent A. Parnabas<sup>1\*</sup> and Yahaya Mahamood<sup>2</sup>

<sup>1</sup>*Faculty of Sports Science and Recreation,  
Universiti Teknologi Mara (UiTM) Perlis, 02600 Arau, Perlis, Malaysia*

<sup>2</sup>*College of Arts and Sciences, Universiti Utara Malaysia,  
06010 UUM Sintok, Kedah, Malaysia*

*\*E-mail: vincentbarnabas@yahoo.com*

### ABSTRACT

Anxiety is recognized as one of the main factors that reduces athletes' performance in sports. In many research reviews, researchers have found that high levels of anxiety can have a deteriorating effect on athletes' or teams' performance. To date, however, there has been no attempt to examine competitive anxiety level as influenced by gender, levels of skills, and performance. The main aim of the study was to describe and compare the anxiety differences before and during competition among different categories of skills of athletes and genders. Data were collected from 902 athletes using a 27 item Competitive State Anxiety Inventory-2. The results showed that national level and male athletes obtained the lowest score on competitive state anxiety. Based on the current results, it is recommended that sport psychologists, sport counsellors, and coaches in Malaysia use the findings to design appropriate training programmes to help athletes acquire suitable coping strategies so as to reduce their state anxiety levels and enhance their performance.

**Keywords:** Anxiety, before competition, categories of skill athletes, competition, during competition, level of anxiety, performance, state anxiety

### INTRODUCTION

Most psychologists believe that the highest level of competitive anxiety will deteriorate athletes' performance in sport (Martens, Vealey and Burton, 1990; Cox, Qiu and Liu, 1993; Weinberg and Gould, 1999; LeUnes and Nation 2002; Ortiz, 2006). On the contrary, a lower level of anxiety was found to have enhanced the performance of athletes (Martens *et al.*, 1990; Krane and Williams, 1994). In sports, higher levels of anxiety before any competition can deteriorate performance (Hardy, 1999). According to Weinberg and Gould (1999), coaches fail to predict the accurate level of anxiety of athletes.

Anxiety consists of two subcomponents, namely cognitive and somatic anxiety, which influence performance before and during competition (Weinberg and Gould, 1999; Lazarus, 1991; Anshel, 2003; Martens *et al.*, 1990; Jarvis, 2002). Meanwhile, cognitive is the mental component, which is characterized by negative expectations about success or self-evaluation, negative self-talk, worry about performance, images of failure, inability to concentrate, and disrupted attention (Martens *et al.*, 1990; Jarvis, 2002). The somatic is the physiological element which is related to autonomic arousals, and negative symptoms such as feelings of nervousness, high blood

Received: 17 December 2009

Accepted: 17 March 2010

\*Corresponding Author

pressure, dry throat, muscular tension, rapid heart rate, sweaty palms, and butterflies in the stomach (Martens *et al.*, 1990; Jarvis, 2002).

The level of anxiety has the tendency to change during competition by becoming higher or lower (Weinberg, 1989; Weinberg and Gould, 1999; Cashmore, 2002; O'Neil and Abedi, 1992; O'Neil, Baker and Matsura, 1992) because the cognitive and somatic components change according to time and situation (Caruso, Dziewaltowski, Gill and McElroy, 1990).

Researchers have reported that over 50 percent of consultations among athletes at Olympic Games or sport events are related to stress or anxiety problems (Murphy, 1988). Anxiety is a negative emotion that affects perceptions in sport competitions, and this leads to majority of athletes to consider anxiety as debilitating towards performance, which may result in a decrease in performance (Weinberg and Gould, 1999; Raglin and Hanin, 2002). Furthermore, majority of the athletes who needed consultation were those who were suffering from anxiety, before and during sport events (Bull, 2000). If athletes fail to control their anxiety, it will deteriorate their performance in sports (Martens *et al.*, 1990). Anxiety is the main factor of decreased performance levels and drop out of athletes from sports (Pierce, 1980; Martens *et al.*, 1990; LeUnes and Nation, 2002). Furthermore, aggression in sports is also related to a higher level of anxiety (Berkowitz, 1990). Athletes also use drugs to reduce anxiety for enhanced performance (Weinberg and Gould, 1999).

According to Hanton, O'Brien and Mellalieu (2003), the level of anxiety before and during competition is not clear because of the contradictory findings. Different athletes have reported different levels of anxiety, i.e. from high to low (Raglin and Hanin, 2000). Meanwhile, the findings by Males and Kerr (1996) showed that the level of anxiety increased gradually when the sport event was nearer. This is related with the tendency to have negative thinking which surrounds the mind when the

sport competition event is coming nearer (Elgin, 2006).

Beside that, the skills of athletes have been found to influence athletes' levels of anxiety as well (Hembree, 1988; Heckhausen, 1990; Jones, 1995). Athletes having different levels of skills have been found to report different levels of anxiety before and during competitions (Mahoney and Meyers, 1989; Cox *et al.*, 1993). Elite or athletes with higher skill level have been found to report low levels of anxiety (Sade, Bar-Eli, Bresler and Tenenbaum, 1990). On the contrary, Perry and Williams (1998) found no significance on the levels of anxiety between athletes of high, medium and low skills.

A significant number of research in sport psychology showed that female athletes reported higher anxiety levels than males (Montgomery and Morris, 1994; Deutch, 1999; Thatcher, Thatcher and Dorling, 2004; Barksy, Peekna and Borus, 2001; Jones and Cale, 1989; Cerin, Szabo, Hunt and Williams, 2001; Kessler, McGonagle, Zhao, Nelson, Hughes, Eshleman, Wittchen and Kendler, 1994; Cartoni, Minganti and Zelli, 2005; Cartoni, Minganti and Zelli, 2005; Scanlan and Passer, 1979; Wark and Wittig, 1979; Jones and Swain, 1992; Krane and Williams, 1994; Thuot, Kavouras and Kenefick, 1998). In addition, a number of research has shown that there is no significant difference in the level of anxiety between male and female athletes (Hammermeister and Burton, 2001; Seeley, Storey, Wagner, Walker and Watts, 2005; Ramella-DeLuca, 2003; Ampongan, 2001). Therefore, this research can also determine the level of anxiety between genders.

So far, research in sport has focused only on the categories of elite or successful athletes, but ignored the other categories of less successful athletes (Krane, 1995). Until the present day in Malaysia, research that compares the categories of athletes based on their skills is very rare. Therefore, this particular research focused on athletes having different skill categories, like those who have represented at the national, state, district, university and school levels. Beside

that, the levels of Malaysian athletes' anxiety before and during competition are yet to be identified through research. In addition, research on gender differences in terms of their anxiety levels before competition should not be ignored (Thatcher *et al.*, 2004).

### AIM

The purpose of this research was to examine the differences in the anxiety levels, before and during competition. For this purpose, the competitive anxiety levels were compared among the athletes having different skill categories or representation in sports (i.e. national, state, district, university, and school levels) and gender. In other words, this research was concerned with the measurement of the anxiety levels among the athletes of different skill levels and gender.

It is important to note that research conducted on athletes with different levels of skill is still very rare in Malaysia. In fact, most of the research conducted in sport psychology is more concerned with male athletes than their female counterpart (Cox, 2007) because sport is considered to be a man's world (Burstyn, 1999; Hargreaves, 1997).

### SAMPLE

The sample consisted of 902 athletes, comprising of national athletes (N=53), state athletes (N=395), district athletes (N=120), university athletes (N=211), and school athletes (N= 123). In term of gender, the participants (N = 908)

comprised of male (n = 502) and female (n = 406) athletes. The sample was drawn from the athletes who competed in three big sport events of Malaysia, MASUM (Universities Sports Competition), MSSM (Schools Sport Competition) and *Sukan Olimpik Muda* (Young Olympic Athletes Competition).

### MATERIALS AND METHODS

The instrument used for the study was the Competitive State Anxiety Inventory-2 which consisted of 27 items. The Competitive State Anxiety Inventory – 2 included both the cognitive and somatic components. The CSAI-2 was administered twice, i.e. before and during the match to examine the level of anxiety prior to and during the competition.

### RESULTS

#### Gender

The independent *t*-test presented in Table 1 shows that the level of anxiety among the female athletes was higher ( $\bar{x}$ =45.6423) than that of the males ( $\bar{x}$ =44.7792) prior to the competitions. In other words, the male athletes showed significantly less anxiety than the females prior to the competition, i.e.  $t(6.607)$ ,  $p<.0.01$ . A similar situation was also found to occur during the competition, whereby females athletes were higher in term of their level of anxiety ( $\bar{x}$ =45.4919) than that of the males ( $\bar{x}$ =41.7352). On the contrary, the male athletes showed significantly less anxiety than the females during the competition, i.e.  $t(5.946)$ ,  $p<.0.01$ .

TABLE 1  
Independent *t* test of gender on the Competitive Anxiety Level

|                              | Gender | Before competition |                |         | During competition |                |         |
|------------------------------|--------|--------------------|----------------|---------|--------------------|----------------|---------|
|                              |        | Mean               | <i>t</i> -test | p-Value | Mean               | <i>t</i> -test | p-Value |
| Level of competitive anxiety | Female | 45.6423            | 6.607**        | 0.000   | 45.4919            | 5.946**        | 0.000   |
|                              | Male   | 44.7792            |                |         | 41.7352            |                |         |

\*\* $p<.0.01$

### Categories of Athletes

Table 2 shows the mean scores for the anxiety among the athletes of different skills, prior to their competitions ( $F(4,843) = 15.102$ ,  $p < .01$ , and during the competition,  $F(4,815) = 7.992$ ,  $p < .01$ . Apparently, significant differences emerged for the athletes having different skills before and during competition. Overall, the mean score obtained for the national athletes was lower than those in other categories, both prior and during the competitions.

This result was confirmed using the Post-Hoc Tukey Test, i.e. the national athletes showed lower anxiety levels than those of the school ( $k < .05$ ) and university ( $k < .05$ ) representative athletes prior to the competitions. However, there was no significant difference between the levels of anxiety among the state and district athletes. This confirmed that the school and university athletes exhibited higher levels of anxiety than those in the other categories.

Meanwhile, the Post-Hoc Tukey Test during the competition confirmed that the levels of anxiety among the national athletes were much lower than those of the state athletes, university and school, but were not much different from the district level athletes.

### Performance

Table 3 shows that the levels of athletes' anxiety differed significantly according to the levels of performance, for both prior to  $F(2,824) = 18.470$ ,

and during the competitions  $k < .01$ ,  $F(2,794) = 9.432$ ,  $k < .01$ . The results showed that the athletes who exhibited higher levels of anxiety showed low levels of performance in sports, while those who exhibited lower anxiety level showed higher levels of performance in sport, both before and during the competition. This result was confirmed by the Post Hoc Tukey test before and during the competition, i.e. the athletes who exhibited the highest level of competitive anxiety performed very low in sports than those who exhibited medium or lower levels of anxiety. Moreover, the athletes who exhibited lower levels of competitive anxiety were found to perform higher in sports than those who were from the highest and medium levels of anxiety.

## DISCUSSION

### Gender

The results showed that the female athletes' level of anxiety, before and during the competitions, was higher than that of the males. This result is supported by the findings of many other researchers such as Scanlan and Passer (1979), Wark and Wittig (1979), Jones and Cale (1989), Abel and Larkin (1990), Jones and Swain (1992), Kessler *et al.* (1994), Krane and Williams (1994), Cerin *et al.* (2001), and Cartoni *et al.* (2005) who also found that the levels of anxiety among the female athletes was higher than that of their male counterparts.

TABLE 2  
One way ANOVA of competitive anxiety level based on the categories of athletes

| Categories of athletes | Before competition |          |         | During competition |         |         |
|------------------------|--------------------|----------|---------|--------------------|---------|---------|
|                        | Mean               | F-value  | p-value | Mean               | F-value | p-value |
| National               | 39.3600            |          |         | 38.5600            |         |         |
| State                  | 42.0111            |          |         | 42.7528            |         |         |
| District               | 42.2091            | 15.102** | 0.000   | 42.2170            | 7.992** | 0.000   |
| University             | 46.3462            |          |         | 45.5279            |         |         |
| School                 | 46.0000            |          |         | 44.9279            |         |         |

\*\* $p < 0.01$

TABLE 3  
Level of anxiety based on the performance in sports

| Performance | Before the competition |          |         | During the competition |         |         |
|-------------|------------------------|----------|---------|------------------------|---------|---------|
|             | Mean                   | F-value  | p-value | Mean                   | F-value | p-value |
| High        | 41.2605                | 18.470** | 0.000   | 41.6134                | 9.432** | 0.000   |
| Medium      | 43.8514                |          |         | 43.6945                |         |         |
| Low         | 48.0141                |          |         | 46.8235                |         |         |

\*\*  $p < 0.01$

According to Montgomery and Morris (1994) and Lewinsohn, Gotlib, Lewinsohn, Seeley and Allen (1998), female athletes generally exhibit higher anxiety than males because of the biological factors and their roles in the society. For example, the society can accept if females show fear, nervousness, and worry but not the males (Montgomery and Morris, 1994). In other words, males have been trained to control their emotions as compared to females who tend to exhibit their emotions (Jones and Cale, 1989).

#### *Categories of Athletes*

Overall, the result showed that before and during competition, the athletes representing their universities and schools exhibited higher anxiety levels than those in the other categories of state and district, whereas national athletes showed the lowest levels of anxiety. In Malaysia, no research involving the five categories of skills has been conducted so far; therefore, this research has failed to compare these with the findings of previous research. However, many studies have shown that elite athletes exhibit the lowest level of competitive anxiety (Fenz and Epstein, 1969; Sade *et al.*, 1990, LeUnes and Nation, 2002, Bridges and Knight, 2000; Smith and Bar-Eli, 2007).

According to Mahoney and Meyers (1989) and Zajonc (in Lloyd and Mayes 1999), athletes of different levels of skill show different levels of competitive anxiety. On the other hand, athletes with low levels of skill, like those whose highest achievement is taking part in

school or university competitions, normally experience higher levels of competitive anxiety. Meanwhile, those athletes whose highest achievement is taking part in national or state level competitions, experienced low levels of anxiety. It is very common that low level skilled athletes experience higher levels of competitive anxiety (Wann 1997). Besides that research of Meyers *et al.* (1979), Hackfort and Spielberger (1989), LeUnes and Nation (2002) showed that elite athletes used coping strategies to reduce competitive anxiety.

#### *Performance*

The results also showed that prior to and during the competition, the athletes in the categories of high levels of competitive anxiety experienced the lowest performance in sports, whereas those with lower levels of competitive anxiety experienced the highest levels of performance. These findings are supported by the research of Martens *et al.* (1990), Jones and Swain (1992), Cox *et al.* (1993), Fujita and Ichimura (1993), Jones, Swain and Hardy (1993), Rotella and Lerner (1993), Jones and Swain (1995), Lane, Terry and Karagerorghis (1995), Lane, Terry and Karagerorghis (1995), Wiggins (1998), Weinberg and Gould (1999), Bull (2000), Cox (2007), Leunes and Nation (2002), Cartoni *et al.* (2005), and Ortiz (2006). On the contrary, higher levels of anxiety are related to lower performance in sports (Williams and Jenkins, 1986; Leunes and Nation, 2002). In other words, victory or defeat in sports is determined by the athletes' levels of anxiety in sports.

## CONCLUSIONS

The present study has certain limitations that need to be taken into account when considering the study and its contributions. Since the level of anxiety after the competition is not related to the athletes' performance, this study merely focused on the level of anxiety before and during the competitions only.

The results of the present study also revealed that the athletes who exhibited higher levels of anxiety showed lower levels of sport performance. This confirmed the fact that the high level of anxiety was the main barrier that inhibited the athletes from gaining higher achievements in sports. The results also pointed out that female athletes and lower skilled athletes experienced higher levels of anxiety.

This research also determined the level of anxiety of different categories of athletes according to their skills. Coaches, sport psychologists, and counsellors can make use of the finding of the present study in providing appropriate coping strategies for school and university levels and certain skills and female athletes who showed the highest level of anxiety so as to reduce their anxiety level before and during the competition.

## REFERENCES

- Abel, J.L. and Larkin, K.T. (1990). Anticipation of performance among musicians: Psychological arousal, confidence and state-anxiety. *Psychology of Music*, 18, 171-182.
- Ampongan, C. (2001). Competitive anxiety of elite Filipino taekwondo athletes. Unpublished Master's thesis (<http://chk.upd.edu.ph/research/Competitive%20Anxiety%20of%20Elite%20Filipino%20Taekwondo%20Athletes.doc>.)
- Anshel, M.H. (2003). *Sport Psychology: From Theory to Practice*. New York: Benjamin Cummings.
- Berkowitz, L. (1990). On the formation and regulation of anger and aggression. *American Psychologist*, 45, 494-503.
- Bridges, A. and Knight, B. (2005). The role of cognitive and somatic anxiety in athletic performance. Thesis Hanover College.
- Bull, S.J. (2000). *Sport Psychology: A Self-help Guide*. Ramsbury, Marlborough: Crowood.
- Burstyn, V. (1999). *The Rites of Men: Manhood, Politics and the Culture of Sport*. Toronto: University of Toronto Press.
- Cartoni, A.C., Minganti, C. and Zelli, A. (2005). Gender, age and professional-level differences in the psychological correlates of fear of injury in Italian gymnast. *Journal of Sport Behavior*, 28, 3-17.
- Caruso, C. M., Dzewaltowski, D. A., Gill, D. L. and McElroy, M. A. (1990). Psychological and physiological changes in competitive state anxiety during noncompetitive and competitive success and failure. *Journal of Sport and Exercise Psychology*, 12, 6-20.
- Cashmore, E. (2002). *Sport Psychology*. London: Routledge.
- Cerin, E., Szabo, A., Hunt, N. and Williams, C. (2001). Temporal patterning of competitive emotions: A criteria review. *Journal Sports Science*, 18, 605-626.
- Cox, R. H. (2007). *Sport Psychology, Concepts and Applications* (6<sup>th</sup> Edn.). New York: McGraw-Hill.
- Cox, R.H., Qiu, Y. and Liu, Z. (1993). Overview of sport psychology. In R.N. Singer, M. Murphey and L.K. Tennant (Eds.), *Handbook of research on sport psychology* (pp. 3-31). New York: Macmillan.
- Deutsch, D. (1999). *The Psychology of Music*. London: Academic Press.
- Elgin, S.L. (2006). State anxiety of women basketball players prior to competition. Missouri Western State University. (<http://clearinghouse.missouriwestern.edu/manuscripts/15.asp>).
- Fenz, W.D. and Epstein, S. (1969). Stress in the air. *Psychology Today*, 3, 27-28, 58-59.
- Fujita, A.H. and Ichimura, S. (1993). In R.N. Singer, M. Murphey and L.K. Tennant (Eds.), *Handbook of research on sport psychology* (pp. 52-57). New York: Macmillan.
- Hammermeister, J. and Burton, D. (2001). Stress, appraisal, and coping revisited: Examining the antecedents of competitive state anxiety with endurance athletes. *The Sport Psychologist*, 15, 66-90.

- Hanton, S., O'Brien, M. and Mellalieu, S.D. (2003). Individual differences, perceived control and competitive trait anxiety. *Journal of Sport Behavior*, 26, 39-55.
- Heckhausen, H. (1990). *Motivation and Action*. Berlin, Germany: Springer-Verlag.
- Helmets, A.M. (1991). Positive anxiety in sport: Recreational volleyball athletes. Unpublished master's thesis, University of Virginia, Charlottesville.
- Hembree. (1988). Correlates, causes, effects, and treatments of test anxiety. *Review of Education Research*, 58, 47-77.
- Jarvis, M. (2002). *Sport Psychology*. New York: Routledge.
- Jones, G. (1995). More than just a game: Research developments and issues in competitive state anxiety in sport. *British Journal of Psychology*, 86, 449-478.
- Jones, G. and Cale, A. (1989). Precompetition temporal patterning of anxiety and self-confidence in males and females. *Journal Sport Behavior*, 12, 183-195.
- Jones, G. and Swain, A. (1992). Intensity and direction as dimensions of competitive state anxiety and relationships with competitiveness. *Perceptual and Motor Skills*, 74, 467-472.
- Jones, G. and Swain, A. (1995). Predispositions to experience debilitating and facilitative anxiety in elite and nonelite performers. *The Sport Psychologist*, 9, 201-211.
- Jones, G., Swain, A. and Cale, A. (1990). Antecedents of multidimensional competitive state anxiety and self-confidence in elite intercollegiate middle-distance runners. *The Sport Psychologist*, 4, 107-118.
- Jones, G., Swain, A. B. J. and Cale, A. (1991). Gender differences in pre competition temporal patterning and antecedents of anxiety and self confidence. *Journal of Sport and Exercise Psychology*, 13, 1-15.
- Jones, G., Swain, A.B.J. and Hardy, L. (1993). Intensity and direction dimensions of competitive state anxiety and relationships with performance. *Journal of Sport Sciences*, 11, 525-532.
- Kessler, R.C., McGonagle, K.A., Zhao, S., Nelson, C.B., Hughes, M., Eshleman, S., Wittchen, H. and Kendler, K. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Survey. *Archives of General Psychiatry*, 51, 8-19.
- Krane, V. (1995). Anxiety and stress: reflection of the past and visions of the future. Paper presented at the *Dorothy Harris Young Scholar – Practitioner Lecturer at the Meeting of the Association for the Advancement of Applied Sport Psychology*. New Orleans, LA.
- Krane, V. and Williams, J. (1994). Cognitive anxiety, somatic anxiety, and confidence in track and field athletics: The impact of gender, competitive level and task characteristics. *International Journal of Sport Psychology*, 25, 203-217.
- Lane, A.M., Terry, P.C. and Karagerorghis, C.I. (1995). Path analysis examining relationships among antecedents of anxiety, multidimensional state anxiety, and triathlon performance. *Perceptual and Motor Skills*, 81, 1255-1266.
- Lazarus, R.S. (1991). *Emotion and Adaptation*. New York: Oxford University Press.
- Lewinsohn, P. M., Gotlib, I. H., Lewinsohn, M., Seeley, J. R. and Allen, N. B. (1998). Gender differences in anxiety disorders and anxiety symptoms in adolescent. *Journal of Abnormal Psychology*, 107(1), 109-117.
- Leunes, A. and Nation, J.R. (2002). *Sport Psychology*. CA, USA: Wadsworth.
- Mahoney, M.J. and Meyers, A.W. (1989). Anxiety and athletic performance: Traditional and cognitive-development perspectives. In Dieter Hackfort and Charles D. Spielberger (Eds.), *Anxiety in sports* (pp.77-94). New York: Hemisphere.
- Males, J.R. and Kerr, J.H. (1996). Stress, emotion, and performance in elite slalom canoeists. *The Sport Psychologists*, 10, 17-36.
- Martens, R., Vealey, R.S. and Burton, D. (1990). *Competitive Anxiety in Sport*. Champaign, Illinois: Human Kinetics.
- Mellalieu, S.D., Hanton, S. and Jones, G. (2003). Emotional labelling and competitive anxiety in preparation and competition. *The Sport Psychologist*, 17, 157-174.

- Montgomery, B. and Morris, L. (1994). *Living with Anxiety*. Singapore: Heinemann Asia.
- Murphy, S. M. (1988). The on-site provision of sport psychology services at the 1987 U. S Olympic Festival. *The Sport Psychologist*, 2, 105-130.
- O'Neil, H.F. and Abedi, J. (1992). Japanese children's trait and state worry and emotionality in a high-stakes testing environment. *Anxiety, Stress and Coping*, 5, 253-267.
- O'Neil, H.F., Baker, E.L. and Matsuura, S. (1992). Reliability and validity of Japanese trait and state worry and emotionality scales. *Anxiety, Stress, and Coping*, 5, 225-239.
- Ortiz, J. (2006). Efficacy of relaxation techniques in increasing sport performance in women golfers. *The Sport Journal*, 9. (<http://www.thesportjournal.org/2006Journal/Vol9-No1/OrtizLaGrange1.asp>)
- Perry J.D. and Williams, J.M. (1998). Relationship of intensity and direction of competitive trait anxiety to skill level and gender in tennis. *The Sport Psychologist*, 12, 169-179.
- Pierce, W.J. (1980). Psychological perspective of youth sport participants and nonparticipants. Unpublished doctoral dissertation. Virginia Polytechnic Institute and State University.
- Raglin, J.S. and Hanin, Y.L. (2000). Competitive anxiety. In L.H. Yuri (Ed.), *Emotions in Sport* (pp. 93-111). Champaign, IL: Human Kinetics.
- Ramella-DeLuca, N.M. (2003). Investigating life stress, competitive trait anxiety and competitive state anxiety with athletic injury occurrence in NCAA Division I Athletes. Master Thesis.
- Rotella, R.J. and Lerner, J.D. (1993). Responding to competitive pressure. In R.N. Singer, M. Murphey and L.K. Tennant (Eds.), *Handbook of research on sport psychology* (pp. 528-541). New York: Macmillan.
- Sade, S., Bar-Eli, M., Bresler, S. and Tenenbaum, G. (1990). Anxiety, self-control and shooting performance. *Perceptual and Motor Skills*, 71, 3-6.
- Scanland, T.K. and Passer, M.W. (1979). Sources of competitive stress in young female athletes. *Journal of Sport Psychology*, 1, 151-159.
- Seeley, G., Storey, J., Wagner, D., Walker, C. and Watts, K. (2005). *Anxiety levels and gender differences in social volleyball players before and during competition in an Australian setting*. <http://www.geocities.com/CollegePark/5686/su99p5.htm>.
- Smith, D. and Bar-Eli, M. (2007). *Essential Readings in Sport and Exercise Psychology*. Champaign, IL: Human Kinetics.
- Thatcher, J., Thatcher, R. and Dorling, D. (2004). Gender differences in the pre-competition temporal patterning of anxiety and hormonal responses. *Journal of Sports Medicine Physical Fitness*, 44, 300-308.
- Thuot, S., Kavouras, S. and Kenefick, R. (1998). Effect of perceived ability, game location, and state anxiety on basketball performance. *Journal of Sport Behavior*, 21, 311-321.
- Wann, D. L. (1997). *Sport Psychology*. New Jersey: Simon and Schuster.
- Wark, K. A. and Wittig, A. F. (1979). Sex role and sport competition anxiety. *Journal of Sport Psychology*, 1, 248-250.
- Weinberg, R. (1989). Anxiety, arousal, and motor performance: Theory, research, and applications. In Dieter Hackfort and Charles D. Spielberger (Eds.), *Anxiety in sports* (pp.95-105). New York: Hemisphere.
- Weinberg, R.S. and Gould, D. (1999). *Foundations of Sport and Exercise Psychology* (2<sup>nd</sup> Edn.). Champaign, IL: Human Kinetics.
- Wiggins, M.S. (1998). Anxiety intensity and direction: Preperformance temporal patterns and expectations in athletes. *Journal of Applied Sport Psychology*, 10, 201-211.
- Williams, D.A. and Jenkins, J.O. (1986). Role of competitive anxiety in the performance of black college basketball players. *Perceptual and Motor Skills*, 63, 847-853.