

---

## A comparative analysis of national Olympic swimming team members' and para-swimming team members' psychological profiles

---

Péter Szájer<sup>1\*</sup>, László Tóth<sup>2</sup>, Ágnes Szemes<sup>2</sup>, Nikoletta Nagy<sup>1</sup>,  
Borbála Zala<sup>2</sup>, Ferenc Köteles<sup>3</sup>, Attila Szabo<sup>3</sup>

---

<sup>1</sup>Department of Swimming and Water Sports, University of Physical Education, Budapest

<sup>2</sup>Department of Psychology and Sport Psychology, University of Physical Education

<sup>3</sup>Institute of Health Promotion and Sport Sciences, ELTE Eötvös Loránd University, Budapest, Hungary

---

### **Abstract**

*Being an elite Para-athlete requires coping with unique challenges beyond those posed by performance improvement. In the current study, we aimed to reveal possible differences in various psychological profiles between elite Para-swimmers (n = 18) and able-bodied swimmers (n = 35) competing at Olympic level to identify the yet unknown psychological drawbacks of being a disabled elite swimmer. An additional aim was to explore possible gender differences and differences between successful and less successful swimmers too. Using several measurements, we assessed 10 sports-related psychological constructs: cognitive anxiety, self-confidence, somatic anxiety, coping with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, self-confidence/achievement motivation, and coachability. Able-bodied swimmers scored lower on somatic anxiety and higher on self-confidence, freedom from worry, and self-confidence/achievement motivation than Paralympics swimmers. When the tests were repeated separately for men and women, the results remained unchanged for women, whereas able-bodied male athletes only scored significantly higher than male Para-swimmers on self-confidence and freedom from worry. Furthermore, medal winning athletes, in the overall sample exhibited less cognitive and somatic anxiety than those ranking fourth or lower at the Olympic Games. Para-swimmers with different levels of disability did not differ from each other in any of the measures. The findings show that Para-swimmers experience psychological disadvantages in contrast to able-bodied swimmers that should be addressed in their training regimen.*

**Keywords:** athlete, Para-athlete, disabled, elite, mindset, sport

During competitions, athletes face numerous stressors including pain, fear, low self-confidence, psychological needs, and the coach's stress (Dale, 2000; Gould, Eklund, & Jackson, 1993; Holt & Hogg, 2002). Reaching maximum performance and finding pleasure in the activity requires individuals in all age groups, at all levels of ability, and in all sports to successfully cope with challenge-related stress (Nicholls, Holt, & Polman, 2005). Directional (i.e., facilitative-debilitative) approaches to the understanding of competitive anxiety in sport emphasize the importance of the interpretation of symptoms. Beyond the actual level of anxiety, individual beliefs regarding the controllability of the stressor seem to play a pivotal role; athletes who appraise themselves as having at least some control over the situation are better able to cope with the symptoms of anxiety than those with lower levels of perceived control (Jones, 1995).

Findings on the effects of anxiety on swimming performance are inconsistent; while some researchers found high levels of anxiety to facilitate the swimmers' performance (Furst & Tenebaum, 1986), others reported that more intense anxiety was associated with poorer performance (Burton, 1988). In accord with the control model proposed by Jones (1995), competitive swimmers with higher levels of expectations judged their anxiety-related symptoms as being more facilitative than those with lower levels of perceived control, although no difference in the actual level of cognitive and somatic anxiety was found (Jones & Hanton, 1996; Jones, Hanton, & Swain, 1994). Non-elite competitive swimmers, who used relaxation strategies, reported lower levels of cognitive and somatic anxiety and judged the symptoms of anxiety as facilitative (Fletcher & Hanton, 2001). Concerning performance effects, research based on a multidimensional approach found that performance was negatively related to cognitive anxiety while positively related to self-confidence (Polman, Rowcliffe, Borkoles, & Levy, 2007). Somatic anxiety was reported to have little impact on performance, since it was only experienced at the pre-competition stage (Martens, Burton, Vealey, Bump, & Smith, 1990). In contrast, recent studies found that somatic anxiety predicted swimming performance significantly better than cognitive anxiety (Mabweazara, Andrews, & Leach, 2014; Mabweazara, Leach, & Andrews, 2017). In a study involving elite swimmers, Lundqvist, Kentta, and Raglin (2011) found that elite athletes experienced facilitating anxiety, and they were more optimistic than non-elite athletes; moreover, female athletes were more likely to experience heightened anxiety than male athletes. In another study, males and females did not differ in somatic anxiety, while both genders showed decrease in self-confidence before the competition, with greater decrease in women than in men (Jones, Swain, & Cale, 1991). The difference was explained by socialization habits; males acquire a more competitive orientation to life than females (Andersen & Williams, 1987; Jones & Cale, 1989). In a recent study, however, elite female athletes showed less cognitive and somatic anxiety than their male counterparts (Hagan, Pollmann, & Schack, 2017).

Compared to their able-bodied peers, athletes with disabilities have to deal with additional sources of stress. In a qualitative study, Campbell and Jones (2002) identified 10 potential stressors in elite male wheelchair basketball players, including disability-specific factors such as costs of wheelchair basketball and a lack of disability awareness. Disabled athletes' quality of sleep was found to be impaired (Silva et al., 2012; Tsunoda et al., 2017), and they reported a need for consultation in sport psychology to assist them to perform better under pressure (de Bressy de Guast, Golby, Van Wersch, & d'Arripe-Longueville, 2013; Lim, Jang, O'Sullivan, & Oh, 2018; Page, Martin, & Wayda, 2001). Although disabled and able-bodied athletes showed similar patterns of anxiety, in general, the former reported more somatic anxiety and lower levels of self-confidence immediately before competition (Campbell & Jones, 1997; Ferreira, Chatzisarantis, Gaspar, & Campos, 2007). Able-bodied and disabled athletes were also found to use similar coping strategies. However, able-bodied athletes employed more redefinition and growth strategies, while Paralympic athletes were more satisfied with their effort and results (Pensgaard, Roberts, & Ursin, 1999). Due to lack of research on the psychological hardship experienced in high level of sport competition by Para-swimmers, there is a need for using a wide range of psychological assessment that could enable researchers to reveal the "additional" challenges (in contrast to able-bodied swimmers) experienced by this group of elite athletes.

The objective of the current study was to disclose theoretically expected differences in sport challenge-related psychological profiles between Hungarian Paralympics swimmers and able-bodied Olympics swimmers in order to gain a better understanding of the psychological challenges encountered by disabled elite swimmers. The research also aims to compare the results of male and female swimmers and more successful elite swimmers (Olympic medalists) with less successful elite swimmers (Olympic four to sixth place ranking).

According to survey data reported by Neulinger (2008), swimming is the third most frequently chosen sport by both genders. Furthermore, Hungarian national swimmers including Para-swimmers are increasingly successful at high-level international competitions. At the 2016 Paralympics in Rio, for example, the Hungarian competitors won one gold, three silver, and ten bronze medals. Considering the very high level of sport competition (Olympic level), the pool of potential participants was relatively low in both groups for the current study, which made it impossible to use random selection or even randomization therefore the current study uses full-sample. Despite this sampling difficulty, this study is important because it is the first in the field to examine Olympic level able-bodied and disabled swimmers while also examining differences between the genders and level of success.

## METHOD

### Participants

**Able-bodied swimmers:** The Hungarian Olympic swimming team, participating at the Rio 2016 Olympic Games, participated in the current study. They won 3 gold, 2 silver and 2 bronze medals at the Rio Olympics. Thirty-five (23 male and 12 female) able-bodied Olympic swimmers consented to participate in the study. Their age varied between 17 and 31 years ( $M = 23.26$ ,  $SD = 3.85$ ) with 15 years of experience in swimming on average. All able-bodied swimmers gave written consent to participation in the current study which was approved by a legitimate research ethics committee at a large urban university.

**Para-swimmers:** The Hungarian Para-athlete sample comprised 18 Paralympics swimmers, 10 of whom achieved remarkable success at the 2016 Summer Paralympics in Rio. They won 1 gold, 3 silver and 5 bronze medals at the Rio Olympics. The participants were 9 male and 9 female competitors aged between 14 and 47 years ( $M = 26.33$ ,  $SD = 10.81$ ) with 16.5 years of experience in swimming on average. All participants were classified under competition classes 1 to 10 and under severity classes 3 to 10 (6 participants in S3-S5, 5 in S6 - S8 and 7 in S9 - S10). All Paralympics swimmers gave written consent to their participation and studying them was approved by the ethics committee of the university.

### Measures

Anxiety was measured with the Competitive State Anxiety Inventory-2 (CSAI-2; Martens, Burton, Vealey, Bump, & Smith, 1990; adapted to Hungarian by Sipos, Kudar, Bejek, & Tóth, 1999). The Likert-type scale consists of 27 items assessing (cognitive and somatic) competitive anxiety and state self-confidence. 9 items evaluate cognitive anxiety (which is the mental manifestations of anxiety), or the specific thought processes that occur during anxiety, such as concern or worry. Another 9 items measure somatic anxiety, such as butterflies in the stomach, sweating, dizziness, and shortness of breath. The third category of the items estimate the state of self-confidence, which is the belief that one has the internal resources, particularly abilities, to achieve success. Respondents are requested to rate each item on a 4-point scale according to “*how they feel at the moment*”.

Participants' coping capacity was assessed with the Athletic Coping Skill Inventory-28 (ACSI-28; Smith et al., 1995; adapted to Hungarian by Jelinek, 2000). The Likert-type scale consists of 28 items and the following 7 subscales tapping psychological skills competitors may mobilize in order to improve their performance each subscale has 4 items: 1) Coping with adversity: The athlete maintains a positive attitude and trusts in positive developments even when facing adversities; 2) Peaking under pressure: The athlete faces pressure situations as

challenges, is not debilitated by anxiety, and is able to perform well; 3) Goal setting/Mental preparation: The athlete prepares a tactical plan before both training and competition; 4) Concentration: The athlete is able to focus on the given task with the maximum concentration required by the circumstances, and is able to ignore distracting stimuli; 5) Freedom from worry: The athlete is not worried about making mistakes, nor is s/he occupied with what others think of her/his performance; 6) Confidence/Achievement motivation: The athlete is intrinsically motivated to improve her/his skills, and has confidence in her/his ability to reach the desired performance; 7) Coachability: The athlete follows the trainer’s instructions and suggestions during training. S/he does not take personal offense at the trainer’s criticisms or intense emotional reactions. Respondents are requested to rate each item on a 4-point scale according to the extent to which the given item applies to them.

**Procedure and data-analysis**

Participants completed the questionnaires in a paper-and-pencil format under the researchers’ supervision before the 2017 World Championships, the Hungarian Para-swimming team in Mexico City in November, and the able-bodied Hungarian team in Budapest in July. Since the sample was not large enough for multivariate parametric tests, and seven out of ten variables did not meet the assumption of normal distribution, the more conservative non-parametric Mann-Whitney *U* test was used to examine the data. This test is less sensitive to sample size, to normality of the data, and to sample size differences.

**RESULTS**

The major findings of comparisons between Para-swimmers and able-bodied swimmers on the 10 measures are summarized in Table 1.

Table 1.  
*Results of the Mann-Whitney U tests comparing able-bodied and Para-swimmers*

Measures	Group	N	Mean Rank	Z	p	Eta squared ( $\eta^2$ ) / Cohen's d
1. Cognitive Anxiety	Able-bodied	35	25.46	1.02	ns	-, -
	Disabled	18	30.00			
2. Self-Confidence	Able-bodied	35	33.93	-4.57	< 0.001	0.40, 1.63
	Disabled	18	13.53			
3. Somatic Anxiety	Able-bodied	35	22.23	3.15	0.002	0.19, 0.97
	Disabled	18	36.28			
4. Coping with Adversity	Able-bodied	35	28.46	-0.97	ns	-, -
	Disabled	18	24.17			
5. Peaking under pressure	Able-bodied	35	28.79	-1.19	ns	-, -
	Disabled	18	23.53			

Measures	Group	N	Mean Rank	Z	p	Eta squared ( $\eta^2$ ) / Cohen's d
6. Goal Setting/Mental Preparation	Able-bodied	35	25.76	0.84	ns	-, -
	Disabled	18	29.42			
7. Concentration	Able-bodied	35	28.11	-0.74	ns	-, -
	Disabled	18	24.83			
8. Freedom from Worry	Able-bodied	35	32.93	-3.95	< 0.001	0.30, 1.31
	Disabled	18	15.47			
9. Confidence/Achievement Motivation	Able-bodied	35	30.83	-2.55	0.011	0.13, 0.77
	Disabled	18	19.56			
10. Coachability	Able-bodied	35	26.70	0.20	ns	-, -
	Disabled	18	27.58			

Note: ns = non-significant

Table 2.

Results of the Mann-Whitney U tests comparing able-bodied and Paralympic male swimmers

Measures	Group	N	Mean Rank	Z	p	Eta squared ( $\eta^2$ ) / Cohen's d
1. Cognitive Anxiety	Able-bodied	23	15.78	0.70	ns	-, -
	Disabled	9	18.33			
2. Self-Confidence	Able-bodied	23	20.38	-3.77	< 0.001	0.46, 1.85
	Disabled	9	6.56			
3. Somatic Anxiety	Able-bodied	23	15.61	0.87	ns	-, -
	Disabled	9	18.78			
4. Coping with Adversity	Able-bodied	23	16.89	-0.38	ns	-, -
	Disabled	9	15.50			
5. Peaking under pressure	Able-bodied	23	17.24	-0.72	ns	-, -
	Disabled	9	14.61			
6. Goal Setting/Mental Preparation	Able-bodied	23	16.48	0.21	ns	-, -
	Disabled	9	16.56			
7. Concentration	Able-bodied	23	16.04	0.45	ns	-, -
	Disabled	9	17.67			
8. Freedom from Worry	Able-bodied	23	19.26	-2.73	0.006	0.24, 1.12
	Disabled	9	9.44			
9. Confidence/Achievement Motivation	Able-bodied	23	17.54	-1.02	ns	-, -
	Disabled	9	13.83			
10. Coachability	Able-bodied	23	16.24	0.20	ns	-, -
	Disabled	9	17.17			

Note: ns = non-significant

The results of the Mann-Whitney U tests revealed differences between the two groups on the following four measures: 1) self-confidence, 2) somatic anxiety, 3) freedom from worry, and 4) self-confidence/achievement motivation. The effect sizes of the statistically significant differences were large. When the data were analyzed separately for men and women, only two measures were found on which able-bodied male swimmers scored higher than disabled male swimmers, namely, self-confidence and freedom from worry (see Table 2). However, the results obtained for the two groups of female athletes were identical with those obtained in

the overall (mixed-gender) analyses, that is, female Para-swimmers scored lower than able-bodied female swimmers on four measures: 1) self-confidence, 2) somatic anxiety, 3) freedom from worry, and 4) self-confidence/achievement motivation. The effect sizes of these differences were also large (see Table 3).

Table 3.  
*Results of the Mann-Whitney U tests comparing able-bodied and Paralympic female swimmers.*

Measures	Group	N	Mean Rank	Z	p	Eta squared ( $\eta^2$ ) / Cohen's d
1. Cognitive Anxiety	Able-bodied	12	10.21	0.68	ns	-, -
	Disabled	9	12.06			
2. Self-Confidence	Able-bodied	12	14.29	-2.83	0.001	0.40, 1.63
	Disabled	9	6.61			
3. Somatic Anxiety	Able-bodied	12	7.12	3.33	0.001	0.55, 2.21
	Disabled	9	16.17			
4. Coping with Adversity	Able-bodied	12	12.62	-1.41	ns	-, -
	Disabled	9	8.83			
5. Peaking under pressure	Able-bodied	12	12.12	-0.97	ns	-, -
	Disabled	9	9.50			
6. Goal Setting/Mental Preparation	Able-bodied	12	9.58	1.27	ns	-, -
	Disabled	9	12.89			
7. Concentration	Able-bodied	12	12.88	-01.63	ns	-, -
	Disabled	9	8.50			
8. Freedom from Worry	Able-bodied	12	14.04	-2.62	0.009	0.34, 1.44
	Disabled	9	6.94			
9. Confidence/Achievement Motivation	Able-bodied	12	13.92	-2.52	0.012	0.32, 1.37
	Disabled	9	7.11			
10. Coachability	Able-bodied	12	11.42	-0.36	ns	-, -
	Disabled	9	10.44			

Note: ns = non-significant

Additional Mann-Whitney *U* tests were conducted to examine whether more successful elite swimmers including Olympic medalists would exhibit superior psychological measures compared to less successful elite swimmers including those who ranked fourth or lower at the Olympic Games. The results indicated that medalists and non-medalists only differed in cognitive anxiety ( $n = 11, 42$ ; *Mean ranks* = 15.32 and 30.06, respectively,  $Z = 2.83, p = 0.005$ , effect size [Cohen's *d*] = 0.82) and in somatic anxiety ( $n = 11, 42$ ; *Mean ranks* = 18.00 and 29.36, respectively,  $Z = 2.18, p = 0.029, d = 0.63$ ). Separate comparisons for able-bodied and Para-swimmers showed that able-bodied Olympic medalists only differed in self-confidence from able-bodied non-medalists ( $n = 6, 29$ ; *Mean ranks* = 26.50 and 16.24, respectively,  $Z = -2.25, p = 0.024, d = 0.84$ ), while Paralympics medalists as compared to Paralympics non-medalists showed lower levels of cognitive anxiety ( $n = 5, 13$ ; *Mean ranks* = 5.00 and 11.23, respectively,  $Z = 2.22, p = 0.026, d = 1.28$ ) and higher levels of freedom from worry

( $n = 5, 13$ ; *Mean ranks* = 14.10 and 7.73, respectively,  $Z = -2.30$ ,  $p = 0.021$ ,  $d = 1.34$ ). Finally, Para-swimmers with different levels of disability (S3 - S10) did not show significant differences from each other on any of the 10 psychological measures.

## DISCUSSIONS

The results of the study revealed differences between Paralympics swimmers and able-bodied Olympic swimmers in some of their sport challenge-related psychological profiles. Significant differences were found between the groups in self-confidence, somatic anxiety, freedom from worry, and self-confidence/achievement motivation, with able-bodied swimmers showing a more superior psychological profile (refer to Table 1). Although the majority of previous reports suggest that Paralympians' psychological characteristics do not differ significantly from able-bodied Olympic athletes' profile (Dieffenbach & Statler, 2012), disabled swimmers in the present study reported lower self-confidence and higher pre-competition somatic anxiety than able-bodied swimmers, which is in line with findings reported earlier by Campbell and Jones (1997) and by Ferreira et al. (2007). The disclosed significant correlations between the measures in the present study may explain the finding that differences between the groups in self-confidence and somatic anxiety, as assessed by the CSAI-2, are also reflected in their scores on the self-confidence/achievement motivation and freedom from worry subscales of the ACSI-28 (Khodayari, Saiari, & Dehghani, 2011).

Separate analyses of male and female athletes' data revealed that disabled male swimmers showed lower levels of self-confidence and freedom from worry than able-bodied male swimmers (refer to Table 2), while disabled and able-bodied female swimmers not only showed these differences, but the former also scored higher on somatic anxiety and lower on self-confidence/achievement motivation than the latter (refer to Table 3). These results corroborate several previous findings on gender differences suggesting that in contrast to men, female athletes are more likely to experience pre-competition anxiety (Perry & Williams, 1998; Wilson, Raglin, & Pritchard, 2002) and to have lower pre-competition self-confidence (Jones et al., 1991; Lundqvist et al., 2011). These findings may be explained by the impact of gender socialization, since male athletes are expected to have a strong character and high resistance to stress (Andersen & Williams, 1987; Jones & Cale, 1989).

Comparisons between medalists and non-medalists showed that the former reported lower levels of cognitive and somatic anxiety than the latter. This finding partially agrees with those showing no significant difference between elite and non-elite competitors in either cognitive or somatic anxiety (Jones & Hanton, 1996; Jones et al., 1994). However, at very high level of competition, such as the Olympics, anxiety may be a crucial factor affecting winning performance. This explanation may be related to the control model of competitive anxiety (Jones,



1995), which predicts that athletes having high expectations are likely to experience facilitative rather than debilitating anxiety. In line with this prediction, similarly to Lundqvist et al. (2011) who found that elite athletes reported higher levels of facilitative anxiety and a more optimistic attitude towards competition than sub-elite athletes, in our sample the medal winning athletes may have experienced more facilitating anxiety and greater optimism than non-medal winning athletes.

Separate comparisons between more and less successful athletes among Paralympic swimmers and able-bodied Olympic swimmers revealed that Paralympic medalists reported lower levels of cognitive anxiety and higher levels of freedom from worry than non-medalist Para-swimmers, while able-bodied medalists showed higher levels of self-confidence than their non-medalist counterparts. These findings are consistent with those reported by Polman et al. (2007), which suggest that performance is negatively related to cognitive anxiety and positively associated with self-confidence, and that debilitating anxiety may impair swimming performance (Burton, 1988). An additional circumstance possibly influencing the current findings was that able-bodied Hungarian medalists of the London Olympics, who later also participated in the Rio Olympics, received psychological training funded by the Hungarian Swimming Association, whereas no such organized training were provided for Para-swimmers despite their having to deal with more sources of stress even in everyday life and having a greater need for consultation with a sport psychologist (de Bressy de Guast et al., 2013; Lim et al., 2018; Page et al., 2001).

**Limitations and Strengths.** The sampling used is a limitation of the present study, that is, the validity of the obtained findings is limited to Olympic swimmers including both able-bodied and disabled athletes. The most important limitations of the study are the non-random sampling and the low sample size. However, these may be considered as 'delimitations' rather than true limitations because the current study focused on a highly specific population very limited in number. Instead of randomized sample the study used full sample. The subjective nature of self-report measures is a general limitation that most paper-and-pencil measures are criticized for in the field of psychology.

The strength of the work is that it examined elite Olympic athletes competing in a sport enjoying global popularity, and it compared able-bodied and Para-swimmers on ten psychological measures related to stress, anxiety and confidence, which allowed the authors to gain insight into the additional psychological difficulties that disabled elite athletes have to cope with. Although the obtained findings might be influenced by cultural factors, they may contribute to a better understanding of the unique psychological difficulties shared by all elite Para-athletes around the world, which may provide the basis for addressing these difficulties in disabled athletes' training regimen.

## CONCLUSION

Able-bodied swimmers scored lower on somatic anxiety and higher on self-confidence, freedom from worry, and self-confidence/achievement motivation than Paralympics swimmers. Large effect sizes were obtained for all mentioned factors. These differences were more consistent among female athletes, since able-bodied male athletes only scored higher than disabled male athletes on self-confidence and freedom from worry. Nevertheless, the obtained effect sizes reflected large differences in these cases as well, since both Cohen's  $d$  values exceeded 0.8. Medal winning athletes in the overall sample exhibited less cognitive and somatic anxiety than those ranking fourth or lower. However, able-bodied medalists only differed from able-bodied non-medalists in self-confidence, which was higher in the medalist group. Medal-winning Para-swimmers scored lower on cognitive anxiety and higher on freedom from worry than non-medalist elite Para-swimmers. The largest effect sizes were obtained in these cases among all comparisons. Para-swimmers' with different levels of disability did not differ from each other on any of the measures.

The obtained findings suggest that supporting athletes in improving anxiety regulation should be a priority in their preparation for competition, since anxiety potentially affects both able-bodied and Paralympic athletes' performance, albeit not to the same extent. Not even those having substantial competitive experience and having accurate knowledge of their abilities are free from the adverse effects of anxiety. Cognitive anxiety has a greater impact on athletes than somatic anxiety, therefore it is advisable to lay more emphasis on learning techniques of managing cognitive anxiety, which may also have a beneficial effect on self-confidence through their close association.

## REFERENCES

- Andersen, M. B., & Williams, J. M. (1987). Gender role and sport competition anxiety: A re-examination. *Research Quarterly for Exercise and Sport*, *58*(1), 52-56. doi:10.1080/02701367.1987.10605420
- Burton, D. (1988). Do anxious swimmers swim slower? Reexamining the elusive anxiety-performance relationship. *Journal of Sport and Exercise Psychology*, *10*(1), 45-61. doi:10.1123/jsep.10.1.45
- Campbell, E., & Jones, G. (1997). Precompetition anxiety and self-confidence in wheelchair sport participants. *Adapted Physical Activity Quarterly*, *14*(2), 95-107. doi:10.1123/apaq.14.2.95
- Campbell, E., & Jones, G. (2002). Sources of stress experienced by elite male wheelchair basketball players. *Adapted Physical Activity Quarterly*, *19*(1), 82-99. doi:10.1123/apaq.19.1.82
- Dale, G. A. (2000). Distractions and coping strategies of elite decathletes during their most memorable performances. *The Sport Psychologist*, *14*(1), 17-41. doi:10.1123/tsp.14.1.17

- de Bressy de Guast, V., Golby, J., Van Wersch, A., & d'Arripe-Longueville, F. (2013). Psychological skills training of an elite wheelchair water-skiing athlete: A single-case study. *Adapted Physical Activity Quarterly*, 30(4), 351-372. doi:10.1123/apaq.30.4.351
- Dieffenbach, K. D., & Statler, T. A. (2012). More similar than different: The psychological environment of Paralympic sport. *Journal of Sport Psychology in Action*, 3(2), 109-118. doi:10.1080/21520704.2012.683322
- Ferreira, J. P. L., Chatzisarantis, N., Caspar, P. M., & Campos, M. J. (2007). Precompetitive anxiety and self-confidence in athletes with disability. *Perceptual and Motor Skills*, 105(1), 339-346. doi:10.2466/pms.105.1.339-346
- Fletcher, D., & Hanton, S. (2001). The relationship between psychological skills usage and competitive anxiety responses. *Psychology of Sport and Exercise*, 2(2), 89-101. doi:10.1016/S1469-0292(00)00014-5
- Furst, D. M., & Tenenbaum, G. (1986). The relationship between worry, emotionality and sport performance. In D. M. Landers (Ed.), *Sport and Elite Performers* (pp. 89-96). Champaign, IL: Human Kinetics
- Gould, D., Eklund, R. C., & Jackson, S. A. (1993). Coping strategies used by US Olympic wrestlers. *Research quarterly for Exercise and Sport*, 64(1), 83-93. doi:10.1080/02701367.1993.10608782
- Hagan Jr, J. E., Pollmann, D., & Schack, T. (2017). Interaction between gender and skill on competitive state anxiety using the time-to-event paradigm: what roles do intensity, direction, and frequency dimensions play? *Frontiers in Psychology*, 8, 692-705. doi:10.3389/fpsyg.2017.00692
- Holt, N. L., & Hogg, J. M. (2002). Perceptions of stress and coping during preparations for the 1999 women's soccer world cup finals. *The Sport Psychologist*, 16(3), 251-271. doi:10.1123/tsp.16.3.251
- Jelinek, Z. (2000). The personality background of the sport physical sensibility. (Unpublished Master's thesis, Eötvös Lorand University. In Hungarian.) Budapest: ELTE.
- Jones, G. (1995). More than just a game: Research developments and issues in competitive anxiety in sport. *British Journal of Psychology*, 86(4), 449-478. doi:10.1111/j.2044-8295.1995.tb02565.x
- Jones, J. G., & Cale, A. (1989). Relationships between multidimensional competitive state anxiety and cognitive and motor subcomponents of performance. *Journal of Sports Sciences*, 7(3), 229-240. doi:10.1080/02640418908729843
- Jones, G., Swain, A., & Cale, A. (1991). Gender differences in precompetition temporal fattening and antecedents of anxiety and self-confidence. *Journal of Sport and Exercise Psychology*, 13(1), 1-15. doi:10.1123/jsep.13.1.1
- Jones, G., & Hanton, S. (1996). Interpretation of competitive anxiety symptoms and goal attainment expectancies. *Journal of Sport and Exercise Psychology*, 18(2), 144-157. doi:10.1123/jsep.18.2.144
- Jones, G., Hanton, S., & Swain, A. (1994). Intensity and interpretation of anxiety symptoms in elite and non-elite sports performers. *Personality and Individual Differences*, 17(5), 657-663. doi:10.1016/0191-8869(94)90138-4
- Lim, T. H., Jang, C. Y., O'Sullivan, D., & Oh, H. (2018). Applications of psychological skills training for Paralympic table tennis athletes. *Journal of Exercise Rehabilitation*, 14(3), 367-374. doi:10.12965/jer.1836198.099

- Khodayari, B., Saiiari, A., & Dehghani, Y. (2011). Comparison relation between mental skills with sport anxiety in sprint and endurance runners. *Procedia-Social and Behavioral Sciences*, 30, 2280-2284. doi:10.1016/j.sbspro.2011.10.445
- Lundqvist, C., Kenttä, G., & Raglin, J. S. (2011). Directional anxiety responses in elite and sub-elite young athletes: intensity of anxiety symptoms matters. *Scandinavian Journal of Medicine and Science in Sports*, 21(6), 853-862. doi:10.1111/j.1600-0838.2010.01102.x
- Mabweazara, S. Z., Andrews, B. S., & Leach, L. L. (2014). Changes in state anxiety prior to competition: sport and exercise psychology. *African Journal for Physical Health Education, Recreation and Dance*, 20(21), 492-499. doi:10520/EJC155178
- Mabweazara, S. Z., Leach, L., & Andrews, B. S. (2017). Predicting swimming performance using state anxiety. *South African Journal of Psychology*, 47(1), 110-120. doi:10.1177/0081246316645060
- Martens, R., Burton, D., Vealey, R. S., Bump, L. A., & Smith, D. E. (1990). Development and validation of the Competitive State Anxiety Inventory. In R. Martens, S. Vealey, & D. Burton (Eds.), *Competitive state anxiety in sport* (pp. 119 – 190). Champaign, IL: Human Kinetics.
- Neulinger, Á. (2008). A szabadidősport iránti érdeklődés Magyarországon 1. A sportolás megítélése és gyakorlata. *Magyar Sporttudományi Szemle*, 36, 12-15.
- Nicholls, A. R., Holt, N. L., & Polman, R. C. (2005). A phenomenological analysis of coping effectiveness in golf. *The Sport Psychologist*, 19(2), 111-130. doi:10.1123/tsp.19.2.111
- Page, S. J., Martin, S. B., & Wayda, V. K. (2001). Attitudes toward seeking sport psychology consultation among wheelchair basketball athletes. *Adapted Physical Activity Quarterly*, 18(2), 183-192. doi:10.1123/apaq.18.2.183
- Pensgaard, A. M., Roberts, G. C., & Ursin, H. (1999). Motivational factors and coping strategies of Norwegian Paralympic and Olympic winter sport athletes. *Adapted Physical Activity Quarterly*, 16(3), 238-250. doi:10.1123/apaq.16.3.238
- Perry, J. D., & Williams, J. M. (1998). Relationship of intensity and direction of competitive trait anxiety to skill level and gender in tennis. *The Sport Psychologist*, 12(2), 169-179. doi:10.1123/tsp.12.2.169
- Polman, R., Rowcliffe, N., Borkoles, E., & Levy, A. (2007). Precompetitive state anxiety, objective and subjective performance, and causal attributions in competitive swimmers. *Pediatric Exercise Science*, 19(1), 39-50. doi:10.1123/pes.19.1.39
- Silva, A., Queiroz, S. S., Winckler, C., Vital, R., Sousa, R. A., Fagundes, V., ... & de Mello, M. T. (2012). Sleep quality evaluation, chronotype, sleepiness and anxiety of Paralympic Brazilian athletes: Beijing 2008 Paralympic Games. *British Journal of Sports Medicine*, 46(2), 150-154. doi:10.1136/bjism.2010.077016
- Sipos, K., Kudar, K., Bejek, K., & Tóth, L. (1999). Standardisation and validation of the Hungarian Competitive State Anxiety Inventory-2 (CSAI-2) of Martens et al. (1990). In *Proceedings of 20<sup>th</sup> International Conference of Stress and Anxiety Research Society (STAR)*, July 12-14, Cracow, Poland (p. 131).
- Smith, R. E., Schutz, R. W., Smoll, F. L., & Ptacek, J. T. (1995). Development and validation of a multidimensional measure of sport-specific psychological skills: The Athletic Coping Skills Inventory-28. *Journal of Sport and Exercise Psychology*, 17, 379-398.

- Tsunoda, K., Mutsuzaki, H., Hotta, K., Shimizu, Y., Kitano, N., & Wadano, Y. (2017). Correlation between sleep and psychological mood states in female wheelchair basketball players on a Japanese national team. *Journal of Physical Therapy Science*, 29(9), 1497-1501. doi:10.1589/jpts.29.1497
- Wilson, G. S., Raglin, J. S., & Pritchard, M. E. (2002). Optimism, pessimism, and precompetition anxiety in college athletes. *Personality and Individual Differences*, 32(5), 893-902. doi:10.1016/S0191-8869(01)00094-0

